



NORTH WEST COAST CONNECTIONS VOLUME 2 JOINT CONSULTATION RESPONSE

Final Submission

Prepared on behalf of the PPA Group Authorities
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1.0 Introduction

1.1 Document Purpose and Structure

- 1.1.1 National Grid is consulting on the latest proposals to connect Moorside, the proposed new nuclear power station near Sellafield in West Cumbria, into the national grid. This report provides the PPA Group's Joint Detailed Response to National Grid's consultation on their proposals for the North West Coast Connections (NWCC) project. This is the formal response to the consultation required under sections 42 and 47 of the Planning Act 2008.
- 1.1.2 This document provides an evaluation of the proposed development and the Preliminary Environmental Impact (PEI) Report issued for consultation on 28 October 2016. The PEI Report provides a preliminary environmental assessment of the project and proposed mitigation measures drawing on currently available information.
- 1.1.3 As 'host' authorities the six local planning authorities in Cumbria affected by the project route and two in Lancashire affected by the tunnel head in Heysham have entered into a Planning Performance Agreement (PPA) with National Grid. These are; Allerdale Borough Council, Barrow Borough Council, Carlisle City Council, Copeland Borough Council, Cumbria County Council, Lake District National Park Authority, Lancashire County Council, Lancaster City Council and South Lakeland District Council. This enables the authorities to work jointly to assess the NWCC project in a positive way and to reach an informed view on the impacts of the proposal. The group are collectively known as the PPA Group. Consultants WYG are to provide ongoing support to the work of this PPA Group.
- 1.1.4 The PPA Group welcomes the opportunity to review and appraise the latest proposals. This response has been prepared by WYG in support of the PPA Group and represents a review of the proposals and PEI produced by National Grid. It has been informed by the work and views of topic specialists from the PPA Group supplemented by WYG support where required. This response is based on the level of detail available in the consultation materials and what the PPA Group understands of the NWCC project at a point in time. Therefore, it should be noted that the PPA Group reserve the right to revisit the assessments and conclusions drawn as the project develops.
- 1.1.5 In order to address the above, the paper is structured as follows:
- **Section 2** sets out the cross cutting themes and concerns of the PPA Group;
 - **Section 3** provides review of the PEI Introduction and Planning Policy;
 - **Section 4** reviews the Project Need;
 - **Section 5** reviews Project Design process and option appraisals;
 - **Section 6** reviews the proposed NWCC Project, and summarises the main design mitigation required for each of the subsections of the route;
 - **Section 7** provides a review of the EIA approach and methodology; and
 - **Sections 8 to 21** provides a topic-by-topic review of the proposed project and PEI.



Chapter 1 - Introduction

- 1.1.6 A topic summary is provided at the beginning of each chapter to highlight the key issues, and the remainder addresses the details of the proposal and potential impacts. This detailed response should be read in conjunction with the PPA Group's Volume 1 Joint Consultation Response Executive Summary, which provides a focus on the key comments and concerns. Appendix 1 also provides a list of project acronyms. The documents should therefore be read as whole to understand the inter-relationship of issues raised in both Volumes 1 and 2.

2.0 Cross-Cutting Issues

2.1 Consultation

Section 42 Duration and Timing

- 2.1.1 In responding to the draft Statement of Community Consultation and as set out in a letter dated 21 October 2016 (ref. CUM525-1150704) the PPA Group had expressed concern to National Grid that consultation period (28 October 2016 to 6 January 2016) was not sufficient or adequate for consultation for stakeholders and communities, given the extent and complexity of information and the timing coinciding with public holidays.
- 2.1.2 Furthermore, despite assurance of the provision of early information to the PPA Group, several deadlines offered by National Grid to provide the PEI material prior to the official consultation date were passed without the technical information being released on time. Some information, such as wireframes to help the PPA Group assess the landscape and visual impacts were not made available (albeit that 4 photo wirelines were issued 21st November 2016), which has led to difficulties in assessing the PEI information, for example the consideration of the impact on the setting of the Solway Coast Area of Outstanding Natural Beauty (AONB). The duration and timing of the consultation has resulted in a very significant challenge to the PPA Group and its consultants within the official timescales, and represents an equally significant challenge for local communities and businesses.

Optioneering Methodology

- 2.1.3 The inclusion and consideration of alternative design options, such as the offshore High Voltage Alternating Current (HVAC) connection options for the route south of the Silecroft is welcomed, as this is consistent with the applicant considering all viable options. However, it is surprising that following lengthy discussions with the PPA Group and other key stakeholders on mitigation options around the Duddon, this option has not been transparently explored previously (see chapter 5.0 Project Design, for more details). This was carried out for the Duddon Tunnel option and it could have aided consultation considerably. The failure to include this and other route/technology options in the public documents for the consultation is a major gap in the suite of consultation documents. Given the very public concern of communities around the Duddon over the Preferred Route Corridor, which National Grid is fully aware of, it is a concern that the public has not been given accessible information on alternative options for them to consider and comment upon.
- 2.1.4 The PPA Group asked for alternative options to be made part of the public consultation documentation in June/July 2016 as part of engagement over the consultation. Assurances were provided at that time from National Grid that this would be included in the set of public consultation documents. The inclusion of such options only in the technical chapters of the PEI, and for that text to be very lengthy, is a significant flaw in the public consultation process.

2.2 Lack of Information, Premature Assessment and Mitigation

- 2.2.1 Overall, a common theme running through all of the PEI Report is that there has been a general lack of sufficient information for an assessment of the potential effects of the development to be carried out by the PPA Group and its specialists at what is and should be treated as a formal stage of consultation. This is the case across a number of key topics and key locations such as the tunnel head construction compounds at Roosecote and Heysham.
- 2.2.2 For example, in terms of the Ecology Chapter, it appears that existing incomplete information has been used to scope in or out various designated sites, habitats and species. The PPA Group do not feel that a robust assessment can be undertaken until all the information has been considered. By scoping out features prior to obtaining all the data it may result in these features being ignored prior to the final Environmental Statement. Many of the ecology assessments have been based upon incomplete survey data which will require updating when surveys have been completed.
- 2.2.3 Another example is the Landscape and Visual Assessments, where the PEI does not systematically address all anticipated effects of the proposed development in a clear format. It fails to provide a fully transparent step-by-step approach to the identification of the sensitivity of each receptor, by failing to identify value and susceptibility. This is required to undertake a judgement on the potential effects through a discussion of the magnitude of change. Additionally, construction effects are not addressed adequately, as detail is not provided to confirm how locally specific landforms will be reinstated following construction. This is particularly where undergrounding takes place and the sensitivity of receptors is not clearly explained, susceptibility is not clearly addressed in the assessment and inconsistencies lie in the 'value' applied to the same character areas but within different subsections.
- 2.2.4 Transport is another key topic where more complete information on the modelling impacts and mitigation measures is required in order that robust assessment can be considered and an appropriate strategy and mitigation developed. The PPA Group are very concerned that the information has not, on the whole been issued.
- 2.2.5 Furthermore, there is significant concern that there is insufficient attention and assessment of the construction and operational design at the tunnel heads to ensure impacts (such as noise/vibration) can be sufficiently mitigated, particularly taking into account the extended period of construction work. There is currently no quantified assessment of the impact of mitigation options or of different design/layout/process choices or options provided for either the operational or construction phases to allow proper consideration of the likely impacts. The PEI does not provide the reassurance that the development with, or without modification, can be constructed and operated without a significant impact on nearby receptors.
- 2.2.6 More detail on the information that is missing or where there are gaps is provided in the topic-by-topic analysis.

Chapter 2 – Cross-Cutting Issues

- 2.2.7 The PPA Group are concerned that although National Grid is consulting on a PEI Report, there is an absence of, and/or lack of progress of other key assessments that are either required under legislation or should be included to address stakeholder and community concerns. Primarily these are as follows below.

Habitats Regulation Assessment (HRA)

- 2.2.8 The PPA Group are significantly concerned that there is a failure to provide the framework for the HRA, and there appears to be a lack of progress in taking this assessment forward. This could lead to significant delays to the acceptance of the DCO by PINS if not addressed. This is further addressed in Chapter 9.

Heritage Impact Assessment

- 2.2.9 The PPA Group do not consider that the PEI demonstrates that the potential impact of the NWCC development on the attributes of Outstanding Universal Values (OUV) of the candidate English Lake District World Heritage Site (WHS) has been adequately assessed. It is considered that this will require a comprehensive Heritage Impact Assessment fully covering all three themes of OUV.

Health Impact Assessment

- 2.2.10 The PPA Group note that National Grid is proposing not to undertake a Health Impact Assessment (HIA), instead addressing the effects of the NWCC Project throughout the EIA process. At this stage, the Group do not consider that sufficient information and justification has been provided within the PEI to demonstrate that health issues have been appropriately considered and addressed. Therefore, the PPA Group considers that there is a need for HIA given the significant health related concerns around a range of topics such as transport, construction, and cumulative effects.
- 2.2.11 Therefore, it is concluded that a HIA is required given the complexity and extent of the project and that of the EIA process. The PPA Group suggest that the scope and methodology should be agreed with the relevant statutory consultees and should take into account project technology and mitigation measures.

2.3 Lack of consideration of cumulative impact

- 2.3.1 Although the PEI includes a section setting out the framework for consideration of cumulative impact, the PPA Group are very concerned that there is a consistent lack of assessment of cumulative impacts in each of the topic areas. This is compounded given the number of major projects proposed across the project area including; Moorside NSIP, ongoing Sellafield activities, West Cumbria Mining's proposal at Whitehaven, BAE at Barrow and United Utilities pipeline project, the already constrained local infrastructure and the similar development periods.

- 2.3.2 Key concerns are expressed throughout the PPA Group response, for example the transport section currently does not benefit from cumulative modelling. Therefore, this makes selection of a transport strategy and drawing conclusions on impacts and mitigation requirements premature. Likewise the lack of consideration of cumulative impact within the landscape section is also concerning as the project is likely to result in significant cumulative impacts that will require careful consideration and appropriate mitigation. Topic based issues are set out in the subsequent chapters, however, the lack of consideration of the cumulative impacts is a key project wide issue.

2.4 Optioneering Methodology

- 2.4.1 The PPA Group has previously raised concerns in relation to the Options Appraisal of Alternative Technologies (OAAT) methodology. The PPA Group maintains its position that the threshold of 'Particularly Significant' in National Grid's OAAT methodology has set an artificially high bar for the establishment of 'Focus Areas' for mitigation. It is only these 'Focus Areas' that are assessed for mitigation and other areas where 'significant' impacts are measured are not considered in this process. This does not allow for full assessment of mitigation options, and is not consistent with the universally applied EIA Regulations approach of implementing mitigation for 'significant' impacts. See Chapter 5, and section 5.4 specifically.
- 2.4.2 The PPA Group has consistently asked for mitigation to be considered along the entire route of the project, and therefore is concerned and disappointed that that by the PEI stage this has still not been undertaken. It is essential that an assessment of mitigation requirements for the entire route and ancillary proposals is undertaken as part of the ES and ahead of the DCO submission. This is a requirement of the EIA Regulations and guidance. The approach is not robust and accountable. In light of the outstanding uncertainties within the methodology, which have the potential to introduce inaccuracies within the process, the PPA Group feels this methodology in its current form is flawed and requires revision to ensure mitigation in areas of 'significant' effect is adequately assessed.
- 2.4.3 In determining preferred options, cost incorrectly appears to have been the key factor in National Grid's decision making on many of the options and designs that are proposed for consultation. However, decisions on the requirement for measures such as alternative options or technologies should be determined by policy rather than cost, and this principle should be applied to the NWCC project.
- 2.4.4 The PPA Group is concerned about the basis for estimating costs of complex works, especially given the early stage of certain options and the absence of detail on environmental conditions and constraints, and how this has influenced the optioneering methodology and assessment process. Where cost is specified in the option reports, the explanation is limited and not transparent. This largely invalidates the comparison and evaluation of options and is not a valid factor in determining the most appropriate form of mitigation. The PPA Group are very concerned that despite the inconsistent and inadequate provision of costs across the set of options National Grid has already indicated its conclusions on options for the Duddon by selecting the proposed pylon route, and has

dismissed alternative options. See paragraph 5.5.11 to 5.5.16 and Chapter 5 for additional details.

- 2.4.5 Furthermore, these views are reinforced by Ofgem’s concerns stated in North West Coast Connections – Consultation on the project’s Initial Needs Case and suitability for tendering (Ofgem 2016). Within this consultation document Ofgem question some of the costs of the alternative options and conclude that the decision between the proposed route and a potential option that avoids going round the head of the Duddon is finely balanced. Additionally it is stated that if costs escalate then there is a real risk that another option would be better value for money to energy consumers.
- 2.4.6 The PPA Group acknowledges the NWCC project will help deliver a significant proportion of national energy requirements, and therefore is a significant benefit to the UK. However, the benefit comes at a significant cost and harm to local communities in terms of significant environmental and economic impacts of NWCC in Cumbria and North Lancashire. This must be considered when developing an appropriate final design and the extent of mitigation and compensation for the impacts of NWCC.

2.5 Duddon Estuary

- 2.5.1 The PPA Group has previously recommended that a tunnel beneath the Duddon Estuary is the only acceptable route in order to avoid major adverse impacts, particularly at the Foxfield Ridge, the Duddon Mosses SAC, plus the wider landscape setting of the Lake District National Park.
- 2.5.2 This would also avoid significant visual, landscape and community impacts of the proposals in the vicinity of Foxfield, The Green, Kirkby in Furness and Beckside and further south.
- 2.5.3 The PPA Group maintains that National Grid’s proposed over-head route is unacceptable, and challenge the PEI conclusion the mitigation round the head of the Duddon given the major (and unmitigated) adverse impacts. After considering the proposed route and information presented by National Grid in the PEI Report, the PPA Group strongly recommends that an alternative option that avoids going round the Duddon Estuary is essential.
- 2.5.4 The PPA Group support National Grid’s conclusion in the appraisal of the Duddon Tunnel option would have lower environmental impacts than using overhead line around the Duddon (paragraph 8.4.1 Volume 2.8.5). The case for the additional cost of all of an alternative options that avoids going round the Duddon Estuary has not been made. Additionally, the PPA Group challenges the conclusion that these costs will be significantly higher than the proposed route costs without such detailed costing evidence. See table 5.5 for further detail.
- 2.5.5 The proposal to leave further assessment of impacts at the head of the Duddon to the ES is not helpful to finding a suitable alignment. The PPA Group has raised this route section as

being a key issue for a considerable time. It is essential that National Grid continue to work on finding a suitable and low impact route and technology choice for this section ahead of the ES submission, as part of considering options for the head of the Duddon, Duddon Mosses SAC and estuary. The impacts on receptors in the LDNP setting affecting their enjoyment of the LDNP landscapes and special qualities are relevant and must be included in the impact assessment. See table 5.5 for further detail.

- 2.5.6 National Grid's appraisal of the Head of Duddon Alignment Options (Volume 2.8.6) fails to state that the landscapes affected by the development at the head of the Duddon are within the setting of the LDNP and within the Landscape of County Importance (Copeland), and therefore a 'valued landscape' in terms of national planning guidance. This is a major omission. Additionally, the design assumption that the options considered for the head for the Duddon should only include overhead line options is flawed and unjustified. The PPA Group has repeatedly asked for all potential options, including use of underground technology, to be considered in the LDNP and its setting – which includes the head of the Duddon. It is considered that this is another major omission in the optioneering approach in the PEI. See table 5.6 for further detail.
- 2.5.7 The PPA Group welcomes continued engagement by National Grid and the opportunity for collaboration. If another option can be developed that demonstrates that technological and environmental challenges can be addressed, the PPA Group recommends that this should be appropriately considered by National Grid, in consultation with all stakeholders.
- 2.5.8 Whilst the PPA Group acknowledge that designing a route crossing the Duddon Estuary is challenging and may be costly, it is vital that the appropriate design and mitigation is provided. This will help to ensure that the significant impacts of the proposed NWCC project are properly addressed, thereby helping to de-risk the project through the DCO process and increase delivery certainty.

2.6 Electricity North West Infrastructure and Energy Security

- 2.6.1 The PPA Group is concerned that the current proposals for the new 400kV network and the associated changes to local Electricity North West (ENW) infrastructure do not adequately address issues of security of supply for specific communities and the provision of additional capacity to meet the needs of new users and producers. This is a significant issue in many areas along the route and especially around Millom and Bootle. The situation has been further exacerbated by the recent decision by the developers of Haverigg Wind Farm to withdraw from their connection agreement with ENW. This removes the need for a substation in the area and the permanent need for the NWCC 132kV trident wood pole overhead line.
- 2.6.2 The PPA Group expect the final design of the NWCC to be revised when changes occur in other inter-related projects. In addressing these specific changes related to the Millom substation the PPA Group consider that the final design should include proposals which resolve these issues for specific communities along the route. The PPA Group would



welcome the opportunity for further dialogue with National Grid regarding the design of NWCC project and associated ENW infrastructure, and how this can be designed to address capacity concerns.

- 2.6.3 Further opportunities for rationalisation of existing wirescapes need to be considered especially where there are significant cumulative impacts of proposed and existing pylons and other existing vertical infrastructure.

2.7 Conclusion

- 2.7.1 In conclusion there are significant gaps as well assumptions that have been made across a number of topic study areas (e.g. transport, landscape, ecology, noise, and hydrology). This could mean that it is likely that certain topic areas/issues may have been incorrectly assessed and scoped out. If the results of this approach were to be carried through to the final Environmental Statement submitted with the DCO, it could lead to incorrect assessments and the wrong conclusions on the likely affects of the development upon the local area. This is a major concern. Additionally, the PPA Group consider that the seriousness of some of the omissions is such that additional consultation will be required when further details on the assessment, impacts and mitigation measures have been developed.



3.0 PEI Introduction and Planning Policy Context

3.1 PEI Introduction

- 3.1.1 Volume 2.2 of the PEI sets out an Introduction and Methodology to the Assessment. It provides a brief introduction to the NWCC Project and the principal elements and an introduction to the applicant. Additionally, it sets out National Grid's Statutory responsibilities, referring to the relevant sections in the Electricity Act 1989 and the need to mitigate any effect which the proposals would have on natural beauty of the countryside, or any such flora, fauna, features, sites, buildings or objects.
- 3.1.2 The Introduction also refers to a number of National Grid documents, namely "Our Approach to the design & routing of new Electricity Transmission Lines"; "Our Approach to Options Appraisal"; "Stakeholder, Community & Amenity Policy"; the Holford Rules (overhead lines) and the Horlock Rules (for Substations).
- 3.1.3 The Introduction provides a description of the NSIP Consenting process and the need for an Environmental Impact Assessment (EIA), and that an EIA Scoping Report for the project was submitted to the Planning Inspectorate in September 2015. The purpose of the PEI Report is also set out and provides a structure and content as well as a guide as to where information can be found in the various PEI chapters.
- 3.1.4 It is notable that the Introduction does not provide reference to the overarching National Policy Statement (EN-1) and the National Policy Statement for Electricity Networks Infrastructure (EN-5). Furthermore, the Environment Act 1995 states that when developing on land which will affect a National Park, National Grid must have regard to National Park purposes. Great weight is also given in legislation and national policy to conserving landscape and scenic beauty in National Parks and Areas of Outstanding Natural Beauty (AONBs). National Policy EN-1, DCLG guidance, the Electricity Act 1995 as well as current planning practice make it clear that the 'setting' of National Parks should be considered in the same way as those areas within the National Park. Major development should only be allowed in National Parks in 'exceptional circumstances', and if taken forward must include adequate mitigation and compensation measures.
- 3.1.5 The Introduction does not refer to the 'duties and purposes' of the Lake District National Park (LDNP), and the lack of reference to these duties and purposes is a major weakness to this section of the PEI, given that a substantial part of the proposal will run through the western part of the National Park. The development will also affect a significant area on the boundary of the National Park, and the Introduction should therefore have made reference to the setting of the Lake District National Park for the reasons outlined above.

3.2 National Policy

- 3.2.1 Volume 2.2 Chapter 2 of the PEI sets out the Planning Policy Context. A detailed review of the chapter and policies referred to has been undertaken. From the onset the Planning Act 2008 is introduced and sets out how decisions are made on Nationally Significant Infrastructure Projects (NSIPs) such as the North West Coast Connections Project. The context correctly identifies National Policy Statements (NPS) EN-1 (Overarching NPS for energy) and EN-5 (Electricity Networks Infrastructure). The context also refers to the NPS for Nuclear Power Generation (EN-6) due to the connection to the Moorside Power station. The Context then provides a review of how the assessment principles in NPS EN-1 will be addressed within the application for development consent.
- 3.2.2 The chapter provides selected quotes of NPS EN-5 and makes specific reference to paragraph 2.8.2 in EN-5, which discusses the term 'particularly sensitive locations.' It states that where there are serious concerns about potential adverse landscape and visual effects of a proposed overhead line, consideration be given to the availability and cost of alternative sites and routes and methods of installation. It quotes paragraph 2.8.9 in EN-5, where Examining Authorities should only refuse consent for overhead line proposal in favour of underground or sub-sea line if it is satisfied that the benefits from the alternative outweigh any extra economic (i.e. the additional cost of undergrounding), social, and environmental (i.e. the landscape in which the proposed line will be set (in particular, the impact on residential areas and those of natural beauty or historic importance such as National Parks AONBs and the Broads)).
- 3.2.3 While EN-5 recognises the term 'particularly sensitive locations' it is not defined in policy for assessing the effects of new development upon landscape character, visual receptors and consequent mitigation. National Grid's Options Appraisal of Alternative Technologies (OAAT) introduced the new tier of 'Particularly Significant', which is not consistent with EIA and other planning regulation and guidance. The use of 'Particularly Significant' in the OAAT methodology sets an artificially high bar for the establishment of 'Focus Areas' areas for mitigation. This approach is not in accordance with current guidance and is in conflict with National Grid's *Response to Consultee Feedback to Assessment of Mitigation Options Methodology* (February 2016), which states that mitigation will be considered for the entire length of the route. Further detail is set out in the subsequent detailed sections of this response.
- 3.2.4 The chapter refers to the National Planning Policy Framework (NPPF), and acknowledges that there are no specific policies for NSIPs within the NPPF, given that there are the National Policy Statements. However, it is welcomed that the Context quotes paragraphs 115 and 116 of the NPPF and highlights the weight that should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty (AONBs), which have the highest status of protection. It also confirms that major development should not take place in National Parks, the Broads and AONBs. However, the PPA Group have previously stated that paragraphs 132, 133, 137 and 152 are also pertinent.

- 3.2.5 The chapter correctly acknowledges that in decision making by the Secretary of State consideration should be made of environmental social and economic benefits and adverse impact at a local level. Hence local development plans are taken in to account as part of the overall assessment in the Planning Policy Context section. The reference to the National Parks and Access to the Countryside Act 1949 and the subsequent reference to the Environment Act 1995 setting out the two statutory purposes for National Parks in England and Wales is welcomed. Likewise, the Context quotes Section 11A of the 1949 Act which is known as the Sandford Principle.
- 3.2.6 The Context also makes reference to the English National Parks and the Broads: UK Government Vision and Circular 2010 published by Defra, which again confirms that major development in or adjacent to the boundary of a National Park can have a significant impact on the qualities for which they were designated, and that major development should only take place in exceptional circumstances.

3.3 Lake District National Park Authority Policies

- 3.3.1 These principles relating to major development are re-iterated by the quotation of Policy CS12 of the Lake District National Park Authority (LDNPA) Core Strategy. The LDNPA Management Plan is helpfully referenced which is to be welcomed as well as the references to the nomination of the Lake District as a World Heritage Site in 2016. Relevant Policies in the LDNPA Core Strategy which should be referenced in detail as part of the full ES should include Policy CS04 (North Distinctive Area), Policy CS06 (West Distinctive Area), Policy CS09 (South Distinctive Area), Policy CS11 (Sustainable Development Principles), Policy CS12 (Major Developments), Policy CS13 (Planning Obligations), Policy CS14 (Sustainable Transport Solutions), Policy CS17 (Development and Flood Risk), Policy CS25 (Protecting the spectacular landscape), Policy CS26 (Geodiversity and Biodiversity), and Policy CS27 (The acclaimed historic environment).
- 3.3.2 Within the adopted Allocations of Land (Local Plan Part 2), Policy AL1 (National Planning Policy Framework – Presumption in favour of sustainable development) is applicable.
- 3.3.3 Within the Management Plan for the English Lake District 2015-2020, Strategy SL1 (A world class living cultural landscape), Strategy 4 (Increased resilience to flooding), Strategy 5 (Improved water quality and resources in lakes, tarns, rivers ground waters and sea), Strategy SL6 (Well considered tree and woodland establishment and improvement), Strategy SL7 (Resilient and well-functioning habitats and wildlife), Strategy SL8 (The continuation of the Lake District as a source of artistic and cultural inspiration) and Strategy PE6 (Major industries and provision of infrastructure outside the Lake District) are applicable.
- 3.3.4 The WHS and its buffer are given great significance in national policy, and EN-1 states that substantial harm to WHS should be 'Wholly Exceptional'. NWCC has the potential to impact on the WHS in terms of impact on the Site, including the landscape and buffer zone. This impact will need to be fully assessed and mitigated as part of the final ES.

- 3.3.5 An important element missing is the lack of reference to the Lake District National Park Authority Landscape Character Supplementary Planning Document (SPD). This tool is considered important to enable an assessment to be made of the landscape and visual effects of development on particular landscape types and should be used as part of the baseline assessment of the NWCC Project.

3.4 Cumbria County Council Policies

- 3.4.1 With regard to Policies at Cumbria County Council, reference is made to the Cumbria and Minerals and Waste Development Framework Core Strategy (April 2009), the generic Development Control Policies DPD and the Appendices for the Core Strategy and Generic Development Control Policies (April 2009). Reference is also made to the adopted On-shore Wind Energy SPD (2007) and the emerging Minerals & Waste Local Plan 2015-2030, which was submitted to the Secretary of State for Examination on the 9 September 2016. These are relevant across a number of the local planning authorities below.
- 3.4.2 However, no reference is made to other related Cumbria County Council environmental policies such as the *Cumulative Impact of Vertical Infrastructure (CIVI)*, which assesses the effects of existing and proposed developments involving the instruction of vertical elements in the landscape and the resulting in cumulative effects on landscape and visual amenity; and the degree to which cumulative effects of vertical infrastructure developments upon landscape character may be considered a constraint on further such developments. The CIVI is aimed at providing the evidence base to support local planning policy and decision making in the County, such as the NWCC Project.
- 3.4.3 The Policy Context also does not refer to Cumbria County Council's *Cumbria Landscape Character Guidance and Toolkit*, which has been developed in partnership with the Cumbrian local planning authorities and supports landscape character policy in the emerging Local Development Plans. It replaces previous Cumbria wide landscape documents and complements landscape documents for the National Parks and AONBs.

3.5 Allerdale Borough Council Policies

- 3.5.1 The Planning Policy Context contains brief reference to the adopted Allerdale Borough Council Local Plan (Part 1) and in particular to Policy S20, which discusses NSIP developments and Policy S28, which refers to the Hadrian's Wall World Heritage Site. Brief reference is also made to the Local Plan (Part 2) - Site Allocations DPD, which is being prepared by the Council.
- 3.5.2 However, the Context should have made specific reference to Policy S2 – Sustainable Development Principles of the adopted Local Plan (Part 1), which against which all development should be assessed. The Context should have included reference to Policy S4 (Design Principles), Policy S5 (Development Principles), Policy S21 (Developer Contributions), Policy S22 (Transport Principles), Policy S23 (Supporting and Safeguarding Strategic Infrastructure), S27 (Heritage Assets), S28 (Hadrian's Wall World Heritage Site),

Policy S29 (Flood Risk and Surface Water Drainage), Policy S30 (Re-Use of land), Policy S32 (Safeguarding Amenity), Policy S35 (Protecting Biodiversity and geodiversity), and Policy S36 (Air, Water and Soil Quality).

- 3.5.3 In particular, Policy S33 (Landscape) should have been referenced in the Context, as this explicitly refers to the Cumbria County Council *Landscape Character Assessment Toolkit* and to the need for assessments to be carried out of the impact of all major developments upon the landscape character of the area. Furthermore, Policy S34 – requires developments both within and adjoining the Solway Coast AONB to have regard to the *Landscape and Seascape Character Assessment* and ensure that the scale, siting or design of proposed development is appropriate to the landscape setting. In addition, the Planning Policy Context needs to refer to Policy S35, which requires conditions for biodiversity to be maintained and improved and important geodiversity assets to be protected. Policy DM17 (Trees Hedges and Woodland) is relevant as well.

3.6 Barrow-in-Furness Borough Council Policies

- 3.6.1 The Context refers briefly to the saved Policies in the Barrow Borough Council Local Plan Review 1996-2006 (August 2001) and the Housing Chapter Alteration (June 2006), plus the Barrow Port Area Action Plan (2010). However, relevant Saved Policies should have been included in the Planning Policy Context, such as: Policy D1 (Rural Character), Policy D7 (Coastal Zone), Policy D9 (Nature conservation – internationally important Sites), Policy D10 (Nature conservation – nationally important Sites), Policy D11 (Nature conservation - sites of regional, county or local importance), Policy D12 (Wildlife sites – protected species), Policy D13 (Wildlife corridors), Policy D15 (Development affecting a Conservation Area), Policy D22 (Scheduled Ancient Monuments), Policy D23 (Important remains/archaeological important sites), Policy D24 (Potentially historical and Archaeological Important Sites), Policy D28 (Landscape Surveys/schemes), Policy D21 (General Design Code) and Policy D53 (Existing power/communications lines), Policy D55 (Increasing levels of air pollution), Policy D56 (Surface underground & coastal water), Policy D57 (Ground water protection), Policy D58 (Noise above ground levels), Policy D60 (Developments giving rise to occasional noise levels above ground), Policy D62 (Noise developments in the urban fringe), Policy E5 (Traffic management new developments on unallocated sites), Policy E7 (Traffic Impact Assessments), Policy E8 (Possible green routes), Policy F6 (Land drainage arrangements), Policy F8 (Identified floodplain), Policy F9 (Water environment), and Policy F10 (Tidal and fluvial defences).
- 3.6.2 Within the Barrow Port Area Action Plan, reference should have been made to Policy BP2 (Development Quality and Sustainability), and BP5 (Environmental Management).
- 3.6.3 The Publication draft Local Plan – June 2015, is referenced which only refers to Policy EM7: Energy Uses Opportunity Area, which discusses the area around the North and South Morecambe Gas Terminal, which is considered to have potential and suitability for uses related to generation and transmission of energy.

- 3.6.4 However, the chapter should have also given detailed analysis to Policy DS1 of the Publication draft Local Plan (2015) relating to Sustainable Development and Policy N1 (Protecting and enhancing landscape character). This Policy requires proposals to protect and enhance where appropriate local landscape character as defined by the *Cumbria Landscape Character Guidance and Toolkit*. In addition, the Context should have been explicit about Policy C2 (Development and safeguarding Coastal Landscape Character), Policy N3 (Protecting biodiversity and geodiversity) and Policy N4 (Protecting other wildlife features) because of the significant biodiversity assets in the Borough, which include the Duddon Estuary Ramsar Site/SPA/SSSI and the Morecambe Bay SSSI/SAC/SPA. Furthermore, reference should be made to draft Publication Policy C1 (Flood risk and erosion).

3.7 Carlisle City Council Policies

- 3.7.1 The Context refers briefly to the saved policies of the Carlisle District Local Plan 2001-2016 and the new replacement Local Plan 2015-2030. It should be noted that the policy position for Carlisle City Council has changed during this consultation period. The Carlisle District Local Plan 2001-2016 is no longer a relevant document and does not form part of the Development Plan for Carlisle. On the 8th November 2016, the City Council adopted the Carlisle District Local Plan 2015-2030.
- 3.7.2 Consequently, there is no analysis of specific Policies in the Carlisle District Local Plan (2015- 2030), such as: SP1 (Sustainable development), SP2 (Strategic Growth and Distribution), SP5 (Strategic Connectivity), SP 6 (Securing Good Design), SP7 (Valuing our Heritage and Cultural Identity), SP8 (Green and Blue Infrastructure), IP1 (Delivering Infrastructure), IP2 (Transport & Development), IP6 (Foul Water Drainage on Development Sites), CC4: (Flood Risk and Development), CC5 (Surface Water Management and Sustainable Drainage Systems), CM5 (Environmental and Amenity Protection), HE1 (Hadrian's Wall World heritage Site), HE2 (Scheduled Ancient Monuments and Non-Designated Archaeological Assets), HE3 (Listed Buildings), HE4 (Historic Parks and Gardens), HE5 (Historic battlefields), and HE6 (Locally Important Heritage Assets), HE7 (Conservation Areas), GI1 (Landscapes), GI2 (Areas of Outstanding Natural Beauty), GI3 (Biodiversity and Geodiversity), GI5 (Public Rights of Way) and GI6 (Trees and Hedgerows). This Local Plan was already a material consideration prior to this consultation and all of these policies should have been considered as part of the development of the proposed NWCC Project, and therefore relevant to the PEI report.
- 3.7.3 Policy GI1 (Landscapes) is particularly relevant to National Grid's NWCC Project in so far as it states that all landscapes are valued for their intrinsic character and will be protected from excessive, harmful or inappropriate development, particularly those areas less able to accommodate significant change. As with the other Local Plans in Cumbria, reference is made in Policy GI1 to the *Cumbria Landscape Guidance and Toolkit* to assess development proposals. Likewise development in the North Pennines or Solway Coast AONB must conserve and enhance the natural beauty of the areas (Policy GI2).

3.8 Copeland Borough Council Policies

- 3.8.1 The Context refers briefly to Copeland Local Plan 2013-2028: Core Strategy and Development Management Policies DPD (December 2013); Copeland Local Plan 2013-2028 Proposals Map (December 2013); and Saved Policies of the Copeland Local Plan 2001-2016 (June 2006). In particular it refers to Policy ST4 (Providing Infrastructure), and Policy ER3 (The Support Infrastructure for the Energy Coast) of the Local Plan 2013-2028, which make reference to the potential upgrading and increasing the capacity of National Grid power lines.
- 3.8.2 However, the Planning Policy Context should have also referred to adopted Core Strategy Strategic Policy ST1, which states that one of the Council's development principles is to protect the Borough's valued assets, including its landscapes. In addition, reference should be made to Policies ST2 (Spatial Development Strategy), and Policy ST3 (Strategic Development Priorities), Policy ST4 (Providing Infrastructure), Policy ER3 (The Support Infrastructure for Energy Coast), Policy DM1 (Nuclear Related Development), Policy DM10 (Achieving Quality of Place), Policy T1 (Improving Accessibility and Transport - an important factor to take into account is the potential Whitehaven Eastern Relief Road), which is key to unlocking future growth for Whitehaven, Policy T2 (Information and Communications Technology), and DM11 (Sustainable Development Standards).
- 3.8.3 Reference should also be made to Policy ENV1 (Flood Risk and Risk Management), ENV2 (Coastal Management), which includes supporting energy generating developments that require a coastal location, and protecting the intrinsic qualities of the St Bees Heritage Coast. Reference should also be made to Policy ENV3 (Biodiversity and Geodiversity) given the significant biodiversity assets such as the Duddon Estuary Ramsar Site/SPA, Morecambe Bay SAC, Drigg Coast Ramsar Site/SSSI, Hallsenna Moor SSSI/National Nature reserve as well as a significant number of County Wildlife Sites lying within Copeland.
- 3.8.4 Other relevant Policies that should have been included are: ENV4 - Heritage Assets and ENV5 – Protecting and Enhancing the Borough's Landscapes. The supporting text to Policy ENV5 refers to the Cumbria Landscape Character Assessment Guidance and Toolkit and to protecting the Borough's Landscapes of County Importance. Other relevant Policies include ENV6 (Access to the Countryside), DM1 (Nuclear-related development), Policy DM10 (Achieving Quality of Place), Policy DM24 (Development Proposals and Flood risk), Policy DM25 (Protecting Nature Conservation Sites, Habitats and Species), DM26 (Landscaping), and DM27 (Built Heritage and Archaeology), DM28 (Protection of Trees), and SS5 (Provision and access to open space and Green Infrastructure).
- 3.8.5 The Copeland Local Plan: Site Allocations and Policies Plan Preferred Options document (January 2015) indicates areas of growth for Copeland's settlements, and includes indicative areas for growth along the route of the Whitehaven Eastern Relief Road. Proposed Policy SAP3A within this document highlights the corridor between the eastern side of Whitehaven and Westlakes Science and Technology Park as an area of future growth for the town. The policy also states that developers in this area may be expected to contribute to the delivery of the Eastern Relief Road. As such, it is vitally important that the North West Coast

Connections project does not inhibit future growth in this area, and also considers how it can help enable the delivery of the Eastern Relief Route if possible. The Site Allocations and Policies Plan is currently being updated, with an updated Preferred Options document being produced for consultation in April 2017, which is very likely to feature even stronger intentions for growth in this area.

- 3.8.6 It is worth pointing out that the Whitehaven Eastern Relief Road and development sites along it are now also the subject of a number of funding bids from both Copeland Borough Council, Cumbria County Council and the Cumbria LEP, which are providing greater certainty around the direction for the longer term growth of Whitehaven. This important point should be considered as part of the full Environmental Statement.

3.9 South Lakeland District Council Policies

- 3.9.1 The Section/Chapter on Planning Policy Context in the PEI should have included a more thorough appraisal of the relevant South Lakeland Development Plan Policies that currently apply and a description of, and the status of, emerging DPD's and relevant adopted or emerging SPD's. The Planning Policy Context refers briefly to South Lakeland Local Plan Part 1 - Core Strategy (adopted October 2010); the South Lakeland Local Plan Part 2 - Land Allocations (adopted December 2013); and the 'Saved' Local Plan policies of the 2006 Local Plan. However, for clarity, the saved policies are from the adopted 1997 local Plan (saved Local Plan 2006).
- 3.9.2 There is also reference to the emerging *Issues and Options Discussion Paper* for the Development Management Policies DPD and the joint Arnsdale & Silverdale AONB Local Plan. The PPA Group would add that as at December 2016, the SLDC's emerging Development Management DPD is now at the Preferred Options stage and not at the Emerging Issues and Options stage, as stated. Similarly, the Arnsdale & Silverdale AONB DPD is also now at the preferred options stage.
- 3.9.3 The Context makes specific reference to Core Strategic Policy CS7.7 (Opportunities Provided by Energy and the Low Carbon Economy) only.
- 3.9.4 The Context should have made reference to Saved Policies from the adopted SLDC Local Plan (2006) including Policy S27 (Overhead Lines), Policy C15 (Listed Buildings and their Setting), Policy C16 (Control of Development Affecting Conservation Areas), Policy C19 (Sites of Archaeological Interest) and Policy C20 (Historic Landscapes).
- 3.9.5 The Context does not include any analysis of the following Policies of the adopted Core Strategy, which is a weakness: Policy CS1.1 (Sustainable Development Principles), Policy CS1.2 (The Development Strategy), Policy CS8.1 (Green Infrastructure), Policy CS8.2 (Protection and Enhancement of Landscape and Settlement Character), Policy CS8.4 (Biodiversity and geodiversity), Policy CS8.5 (Coastal and Estuarine Landscape), Policy CS8.6 (Historic Environment), Policy CS8.8 (Development and Flood Risk), CS10.2 (Transport Impact of New Development), and Policy CS8.10 (Design). The lack of reference

to these important policies means that the PEI is deficient, given the importance of the matters covered by the Policies in relation to the NWCC Project.

- 3.9.6 The Land Allocations Policy LA1.10 (Existing Green Infrastructure) is relevant to the NWCC Project and should have been referenced in the Planning Policy Context, yet none is provided. Additionally, Policy LA1.3 – Housing Allocations includes a site at Kirkby-in-Furness. The PPA Group are concerned that the land adjacent to Burlington C of E School is potentially affected by the Project.
- 3.9.7 Policy CS8.2 (Protection and Enhancement of Landscape and Settlement Character), for example, is clear that proposals for development should be informed by, and sympathetic to, the distinctive character landscape types identified in the Cumbria Landscape *Character Guidance and Toolkit*, *Historic Landscape Character Assessment*, *the Arncliffe & Silverdale AONB Landscape and Seascape Assessment* amongst others. This Policy also makes clear that development proposal should demonstrate that their location, scale, design and materials will protect, conserve and where possible, enhance the setting of, and views into and from the AONB and the National Parks (Lake District NP and Yorkshire Dales NP).

3.10 Lancashire County Council Policy

- 3.10.1 The Planning Policy Context refers to the adopted Minerals and Waste Development Plan comprising the Core Strategy Development Plan (Part 1 and Part 2) and the Site Allocations and Development Management Policies (Part 1 and Part 2). It also refers to the Joint Lancashire Minerals and Waste Local Plan being prepared between Blackburn, with Darwen Borough Council and Blackpool Council.
- 3.10.2 However, the Planning Policy Context does not refer to the Lancashire Landscape Character Assessment (A Landscape Strategy for Lancashire) against which the proposal should have been assessed as a baseline consideration for the LVIA.

3.11 Lancaster City Council Policies

- 3.11.1 Brief reference is made in the Planning Policy Context to the Residual Saved Policies of the Lancaster District Local Plan (adopted 2004); The Lancaster District Core Strategy (adopted 2008); Development Management DPD (adopted December 2014); and Morecambe Area Action Plan (adopted December 2014). Specific Policy reference is made to DM19 (Upgrades to the National Grid) from the Development Management DPD, which sets out the City Council's approach to the NWCC Project.
- 3.11.2 However, the Policy Context does not refer to adopted Core Strategy (2003-2021) Policy SC1 (Sustainable Development) of the Lancaster Core Strategy, which seeks to ensure that proposed development would be appropriate to the character of the landscape. Likewise analysis should have been given to Policy SC5 (Achieving Quality in Design) and Policy SC7 (Development and the risk of flooding). There is also no reference to Policy E1

(Environmental Capital), which seeks to protect and enhance nature conservation sites, urban green spaces, landscapes of national importance, and conserving and enhancing landscapes. Also applicable are Policies E7 (Water Quality), and Policy E8 (Ground water vulnerability).

- 3.11.3 It also does not refer to important Development Management Policies including: DM 20 (Enhancing Accessibility and Transport Linkages), DM23 (Transport Efficiency and Travel Plans), DM25 (Green Spaces & Green Corridors), DM27 (The protection and enhancement of biodiversity); Policy DM28 (Development and Landscape Impact), Policy DM29 (Protection of trees, hedgerows and woodland), Policy DM32 (The setting of designated heritage assets), Policy DM34 (Archaeological Features and Scheduled Monuments), DM35 (Key Design Principles), Policy DM 36 (Sustainable Design), Policy DM37 (Air Quality Management and Pollution), Policy DM38 (Development and Flood Risk), Policy DM39 (Surface Water Run-Off & Sustainable Drainage), and Policy DM 40 (Protecting Water resources and Infrastructure).

3.12 Eden District Council Policies

- 3.12.1 The Planning Policy Context acknowledges that the NWCC Project is not located within the administrative boundary of Eden District Council. Nonetheless, it does include reference to Eden District Council *Core Strategy Development Plan* Document (March 2010); and Saved Policies of the Eden Local Plan (March 1996) as well as the Submission draft Eden Local Plan 2014-2032 because the study areas for the assessment of landscape, visual and traffic and transport extend into its administrative area.
- 3.12.2 Hence the Planning Policy Context should have provided some analysis of how the proposal meets Core Strategy Policy CS1 (Sustainable Development Principles), Policy CS4 (Flood Risk), CS5 (Transport and Accessibility), CS16 (Principles for the Natural Environment), CS17 (Principles for the Built Environment), and Policy CS18 (Design of New Development).
- 3.12.3 Saved Policies Policy SE5 (Development Involving Overhead Lines), Policy BE9 (Protection and Recording of archaeological remains) and BE10 (Archaeological Assessments) are also considered relevant but were not given any analysis in the Policy Context.
- 3.12.4 In addition, consideration should have been given to the Policies contained in the Submission draft Eden Local Plan 2014-2032, which includes Policy DEV5 (Design of New Development), which requires new development to demonstrate that it protects and where possible enhances the District's distinctive rural landscape, natural environment and biodiversity. Policy ENV1 (Protection and Enhancement of the Natural Environment, Biodiversity and Geodiversity) is important because it refers to the protection given to International, European, National and Locally designated biodiversity sites. Policy ENV2 (Protection and Enhancement of Landscapes and Trees) is relevant and as with other District Local Plan Policies in Cumbria, it makes reference to the Cumbria *Landscape Character Guidance and Toolkit* against which new development will need to be assessed. Policy ENV3 (The North Pennines AONB) states that major developments will not be

permitted except where it can be demonstrated that other locations outside the AONB are not suitable.

3.13 Wyre Borough Council Policies

3.13.1 Likewise, the Planning Policy Context acknowledges that the proposed development would not affect land within the administrative boundary of Wyre Borough Council. Nonetheless, the Planning Policy Context refers to the Saved Policies of the Adopted Local Plan (1999) until such time as these are replaced by the new plans in preparation detailed below; and The Fleetwood-Thornton Area Action Plan (adopted 2009). It also refers to the draft Wye Local Plan, which is due for adoption in 2017. The Context does not refer to any specific Planning Policies, and therefore is deficient in this regard.

3.13.2 Relevant Saved Policies should therefore have included Policy SP2 (Strategic Location for development), ENV2 (Open Coastline), ENV13 (Development and Flood Risk); Policy TR1 (Major Road Proposals), TR6 (Rail Facilities), Policy ENV9 (Conservation Areas), Policy ENV10 (Listed Buildings) and Policy CIS5 (High Voltage Power Lines). The Issues and Options Wyre Local Plan is at an early stage of development and does not contain specific planning policies to be relevant to this consultation.

3.14 Dumfries & Galloway Council Policies

3.14.1 The Project will not directly affect land within the administrative boundary of Dumfries & Galloway Council, but the Study Area of the project would affect land within the Local Authority boundary. The Planning Policy Context therefore refers to the Dumfries & Galloway Local Development Plan, which was adopted in September 2014 and comprises four sections: Policies, Proposals Map, Inset Maps and Appendices. Preparation of the Local Development Plan 2 for Dumfries & Galloway (LDP2) is programmed to be adopted by the end of September 2019.

3.14.2 The Context does not refer to any specific policies, and it is considered that the following Planning Policies should have been included in the Planning Policy Context: Policy OP1 (Development Considerations), which includes landscape considerations and the need to refer to the Dumfries & Galloway Landscape Assessment; Policy OP2 (Design Quality of New Development); Policy HE1 (Listed Buildings), Policy HE2 (Conservation Areas), Policy HE3 (Archaeology), Policy HE4 (Archaeologically Sensitive Areas), Policy HE5 (Hadrian's Wall), Policy HE6 (Gardens and Designed Landscapes), Policy NE1 (National Scenic Areas); Policy NE2 (Regional Scenic Areas); Policy NE3 (Sites of International Importance for Biodiversity); Policy NE4 (Species of International Importance), Policy NE5 (Sites of National Importance for Biodiversity and Geodiversity), Policy T1 (Transport Infrastructure), Policy T2 (Location of Development/Accessibility) and Policy T4 (Freight Transport).



3.15 Other Relevant Legislation and Policy

- 3.15.1 It is noted that other consenting and licensing regimes are recognised in the consultation, although these are not specified in detail.

4.0 Project Need

4.1 Introduction

- 4.1.1 This section provides a review of the Need and Alternatives chapter (volume 2.2 Chapter 3), including the supporting Volume, 5.3 NWCC Project Need Case. The review of these documents is organised as follows:

4.2 The need for the Project

- 4.2.1 There are three main strands of the Need Case presented by National Grid: legislative demand, customer demand ('customers' include those that supply power) and stemming from these first two, a need based on ensuring a stable capacity in the National Grid infrastructure (discussed within the 5.3 Need Case document, only).

Legislative demand

- 4.2.2 In paragraph 3.1.3, it is stated that: "*National Grid's transmission licence under the Electricity Act 1989 requires National Grid at all times to plan, develop and operate the National Electricity Transmission System (NETS) in accordance with the NETS Security and Quality of Supply Standard (NETS SQSS).*"
- 4.2.3 Whilst National Grid acknowledge that the current grid system is adequate to comply with the standards of the NETS SQSS, they also state that it is not adequate for potential future generation amounts and as such would therefore not continue to be compliant with the NETS SQSS leading to the following text on how or why this would not be compliant.
- 4.2.4 Therefore, in evaluating the current Need Case it is noted that the NETS SQSS is a National Grid Document which seeks to fulfil the requirements of Electricity Act. It states that: "*The transmission system infrastructure needs to be capable of maintaining a minimum level of security of supply as defined within the National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS) and of transporting electricity from and to customers.*"
- 4.2.5 Additionally, the text in the Need Case states "*Part of National Grid's role is to provide the contractual interface with demand customers, generators and interconnectors that are seeking to connect to and that are connected to the NETS. National Grid is also required to provide the contractual interface with customers that are exporting power or seeking to export power onto the NETS.*"

Chapter 4 – Project Need

- 4.2.6 What is not clear, however, is the strength of that *contractual* requirement. The document does not make it clear where within those references it is stated that National Grid must enable these requests in the positive e.g. whether they are duty bound to always facilitate new supply or it can be refused, for example for good environmental or business case reasons.
- 4.2.7 At present, the case is being made that National Grid are unable to manage on the current level of infrastructure and must incrementally provide increasing scale of provision because of new customer demand. National Grid should clarify as to whether they have actually made an objective decision themselves to proceed merely within the requirements of suitable and correct legislation, or whether the Need Case is in fact based on a legal response to expansion and new developments within the energy industry (i.e. the NuGen Moorside development).
- 4.2.8 The Need Case (volume 5.3) that supports this chapter also explains that the Government National Policy Statements for energy infrastructure (2011), in particular EN-5 Electricity Networks Infrastructure, makes it clear that there are circumstances where flexibility in the rationale for new infrastructure is appropriate. This includes the timing of applying for infrastructure when the generator of the electricity will be under a different regime or timescale and that by the location nature of (nuclear) power stations, the linkage electricity infrastructure could be in locations where there is no infrastructure currently or that where in other circumstances the location would be protected from such development.
- 4.2.9 In addition to the above Policy, National Grid has published a document that seeks to further describe National Grid's approach to the design and routing of new electricity transmission lines. The document describes the process by which National Grid delivers its projects and also seeks to inform stakeholders of the stages it will take before finally submitting a planning application for development.
- 4.2.10 The document includes commentary on the environmental requirements placed by legislation such as the Electricity Act and discusses National Grid's own policy on environmental duty. This appears not to be a justification of need and its superfluous addition of actions should not be taken or read as evidence of robust determination of alternatives; it appears to be a premature assumption of route choice.

Customer demand

- 4.2.11 At paragraph 3.1.4 of Chapter 3, National Grid state that a 'Substantial Amount' of new generation capacity is planned beyond Moorside and paragraph 3.1.6 cross refers to the Need Case in volume 5.3 which includes commentary to also accommodate the Walney Offshore Windfarm extension (paragraph 1.4 and conclusion paragraph 6.1). Whereas, paragraph 3.3.19 of Chapter 3 then also states: "*The Preliminary Strategic Options Report (PSOR) ruled out any potential to integrate the Moorside Power Station connection circuits with any future Irish Sea offshore windfarm developments due to the distances and costs involved.*" The two paragraphs appear to be inconsistent in what they are saying.

Chapter 4 – Project Need

- 4.2.12 The PEI does not give sufficient clarity for the reader to understand as to what the 'substantial amount' of new generation capacity is beyond Moorside, and if the calculations and need justifications based on Moorside and Walney (with other smaller suppliers coming on stream) and paragraph 3.3.19 merely refers to *other* or more offshore developments.
- 4.2.13 From the assessment, National Grid forecasts that without reinforcement, the transmission system in Cumbria would not be compliant with the NETS SQSS from 2024 onwards following the connection of the first unit at Moorside. As the need case states: *"Once the Moorside nuclear power station has been constructed, peak power transfers across the Cumbria Export boundary would exceed the post-fault circuit capabilities and reinforcement across the Cumbria Export boundary would be required"*.
- 4.2.14 As with above, it is not wholly clear as to whether or not the need case is based on inclusion of the capacity of the Walney Off-Shore Extension.

Stable Capacity

- 4.2.15 Based on their own calculations National Grid state that three transmission circuits would be required to accommodate the (again) 'substantial amount' of transmission capacity to be required in the future. Leaving aside the questions of the actual total amount required and the need for three circuits to carry it, the number of circuits is in any case increased to four. National Grid states that were there a fault on two circuits, this would leave only one which is insufficient to carry the assumed load. What is not clear is what circumstance is likely to occur that would in effect 'knock out' two circuits and how this should be mitigated or made secure in the first place.
- 4.2.16 Equally, a significant question arises with regard to what National Grid refer to in (unreferenced) 'Transmission System Analysis Studies' that assumedly demonstrate that this occurrence would cause *"a step-change in impedance between the Moorside power station and the transmission system"* and that this impedance can (not would) *"cause the Moorside generators to lose synchronism with the rest of the transmission system, resulting in system instability."*
- 4.2.17 Based on this unknown study, National Grid then conclude: *"there is thus a requirement to build a new 400 kV substation to connect the power station and to build new transmission circuits to connect this substation to the existing transmission network. To ensure generator stability post-fault, and therefore compliance with the NETS SQSS, four transmission circuits would be needed to connect the Moorside Power Station to the existing transmission network"*.
- 4.2.18 It is not clear therefore how this would occur or what likely step change of significance could have such an effect that would warrant increasing the circuits and thus substations and lines to be built. This is a critical matter that should be made much clearer, the references missing should be appended to the Need Case and a fuller explanation needs to be part of that chapter which currently has very little clear argument.

5.0 Project Design

5.1 Introduction

- 5.1.1 The PPA Group welcomes previous constructive informal engagement with National Grid, and recognises that this ongoing statutory consultation is an important step in the development of the NWCC Project and submission of the DCO.
- 5.1.2 The linear iterative process set out in paragraph 3.2.2 of Volume 2.2 Chapter 3 of the PEI documentation, whereby National Grid obtained the views of statutory bodies, other agencies and the general public to comment on the emerging preference for a route corridor, appears to be correct.
- 5.1.3 Within paragraph 3.2.2, despite references which are useful, the listing of steps for optioneering/consultation in this section would greatly benefit from dates to allow the reader to more easily understand the efforts undertaken than having to look them up especially on critical points such as the public consultation on route corridors. It would be more productive therefore for dates to be added to this critical timeline which properly demonstrate National Grid's consultations.
- 5.1.4 Paragraph 3.2.2, point 8 (page 4) refers to alternative technologies but there is no reference to where these or this process is clarified or set out. Furthermore, paragraph 3.2.3 states "*this PEI does not seek to reproduce the various assessments and work that has been previously undertaken*". Whilst we would not recommend that such work is repeated, a clear roadmap of events or where this information can be found through a basic summary would save the reader having to 'research' where this critical design making in regard to assessment, alternatives considered and thus the justification for the final design, is located.
- 5.1.5 Our point is underscored by paragraph 3.2.3 which states: "*description of the **main alternatives** (our emphasis) considered in these earlier stages is provided later in this chapter*", meaning it can only be assumed that there are other alternatives considered and dismissed that are not listed. The PPA Group note the references in paragraph 3.2.6 to Volume 2.8 which contains studies and appraisals undertaken.

5.1 Project Design Key Issues

Table 5.1: Project Design Headlines

Key Issue	Comment
Project Design Process Comment	
1. National Grid's option appraisal methodology is fundamentally flawed.	The PPA Group has previously raised concerns in relation to the Options Appraisal of Alternative Technologies (OAAT) methodology. The PPA Group maintains its position that the threshold of 'Particularly Significant' in National Grid's OAAT methodology has set an artificially high bar for the establishment of 'Focus Areas' for mitigation. It is considered that the methodology as set out in the PEI is flawed. See paragraph 5.5.4 to 5.5.16.
2. National Grid's application of its methodology leads to a piecemeal approach to mitigation.	The PPA Group has consistently asked for mitigation to be considered along the entire route of the project, and therefore is concerned and disappointed that that by the PEI stage this has still not be undertaken. It is essential that an assessment of mitigation requirements for the entire route and ancillary proposals is undertaken as part of the Environmental Statement and ahead of the DCO submission. This is a requirement of the EIA Regulations and guidance. See paragraphs 5.4.2, 5.4.11 5.4.15 and Table 5.7.
3. The estimation of cost are inconsistent and inadequate across the set of options	<p>National Grid have incorrectly used appears as the key factor in National Grid's decision making in determining preferred options and designs that are proposed for consultation. However, decisions on the requirement for measures such as alternative options or technologies should be determined by policy rather than cost, and this principle should be applied to the NWCC project.</p> <p>The PPA Group is concerned about the basis for estimating costs of complex works, especially given the early stage of certain options and the absence of detail on environmental conditions and constraints, and how this has influenced the optioneering methodology and assessment process. Where cost is specified in the option reports, the explanation is limited and not transparent. This largely invalidates the comparison and evaluation of options and is not a valid factor in determining the most appropriate form of mitigation. The PPA Group are very concerned that despite the inconsistent and inadequate provision of costs across the set of options National Grid has already indicated its conclusions on options for the Duddon by selecting the proposed pylon route, and has dismissed alternative options.</p> <p>Furthermore, these views are reinforced by Ofgem's concerns stated in North West Coast Connections – Consultation on the project's Initial Needs Case and suitability for tendering (Ofgem 2016). Within this consultation document Ofgem question some of the costs of the alternative options and conclude that the decision between the proposed route and a potential option that avoids going round the head of the Duddon is finely balanced. Additionally it is stated that if costs escalate then there is a real risk that another option would be</p>

Key Issue	Comment
	<p>better value for money to for energy consumers. See paragraph 5.5.11 to 5.5.16.</p> <p>Specifically, the indicative costs provided for the Duddon tunnel (Volume 2.8.5 paragraph 8.2.2) are insufficient to enable an appraisal of mitigation options and their relative costs and benefits. To enable this further information on the cost of the tunnel options is urgently required to inform a consideration of options ahead of the DCO submission. See table 5.4.</p> <p>The PPA Group consider that the case for the additional cost of alternative options that avoids going round the Duddon Estuary including the HVAC options has not been made (Volume 2.8.9 paragraph 7.2.4, 7.4.2 and 7.4.10). The PPA Group challenges the conclusion that these costs will be significantly higher than the PRC costs without such detailed costing evidence. See table 5.8.</p>
4. The proposed overhead line route round the Duddon is unacceptable.	<p>The PPA Group maintains that National Grid's proposed over-head route is unacceptable, and challenge the PEI conclusion the mitigation round the head of the Duddon given the major (and unmitigated) adverse impacts. After considering the proposed route and information presented by National Grid in the PEI Report, the PPA Group strongly recommends that an alternative option that avoids going round the Duddon Estuary is essential.</p> <p>Whilst it is acknowledged that designing a route crossing the Duddon Estuary is challenging and costly, it is vital that the appropriate design and mitigation is provided. This will help to ensure that the significant impacts of the proposed NWCC project are properly addressed, thereby helping to de-risk the project through the DCO process and increase delivery certainty.</p> <p>See paragraph 5.5.6 to 5.5.10 and tables 5.4</p>
5. National Grid's proposal to leave further assessment of impacts on the Duddon until the ES is unacceptable.	<p>The proposal to leave further assessment of impacts at the head of the Duddon to the Environmental Statement is not helpful to finding a suitable alignment. The PPA Group has raised this route section as being a key issue for a considerable time. It is essential that National Grid continue to work on finding a suitable and low impact route and technology choice for this section ahead of the Environmental Statement submission, as part of considering options for the head of the Duddon, Duddon Mosses SAC and estuary. The impacts on receptors in the LDNP setting affecting their enjoyment of the LDNP landscapes and special qualities are relevant and must be included in the impact assessment.</p> <p>The conclusion that mitigation is not required around the head of the Duddon is challenged by the PPA Group. See Table 5.4.</p>
6. The Options Appraisal fails	<p>With regard to the head of the Duddon the design assumption that the options considered for the head for the Duddon should only include overhead line</p>

Key Issue	Comment
to appropriately consider undergrounding in relation to the Head of the Duddon.	options is flawed and unjustified. The PPA Group has repeatedly asked for all potential options, including use of underground technology, to be considered in the LDNP and its setting – which includes the head of the Duddon. See Table 5.5.
7. National Grid has failed to appropriately assess and mitigate the impacts on the LDNP setting.	National Grid's appraisal of the Head of Duddon Alignment Options (Volume 2.8.6) fails to state that the landscapes affected by the development at the head of the Duddon are within the setting of the LDNP and within the Landscape of County Importance (Copeland), and therefore a 'valued landscape' in terms of national planning guidance. This is a major omission. Additionally, the design assumption that the options considered for the head for the Duddon should only include overhead line options is flawed and unjustified. The PPA Group has repeatedly asked for all potential options, including use of underground technology, to be considered in the LDNP and its setting – which includes the head of the Duddon. It is considered that this is another major omission in National Grid's optioneering approach detailed in the PEI. See table 5.4
8. There has been a lack of appropriate consultation on other route and technology options.	National Grid is only consulting on its preferred route and has failed to adequately consult on other route and technology options. In particular, there are alternative route options around the head of the Duddon Estuary that should have been consulted upon. See paragraph 5.5.14 and table 5.5.

5.2 Strategic Alternatives to the 400kV Connection (Strategic Options Report -2009 to 2012)

5.2.1 Section 3.3 of Volume 2.2 Chapter 3 of the PEI sets out the early process of developing NWCC. National Grid published the Preliminary Strategic Options Report and undertook an informal consultation on six Strategic Options between 11 May 2012 and 19 July 2012. Their appraisal work concluded in a final Strategic Options Report that stated a preference for Option 3a (Cumbria Ring Onshore South) and Option 4a (Cumbria Ring Offshore South), as these were the options likely to achieve the best balance between its technical, economic and environmental obligations. The PPA Group Authorities provided feedback to the consultation and generally welcomed the two strategic options being taken forward. However, it was considered that extensive work would be required to address significant issues that each option raised.

5.3 Outline Route Options (Route Corridor Studies 2012-2014)

- 5.3.1 Based on consultation feedback and further technical appraisal of the options, National Grid identified potential route corridors where new infrastructure could be located, and undertook further informal consultation on the Route Corridor Studies between 4 September 2014 and 28 November 2014. Only one onshore route option was proposed for the connection north from Moorside to Harker, however, three route options were proposed for the south connection:
- Onshore South with Tunnel;
 - onshore South; and
 - offshore South.
- 5.3.2 National Grid's preferred route corridor option was stated as 'Onshore south with tunnel' – a connection from Moorside to Heysham via a tunnel beneath Morecambe Bay and a route largely following the existing route north through Furness and round the Duddon Estuary.
- 5.3.3 The PPA Group's response supported the Morecambe Bay Tunnel option and concluded on balance that the emerging Onshore South with Tunnel Option provided the most preferable solution. However, it was also suggested that the preferred option presented a series of complex and challenging issues that would need to be addressed to ensure the route option can be delivered effectively without compromising important environmental, economic and social considerations of the route. Therefore, appropriate technologies, such as undergrounding should be investigated across the route. Furthermore, the PPA Group have expressed support for the principle of rationalisation of existing overhead lines, therefore, the provision to take down lines is supported so long as the integrity of the electricity distribution network and connection opportunities is not weakened as a result.

5.4 Ongoing informal consultation – Options Appraisal of Alternative Technology (OAT) process

Introduction

- 5.4.1 Following these distinct rounds of informal consultation the PPA Group has welcomed ongoing positive engagement on the route design and mitigation that is required. The main dialogue that the PPA Group have undertaken relates to National Grid's OAT and the establishment of 'Focus Areas' for the consideration of the mitigation.
- 5.4.2 Fundamentally, the PPA Group consider that the OAT methodology is flawed (see proceeding section below – General Commentary on OAT process) and has therefore resulted in an inappropriate approach to mitigation across the NWCC route and a piecemeal approach to mitigation and the consideration of alternative technologies. The Group would draw National Grid's attention to the comments provided in the following responses;
- Joint Scoping Response to National Grid's NWCC EIA Scoping Report (October 2015);

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- review of National Grid’s Assessment of Mitigation Options Methodology and Focus Areas January 2016 (14 January 2016)¹;
 - letter regarding National Grid’s Appraisal of Focus Area Locations and the Response to consultee Feedback to Assessment of Mitigation Options Methodology (15 April 2016)¹;
 - review of National Grid’s Mitigation Methodology Assessment (3 June 2016)¹;
 - key Impacts Report (21 July 2016)¹;
 - comments on revised Option Appraisal of Alternative Technology (24 August 2016)¹; and
 - PPA Group Response to the Stakeholder Feedback Questionnaire (12 September 2016).
- 5.4.3 The main areas of concern to the PPA Group related to the design and mitigation of the NWCC project were;
- The need for undergrounding in the National Park;
 - impacts of the Special Qualities and Setting of the National Park;
 - impact of the route on communities and socio-economic receptors;
 - appropriate design of route for crossing the Duddon Estuary; and
 - cumulative impact and the need for rationalisation of the ENW network.
- 5.4.4 The PPA Group has welcomed the continued engagement with National Grid and considers that adequately addressing the impacts raised in this paper will minimise the risks to the project through the DCO process, protect the communities and increase delivery certainty for National Grid. The Group wants to continue to engage in positive dialogue to enable delivery of the NWCC project in a way that meets both national and local needs, and is consistent with legislation and government policy.

General Commentary on OAAT process

- 5.4.5 This section provides a general commentary on the Options Appraisal of Alternative Technology (OAAT), and is followed by more detailed assessment in subsequent Table 5.7 below. We note that the OAAT provides extensive information regarding the consideration of alternative technology along the length of the route. We see no reason why this document could not have been provided in advance of the PEI in order to allow sufficient time for review it.
- 5.4.6 Volume 2.8: 2.8.8 OAAT document provides consideration of alternative technology along the length of the route. The PPA Group has previously reviewed National Grid’s Assessment of Mitigation Options Methodology: Issued for Consultation (draft) November 2015 and Without Prejudice – Draft for comment 17th June 2016 – Approach to Option Appraisal of Alternative Technology. Feedback has previously been provided in relation to these documents, however, they contained methodology and approach only, and did not contain any results of the appraisal. The June 2016 version was supported by a map to illustrate the focus areas (draft for comment), although no supporting information or justification for their selection was provided at that time.
- 5.4.7 The PPA Group has raised previous concerns in relation to the methodology contained

¹ See Appendix 2

within Volume 2.8 section 2.8.8 (see Table 5.7 below). Concerns are raised again as part of the PEI report relating to how the threshold for 'Particularly Significant' has been set. It is noted that the threshold to determine 'Particularly Significant' has altered slightly since the previous draft version of the methodology. For landscape it is considered to be where *"substantial magnitude effects are most likely to occur upon highly sensitive landscapes located outside nationally designated landscape"* (we assume this should read substantial magnitude of change), or *"medium (or above) magnitude effects are most likely to occur upon highly sensitive landscapes located within nationally designated landscape areas"* (again, we assume this should read medium magnitude of change). For visual impacts, the thresholds are defined as *"the proposed development causes a substantial magnitude of change for highly sensitive visual receptors (e.g. settlements, popular tourist destinations, valued or well used routes) that are not relevant to the purposes of nationally designated landscape areas, or the proposed development causes a medium (or above) magnitude of change for highly sensitive visual receptors that are relevant to the purposes of nationally designated landscape areas. In this context residential receptors are not considered to be relevant to the purposes of designation but users of recreational routes/areas within the designated area are considered relevant"*.

- 5.4.8 We would still nonetheless query the justification for setting the threshold at this level and why it does not include *all* EIA significant effects, 'Major/moderate Adverse' and 'Moderate Adverse' as defined in the diagram (i.e. outwith designated landscapes). We would also query what is considered as a receptor 'relevant to the purposes of nationally designated landscape areas', as we feel this should include landscape, which falls within the setting of the national designations, however, from the subsequent assessment this is not the case.
- 5.4.9 National Policy Statements EN-1 and EN-5 and the Planning Inspectorate's Advice Notes Two and Nine provide the basis for determining NSIPs. EN-5 recognises that in 'particularly sensitive locations' the potential adverse landscape and visual impacts of an overhead line proposal may make it unacceptable in planning terms, taking account of the specific local environment and context. However, the term 'Particularly Significant' itself is not defined in policy or guidance (i.e. the GLVIA 3rd edition) for assessing the effects of new development upon landscape character and visual receptors and consequent mitigation.
- 5.4.10 The NPPF is also clear that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes. Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. National Policy makes clear that planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest. Where major development is proposed, it should not cause significant impacts to all of the 12 Special Qualities of the National Park.
- 5.4.11 National Policy EN-1, DCLG guidance, the Electricity Act 1995 as well as current planning practice make it clear that the 'setting' of National Parks should be considered in the same way as those areas within the National Park. However, the approach to mitigation currently

proposed by National Grid is particularly deficient in its assessment of the effects on the 'setting' of the Lake District National Park. Moreover, the policy context for National Parks fully recognises that the National Park and its setting are not divisible. The visual impacts of the design of the NWCC project will similarly not stop at the National Park boundary, affecting views from the setting, views into the National Park and views out into the setting. Consideration of the wider landscape setting of the Lake District National Park is of equal importance along the whole route of the NWCC Project.

- 5.4.12 Landscape planning guidance from DCLG, including that shown on its website, provides clarity that development by 'relevant authorities' impacting on the setting of National Parks should be considered in the same way as those within the National Park. There is a long-established recognition that the legislative and policy framework, including current planning guidance, provides protection of the setting of National Parks. Although these areas are not designated as National Park, developments within the setting can impact upon their statutory purposes and Special Qualities.
- 5.4.13 The area around the Duddon Estuary and the setting of the Lake District National Park and the Solway Coast AONB as well as other areas such as those designated as 'Landscape of County Importance' require careful consideration as to the effects of the development upon protecting and enhancing these 'valued landscapes'. The PPA Group has previously strongly recommended that a tunnel is the only acceptable route option across the Duddon Estuary, which would avoid the considerable problems raised by the proposed route across Foxfield Ridge and the Duddon Mosses SAC, as well as in the setting of the Lake District National Park that have been identified in the Duddon Estuary. The PPA Group would maintain that other suitable mitigation is also necessary elsewhere along the length of the North and South routes, thereby ensuring protection and enhancement of valued landscapes in these areas (see PPA Group Joint Response Volume 2 Chapter 8 Landscape & Visual response sections 8.11 and 8.12).
- 5.4.14 The use of 'Particularly Significant' in National Grid's *Options Appraisal of Alternative Technologies (OAAT) methodology* has therefore set an artificially high bar for the establishment of 'Focus Areas' areas for mitigation. The methodology is not in accordance with current guidance set by the Landscape Institute's Guidelines for Landscape and Visual Impact Assessment – GLVIA (3rd edition), and is in conflict with National Grid's 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology' (February 2016), which states that mitigation will be considered for the entire length of the route.
- 5.4.15 In this regard, there is concern that whilst 'significant' effects would be measured in the Environmental Statement/EIA, it is not clear as to why areas within the Draft Order Limits and beyond have not been considered for appropriate mitigation where there are 'significant' effects, in a way that is both robust and accountable. This does not allow for full assessment of mitigation options, and is not consistent with the universally applied EIA regulations approach of implementing mitigation for 'significant' impacts. In light of the outstanding uncertainties within the methodology, which have the potential to introduced inaccuracies within the process, we feel this methodology in its current form is flawed and requires revision to ensure that mitigation in areas of 'significant' effect is adequately

assessed.

5.5 Optioneering Methodology

- 5.5.1 The following section provides a focused review of National Grid's Optioneering Reports that are summarised in Volume 2.2 Chapter 3.5 to 3.15, and contained in detail in Volume 2.8 of the PEI Report. The PPA Group have fundamental concerns with the Optioneering process that has led to the selection of inappropriate design and failure to consider suitable mitigation across the NWCC Project.
- 5.5.2 These key concerns and conclusions are set out below, followed by detailed comments related to the key Option Appraisal Reports contained within the PEI.

General – Methodology

- 5.5.3 The approach taken relates to the OAAT which has been used to determine when significant impacts require consideration of mitigation. Despite prolonged discussion with the PPA Group in earlier stages of the project design over the flaws in this methodology National Grid has used this within the PEI. Our previous serious concerns appear not to have been addressed, nor have they informed the design and mitigation process. This has resulted in the flawed selection of Areas of Likely Significant Effect and 'Focus Areas' for mitigation within the PEI.
- 5.5.4 It is considered that the basis for impact appraisal in the OAAT methodology falsely raises the bar for determining implementation of mitigation measures. As a result, National Grid's proposals only implements mitigation measures when impacts are considered to be 'Particularly Significant'. The use of 'Particularly Significant' as a trigger for mitigation is inappropriate and the PPA Group considers that it is essential that National Grid implement mitigation to reduce other significant impacts that are likely to result from the proposal especially in subsections E1 and E2.
- 5.5.5 Fundamentally, the methodology is not in accordance with current guidance set by the GLVIA 3rd Edition, and there is concern that whilst 'significant' effects would be measured in the EIA, it is not clear as to why areas within the DOL and beyond have not been considered for appropriate mitigation where there are significant effects. The approach is not robust and accountable. In light of the outstanding uncertainties within the methodology, which have the potential to introduce inaccuracies within the process, the PPA Group feel this methodology in its current form is flawed and requires revision.
- 5.5.6 The approach taken by National Grid fails to consider appropriate mitigation measures as part of the design process to date. It fails to mitigate significant landscape and visual impacts arising from the use of pylon and overhead cables, cable sealing end compounds, other associated structures and the 132kV trident pole line.

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Duddon Estuary

- 5.5.7 The PPA Group have previously recommended that a tunnel beneath the Duddon Estuary is the only acceptable route in order to avoid major adverse impacts, particularly at the Foxfield Ridge, the Duddon Mosses SAC, plus the wider landscape setting of the Lake District National Park.
- 5.5.8 This would also avoid significant visual, landscape and community impacts of the proposals in the vicinity of The Green, Kirkby in Furness and Beckside and further south.
- 5.5.9 The PPA Group maintain that National Grid's proposed OHL route is unacceptable given major (and unmitigated) adverse impacts described above. After considering the proposed route and information presented by National Grid in the PEI Report (including the Option Appraisals), the PPA Group strongly recommend that an alternative option that avoids going round the Duddon Estuary is essential.
- 5.5.10 The PPA Group welcomes continued engagement by National Grid and the opportunity for collaboration. If another option can be developed that demonstrates that technological and environmental challenges can be addressed, the PPA Group recommend that this should be appropriately considered by National Grid, in consultation with all stakeholders.
- 5.5.11 Whilst we acknowledge that designing a route crossing the Duddon Estuary is challenging and costly, it is vital that the appropriate design and mitigation is provided. This will help to ensure that the significant impacts of the proposed NWCC project are properly addressed, thereby helping to de-risk the project through the DCO process and increase delivery certainty.

General – Cost

- 5.5.12 Cost incorrectly appears to be the key factor in National Grid's determining the preferred options. However, it is considered that cost is not a determining factor in reaching a planning decision or the selection of the appropriate mitigation measures. As outlined by the PPA Group to National Grid in September 2016, it is our view that cost is not specifically within the remit of the local planning authorities involved in NSIPs under the Planning Act 2008. The role of local planning authorities, including our own, relates to engagement on consultation arrangements, the nature of the project and its impacts and benefits. Likewise cost is not a determining factor in reaching a planning decision or the selection of the appropriate mitigation measures. Decisions on the requirement for measures such as undergrounding should be determined by planning policy rather than cost, and this principle should be applied to the NWCC project.
- 5.5.13 The PPA Group are concerned about the basis for estimating costs of complex works, especially given the early stage of option development, and in the absence of more environmental conditions and constraints. Additionally, where cost is specified in the option reports the explanation is limited and not transparent. This largely invalidates the

comparison and evaluation of options, and is not a valid factor in determining the most appropriate form of mitigation. The PPA Group are very concerned that despite the inconsistent and inadequate provision of costs across the set of options National Grid has already indicated its conclusions on options for the Duddon by selecting the proposed pylon route, and has dismissed alternative options. It is important that consistent costing information is provided across all the options to enable an effective comparison and options appraisal to be undertaken.

5.5.14 Furthermore, these views are reinforced by Ofgem's concerns stated in North West Coast Connections – Consultation on the project's Initial Needs Case and suitability for tendering (Ofgem 2016). Within this consultation document Ofgem question some of the costs of the alternative options and conclude that the decision between the proposed route and a potential option that avoids going round the head of the Duddon is finely balanced. Additionally, it is stated that if costs escalate then there is a real risk that another option would be better value for money to for energy consumers.

5.5.15 The PPA Group acknowledges the NWCC project will help deliver a significant proportion of national energy requirements, and therefore is a significant benefit to the UK. However, the benefit comes at a significant cost and harm to local communities in terms of significant environmental and economic impacts of NWCC in Cumbria and North Lancashire. This must be considered when developing an appropriate final design and the extent of mitigation and compensation for the impacts of NWCC.

Consultation Alternatives

5.5.16 The PPA Group is significantly concerned that National Grid have failed to include all other route and technology options as a clear basis for consultation, particularly in the section of the route around the head of the Duddon Estuary. While the inclusion of option appraisals is noted the extent of the documents and lack of 'signposting' in consultation documents is concerning. There has been significant community interest in the Optioneering documents, therefore the PPA Group are disappointed that the subject has not received more prominence in consultation materials and a consolidated consideration in the PEI Report.

5.6 Detailed review

5.6.1 In order to inform the consultation response the PPA Group have reviewed the Option Appraisals with a focus on the National Grid's Options Appraisal of Alternative Technology (Volume 2.8.8) and the Appraisals related to the Duddon Estuary area given the specific concern regarding the significant impact of the NWCC project design.

5.6.2 The proceeding review provides detailed commentary on the options where appropriate on National Grid's Option Appraisals.

Volume 2.8: 2.8.2 Northern Substation Siting Study**Table 5.1 – Review of Volume 2.8.2 Options Appraisal Northern Substation Siting Study**

Volume 2.8 Chapter 2	Options Appraisal Northern Substation Siting Study
General	Following a review of the study, it is considered that the document provides a robust methodology and that a comprehensive range of criteria have been applied in reaching its conclusions. Whilst it is acknowledged that the full range of technical and environmental constraints needed to be applied to the identification of a suitable site location, it is noted that in purely landscape and visual terms, Site B was potentially more favourable (or at least comparable with Site F), but the technical requirements and future flexibility weighted the decision making process in favour of Site F.

Volume 2.8: 2.8.3 Cable Sealing End Siting Study**Table 5.2 – Review of Volume 2.8.3 Options Appraisal Cable Sealing End Study**

Volume 2.8 Chapter 2	Options Appraisal Northern Substation Siting Study
General	<p>The document provides an analysis of the proposed Cable Sealing End (CSE) compound locations to the north and south of the LDNP and results in the preferred locations of Drigg CSE compound North 1 and Whicham CSE compound South 2. The approach to the selection of CSE compound locations is based upon weighing up environmental factors against the costs associated with each option</p> <p>The impact of the CSE cannot be considered in isolation to the transmission technology selected. The approximate CSE locations are determined by National Grid's transmissions technology decisions. The CSEs should be considered in combination with the transmission technology. This is particularly relevant where they are located at the change from undergrounding to overhead cables with pylons.</p> <p>The selection of CSE Siting Area North 1, which is located within the setting of the LDNP, 700m north of the boundary, along with the pylons causes concern. It is considered that the location of the CSE in combination with the pylons fails to conserve and enhance the special qualities of the LDNP and its setting. The options for this area must be reviewed in relation to this.</p> <p>The selection of CSE Siting Areas South 1-6 are similarly located, either within the LDNP or within its setting, as well as within the Landscape of County Importance. The PPA Group considers that it is essential that pylons are not used within the</p>

Volume 2.8 Chapter 2	Options Appraisal Northern Substation Siting Study
	<p>setting of the LDNP. This is Particularly Significant at this location given that the CSE is extremely close to the National Park boundary and also located at the mouth of the Whicham Valley (see PPA Group Joint Response Volume 2 Chapter 8 Landscape & Visual response - section 8.12).</p>
	<p>Within the Whicham Siting Study Area section paragraph 7.2.12 states “<i>Siting Areas South 5 and 6 would result in the removal of lattice pylons from within the Whicham Valley, moving their position to the north eastern end into the transition area onto the incised ridge that terminates the valley.</i>” This statement is confusing in that accompanying Figure 2 identifies the route passing through the Whicham Valley as a ‘Proposed 400kV Overhead Line’; clarification on this should be provided in relation to the selection of the southern site.</p> <p>The least constrained location in the south is identified as South 2 taking into consideration environmental factors considered alongside technical and cost factors. However, as stated above, the CSE impacts need to be considered in combination with the use of pylons north from the chosen location as this will be the point of transition from underground to overhead cables with pylons.</p> <p>The PPA Group is very concerned about the impact of the CSEs in combination with the pylons on the setting of the LDNP – see specific CSE comments above.</p> <p>Notwithstanding these comments on transmission technology, the CSE design proposed at some locations includes horizontal isolator bars at a height of c15m. These are visually intrusive when viewed relatively close to the CSE. The use of CSE design that avoids these highly visible bars should be used to reduce the visual impact of CSEs. Alternative designs are available and included in the project. This issue is particularly important to address for the Whicham Valley CSE, if it is included in the final project design.</p>
7.2.17	<p>The text identifies that the pylons required within the Whicham Valley to connect would not result in significant effects and therefore do not require undergrounding however it is noted within the methodology and Subsection review that the potential effects on the Whicham Valley may be underrepresented. There are concerns that the PEI fails to adequately assess the significance of effects of the CSE and pylons on the setting of the LDNP in the Whicham Valley. These are sited within the setting of the Park and well within 100m of the boundary. The options for this area must be reviewed in relation to this. Also, clarification is sought in respect of the over ground/underground option associated with locations South 1-6.</p>

Volume 2.8: 2.8.4 Furness Peninsula Substation and Tunnel Head Siting Study**Table 5.3 – Review of Volume 2.8.4 Options Appraisal Furness Peninsula Substation and Tunnel Head Siting Study**

Volume 2.8 Chapter 4	Options Appraisal Furness Peninsula Substation and Tunnel Head Siting Study
General	<p>The document adequately sets out the baseline landscape and visual context of the study area and provides analysis of the relevant national, regional and local planning policy relevant to the siting of substations.</p> <p>Three options are considered within the Siting Study with the main features of each option clearly identified. Each of the options are methodically analysed in both landscape and visual terms with the likely significant effects of each option identified. However, there is no supporting assessment provided to support the outcomes of the likely significant effects; this should be provided within the Environmental Statement.</p> <p>Of the three options assessed, it is determined that Option 1 performs best as it is supported by planning policy, it is located in closer to other industrial areas, has fewer landscape and visual effects and avoids the requirement to be located a new 400kV overhead line through an area that currently does not contain pylons. Option 1 is also in accordance with Holford Rules 1 and 2 aimed at avoiding areas of amenity value and Horlock Guideline 4 avoiding visual effects.</p> <p>Whilst based upon the information presented within the Siting Study the selection of Option 1 Roosecote Substation and Tunnel Head appears to be the most appropriate, the supporting assessment identifying the likely significant effects discussed should be provided.</p>

Volume 2.8.5 Options Appraisal of a 400kV Connection via a Duddon Tunnel;

- 5.6.3 The PPA Group has previously recommended that a tunnel beneath the Duddon Estuary is the only acceptable route in order to avoid major adverse impacts, particularly at the Foxfield Ridge, the Duddon Mosses SAC, plus the wider landscape setting of the Lake District National Park.
- 5.6.4 The PPA Group maintains that National Grid's proposed over-head route is unacceptable, and challenge the PEI conclusion the mitigation round the head of the Duddon given the major (and unmitigated) adverse impacts. After considering the proposed route and information presented by National Grid in the PEI Report, the PPA Group strongly recommends that an alternative option that avoids going round the Duddon Estuary is essential. The following table provides consideration of the detail of Volume 2.8.5 Options Appraisal relating to a 400kV connection via the Duddon Tunnel.

Table 5.4 – Review of Volume 2.8.5 Options Appraisal of a 400kV Connection via a Duddon Tunnel

Volume 2.8 Chapter 5	Options Appraisal of a 400kV Connection via a Duddon Tunnel
2.9.5	<p>It is stated that Horizontal Directional Drilling (HDD) can only be used for distances up to 500m, and is therefore not considered as providing an alternative option to the proposal set out for the Preferred Route Corridor. However, whilst, it is accepted that HDD challenging for length of up to 500m it would be possible to cross the Duddon at a suitable point where the length would be less than 500m (subject to evidence to demonstrate supporting geotechnical conditions). This alternative less costly option does not appear to have been considered. Instead much more expensive tunnelling options have been put forward, which might be considered to be tactical maneuvering to present the preferred route proposals in a positive light.</p> <p>The PPA Group has consistently requested that various HDD options be explored as part of the option appraisal for the head of the Duddon, Duddon Mosses SAC and estuary. As a result, National Grid held a workshop in June 2016 began to address Duddon options, but the possible HDD options presented have not been included in the PEI. The PPA Group continues to request that all such options be considered – see comments in Table 5.5, relating to 3.2.1.</p>
3.6.2 and 3.6.6	<p>It is suggested that socio economics, traffic and transport should be considered in the decision making process for the tunnel head sites, as a development of this kind is likely to have significant impacts on the area given the already constrained transport system.</p>
4.4.3 to 4.4.8	<p>The text references policy which states that the siting of infrastructure should <i>"seek to avoid WHSs.....Avoiding and ensuring separation from a WHS seeks to avoid effects on setting"</i>. Paragraph 4.4.5 continues to state that there would be benefits from the use of underground cables as opposed to overhead line although it <i>"is not considered to be of sufficient magnitude to be a differentiator"</i>. The narrative continues within paragraph 4.4.8 to state that the landscape within the LDNP is considered of national value, however as stated previously it is considered in light of the Candidate WHS designation that it should be considered of international value.</p>
4.10.9 to 4.10.17	<p>It is considered that a tunnel entry is likely to be assessed as a vulnerable location and should therefore be either located outside of the zone likely to be affected by floods of a specified high extremity and taking into account National policy. As such, all of the identified compound areas appear suspect;</p> <p>The connections to the preferred route on the east of the Duddon do not raise any specific hydrological or flood risk issues. Additionally, the proposed joint sealing end compound shared by both Duddon West Options is in an area of Flood Zone 3; as noted, this is a potentially vulnerable location which requires consideration of potentially more extreme floods and the impacts of climate change;</p> <p>The route from the proposed joint sealing compound to the Duddon West Option 1</p>

Volume 2.8 Chapter 5	Options Appraisal of a 400kV Connection via a Duddon Tunnel
	<p>tunnel compound involves significant incursion into Flood Zones 2 and 3, plus risk associated with geomorphological processes associated with Havergill Pool. However, the length of route exposed to this risk;</p> <p>The route from the proposed joint sealing end compound to the Duddon West Option 2 tunnel compound involves some incursion into Flood Zones 2 and 3 plus risk associated with geomorphological processes associated with watercourses on the north of Millom. However, the length of route exposed to this risk and surface water flooding is reduced when compared with the preferred route corridor; and</p> <p>There is no supporting geological data to allow the practicality of the proposed tunnelled options to be assessed.</p>
6.2.2 and 6.2.3	<p>Section 6.2 Duddon West – Appraisal of Overhead Line Alignment (Option A), paragraph 6.2.2 identifies “<i>The Whicham Valley (within the LDNP) forms a distinctive break in this high ground to the east and has a strong sense of containment resulting in distinctive open views from the western end, dominated by the sea and sky which would be adversely affected by overhead line through this area and across the valley entrance</i>”. It is considered that it is not only the area located within the LDNP that forms the strong sense of containment and that the land immediately to the east comprising the valley side rising up to Great Knott immediately outside the LDNP boundary contributes equally to the strong sense of containment and character which should be recognised. This is part of the landscape setting of the LDNP.</p> <p>Paragraph 6.2.3 continues on to state that the existing pylons would remain if a Duddon Tunnel were to be adopted, as there would be no need to remove the existing 132kV line. This is acknowledged, however the report fails to identify that this would result in the effects with the Whicham Valley resulting from the 132kV route remaining rather than being intensified by the construction of a 400kV route. This should be made clear within the report.</p> <p>The Duddon West – Appraisal of Overhead Line Alignment Option A identifies major adverse visual effect and Option B identifies major or major/moderate adverse effects upon visual receptors, however the potential for continuing the undergrounding beyond the LDNP to the Tunnel Head is not discussed.</p>
6.5.1 -2	<p>The adoption of this option would negate the need for 17.5km of 400 kV overhead line which, except in two instances, would be carried on standard height towers.</p> <p>Much of this would be through the setting of the LDNP, particularly the Whicham Valley and the head of the Duddon Estuary. Within these locations the assessment of significance of landscape and/or visual impacts in the PEI is stated to be major/moderate and therefore adverse (See Section 8.12 in PPA Group Volume 2 Joint Response Landscape & Visual Chapter 7 – Key Issues affecting the Lake District National Park).</p>

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7.1.1	<p>Footnote 16 on p49 relates to use of the phrase 'Particularly Significant' from EN-5 paragraph 2.8.4. This footnote 16 fails to explain how significant landscape and visual effects in the setting of the LDNP as determined by the LVIA relate to this classification. This is important as it determines where mitigation is considered necessary or not (see also OAAT Commentary32).</p> <p>The linkage of the methodologies used for the LVIA (See Section 8.12 in PPA Group Volume 2 Joint Response Landscape & Visual Chapter 7 – Key Issues affecting the Lake District National Park) and used here for the assessment of options is not clear and needs to be clarified in the ES.</p> <p>The PPA Group considers that where landscape and visual effects are judged to be major/moderate the impact is significant. In accordance with established EIA guidance and practice mitigation should be considered when impacts are likely to be significant.</p> <p>Also, effects within the LDNP setting (See Section in PPA Group Volume 2 Joint Response Landscape & Visual Chapter 7 – Key Issues affecting the Lake District National Park – Assessing the impacts on the setting of the National Park - Methodology) should be dealt with in the same way as those effects within the designation which are deemed to be significant.</p> <p>Many of the landscape and visual effects predicted in subsection E2 fall into this classification (See Section in Volume 2 joint Response Landscape & Visual Chapter 7 – Key Issues affecting the Lake District National Park – General comments on the application of the methodology).</p>
7.2.7 and 7.2.10	<p>The need for undergrounding south of Millom is supported, as is the consequent removal of the need for a CSE near Low Layriggs.</p> <p>The transition from underground in the LDNP to overhead lines with pylons within the setting of the LDNP is likely to lead to significant landscape and visual effects. This should be avoided via use of underground cabling.</p> <p>Additionally, the PPA Group would support the use of underground cables to remove the potential for visual effects on these residential receptors.</p>
7.2.9 and 7.2.10	<p>The Environmental Conclusion identifies that there is potential for significant adverse visual effects as a result of a standard lattice pylon connection to a Tunnel Head. Paragraph 7.2.9 identifies that the effects could be reduced using low height lattice pylons, but some significant effects 'may' remain. Paragraph 7.2.10 identifies that underground cables would remove the potential for visual effects.</p>
7.2.8	<p>The relationship between cost and likelihood of adverse visual effects suggested in the first sentence is unclear.</p>
8.2.1 and 8.2.2	<p>Paragraph 8.2.1 states the report "<i>confirmed a viable option exists to complete the NWCC project with a connection via a Duddon Tunnel</i>"; although this is subject to</p>

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	<p>further routing studies which are not provided.</p> <p>Paragraph 8.2.2 identifies the associated additional costs for utilising an overhead connection to a Duddon Tunnel and an underground connection to a Duddon Tunnel with the costs identified as £231m and £265m respectively, however there is little information provided on how these values are calculated. As outlined in section 5.5.11, the PPA Group considers it essential that all options have an equal degree of costing information detail. The indicative costs provided for the Duddon tunnel are insufficient to enable an appraisal of mitigation options and their relative costs and benefits. To enable this further information on the cost of the tunnel options is urgently required to inform a consideration of options ahead of the DCO submission.</p>
8.3.1	<p>Based on the level of information currently available is the PPA Group has a clear preference for continuation of the proposed PRC based underground cable to the west of Silecroft to a Tunnel Head in the vicinity south of Millom</p>
8.3.2	<p>8.3.2 sub-section 1 (at top of p54) fails to identify potential adverse impacts of the PRC on the Duddon Mosses SAC – see ecology comments on this issue.</p> <p>The assessment in sub-section 2, that the PRC route has potential for greater adverse landscape effects on the LDNP due to the route being partly within the setting of the LDNP is supported.</p> <p>However, the assessment that these impacts are no more than moderate is not consistent with the LVIA impact assessment for the head of the Duddon in (Volume 2.5 Chapter 6, 6.6.47), which assesses the impact as major/moderate. This underplaying of the likely impacts in this sensitive location is a major concern. The proposal to leave further assessment of impacts at the head of the Duddon to the Environmental Statement is not helpful to finding a suitable alignment. The PPA Group has raised this route section as being a key issue for a considerable time. National Grid held a workshop in June 2016 to begin to address Duddon options, but the options considered by stakeholders have not been included in the PEI. The PPA Group continue to request that all such options be considered – see comments in Table 5.5, in relation to 3.2.1.</p> <p>It is essential that National Grid continue to work on finding a suitable and low impact route and technology choice for this section ahead of the Environmental Statement submission, as part of considering options for the head of the Duddon, Duddon Mosses SAC and estuary. The PPA Group is willing to comment on further options in this respect.</p> <p>It is unclear in this assessment whether impacts on receptors of the LDNP landscapes, which are within the LDNP setting, have been included in the assessment. For the avoidance of doubt, the PPA Group considers that impacts on receptors in the LDNP setting affecting their enjoyment of the LDNP landscapes</p>

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	<p>and special qualities are relevant and must be included in the impact assessment.</p> <p>The PPA Group disagrees with and challenges the conclusion in paragraph 8.3.2, Item 2 which states “<i>Landscape effects are predicted from both the PRC based alignment and a connection via a Duddon Tunnel option. These are greater for the PRC due to its potential for greater adverse landscape effects on the LDNP from the alignment within the LDNP setting but are of no more than a moderate adverse level of effect.</i>” [Our emphasis].</p> <p>As identified within section 8.12 of the Landscape and Visual chapter, it is considered that within the assessment of Subsection E1 (See Section 8.15) the level of adverse effect upon the LDNP may be understated and further review and explanation is requested. Item 3 states there may be effects as a result of the Duddon Tunnel Head upon residential properties within Millom although there is the potential to reduce these effects through the implementation of mitigation (see Section 8.12 Landscape & Visual Chapter 7 of the PPA Group Volume 2 Joint Technical Response).</p>
8.4.1	<p>National Grid’s conclusion in the first sentence is supported – that the Duddon tunnel option would have lower environmental impacts than using overhead line around the Duddon.</p> <p>However the subsequent statement that mitigation is not required around the head of the Duddon is not supported. The methodology for selecting ‘Focus Areas’ is challenged by the PPA Group – (see Section in Volume 2 joint Response Landscape & Visual Chapter 7 – The flawed approach to ‘Particularly Significant’ as a trigger for mitigation).</p>
8.4.8 - 9	<p>The conclusion that mitigation is not required around the head of the Duddon is challenged by the PPA Group – (see Section 8.12 and 8.15 in Volume 2 joint Response Landscape & Visual Chapter 7 – The flawed approach to ‘Particularly Significant’ as a trigger for mitigation).</p> <p>Therefore the conclusion that the environmental benefits of a tunnel option would not outweigh the additional costs is not justified and is flawed. Additionally, it is considered that the exclusion of a Duddon Tunnel at this stage is pre-emptive having not fully carried out analysis and assessment work to fully and robustly justify this outcome; e.g. it is considered that effects within the setting area of the LDNP may be under assessed; the effects identified along the whole route alignment are yet to be moderated which may alter (increase or decrease) the outcome of the assessment.</p> <p>8.4.8 notes that “<i>National Grid considers that the additional costs of installing an underground cable past the south of Millom to a Duddon Tunnel Head would not be justified.</i>” The PPA Group disagrees with this conclusion, however, section 8.4 does not appear to provide a clear conclusion on the additional costs of installing a</p>

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	OHL connection.

Volume 2.8.6 Head of Duddon Alignment Options Appraisal;

Table 5.5 – Review of Volume 2.8.6 Head of Duddon Alignment Option Appraisal

Volume 2.8 Chapter 6	Head of Duddon Alignment Option Appraisal
General	The chapter fails to state that the landscapes affected by the development at the head of the Duddon are within the setting of the LDNP and within the Landscape of County Importance (Copeland), and therefore a 'valued landscape' in terms of national planning guidance. This is a major omission.
Section 2.7.5 – 8	<p>The relevant plans and policies for the Lake District and South Lakeland District Council are outlined in these paragraphs. However, there is no reference to relevant Copeland Borough Council Local Plan Policies (Core Strategy & Development Management Policies), which have effect on this area.</p> <p>The stated policies include the following principles that are relevant to mitigation options for the Duddon as it is part of the setting of LDNP. It is considered that the consultation route round head of the Duddon does not meet the following criteria:</p> <ul style="list-style-type: none"> • There is proven overriding national need that cannot be met in any other way • The development is designed and carried out to cause least practicable harm • Any detrimental effects on the special qualities of the NP can be adequately mitigated <p>The Option Appraisal also does not make sufficient reference to relevant Copeland Borough Council Local Plan Policies (ENV6) in its assessment nor in Appendix 1 relating to:</p> <ul style="list-style-type: none"> • Protecting all landscapes from inappropriate change by ensuring that development does not threaten or detract from the distinctive characteristics of that particular area <p>The Option Appraisal would appear to affect land within the Landscapes of County Importance (LoCI) within Copeland, which are a locally 'valued landscape', in accordance with the NPPF (paragraph 109). The Appraisal does not appear to address the impact on the local valued landscapes, and therefore it fails Holford Rule 2, which requires developments to avoid smaller areas of high amenity value,</p>

Volume 2.8 Chapter 6	Head of Duddon Alignment Option Appraisal
	<p>or scientific interests by deviation.</p> <p>Despite the inclusion of the aforementioned policy statements relating to the LDNP, the selection of the PRC and therefore the failure to adhere to these policies which protect a National Park and its setting, and has the highest level of landscape protection, is not justified.</p>
3.2.1 and general Approach to optioneering at the head of Duddon	<p>The design assumption that the options considered for the head for the Duddon should only include overhead line options is flawed and unjustified. The lengthy report into options for this route section fails to consider any use of underground technology. This is a major omission in the optioneering approach in the PEI.</p> <p>This incomplete assessment of design options for the head of the Duddon goes against the local development plan policies that protect the National Park including its setting (see comment on 2.7.5 – 8 above). This omission also goes against the statutory duties placed on utility providers and others to protect and enhance National Parks, set out in S62 of the Environment Act 1995.</p> <p>The PPA Group has repeatedly asked for all potential options, including use of underground technology, to be considered in the LDNP and its setting – which includes the head of the Duddon.</p> <p>At the request of the PPA Group and other stakeholders in June 2016 National Grid undertook a stakeholder workshop to explore option for the Duddon/Whicham area. These included options for use of HDD and underground trenching at the head of the Duddon. National Grid provided 3 HDD routes under the head of the estuary, an undergrounding route near Foxfield plus other options.</p> <p>In addition, the PPA Group and other stakeholders asked National Grid to consider further undergrounding options including a small bore tunnel through the Foxfield ridge (which National Grid stated was technically feasible), and consideration of undergrounding and HDD options including, in combination with some overhead line, in the vicinity of the Duddon Mosses SAC.</p> <p>It is therefore of serious concern that National Grid has failed to include within the PEI optioneering report options previously explored, and failed to consider alternative options proposed by stakeholders despite requests to engage further.</p>
Section 4	<p>Noise and vibration have been scoped out due to them not having enough of an impact to warrant them being a differentiator to the option. However, later parts of the same document go on to state that some residential receptors will have a significant adverse effect.</p>
Section 7	<p>Section 7 sets out the potential landscape and visual effects of each of the routes and provides a comparison of these in relation to landscape character and</p>

Volume 2.8 Chapter 6	Head of Duddon Alignment Option Appraisal
	<p>potential visual effects. We would generally agree with the analysis of the routes and the findings and would agree with paragraph 7.2.11, which states “<i>in terms of landscape and visual effects, Option A is considered to result in marginally fewer residual negative effects on landscape designations, landscape character and visual amenity of local residents and recreational users..... (except for visual effects from Foxfield Bank where Option D performs best).</i>”</p> <p>Options A-D are identified as being constrained in terms of construction and it is identified that various methods of ‘on-line construction’ would be required, although it is not identified within the Options Appraisal the extent or location of these which should be identified.</p> <p>The report concludes that the preferred alignment is Option C as it “<i>avoids the greater negative effects on landscape and views from an alignment closer to Broughton in Furness and the LDNP</i>”. However this is not the optimal route in terms of landscape and visual effects as identified in paragraph 7.2.11, although it is acknowledged that the route does avoid effects on SCA and SSI designations. It is considered that additional explanation is required to support this outcome.</p>
Section 8 - Conclusion	<p>The chapter concludes that overhead line Option C is the only option that avoids siting pylons within the Duddon Mosses SAC. Whilst this is acknowledged in terms of the options for overhead line considered in the Optioneering Documents, this fails to consider any undergrounding options.</p> <p>The conclusion fails to indicate that all of the overhead line options will have significant landscape and visual impacts on valued landscapes. It also fails to consider or assess that this section lies within the setting of the LDNP and within the designated Landscape of County Importance, and hence a valued landscape.</p>

Volume 2.8: 2.8.7 Option Appraisal for a 132kV Wood Pole Trident Line Connection to Millom BSP

Table 5.6 – Review of Volume 2.8.7 Option Appraisal for a 132kV Wood Pole Trident Line Connection to Millom BSP

Volume 2.8 Chapter 7	Options Appraisal Furness Peninsula Substation and Tunnel Head Siting Study
General	<p>The proposed wooden trident line has been selected to take the least environmentally constrained route from Millom BSP to Lindal in Furness.</p> <p>Exiting Millom BSP, the route is taken to the east of Lowscales Bank to avoid the LDNP and potential cumulative effects with the proposed development. The proposed 132kV trident route does however encroach on the LDNP at the north of</p>

Volume 2.8 Chapter 7	Options Appraisal Furness Peninsula Substation and Tunnel Head Siting Study
	<p>the Duddon Estuary due to the reduced span capable of the trident timber pole technology; this is considered within the PEI to be preferable over the presence of two lattice pylon routes (the proposed 400kV route and the realigned 132kV route) crossing the Duddon further south outside the LDNP. However, concerns are expressed about the adverse effects of the proposed wooden trident line upon the setting of the LDNP.</p> <p>The location of the 132kV trident line through the LDNP is also against the Horlock Rule 1. Whilst it is likely that this may be the case, there is limited assessment to verify this within the PEI.</p>

Volume 2.8.8 Options Appraisal of Alternative Technology

5.6.5 The following Table 5.7 provides a detailed review of Volume 2.6.8 Options Appraisal of Alternative Technology (OAAT), and should be read in conjunction with the General Commentary in Section 5.4 above.

Table 5.7 – Review of Volume 2.8.8 Options Appraisal for Alternative Technology

Volume 2.8 Chapter 8	Options Appraisal for Alternative Technology
General	The offshore south options appraisal does not introduce any new issues in addition to the above, if it is assumed that matters of coastal erosion are covered under the heading of 'marine- physical processes'. It is assumed that the transition from sub-sea construction to overhead pylons will require a specialist transition point which, may introduce specific infrastructure vulnerabilities that need specialist hydrological considerations
4.2.5	Paragraph 4.2.5 the methodology quotes from SCHEDULE 4 of the TCPA EIA Regs 2011: Information for inclusion in environmental statements, Part 1 no. 5 " <i>a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment</i> " and emphasises from this quote that this is stating that the regulations " <i>do not require significant effects to be mitigated</i> ". We would add that Part 2 - no. 2. - also says " <i>A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.</i> " We would comment that although it is true that the regulations do not say that that significant effects must be mitigated the extent of significant effects is likely to influence decisions about the acceptability of the development;

Volume 2.8 Chapter 8	Options Appraisal for Alternative Technology
4.2.11 - 13	<p>The hierarchy for identifying 'Particularly Significant' effects, illustrated in Image 4.1 is flawed, reflecting the OAAT methodology for the identification of 'Focus Areas' for considering mitigation,</p> <p>By setting a threshold for considering mitigation at 'Particularly Significant' the approach does not conform to the standard EIA practice and guidance (see above general commentary).</p> <p>Applying this flawed approach has led to 'Focus Areas' being incorrectly identified, with sections of the route where mitigation is likely to be required not being identified.</p> <p>Previous concerns have been raised in relation to the methodology contained in Vol 2.8 section 2.8.8 relating to how the threshold for Particularly Significant has been set. The PPA Group has repeatedly informally advised of the flaws in the OAAT methodology (i.e. the review of National Grid's Assessment of Mitigation Options Methodology and Focus Areas January 2016 (14 January 2016); letter regarding National Grid's Appraisal of 'Focus Area' Locations and the Response to Consultee Feedback to Assessment of Mitigation Options Methodology (15 April 2016); review of National Grid's Mitigation Methodology Assessment (3 June 2016); Key Impacts Report (21 July 2016); comments on revised Option Appraisal of Alternative Technology (24 August 2016); and PPA Group Response to the Stakeholder Feedback Questionnaire (12 September 2016). Considerable discussion had led to a revised version of the methodology in June 16, which while still of concern to the PPA Group had developed from the initial version.</p> <p>The PPA Group is therefore very disappointed to note that the methodology in the PEI reverts back to the original version. This is a retrograde step. (Please see comments in the PPA Group Joint Consultation Response Landscape and Visual Chapter 8 (8.11 and 8.12) for further information on this issue).</p>
4.2.16	<p>Text states "<i>The application of any mitigation for remaining significant effects affecting land outside Focus Areas along the length of the Project is considered on a case by case basis and will be reported in the Preliminary Environmental Information (PEI) and ES where considered or envisaged.</i>" We note that some mitigation outside these focus areas is included within the PEI</p> <p>The PPA Group has consistently asked for mitigation to be considered along the entire route of the project. We are concerned and disappointed that that by the PEI stage this has still not be undertaken. It is essential that an assessment of mitigation requirements for the entire route and ancillary proposals is undertaken as part of the ES and ahead of the DCO submission. This is a requirement of the EIA Regulations and guidance.</p>

Volume 2.8 Chapter 8	Options Appraisal for Alternative Technology
4.3.9	<p>The paragraph states “<i>The effects of underground cable options on landscape and visual receptors are generally considerably less than the effect of overhead line option.</i>” We would agree that this statement is correct once the Project is completed, but this would not be the case for during construction and this should be clearly stated. We note that the following paragraph does state: “<i>There would be adverse effects associated with the construction phase that would be temporary. National Grid does not consider short/medium term effects, such as these, to be a differentiator affecting choice of technology</i>” The construction effects should be clearly explained in detail in the Environmental Statement to give assurance that none of the construction effects will last beyond the short to medium term;</p>
4.3.12 to 4.3.15	<p>Inconsistencies exist with the assessment of source noises such as overhead lines (part 2.8.8). The main assessments scope out 132kV lines but provide assessment of the 400kV lines, however, the optioneering documents (generally) exclude noise completely as having an effect.</p>
4.4.6 – 8 4.5.3	<p>The application of the hierarchy for identifying ‘Focus Areas’ in the OAAT methodology has led to the highly sensitive landscape at the head of the Duddon estuary and mosses (section E2) not being entirely identified as requiring mitigation. This is despite the assessment of landscape and visual impacts being rated as ‘Major/moderate’ (i.e. the EIA requirement to consider mitigation for significant effects). There are also other sensitive areas such as the setting of the Solway Coast AONB, Landscapes of County Importance, as well as other non-designated landscapes, which are nonetheless considered ‘valued landscapes’ that are considered worthy of mitigation involving the use of alternative technology within both the North and the South routes. These require careful consideration as to the effects of the development upon protecting and enhancing these landscapes.</p> <p>The conclusion to exclude these highly sensitive landscapes is flawed. The ‘Particularly Significant’ threshold in the OAAT methodology for areas outside of the LDNP but within its landscape setting is set too high. If this landscape was within the LDNP it would be in a ‘Focus Area’ (Please see PPA Group Joint Response Volume 2 Chapter 8 – Landscape and Visual - sections 8.11 and 8.12)³².</p> <p>It is the view of the PPA Group that the value and sensitivity of the receptors within the LDNP and the setting of the LDNP are equal.</p> <p>Further information on these issues is set out in our comments in the landscape and visual chapter.</p>
4.5.2, 4.6.2 - 4.6.4	<p>The PEI states that the identification of ‘Areas of Likely Significant Effect’ have been identified ‘With Reference to Industry Guidelines’ and taking a precautionary basis. Further, that “<i>the methodology and semantic scales.....have been developed</i></p>

Volume 2.8 Chapter 8	Options Appraisal for Alternative Technology
	<p><i>in line with guidance or topic specific good practice.”</i></p> <p>This statement is challenged. The approach of setting the bar for consideration of mitigation at a 'Particularly Significant' level is not consistent with the industry standard GLVIA 3 methodology. It is also in conflict with National Grid's 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology' (February 2016), which states that mitigation will be considered for the entire length of the route.</p>
4.5.3	<p>This paragraph fails to acknowledge that it is established in policy guidance and through practice that landscape setting is a recognized consideration for development outside of National Parks and AONBs. The determination of Areas of 'Likely Significant Effect' by 'absence of features or designations rendering them sensitive' fails to recognise the importance of the landscape setting of LDNP as well as the Solway Coast AONB</p> <p>This is an arbitrary criteria-led approach to assessing sensitivity which is flawed.</p> <p>National Policy EN-1, DCLG guidance, the Electricity Act 1995 as well as current planning practice make it clear that the 'setting' of National Parks should be considered in the same way as those areas within the National Park. However, the approach to mitigation currently proposed by National Grid is particularly deficient in its assessment of the effects on the 'setting' of the Lake District National Park. Moreover, the policy context for National Parks fully recognises that the National Park and its setting are not divisible. The visual impacts of the design of the NWCC project will similarly not stop at the National Park boundary, affecting views from the setting, views into the National Park and views out into the setting. Consideration of the wider landscape setting of the Lake District National Park is of equal importance along the whole route of the NWCC Project.</p>
6.4.3, 6.4.218, 6.4.224	<p>The application of the flawed approach to 'Focus Area' selection has led to the de-selection of the following Focus Areas for consideration of mitigation:</p> <ul style="list-style-type: none"> • 1a: St Bees • 1b: Whitehaven • 2: Moresby Park • 3: Stainburn and Great Clifton • 4: Hayton • 7: Great Orton • 9e: LDNP - Whicham Valley • 10a: Duddon - Estuary Crossing • 10b: Duddon – Foxfield <p>These 'Focus Areas' should all be considered for mitigation of landscape and/or</p>

Volume 2.8 Chapter 8	Options Appraisal for Alternative Technology
	<p>visual impacts.</p> <p>For example, 'major/moderate' (adverse) effects are identified for Landscape Character Types located primarily at the head of the Duddon Estuary and mosses with the effects noted resulting from the increase in size of pylons with the proposed development and the associated perception within the landscape. It is agreed that the increase in pylon height is likely to alter the landscape perception and if the value of these areas is reconsidered may raise the effect beyond major/moderate. Consequently, this location should have been assessed for mitigation. Similar assessments would appear to apply to the other areas identified above, which also should have been included as 'Focus Areas'³².</p>
4.6.3	<p>This paragraph states "<i>National Grid will back check and review the results of the assessment to ensure the conclusions remain valid when it has the benefit of more detailed assessments and environmental information. This means in practice that where subsequent assessment, as part of the EIA process, results in the identification of other Particularly Significant effects, the need for mitigation or alternative technology choices would be considered at later stages in the preparation of the application for development consent.</i>" We would welcome this back checking exercise;</p>
5.10.4, 5.10.9 and 5.10.14	<p>It notes that, in relation to undergrounding "<i>It should be noted that the temporary construction working width required for using a trenching installation technique is somewhat wider than the construction working area for an overhead line solution. In addition, there would be a requirement for site compounds and/or working areas for cable storage, deliveries and other logistics requirements.</i>" These should be addressed fully in the Environmental Statement when considering the landscape and visual impacts and effects;</p> <p>Paragraph 5.10.9 notes: "<i>Wherever possible hedgerows would be planted or replaced although trees cannot be planted on top of the cables.</i>" This needs to be addressed when considering the landscape and visual effects in the Environmental Statement; and</p> <p>Paragraph 5.10.14 states, in relation to the construction of underground cables, that "<i>Temporary access tracks would continue along the length of the section of underground cable as far as possible so that construction traffic can run on dedicated routes and avoid public highways.</i>" This construction effect on the landscape and visual receptors should be reflected in the Environmental Statement.</p>

Volume 2.8.9 Development and Appraisal of an Offshore South 400kV Connection using HVACTechnology:**Table 5.8 – Review of Volume 2.8.9 Development and Appraisal of an Offshore South 400kV connection using HVAC technology**

Volume 2.8 Chapter 9	Development and Appraisal of an Offshore South 400kV connection using HVAC technology
General	<p>The inclusion and consideration of offshore HVAC connection options for the route south of the LDNP is welcomed, as this is consistent with the applicant considering all viable options. However, it is surprising that following lengthy discussions with the PPA Group and other key stakeholders on options to mitigate impacts around the Duddon this option has not been explored previously. This was carried out for the Duddon Tunnel option and could have aided consultation considerably.</p> <p>The failure to include this and other route/technology options in the public documents for the consultation is a major gap in the consultation documents. Given the very public concern of communities around the Duddon over the PRC, which National Grid is fully aware of, it is a concern that the public has not been given accessible information on options for them to consider and comment on.</p> <p>The PPA Group asked for alternative options to be made part of the public consultation documentation in June/July 2016 as part of engagement over the consultation. Assurances were provided at that time from National Grid that this would be included in the set of public consultation documents. The inclusion of such options only in the technical chapters of the PEI, and for that text to be very lengthy, is a significant flaw in the public consultation process.</p>
2.6	<p>The PPA Group understand that the HVAC Options Report has been produced in order to undertake the 'back checking' exercise, therefore, assumption and a limited level of information has been provided. However, sufficient detail is required to enable the community and other stakeholder to understand the impacts, e.g. limited information of technology and installations required and land take.</p>
2.6.6	<p>There appears to be a lack of detail related to the transformers that would/may be needed at Kirksanton. Figure 4, shows a 132kV line from the landing point, running between Silecroft and Kirksanton and joining the current 132kV route inside the National Park northeast of Baldmire Wood. The existing 132kV line would then still run on around the Duddon Valley to Barrow. There would need to be another 132kV line from the Kirksanton substation to Millom to feed the new transformer that is the subject of the current planning application by ENW.</p> <p>The Kirksanton substation would have to take over the function of the one proposed at Roosecote. It is considered that this would need two supergrid transformers to feed the two circuits necessary for resilience. If anything, it would</p>

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	<p>be larger than the one at Roosecote, as the offshore cables will need big shunt reactors, because these cables are right out at the maximum technically possible length. Paragraphs 2.6.6 - 2.6.9 of Vol 2.8.9 cover this point, but we cannot find any mention of the transformer side of the substation. The landscape assessment of Kirksanton (5.3.1 -5.3.4) mentions the reactive compensation equipment, but not the transformers and their associated 132kV circuit breakers.</p>
3.7.2	<p>It is noted that the OAAT is once again used to scope the onshore elements (see comments above), however, the four environmental topics that have been used to appraise the landing options is noted, however, National Grid's own methodology (OAAT) included socio-economic and did not consider hydrology. The OAAT is used for the onshore element.</p>
3.7.13	<p>It is initially stated that construction noise has been scoped out. Later in the document, within the socio-economic section, there is outline commentary/consideration concerning the effect of construction noise on nearby residents which goes as far as to recommend acoustic barriers to mitigate noise.</p> <p>Therefore, more clarification should be given to the justification for scoping out topics, and this approach should be consistent throughout the document. It should be clearly stated for which topics noise and vibration effects are considered, in the event that significant adverse effects at sensitive locations are identified.</p>
6.5.9	<p>The PPA Group maintains that National Grid's proposed OHL route is unacceptable given major (and unmitigated) adverse impacts described above. After considering the proposed route and information presented by National Grid in the PEI Report (including the Option Appraisals), the PPA Group strongly recommend that an alternative option that avoids going round the Duddon Estuary is essential, much of which is within the landscape setting of the LDNP.</p> <p>The PPA Group welcomes continued engagement by National Grid and the opportunity for collaboration. If another option can be developed that demonstrates that technological and environmental challenges can be addressed, the PPA Group recommends that this should be appropriately considered by National Grid, in consultation with all stakeholders.</p> <p>Whilst the PPA Group acknowledge that designing a route crossing the Duddon Estuary is challenging and may be costly, it is vital that the appropriate design and mitigation is proposed. This will help ensure that the significant impacts of the proposed NWCC Project are properly addressed, thereby helping to de-risk the project through the DCO process and increase delivery certainty.</p>
7.2.1	<p>Having offered a HVDC offshore option in the RCS consultation autumn 2014 route options consultation, the PPA Group has made it very clear to the applicant that only technically feasible options should be put forward in the current consultation.</p> <p>The PPA Group notes that the inclusion of 3 options using HVAC technology and</p>

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	<p>considers that this is in effect acceptance by the applicant that they are technically feasible.</p> <p>When considering a route option from Kirksanton the use of undergrounding from the PRC route to the Kirksanton landing point is supported and justified. For landscape and visual impact reasons use of overhead line would be inappropriate.</p>
7.2.4, 7.4.2, 7.4.7, 7.4.9, 7.4.10	<p>The PPA Group challenges the conclusion that an HVAC Kirksanton to Rossall option is not justified. The PPA Group considers that National Grid's proposed OHL route is unacceptable given major (and unmitigated) adverse impacts described above. After considering the proposed route and information presented by National Grid in the PEI Report (including the Option Appraisals), the PPA Group strongly recommend that an alternative option that avoids going round the Duddon Estuary is essential.</p> <p>The applicant gives three reasons for the HVAC Kirksanton to Rossall option not being justified; the PPA Group challenges all three:</p> <ul style="list-style-type: none"> • That the landscape effects of the PRC do not require further mitigation, particularly in the Whicham Valley and Duddon estuary. The use of a threshold for requiring mitigation of 'Particularly Significant' is flawed – see comments above. • That lengthy studies of the effects on marine SAC and SPA designated sites could cause undue delay to the project and be a risk to project delivery. (see our and Natural England's comments on this for paras 7.4.5-7 below) • That the additional cost of installing this option would not be justified.
7.4.3	<p>The PPA Group note that if an alternative option that avoids going round the Duddon Estuary were progressed the existing 132kV lattice pylon overhead distribution circuits within the PRC would be unchanged. Therefore, existing 132kV lattice pylons would remain within the Whicham Valley and through to Askam-in-Furness as part of ENW's distribution network.</p> <p>However, it is understood that the developers of the Haverigg Windfarm have withdrawn from their arrangement with ENW and the PPA Group assumption is that this means that the proposed Millom sub-station will not be provided. The provision of the sub-station was seen as key in resolving the issues relating to reliability of supply and future capacity issues for Millom, Bootle and surrounding communities, issues that are of strategic significance for the Borough Council and other stakeholders in the area.</p> <p>It is vital that additional detail is provided to understand the implication on the ENW network of this change in circumstance, both in terms of the area north of</p>

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	<p>Silecroft, Millom and in the area around the Duddon Estuary and Barrow. It is not clear as to the implications of this decision for the ENW network south of Askam-in-Furness, and clarification is required.</p> <p>Additionally, the PPA Group understand that if an alternative option that avoids going round the Duddon Estuary were to be selected, ENW would need to maintain a connection (either the existing or underground) between Silecroft and Moorside, however, once again clarification and detail is required to appropriately assess the option.</p>
7.4.5 - 7	<p>The PPA Group agrees and supports Natural England's position that the Offshore 400kV HVAC from Kirksanton to Rossall is, based on the available information, likely to be the least environmentally damaging option for the route south of Silecroft and could be considered as one of the options and should be considered against other planning considerations..</p> <p>The PPA Group support Natural England's consultation response comments in their response letter dated 5/1/17:</p> <p><i>"4.3.1 This option has the potential to avoid or reduce impacts to a large number of terrestrial and coastal habitats, protected species and designated sites.</i></p> <p><i>4.3.2. This includes the following sites for which there would otherwise be significant impacts likely to require mitigation: Morecambe Bay and Duddon Estuary pSPA; Morecambe SAC, SPA, SSSI, Ramsar; Duddon Estuary SPA, Ramsar, SSSI; South Walney and Piel Channel Flats SSSI; Duddon Mosses SSSI, SAC, National Nature Reserve NNR; Heysham Moss SSSI</i></p> <p><i>4.3.3. Protected species in the area between Silecroft and Rossall, such as bats, GCN and natterjack toad would be largely avoided with this option.</i></p> <p><i>4.3.4. This option would also reduce the amount of ancient woodland that the project would impact.</i></p> <p><i>4.3.5. This option does imply potential impacts where the cable route passes through the Morecambe Bay and Duddon Estuary pSPA, Liverpool Bay SPA (with proposed extension), for which disturbance to birds may be an issue; and the Shell Flat and Lune Deep SAC, where damage to the Shell Flat sand bank could occur. It is NE's view however, that these impacts will be more readily mitigated for through timing and the ability of the affected habitats to recover.</i></p> <p><i>4.3.5.1. Foraging terns protected by the Morecambe Bay and Duddon Estuary pSPA are not highly sensitive to vessel traffic</i></p> <p><i>4.3.5.2. Overwintering water birds of the Liverpool Bay (p)SPA can be avoided</i></p>

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	<p><i>through timing of works.</i></p> <p><i>4.3.5.3. The Shell Flat sand bank is a stable 'banner bank' which has seen the successful burial of a wind farm cable without hindering the conservation objective of the Shell flat and Lune Deep SAC.</i></p> <p><i>4.3.6. It is NE's view that further detailed work is required on this option and its implications for the environment and the project as it appears to be the most viable in terms of environmental impacts."</i></p>
7.2.4, 7.4.2, 7.4.10	<p>The case for the additional cost of all of an alternative option that avoids going round the Duddon Estuary including the HVAC options has not been made. The PPA Group challenges the conclusion that these costs will be significantly higher than the PRC costs without such detailed costing evidence.</p> <p>The outline costs for the Kirksanton/Rossall HVAC option are given as "<i>add approximately £200 to the cost estimate for the project</i>". This 'ballpark' figure is used to determine that the additional cost is not justified. This is insufficiently detailed and justified to provide an adequate comparative assessment with other route options (see general comments above).</p> <p>The detailed case for the cost of this HVAC option and the full justification of this being considerably higher than the equivalent onshore and tunnel option is essential to enable an effective comparison to be made.</p> <p>The case for the cost of the HVAC options being more expensive than the PRC onshore/tunnel option has not been made and is required. Despite this being a gap in the PEI the Report concludes that there will be significant additional cost and that these are not justified.</p>

Volume 2.8.10 Distribution System Options Report**Table 5.9 – Review of Volume 2.8.10 Option Appraisal for Distribution System Options Report**

Volume 2.8 Chapter 10	Options Appraisal for Distribution System Options Report
General	<p>The NPPF is mentioned frequently through the optioneering documents, however, there is little or no consideration given to tranquility, which is mentioned in NPPF paragraph 123 point 4:</p> <p><i>"Identify and protect areas of tranquility which have remained relatively</i></p>



Volume 2.8 Chapter 10	Options Appraisal for Distribution System Options Report
	<p><i>undisturbed by noise and are prized for their recreational and amenity value for this reason"</i></p> <p>Much of the land that will be developed as part of the scheme is close to PRow or land that has amenity value such as National Parks. It is concerning that this is not addressed in any document, with the exception of part 2.8.10 in which tranquility is taken into consideration. This will need to be addressed as part of the assessment in the submission Environmental Statement.</p>

6.0 Proposed Development

6.1 Introduction

- 6.1.1 This section provides a review of the Proposed NWCC Development (volume 2.2 Chapter 4). The Chapter provides a definition of the draft order limits (DOL), a description of the land encompassed, the development works proposed within and project construction, including the draft Code of Construction Practice (CoCP)

6.2 Location of the project

- 6.2.1 Although the location of the project outlined in section 4.2 is accepted, it is suggested that the limits of deviation (as defined in the draft DCO) should be referenced in order to better understand the context and implications.

6.3 Summary of the Project

- 6.3.1 The summary of the project set out in section 4.3 appears to be correct. However, it is suggested that although 'Areas of Mitigation' (element 10) are included, given the status of the PEI and absence of mitigation in a number of areas, the DOL may need to be revised to reflect additional works, such as road improvements. The footnote highlighting the substation at Moorside (delivered as part of the NuGen's DCO application) is helpful, however, given the implications for cumulative land take and impacts it is suggested that this reference should be expanded and be situated in the main text.

6.4 Project Elements

- 6.4.1 This section provides a review of the Need and Alternatives chapter (volume 2.2 Chapter 3), including the supporting Volume, 5.3 NWCC Project Need Case. The project elements are noted, however, in Table 4.2 of the PEI it would be beneficial to provide an average height related NWCC project.

6.5 Construction Code of Practice (CoCP)

- 6.5.1 The PPA Group has made some detailed comments on the issue of CoCP focused on minimising risks for ecology (following). Consultation on the draft CoCP is welcomed and the PPA Group request further dialogue on other all topics as the proposed CoCP is developed.

Purpose of CoCP – Ecology

- 6.5.2 The National Grid North West Coast Connections Project has the potential to have

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significant negative impacts on the ecology along the chosen route. Of particular concern are designated sites and protected species of international and national importance within and adjacent to the route corridor. These are identified below (Table 1). Further habitats and species of local interest are also at risk and although not listed here will need to be considered in the CoCP.

- 6.5.3 It is assumed that the location and design of the final route and the timings of the work will take account of these ecology interests, preferably aiming to avoid any potential for effects. If this is not possible then reasons why they cannot be avoided should be supplied.
- 6.5.4 Where ecology interests are still at risk from the project, the CoCP will provide detailed guidance on how construction activities must be carried out to reduce the harm as far as possible. Contractors will then be required to produce specific, detailed Method Statements (MS) for their work which will aim to protect the environment.
- 6.5.5 Examples of topics to be covered by the CoCP are listed and described briefly below. This is not an exhaustive list and further topics within the CoCP may become necessary as the details of the project emerge.

Need for a NWCC CoCP

- 6.5.6 The PPA Group expect a comprehensive CoCP to be produced to support the Environmental Impact Assessment (EIA) for the North West Coast Connections Project, as well as support required Habitats Regulations Assessments (HRAs).
- 6.5.7 The PPA Group considers that:
- A comprehensive CoCP will be required to be submitted as part of the DCO application;
 - the final CoCP would form a 'requirement' to the DCO. A 'requirement' operates in a similar way to a planning condition to non-NSIP consents; and,
 - the current draft CoCP is insufficient to address the range of ecological and wider environmental risks identified in the PEI.
- 6.5.8 The comments here on the CoCP in the PEI are provided to help the development of a more comprehensive CoCP. The PPA Group wants to engage further on the development of an effective CoCP. Other relevant stakeholders should be included; for ecology the Environment Agency and Natural England are key.
- 6.5.9 The PPA Group considers that a more comprehensive CoCP is required for the following reasons:
- Provide a framework to ensure the agreed detailed design and construction proposals within the DCO, including mitigation and enhancement, are fully delivered during the construction phase;

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- ensure the requirements of Habitats Regulations Assessments (HRAs) are fully delivered and complied with;
 - enable the applicant, contractors and the planning authorities to monitor delivery of the DCO as proposed, and check compliance where necessary;
 - the planning authorities have a duty to ensure compliance with any 'requirements' once the DCO is granted; and,
 - to enable the planning authorities and other statutory organisation (e.g. the Environment Agency) to be efficiently involved in delivery of the proposals over the construction and reinstatement phases.
- 6.5.10 To achieve this objective, the PPA Group advises that a topic-by-topic approach to the CoCP is used, with a strategy for each key issue or topic. In effect each strategy is a chapter for the overall CoCP.
- 6.5.11 The PPA Group has identified the following topics as requiring a CoCP strategy with regard to ecology protection:
- Soil Management;
 - water Pollution Prevention and Water Quality Monitoring;
 - bio security;
 - land Drainage;
 - waste Management;
 - woodland, Trees and Hedgerows;
 - birds, Bats, Red Squirrels and Dormice;
 - amphibians and Reptiles;
 - animal Welfare;
 - environmental Incident Procedure;
 - in-River Works;
 - noise and Vibration;
 - air Pollution; and,
 - light Pollution.
- 6.5.12 The PPA Group further advises that CoCP strategies will be required for the following project elements:
- Work Compounds – to include use and lighting periods;
 - horizontal Directional Drilling (HDD) – this needs to be addressed, and could either have a separate strategy or be included across the set of strategies proposed above;
 - a recent and very relevant example of this approach being effectively applied to a major linear infrastructure project is the West Cumbria water supply project, which received full planning permission in November 2016 (it is not an NSIP project). United Utilities produced a comprehensive CoCP that addressed key issues and topics; and,
 - through informal discussions with LDNPA United Utilities have indicated it is willing to share its agreed CoCP with National Grid to help enable a similar approach to the NWCC project.

CoCP Strategies per Topic

- 6.5.13 It should be noted that the following comments for the NWCC CoCP are related to ecology. The CoCP should also address construction practice relating to historic environment, landscape, public access and other topics. At this stage these topics have not been considered and should be included as the CoCP is developed.
- 6.5.14 This section provides a brief outline of the scope for each CoCP topic strategy. This is intended to provide a steer to assist National Grid and is not comprehensive. National Grid will need to develop its own approach bespoke to the NWCC project.
- 6.5.15 The PPA Group is willing to comment further on the scope and content of any CoCP strategies as they are developed. This iterative approach between the planning authorities and the developer can help ensure that project specific requirements are delivered and that the ecological and wider environmental impacts are well managed during construction. Both the developer and planning authorities considered this approach beneficial for the West Cumbria water supply project.

Protected Sites.

- 6.5.16 Table 1 identifies sites of international importance within or adjacent to the project route. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites which are wetlands of international importance.
- 6.5.17 These sites are of particular note because the Habitats Regulations (Article 6(3) of the Habitats Directive) require competent authorities to assess certain plans or projects which affect sites of European importance (SACs and SPAs). Any development proposal which requires planning permission or other consent is a 'project' which may require a full Appropriate Assessment (AA) under the Habitats Regulations (HRAs) should any likely significant effects be identified. The AA should identify using robust evidence whether or not there will be an adverse effect on the integrity of the designated site as a result of these likely significant effects.
- 6.5.18 Table 1 also includes sites of national importance including Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs). Protecting these sites including habitats and species they support should be included within the CoCP. Protected species are not listed in Table 1 and neither are habitats of local importance such as County Wildlife Sites, priority habitats and species of principal importance to conserve in the UK, or habitats and species of local Biodiversity Action Plan importance, but their protection should also be appropriately addressed in the CoCP.

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6.5.19 The CoCP will lead to Method Statements which need to consider all the potentially damaging operations likely to impact on protected sites and species. There will need to be both project-wide and site-specific statements. Advice on various working practices is provided in CIRIA's Working with Wildlife: *Guidance for the Construction Industry* (2011) London: Construction Industry Research and Information Association.

Soil Management Strategy

6.5.20 This strategy is required to ensure that removal and storage of soils does not lead to impacts on the ecology along the project route, and that soils are effectively safeguarded and reinstated.

6.5.21 This will cover construction activities involving soil, such as:

- Stripping top soil;
- storing soil;
- disposing of soil; and,
- reinstating the land after these activities.

6.5.22 The CoCP will consider elements such as:

- Timing of work; e.g. predominantly in the spring/summer months unless ecological constraints prevent this, major road crossings in the winter months, if in the vicinity of watercourses then in dry weather and low flow conditions, minimising periods of exposed ground;
- working method; e.g. minimising area, ensuring careful removal and appropriate storage of sensitive and valued vegetation, reducing compaction, smearing and waterlogging, avoiding contamination;
- storing soil e.g. how to preserve sensitive turfs, appropriate storage locations, consideration of silt run off and flood risk, appropriate separation of top/sub/contaminated soil;
- managing sediment, e.g. particularly to avoid silt entering important sites, use of adequate silt control methods, reference to the Water Quality Monitoring strategy (see above);
- disposing of soil; e.g. minimising waste;
- permits and consents; e.g. for waste;
- protection of species e.g. how to protect species and animal welfare when managing soil, such as avoiding removal of soil/roots where amphibians and reptiles may be sheltering, checking for ground nesting birds; and,
- reinstatement of very sensitive habitats and conditions (although the main aim should be to avoid such habitats through micro-siting); e.g. working with peat and peaty soils (peat should be avoided where possible, particularly if there is deep peat with a catotelmic layer below the surface which would be damaged through any trenching or digging works, resulting in the loss of peat and pollution to watercourses.)

Water Pollution Prevention and Water Quality Monitoring Strategy

- 6.5.23 This strategy is required to prevent water pollution as a consequence of the project works. Contaminated surface-run-off, sediment mobilisation, turbidity and resultant sedimentation are key pollution issues given that the project is within or close to a range of freshwater, estuarine and marine protected sites and habitats – see Table 1 – and where the HRAs are likely to require effective monitoring across the construction and reinstatement phases. Potential for accidental spillages, leakages and refuelling incidents, and risk of stored construction materials entering watercourses (such as concrete, sands or herbicides) mean that a robust pollution prevention methodology will need to be adopted for all construction compounds and working corridors.
- 6.5.24 The strategy will also identify why, where, how and when water quality monitoring will be required. It will include trigger levels for appropriate actions, such as starting work, stopping work and when to follow the Environmental Incident Procedure strategy (see below).
- 6.5.25 This has a strong linkage with the Soil Management strategy, and clear cross-referencing between them is essential.
- 6.5.26 Water pollution prevention, control measures and water quality monitoring will apply to all construction activities.
- 6.5.27 The CoCP will cover elements such as:
- Identification of potential pollutants;
 - management of potential pollutants.
 - Monitoring;
 - reference to Environmental Incident Procedure strategy (see below);
 - mitigation of adverse impacts;
 - permits and consents;
 - preventative working practices – including:
 - use of biodegradable oils wherever possible;
 - all plant, machinery and pumps to be inspected for oil/fuel leaks;
 - all to carry spill kits at all times and all relevant staff to be trained in their use;
 - all refuelling activities to be within secure compounds;
 - oil booms and extra spill kits to be held at the site for the duration of the works;
 - chemicals/oils to be stored in an impermeable bund capable of containing 110% of the contents;
 - cleaning of construction vehicles in a suitably enclosed compound draining to a sealed tank or via a suitable interceptor.

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- no dewatering directly into watercourses; and,
- restrict use of agrochemicals/herbicides used along riverbanks.

Bio security Strategy

- 6.5.28 This strategy is required to prevent the introduction or spread of Invasive Non-Native Species (INNS), weeds, pests and diseases as a consequence of the project works.
- 6.5.29 This will apply to all construction activities. It will cover all agricultural, sporting and ecological interests.
- 6.5.30 INNS are a particular risk for linear construction projects. In particular, the risk of spreading INNS and impacting on important freshwater habitats and the species they support.
- 6.5.31 The CoCP will cover elements such as:
- Prevention through strict protocols;
 - detection through detailed surveys, undertaken prior to commencing any construction or site preparation to determine and map the extent of invasive species;
 - management and eradication plans, specific to each area of infestation;
 - isolation through provision of temporary barriers prior to eradication e.g. Japanese knotweed to be fenced at least 7m from the stand;
 - installation of warning signs;
 - control;
 - mitigation of adverse impacts of control;
 - assessing and managing risk;
 - monitoring;
 - permits and consents; and,
 - preventative working practices;

Land Drainage Strategy

- 6.5.32 This strategy is required to ensure that work affecting land drainage does not lead to impacts on the ecology along the project route, and that the existing movement, distribution and quality of water are effectively safeguarded and reinstated.
- 6.5.33 This will cover all construction activities which will affect existing or create new land drainage. In particular, risks of altering existing drainage of habitats, including groundwater dependant habitats, and/or impacting on the species they support (e.g. Great Crested Newt; Natterjack toad) need to be avoided.
- 6.5.34 The CoCP will consider elements such as:
- Pre-construction, construction and post-construction phases;

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- surface and groundwater;
- water pathways;
- water quantity and quality;
- pre-construction drainage survey;
- assessment of impacts of the work;
- appropriate design and planning of works to reduce risks during and after construction;
- reference to the Water Quality Monitoring strategy (see above); and,
- reinstatement needs, including reinstating natural drainage flows and water levels of existing habitats.

Waste Management Strategy

6.5.35 This strategy is required to reduce waste and environmental impacts of waste arising from the project works. This includes excess materials and spoil from the project. In the case of ecology, it is also important not to stockpile waste on the construction compounds where there is potential for protected species (or other species) to burrow or nest on suitable waste, hence creating a new ecological constraint to works.

6.5.36 This strategy will apply to all construction activities.

6.5.37 The CoCP will cover elements such as:

- Identifying waste materials;
- forward planning to reduce waste production;
- identifying recycling opportunities;
- management of unavoidable waste;
- mitigation of adverse impacts of waste generation;
- assessing and managing risk of waste materials; and,
- monitoring waste materials and their impact:
 - Permits and consents.
 - Safe storage and disposal – e.g. need to avoid dumping of spoil on habitats

Woodland, Trees and Hedgerows Strategy

6.5.38 This strategy is required to minimise impacts affecting woodland, trees and hedgerows and ensure reinstatement and compensatory planting is effective.

6.5.39 The CoCP will include elements such as:

- Constraints and permissions;
- arboricultural standards and practices;
- tree surveys;
- tree protection plans;
- preventative working practices – e.g. root damage avoidance areas;

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- reinstatement and compensatory methods; and,
- aftercare and monitoring of compensatory planting.

Birds, Bats, Red Squirrels and Dormice Strategy

- 6.5.40 This strategy is required to minimise impacts on breeding birds (including raptors) and other species using woodland habitat and hedgerows. It will be closely linked to the provision in the Woodland, Trees and Hedgerows Strategy above.
- 6.5.41 This will cover all construction activities impacting on Schedule 1 birds and qualifying species of SPAs where these species may use land outside of the designated site boundary for roosting, foraging, and breeding.

Amphibians and Reptiles Strategy

- 6.5.42 This strategy is required to avoid killing or impacting on the habitats of protected amphibians or reptiles during construction activities. This will cover all construction activities in the vicinity of known protected amphibian and reptile populations.
- 6.5.43 The CoCP will include elements such as:
- Licensing;
 - amphibian and reptiles surveys;
 - timing of works; and,
 - specific Plans to protect these species, either through precautionary working practices if there is only low risk to populations, or by making use of temporary exclusion fencing, capture and translocation, receptor enhancement.

Animal Welfare Strategy

- 6.5.44 The Animal Welfare Act 2006 protects all wild animals from unnecessary suffering so methods to prevent risk of an offence should be incorporated within the CoCP. These will include for example:
- Covering over any excavations overnight and providing ramps to allow animals to climb out if they fall in;
 - prevent access to the site by use of hoarding; and,
 - blocking off open pipework at the end of the working day.

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Environmental Incident Procedure Strategy

- 6.5.45 This strategy is required to ensure that environmental incidents are dealt with swiftly and appropriately, to minimise their impacts on the ecology along the project route.
- 6.5.46 This will cover the appropriate procedures to be followed in the event of an environmental incident such as a fuel spill or the release of a significant volume of silt. For the latter, trigger levels will be determined by the Water Quality Monitoring strategy (see above).

In-River Works Strategy

- 6.5.47 This strategy is required to ensure that impacts on watercourses and their surroundings are minimised, and that they are effectively safeguarded and reinstated.
- 6.5.48 This will cover all construction activities in or adjacent to watercourses.
- 6.5.49 The CoCP will consider elements including but not restricted to:
- Permits and consents;
 - flood assessment;
 - timing of work;
 - pollution prevention methods (as included in Water Pollution Prevention above);
 - weather and flow conditions;
 - methods e.g. damming/half & half/over pumping;
 - managing sediment and turbidity;
 - maintaining fish and otter passage;
 - rescuing fish and other species;
 - reinstatement;
 - reference to Bio security Strategy;
 - limit use of herbicides, on riverbanks;
 - protection of adjacent riparian habitats;
 - licensing for protected species where required (e.g. otter, water vole, freshwater pearl mussel, white clawed crayfish); and,
 - provision of membrane between riverbed and any backfill/concrete used to prevent contamination of substrate and water.

Noise and Vibration Strategy

- 6.5.50 This strategy is required to reduce potential risks to protected species through noise and vibration disturbance. In particular risk of disturbance to SPA birds, Schedule 1 birds, breeding birds on the nest, migratory fish (e.g. from piling operations) and otter holts.

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6.5.51 The CoCP will consider elements including but not restricted to:

- Timing of works to avoid overwintering birds, fish migrations;
- use of soft-start to drilling operations;
- use of vibration rather than hammer drilling; and,
- pre-start check for breeding birds in vicinity.

Air Pollution Strategy

6.5.52 This strategy is required to reduce potential risks from air pollution as a result of construction activity, which may adversely impact on certain habitats such as bogs, woodland with rich lichen and bryophyte flora and heath.

6.5.53 Risks include:

- Dust pollution through excavation, earthmoving equipment, vehicle movements;
- fine particulates (PM10); and,
- nitrogen dioxide from vehicle exhausts.

6.5.54 The CoCP will address these risks through provision of working methods to reduce emissions, such as:

- Dampening of construction areas in dry or windy weather to reduce dust emissions;
- not leaving vehicles running when stationary;
- covering stockpiled materials when not in use; and,
- minimising vehicular movement on site.

Light Pollution Strategy

6.5.55 This strategy is required to limit light dispersion from construction sites and access roads, particularly in areas of potential importance for roosting, foraging or commuting bats.

6.5.56 The CoCP will reduce risks through provision of appropriate working methods, such as:

- Working in daylight hours only; and,
- limiting security lighting to areas where required and using light deflectors to direct downwards away from habitats.

6.5.57 A working example which we think will be a helpful way of working is demonstrated in Table 6.1 below, but will need to be populated with the relevant habitat and species information and developed further. (Please note this is an incomplete table.)

Table 6.1 – Indicative Table only – Examples of Code of Construction Practice (CoCP) required working example. (Please note this is an incomplete table.)

Designated Nature Conservation Sites – International, European and National	Distance from DOL (km)	Route section	Examples of Risks from Construction	Examples of Code of Construction Practice (CoCP) required
See Consultation Documents - Vol2.7 Ch9 App9B & App9C				
SAC, SPA & Ramsar				
Drigg Coast SAC & SSSI	Within DOL	D1	<ul style="list-style-type: none"> • Pollution from sediment, chemicals, fuels & waste. • Damage to qualifying habitats of the SAC/SSSI. • Destruction/temporary loss of habitats supporting amphibians and reptiles including natterjack toads, great crested newts, adders. • Potential death and/or injury to protected amphibians and reptiles. • Introduction of non-native invasive species. • Localised hydrological impacts on dune habitats e.g. dune slacks and watercourses. • Obstruction to passage of otter or disturbance to holts/resting places. 	<ul style="list-style-type: none"> • Soil Management Strategy • Pollution Prevention Strategy • Waste Management Strategy • Amphibians and Reptiles Strategy • Bio security Strategy
Duddon Estuary SPA, Ramsar & SSSI	Within DOL	E2	<ul style="list-style-type: none"> • Pollution from sediment, chemicals, fuels & waste. • Destruction /loss of habitats supporting natterjack toads. • Potential for death or injury of natterjack toads. • Noise and human disturbance of qualifying 	<ul style="list-style-type: none"> • Soil Management Strategy • Pollution Prevention Strategy • Waste Management Strategy • Amphibians and Reptiles Strategy • Bio security Strategy • Land Drainage Strategy

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Designated Nature Conservation Sites – International, European and National	Distance from DOL (km)	Route section	Examples of Risks from Construction	Examples of Code of Construction Practice (CoCP) required
			<ul style="list-style-type: none"> bird species. Temporary disturbance/loss of foraging and roosting habitat of qualifying bird species. Introduction of non-native invasive species. Hydrological impacts on habitats. 	
Duddon Mosses SAC, SSSI & NNR	Within DOL	E2	<ul style="list-style-type: none"> Pollution from fuels, chemicals, sediment & waste. Air pollution. Changes in hydrology. Introduction of non-native invasive species. Compaction of peat/sensitive habitats. 	<ul style="list-style-type: none"> Soil Management Strategy Pollution Prevention Strategy Waste Management Strategy Land Drainage Strategy Bio security Strategy Air Pollution Strategy
Morecambe Bay SAC, SPA, Ramsar & SSSI	Within DOL	E2	<ul style="list-style-type: none"> Pollution from fuels, chemicals, sediment & waste. Introduction of non-native invasive species. Noise and human disturbance of qualifying bird species. Temporary disturbance/loss of foraging and roosting habitat of qualifying bird species. 	<ul style="list-style-type: none"> Soil Management Strategy Pollution Prevention Strategy Waste Management Strategy Bio security Strategy Noise and Vibration Strategy
River Derwent & Bassenthwaite Lake SAC, River Derwent & Tributaries SSSI	Within DOL	B1	<ul style="list-style-type: none"> Damage to habitats, and death/injury to or disturbance of species due to inappropriate in-river works. Obstruction to migratory fish and/or passage of otter. 	<ul style="list-style-type: none"> In-River Works Strategy Soil Management Strategy Pollution Prevention Strategy Waste Management Strategy Bio security Strategy

Designated Nature Conservation Sites – International, European and National	Distance from DOL (km)	Route section	Examples of Risks from Construction	Examples of Code of Construction Practice (CoCP) required
			<ul style="list-style-type: none"> • Pollution from fuels, chemicals, sediment & waste. • Introduction of non-native invasive species. 	
River Eden & Tributaries SAC & SSSI	Within DOL	C2	<ul style="list-style-type: none"> • Damage to habitats, and death/injury to or disturbance of species due to inappropriate in-river works. • Obstruction to migratory fish and/or passage of otter. • Pollution from fuels, chemicals, sediment & waste. • Introduction of non-native invasive species. 	<ul style="list-style-type: none"> • In-River Works Strategy • Soil Management Strategy • Pollution Prevention Strategy • Waste Management Strategy • Bio security Strategy
River Ehen SAC & SSSI	1.04	A1	<ul style="list-style-type: none"> • Damage to habitats and death/injury to or disturbance of species due to inappropriate in-river works. • Obstruction to migratory fish and/or passage of otter. • Pollution from fuels, chemicals, sediment & waste. • Introduction of non-native invasive species. 	<ul style="list-style-type: none"> • In-River Works Strategy • Soil Management Strategy • Pollution Prevention Strategy • Waste Management Strategy • Bio security Strategy
River Kent & Tributaries SAC & SSSI	0.37	Natland	<ul style="list-style-type: none"> • Damage to habitats and potential for death/injury to or disturbance of species due to inappropriate in-river works. • Pollution from fuels, chemicals, sediment & waste. • Introduction of non-native invasive species. 	<ul style="list-style-type: none"> • In-River Works Strategy • Soil Management Strategy • Pollution Prevention Strategy • Waste Management Strategy • Bio security Strategy
Solway Firth SAC & Marine dSPA	0.69	C2	<ul style="list-style-type: none"> • Pollution from fuels, chemicals, sediment 	<ul style="list-style-type: none"> • Soil Management Strategy

Designated Nature Conservation Sites – International, European and National	Distance from DOL (km)	Route section	Examples of Risks from Construction	Examples of Code of Construction Practice (CoCP) required
			<ul style="list-style-type: none"> & waste. • Introduction of non-native invasive species. 	<ul style="list-style-type: none"> • Pollution Prevention Strategy • Waste Management Strategy • Bio security Strategy
South Solway Mosses SAC & NNR	1.78	C2	<ul style="list-style-type: none"> • Pollution from fuels, chemicals, sediment & waste. • Changes in hydrology. • Introduction of non-native invasive species. • Potential for air pollution effects. 	<ul style="list-style-type: none"> • Soil Management Strategy • Pollution Prevention Strategy • Waste Management Strategy • Land Drainage Strategy • Bio security Strategy
Subberthwaite, Blawith & Torver Low Commons SAC	2.75	E2	<ul style="list-style-type: none"> • Pollution from fuels, chemicals, sediment & waste. • Changes in hydrology. • Introduction of non-native invasive species. • Potential for air pollution effects. 	<ul style="list-style-type: none"> • Soil Management Strategy • Pollution Prevention Strategy • Waste Management Strategy • Land Drainage Strategy • Bio security Strategy
Upper Solway Flats & Marshes SPA, Ramsar & SSSI	0.69	C2	<ul style="list-style-type: none"> • Pollution from fuels, chemicals, sediment & waste. • Introduction of non-native invasive species. 	<ul style="list-style-type: none"> • Soil Management Strategy • Pollution Prevention Strategy • Waste Management Strategy • Bio security Strategy
SSSI, NNR & LNR				
Annaside SSSI	0.34	D2		
Broad Dales SSSI	0.95	C2		
Clints Quarry SSSI	0.44	A2		
Crople How Mire SSSI	1.86	D1		
Drigg Dunes & Gullery, Ravenglass LNR	0.6	D1		
Drigg Holme SSSI	Within DOL	D1		
Duddon Valley Woodlands SSSI	0.01	E2		

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Designated Nature Conservation Sites – International, European and National	Distance from DOL (km)	Route section	Examples of Risks from Construction	Examples of Code of Construction Practice (CoCP) required
Halsenna Moor SSSI & NNR	Within DOL	D1		
Heysham Moss SSSI	Within DOL	H3		
Kirkby Moor SSSI	0.33	E2		
Low Church Moss SSSI	Within DOL	A1		
Lune Estuary SSSI	0.31	H3		
Millow Ironworks LNR	0.73	E1		
Orton Moss SSSI	0.05	C2		
Shaw Meadow & Sea Pasture SSSI	0.03	D2		
Siddick Pond LNR	Adjacent to DOL	B1		
Silver Tarn, Hollas & Harnsey Mosses SSSI	0.57	A1		
South Walney & Piel Channels Flats SSSI	Within DOL	H1		
Thornhill Moss and Meadows SSSI & NNR	1.86	C1		
Wedholme Flow SSSI	1.78	C2		
County wildlife sites				
Protected species outside sites identified above				

6.6 Temporary compounds

- 6.6.1 The locations of the temporary compounds are noted, as is the indicative site compound plan. However, more information is required to understand the impacts and works that will be on site. Additionally, clear restoration or future use plans are required to ensure long terms impacts are mitigated and any associated benefit of the site secured.

6.7 132kV Overhead line removal

- 6.7.1 It is considered that 132kV line removal should be undertaken in consultation with the landowner and in the context of future land use of the sites. Therefore, it may be beneficial to remove outgoing infrastructure to a greater depth.

6.8 Tunnel under Morecambe Bay

- 6.8.1 The PPA Group have significant concerns regarding the lack of detail related to the tunnel head locations. This is highlighted across the PPA Group's response. The Group do not consider that there is sufficient detail to fully assess the impact of the onsite processes and therefore the adequacy of mitigation options. Appropriate mitigation options may include different design/layout/process choices or options and these will have to be provided for either the operational or construction phases to allow proper consideration of the likely impacts. The PEI Report and consultation materials do not provide the reassurance that the development - with or without modification - can be constructed and operated without a significant impact on nearby receptors.

6.9 Construction Programme

- 6.9.1 The PPA Group understand that the detailed construction programme is in development, however, it is considered that lack of detail has made assessment of the project impacts (and cumulative) and understanding of the order construction difficult. Additionally, it is noted that 'enabling works are mentioned in paragraph 4.9.3, however, it is unclear whether these works will be secured within the DCO and therefore within the Draft order Limits, or whether they will come forward separately under the Town and Country Planning Act (1990), as amended. If early works are required National Grid should engage with the relevant planning authority from an early stage.

6.10 Project Description

- 6.10.1 This section provides an overview of the Project, subsection by subsection. It describes the key elements of the Project, including; the route of the 400kV connection, the main modifications to the ENW network and the main 132kV overhead line modifications and removals. The 400kV connection described is based on the use of steel lattice pylons, unless

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stated otherwise (i.e. low height pylons or undergrounding). The topic-by-topic analysis provides a full assessment of the detailed route together with mitigation and changes that are required. The proposed project (the subject of consultation) includes the following principal elements:

- Construction of 400kV transmission connections totalling approximately 163km from Harker to Heysham. This connection comprises overhead lines, underground cables and the use of tunnelling technology;
- construction of new 400kV substations at Stainburn and Roosecote and extensions to the existing 400kV substations at Harker and Middleton (Heysham);
- relocation of existing 400kV overhead line west of Harker;
- construction of a tunnel beneath Morecambe Bay between tunnel head houses at Roosecote and Middleton (Heysham);
- modifications to existing 132kV distribution infrastructure and removal of certain existing 132kV overhead lines (including at Heysham);
- works to modify the existing Electricity North West Limited (ENW) 132kV and lower voltage network where necessary to allow construction of the 400kV connections;
- modifications to the railway network to provide access to temporary rail sidings in certain locations;
- areas of mitigation, restoration and/or reinstatement; and,
- associated works, for example, temporary access roads, highways works, temporary compounds (rail, helicopter and general construction) two temporary shafts, work sites and ancillary works.

6.10.2 The PPA Group acknowledge that positive ongoing engagement has led to extensive mitigation and redesign of the NWCC project.

6.10.3 However, there are a number of areas of concern, where the PPA Group consider that National Grid has not appropriately addressed concerns and the significant impacts of the NWCC Project. These are summarised below and addressed in detail within the topic-by-topic analysis that follows this chapter. Overall, the PPA Group welcome the principle:

- To remove additional existing ENW lines to reduce cumulative impact and clutter in a number of locations, notably around the FRE WHS at Carlisle, Broughton Moor and East of Whitehaven; and,
- to provide 23.4km (14.5 miles) of new 400kV underground cable through the western section of the Lake District National Park (LDNP), and the decision to remove the existing Electricity North West 132kV overhead line through the same area.

6.10.4 The area of the consultation is divided up into two parts in order to better help consultees understand the areas that affect them – North (Moorside to Harker near Carlisle) and South (Moorside to Heysham). National Grid has further divided these into subsection below;

6.11 Summary of Mitigation required by Subsection

- 6.11.1 The following section provides a summary of the main design mitigation which is necessary for each Sub Section. This highlights key matters that are raised in the technical specialist report that will need to be addressed prior to submission of the DCO to the Secretary of State. The topic based chapters provide a description of all mitigation measures as appropriate.
- 6.11.2 A cross-cutting theme in reviewing the PEI is the paucity of information contained in most of the technical chapters for consultees to be able to adequately suggest additional locations or measures for suitable mitigation. Information has been presented in a confusing manner, and this has also made the task in responding to the PEI to identify appropriate mitigation strategies extremely difficult in the circumstances. It is clear that the information has had to be presented at such a pace that significant gaps have arisen. These matters will need to be addressed by the time the ES is finalised in order for the PINS to properly assess the full implications of the development and its effects on the local area. However, this has in some cases, brought into question the adequacy of consultation through the lack of clarity and content for critical environmental matters that have been used for decision making, design options or site selection.
- 6.11.3 The following table includes generic information relating to all the Sub Sections as well as more specific information. The generic information has been inserted into the first of the Sub Sections A1 (Moorside – Thornhill). The reader is then referred to this text in subsequent Sub Sections to reduce duplication. Where there is specific information relevant to the Sub Section, then this is contained only within that specific Sub Section. In the case of Landscape & Visual matters, the text only relates to the specific Sub Section, as there is no generic information applicable across all areas.

North Route

Table 6.2, Subsection A1 – Moorside to Thornhill

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>There is potential for cumulative adverse effects resulting from the construction of the 400 kV line and pylons and the proposed Moorside Power Station and substation as well as construction of bellmouths, access tracks and ancillary development.</p> <p>There is insufficient information available to fully understand the scale and extent of landscape & visual effects, and appropriate mitigation is necessary, particularly in relation to reducing the effects on the settlements of Beckermeth and Braystones.</p> <p>Whilst mitigation proposals such as new planting would be difficult to implement</p>

Topic Area	Description of required mitigation
	<p>given the prevailing landscape character, it is considered necessary that there are opportunities committed to introduce location specific mitigation once the full extent of the proposed Moorside Power Station and substation are understood.</p>
Ecology	<p>Generic issues common to all Sub Section areas relating to ecology are as follows.</p> <p>Overall, insufficient information has been presented in the PEI to determine the effects of the development on ecology. This means that it is not possible to identify specific bespoke mitigation for locations and to determine if this is adequate to continue route location. Evaluation and assessment should not be attempted until this can be based on robust evidence, as it may well be incorrect or misleading.</p> <p>The Environmental Statement should demonstrate that appropriate and proportionate mitigation/ compensation for unavoidable impacts will be delivered, i.e. that the applicant will not damage designated sites and priority habitats and leave it to the landowner to restore habitats. The Environmental Statement will need to demonstrate how significant adverse effects on, for example, SSSIs resulting from pylon removal would be avoided, mitigated or compensated.</p> <p>Volume 5.2 Code of Construction Practice: Table 5.6 Ecology and Nature Conservation lists measures, which appear generally appropriate for the protection of biodiversity. However, while some are generic and as a standard are left to pre-construction, some should properly be addressed prior to determination. For example, surveys for protected species immediately prior to site clearance/ development works (pre-construction) are appropriate as a precaution (i.e. for mobile species which might colonise prior to works on site), but only where adequate survey has been carried out in advance of determination to inform a robust assessment of impacts.</p> <p>Moreover, for most protected species affected by the development, pre-construction precautionary survey would be expected to form part of a wider biodiversity mitigation strategy, which will need to be approved in advance. Whilst it will undoubtedly be appropriate for the Ecological Clerk of Works to work with the contractor where designated sites and important habitats are affected, this should be to ensure that avoidance/ mitigation/ compensation measures approved as part of the permission are implemented in full, and not to formulate/ agree mitigation on an ad hoc manner once work has commenced.</p> <p>Comments in relation to the Code of Construction Practice include:</p> <p>1) where disturbance to/ loss of bat roosts is unavoidable updated surveys and derogation licences should be obtained; specific mitigation measures to be outlined in the Biodiversity Mitigation Strategy:</p>

Topic Area	Description of required mitigation
	<p>2) where any European protected species is affected, the Environmental Statement must include sufficient information to enable the determining authority to engage with the requirements of the Conservation of Habitats and Species Regulations 2010 (as amended) in the making of the DCO decision;</p> <p>3) post-construction planting measures appear to be minimal, with some areas of woodland planting already approved for the existing substation. The Environmental Statement should not double-count mitigation;</p> <p>4) the Environmental Statement should clarify why it is considered appropriate to damage habitats within designated sites without proposing mitigation/compensation.</p> <p>5) with regard to protection of the water environment, there is apparently no specific mention of mitigation for H3 dewatering effects on adjacent designated sites, although this was thought to be a potentially significant impact.</p> <p>6) hydrogeological effects on SAC habitats dependant on groundwater will need to be assessed under the Habitats Regulations where there is hydrogeological connectivity to designated sites.</p> <p>7) loss of red squirrel habitat and associated fragmentation of habitat due to woodland clearance is of significance to red squirrel populations and should be properly assessed.</p> <p>8) electro-magnetic fields and impact on aquatic species – where these may affect qualifying species of SACs e.g. migratory fish such as Atlantic salmon, this effect will need to be assessed based on robust baseline evidence under the Habitats Regulations.</p> <p>9) clearance of a swathe of woodland then allowing scrub to regenerate later on does not mitigate or compensate for loss of this habitat or for loss of habitat and fragmentation of populations of red squirrel where present.</p> <p>10) in using biodiversity offsetting metrics, there may be an expectation of higher ratios of replacement than 1:1, especially where Habitats of Principal Importance (Section 41 of the NERC Act, 2006) are affected. In particular, ancient woodland and mature broadleaved on ancient woodland cannot be replaced, so additional compensation will be required (and because of the irreplaceable nature, much higher ratios are common in this regard). The clearance corridor might increase biodiversity for some species but may also fragment habitats/populations of other species such as red squirrel.</p> <p>A Habitats Regulations Assessment will be necessary, but there is no evidence of any</p>

Topic Area	Description of required mitigation
	<p>Assessment of Likely Significant Effects (ALSE) or full Appropriate Assessment.</p> <p>Bio security in relation to invasive species throughout the length of the project and on any land to be used for associated works or storage should be considered as a potentially high risk to biodiversity and as such very clear guidelines must be included within the Construction Environmental Management Plan to minimise risk. This needs to be considered before the start of the scheme and clarity provided in the ES as to how this issue will be dealt with prior to any works commencing.</p>
Historic Environment	<p>Generic issues common to all Sub Section areas relating to Historic Environment are as follows.</p> <p>In general proposed mitigation appears acceptable, however, there is no detail provided in order to determine if the measures to be implemented are appropriate and in accordance with Best Practice standards (e.g. CIFA and Historic England guidance). The mitigation therefore needs to demonstrate better robustness by accordance with such guidance or state why this has not been adhered to.</p> <p>However, there are deficiencies in the way that mitigation material has been presented for Historic Environment to be able to adequately comment Sub-Section by Sub-Section, and there are deficiencies in the assessments of impacts throughout the PEI, which therefore makes it difficult to determine the adequacy of mitigation proposed. This is a weakness in the clarity to the reader or assessor, including the Secretary of State in the future.</p> <p>The completion of some evaluation work and further surveys are listed under the mitigation for construction. However, these works will need to be undertaken prior to the construction of the Proposed Development.</p> <p>It is acknowledged that further investigation of the non-designated archaeological resource in areas where undergrounding is proposed would be carried out or ongoing. This is welcomed. An appropriate scheme of mitigation of construction phase effects, in the form of archaeological investigation will be necessary in these areas, as proposed in Volume 2.4, Chapter 8. The completion of some evaluation work and further surveys are listed under the mitigation for construction. However, these works will need to be undertaken prior to the construction of the Proposed Development.</p> <p>The detail of draft Written Schemes of Investigation and Method Statements should be consulted upon with the statutory consultees prior to their implementation.</p> <p>Within the assessment in Volume 2.5, Chapter 8, the requirement for mitigation is only triggered when the scheme will result in moderate adverse effects or worse. This neglects slight adverse effects which, although not significant in EIA terms,</p>

Topic Area	Description of required mitigation
	<p>would result in 'less than substantial harm' to heritage in NPPF terms. This needs changing in the ES Historic Environment Mitigation Strategy.</p> <p>The methodology prescribed in <i>HE GPA 3 Setting of Heritage Assets</i> which is being followed throughout the assessment, has a fourth step involving maximising benefits and minimising harm. There is therefore a responsibility to minimise harm, at any level, to heritage assets as part of a proposed scheme. The information submitted as part of the PEI fails to demonstrate that the proposal does this. Micro-siting of project infrastructure would go some way towards minimising harm, however there are no instances discussed where micro-siting has taken place, despite it being listed as a mitigation measure in Table 8.6 in Volume 2.2, Chapter 8.</p> <p>Section 8.3.24 of Volume 2.3, Chapter 8, discusses mitigation of the construction phase effects on the LDNP WHS (WHS2). It states that the effects of the scheme reduce to neutral if assets are 'avoided or reinstated'. Reinstatement is not necessarily considered to be an adequate mitigation measure for heritage features. Detailed rationale and designs for the proposed reinstatement would be required before this could become an agreed mitigation measure, and only in areas where this would be deemed an appropriate response to the impacts of the scheme.</p>
Transport	<p>Generic issues common to all Sub Section areas relating to Transport are set out as follows:</p> <ul style="list-style-type: none"> • The PEI does not identify what the environmental impacts if increased traffic, particularly HGVs is likely to be. The following should be assessed in greater detail for all roads where there may be a significant environmental impact: severance; driver delay; public transport passenger delay; pedestrian/cyclist/equestrian delay; pedestrian amenity; fear and intimidation; accidents and safety; and hazardous loads; • a Transport Assessment has not been carried out, which means that National Grid has not included any design mitigation for the impacts on the road network. The TA would carry out a detailed analysis of trip generation and assignment, identifying where there are any capacity issues, and developing suitable mitigation measures; • a Travel Plan for workers involved in the construction of the Tunnel Heads for both Barrow and Heysham would help minimise the impact of trips on both towns and provide a necessary understanding of mitigation early on; • a multi modal option should be considered for the Northern Strategic Route and a full and proper assessment of the capacity of <u>all</u> rail and port facilities should be carried to determine what measures are required to ensure that the ports have sufficient capacity for the forecast increases in usage. The Cumbria Coast Line for

Topic Area	Description of required mitigation
	<p>the Northern Strategic Route will be at or over capacity from 2020 to 2024, and there are a number of proposals that will result in increased usage of the line – including the Moorside Power Station and West Cumbria Mining proposal. Whilst the NWCC will contribute to the increase, there is a compelling case for making improvements to the Cumbria Coast Line given the impacts of this development, the Moorside Power Station and West Cumbria Mining developments;</p> <ul style="list-style-type: none"> • the National Grid analysis concludes that the Port of Workington could cater for the forecast increases through the multi modal option, however no analysis is presented as to what improvements to the connections from the rail network are required. It is concluded therefore that additional work is still required to determine whether the multi modal or road only option should be pursued and should be clearly presented; • a multi modal approach should be adopted for the central strategic section. The reasons are that development of the Moorside Power Station will have a significant impact on the roads affected by the Central Strategic Route – as acknowledged by National Grid. In terms of the Central Strategic Route, the Cumbria Coast Line for the section between Whitehaven and Sellafield, will be over capacity from 2019 to 2024. For sections of the A595 from Whitehaven to Sellafield which currently experience congestion, the forecast increases in HGV movements in the road based option are likely to have a significant impact; • a multi modal option should be adopted for the southern strategic section due to the large benefits it brings in terms of reducing HGV flows on a number of roads that are unsuitable for use by HGVs especially for Barrow and Ulverston where additional work is required to assess the capacity of key junctions and for Barrow, a more detailed assignment of traffic is required; • there is a case for a multi modal option for the Heysham strategic section, as the PEI does not demonstrate that the Port will have sufficient capacity. As in Barrow, the same argument applies to the assessment of impacts on the roads due to commuter trips in Heysham and Morecambe; and, • there will be significant numbers of employees working on the project for a prolonged period of time. For example, during construction of the Morecambe Bay Tunnel up to 470 operatives will be on site at each end of the tunnel at peak times of construction activity. The trips however have been loaded onto the strategic network at appropriate loading points, without any consideration of how they will reach the strategic route network. In Barrow for instance, all trips are loaded onto the A5087 or A590 at various significant junctions. A more detailed analysis is required to fully understand the impacts of employee trips and identify whether any highway mitigation is required.

Topic Area	Description of required mitigation
	<p>The following measures should also be adopted:</p> <ul style="list-style-type: none"> • production of a Construction Management Plan setting out a strategy to minimise the impact of HGV traffic; • production of an abnormal load route strategy; • restriction of hours for HGVs where routes pass schools; and, • condition surveys for all routes/PRoWs with a commitment to restore all to their previous condition as a minimum. <p>The PEI has not assessed the potential for additional traffic resulting in increased accidents, and the data has not been disaggregated to allow accident clusters (on links or junctions) to be identified. More detailed analysis is required to fully identify the potential risks and also to develop measures to ensure that the proposed routes are appropriate and safe.</p> <p>For Public Rights of Way and cycle routes the information provided lists a number of interventions that will be implemented depending upon the exact details of the impact. A PRoW Management Plan will need to be developed setting out measures that would be applied to reduce the potential disruption. There is no detail at this stage provided of how the measures would be implemented – e.g. diversions, fencing, scaffolding. Without this level of detail, it is not possible to determine whether the proposals will successfully mitigate the developments impacts.</p> <p>Where PRoW/cycle ways are impacted by the proposals there may be opportunities to improve existing facilities when reinstating routes. This should be committed to as a positive principle. The detailed consideration of impacts on specific PRoWs is set out in the Transport section of the Joint response.</p> <p>With regard to the site accesses for compounds and works along the route of the proposed development, there are a number of repeated issues that will require further investigation and mitigation for the sake of lessening traffic impact and ensuring safety as follows:</p> <ul style="list-style-type: none"> • poor/restricted visibility; • narrow road widths and steep gradients; and, • high network sensitivity and traffic flows. <p>In terms of specific transport issues relating to this Sub Section, site accesses 400C37, 400C39 & 400C40 to 400C44 are located off High House Road and a number of unnamed roads between St. Bees, Bigrigg and Egremont. The carriageways are generally narrow with a typical width of 4.2m and in many areas there are high banks on each side and High House Road is signed as being unsuitable for Caravans and HGVs – these require significant mitigation.</p>

Topic Area	Description of required mitigation
	<p>The northern section of the route through Linethwaite will have some 19 HGVs daily and a further 31 HGVs enter the route from Bigrigg. The roads are not wide enough to accommodate either two lorries or a car and a lorry passing each other. To make these routes safe all traffic must be subject to one-way temporary traffic orders with non-construction traffic being routed to Grove Road and Egremont town centre.</p> <p>The 400C39 access point is a long gravelled farm track also 4.2m in width, positioned on a slight bend. This access point will serve 3 400kV pylon construction sites, and visibility from this access point is also poor. A lower visibility splay may be appropriate, but the results of a speed survey will be required.</p> <p>The C2C (NCR 72) long distance cycleway and two long distance footpaths (Coast to Coast and St Begas Way) have been identified within this area. The C2C will be impacted by the provision of an access track crossing the route, stringing work between new pylons and removal of existing overhead line. Whilst the package of mitigation measures are generally considered to be appropriate, for the importance of the footpaths and cycleway the measures are considered generic only, and more detailed proposals are required to fully understand how impacts will be mitigated.</p>
Socio-Economics, Recreation and Land-Use	<p>Generic issues common to all Sub Section areas relating to Socio Economics, Recreation and Land-Use are as follows.</p> <p>In terms of the local supply and chain and local market, additional mitigation required relating to:</p> <ul style="list-style-type: none"> • delivery and implementation of (and compliance with) the Employment and Skills Framework (ESF) outlining in detail how National Grid will work with other local employment and recruitment agencies and existing training/infrastructure providers to maximise local benefits, including through the provision of revenue and capital support. This should encompass the setting up of a local employment partnership, targeted at the long term unemployed; • partnership working with stakeholders (local employment and recruitment agencies and training providers), including revenue and capital contributions towards increased capacity to meet the skills demands (e.g. demand for construction skills is forecast to rise exponentially and it is identified as a sector with immediate and critical skills shortages); and, • pre-recruitment skills training and upskilling training support and work with the existing training infrastructure/providers to ensure that they respond to the gaps in provision now, so that the pipeline of skills will be available once the project becomes operational. It is clear that there is a risk, due to identified skills shortages, to National Grid achieving its target of 20% of jobs being taken up by

Topic Area	Description of required mitigation
	<p>local residents. An integrated labour market and skills model is required to highlight the scale of the challenge and need for investment in skills provision.</p> <p>In terms of the visitor economy, there is a failure to consider effective mitigation relating to:</p> <ul style="list-style-type: none"> • the effect on the visitor economy from traffic disruption and congestion - it is essential that a multi-modal transport strategy is developed to minimise the effects on the visitor economy due to a lack of sustainable transport connectivity between key gateways into the county and to key visitor destinations; • the use of undergrounding and other non-pylon technology in additional areas along the route - further consideration needs to be given to the use of undergrounding and other non-pylon technology, particularly where major visual and landscape effects have been identified - this should be based on a reassessment of the significance of the effect on the visitor economy; • a 'resilience' or 'crisis fund' is required to off-set the adverse effect of the development upon small and medium sized businesses, particularly those still recovering from the recent floods; • countering the adverse impact the Project is likely to have on perceptions of Cumbria (especially the Lake District National Park) and North Lancashire as a visitor destination - more active mitigation in the form of marketing and promotional activities will though also be necessary to help offset potential negative visitor perceptions of the Project to include a broad Communication Plan that is developed by National Grid in conjunction with the Cumbria and Lancashire LEPs and tourism bodies; and, • minimising impact of the project workforce of visitor accommodation supply - due to National Grid's flawed approach to assessing the significance of the effect on visitor accommodation supply, it is unlikely that the mitigation currently proposed will be sufficient. Further support is therefore needed to increase the supply of temporary worker accommodation in key areas where there is likely to be a capacity constraint. This will need to include funding following the construction phase to convert vacant worker accommodation to other uses. <p>The Local Liaison Plans proposed by National Grid are not wide enough in scope to counter the potentially significant adverse impact the Project could have on perceptions of Cumbria and North Lancashire as a visitor destination. A broader Communications Plan is required, targeted at ensuring people know the county is still 'open for business'.</p> <p>In terms of Sub Section specific socio economic matters, there is potential for</p>

Topic Area	Description of required mitigation
	<p>significant effects on the Coast to Coast (C2C) St Begas Way long distance footpaths and on the unique appeal of the LDNP where there is a risk of significant adverse effect upon the visitor economy in terms of affecting longer term visitor perceptions. Linked to landscape and visual impacts and recognising the importance of PRoWs to the tourism offer of the Cumbrian visitor economy, a funded package of improvement works to receptors of higher sensitivity, including the C2C cycle route and Hadrian's Wall National Trail, is required as part of a Public Rights of Way Management Plan (PRoW MP). This would need to align with Coastal Team Growth Plans and other wider sub-regional plans such as the West Cumbria Corridor Travel Plan.</p> <p>In terms of land-use and planning, there is a concern that that the development may impact on land promoted for temporary worker accommodation at Mirehouse, Whitehaven, as well as a proposed Whitehaven Eastern Relief Road. There are also likely effects on land allocations in the Copeland Local Plan Core Strategy (Ehen /Keekle Valleys Tourism Opportunity Site and a possible Opportunity Site at Hensingham Common which are uncertain – these will need mitigation to avoid long-term adverse effects.</p>

Table 6.3, Sub Section A2 – Thornhill to Whitehaven

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>Major or major/moderate adverse effects are predicted in the PEI for properties in Middletown and Keekle, which lie close to the proposed 400kV route. Effects on the St Bees Heritage Coast and the setting of the LDNP will require further assessment before adequate mitigation can be suggested.</p> <p>Whilst subsection specific mitigation proposals have been prepared for Keekle, there is potential for the magnitude of change to be much higher from this location, albeit for a short duration, as mitigation planting will not have established sufficiently to mitigate against construction stage views. In addition, a range of cable undergrounding works will take place to the west of the settlement and there is no indication of the effects resulting from the works within the narrative.</p> <p>The effects of the construction stage on a number of local roads, the A595, NCRs and PRoWs (including the Coast to Coast Walk) could be higher than that stated, and the effects of the works have been underplayed within the assessment. Localised major or major/moderate adverse effects are also predicted in the PEI for parts of the Coast to Coast path.</p>

Topic Area	Description of required mitigation
	In light of these potential impacts both during the construction and operational phase, National Grid will need to demonstrate that there will be sufficient mitigation to off-set the significant landscape & visual effects of the development in this sub section.
Ecology	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues relating to this Sub Section access 400C32 is located off an unnamed road from the B5295 to the east of Hensingham. This access point serves one pylon construction site. The road has a narrow carriageway width and it would be necessary to temporarily widen this road to accommodate HGVs.</p>
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In addition, in terms of Sub Section specific matters, there is potential for significant effects on the Coast to Coast (C2C) cycle route long distance footpaths and on the unique appeal of the LDNP where there is a risk of significant adverse effect upon the visitor economy in terms of affecting longer term visitor perceptions. These negative perceptions will need to be mitigated.</p> <p>In terms of land-use and planning, there is a concern that that the development may impact on land promoted for temporary worker accommodation at Mirehouse, Whitehaven, as well as a proposed Whitehaven Eastern Relief Road. There are also likely effects on land allocations in the Copeland Local Plan Core Strategy (Ehen /Keekle Valleys Tourism Opportunity Site and a possible Opportunity Site at Hensingham Common which are uncertain – these will need mitigation to avoid long-term adverse effects.</p>

Table 6.4, Sub Section B1 – Whitehaven to Seaton

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>The proposed 400kV substation and the 132kV substation extension are located in</p>

Topic Area	Description of required mitigation
	<p>proximity to the eastern edge of Stainburn and the minor road which extends between Great Clifton and Stainburn. Subsection specific mitigation proposals have been prepared near Stainburn including undergrounding. There will also be construction stage effects on views from Moresby Parks, Winscales, Stainburn, Seaton, Great Clifton and scattered individual properties (e.g. East Town End Farm, Stainburn Hall Farm, and Gale Brow) adjacent to these settlements.</p> <p>Whilst mitigation planting has been proposed around both substations, it is considered that this will not provide an effective screening effect until after the construction stage is complete. There is also potential for increased cumulative effect as a result of locating the new 400kV OH line near existing wind farms (East Town End Wind Farm, Fairfield Wind Farm). In addition, undergrounding works to 132kV, 33kV and 11kV cables are proposed in this area and there is insufficient detail and assessment of the effects of this for the construction phase, particularly as it could result in the removal of existing vegetation which currently provides a screening effect to the substation locations.</p> <p>All these adverse effects should be discussed in more depth within the ES, and further mitigation should be considered to off-set the adverse effects for both the construction phase and operational stage.</p>
Ecology	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In addition in terms of Sub Section specific matters, some of the data search feedback appears to be lacking in known species for example, red squirrels, in the Stainburn/Workington area (e.g. 9.3.56). Searches undertaken from this source in the Workington and Stainburn area have revealed tens of records of red squirrel so we would have expected more records covering the length of the B1 route. Additional survey will be necessary to fill the gaps in the data records, and appropriate mitigation will be necessary to ensure that local populations are not adversely affected.</p>
Historic Environment	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.</p>
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues relating to this Sub Section, given the potential increases in flow (particularly HGV) there may be significant issues on the A595 from Low Moresby to Sellafield – this road is congested and there is potential for increased delays and accidents.</p>

Topic Area	Description of required mitigation
	<p>Whilst the Cumbrian Coast Line between Whitehaven and Sellafield is forecast to be over capacity from 2019 onwards there is a compelling case for improvements to the line given the impacts of this development and the Moorside Power Station and West Cumbria Mining developments. The National Grid analysis concludes that the Port of Workington could cater for the forecast increases through the multi modal option. The impact on the Workington Rail Depot is assessed as major as there are constraints on the access to the depot from the rail network. However, no analysis is presented as to what improvements to the connections from the rail network are required. It is concluded therefore that additional work is required to determine whether the multi modal or road only option should be pursued.</p> <p>Accesses 400C16 & 17 are located off the A595 to Stainburn Road. This access points serves 4 pylon construction sites as well as a number of alterations to the 132kV line. The DCO order limits appear to include sufficient land for the necessary plays. A speed survey is needed to justify whether the lower visibility distances are acceptable.</p> <p>400C19 has particular issues regarding cycle ways and is included as an example although the A595 is a trunk road at this point. Additional mitigation measures will be needed in relation to the cycle use.</p> <p>400C27 is located south of Pica, off an unnamed road. This access point is a field gate and will serve one 400kV pylon construction site. The visibility is poor being only 50m in each direction, significantly less than the 215m requirement for a national speed limit road. The access route has a carriageway width too narrow for a car and a lorry to pass and includes a 3.5m wide stone bridge. Temporary but significant suitable mitigation in the form of widening the road will be necessary.</p> <p>Within this area the Workington branch of the C2C (NCR 71) long distance cycleway is identified as high sensitivity and one long distance footpath (the Allerdale Rambler) is identified as medium sensitivity. Whilst the package of mitigation measures are generally considered to be appropriate, for the importance of the footpaths and cycleway the measures are considered generic. We would wish to see more detailed proposals to fully understand how impacts will be mitigated.</p>
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters there is potential for significant effects on the Coast to Coast (C2C) cycle route, St Begas Way long distance footpaths and on the unique appeal of the LDNP where there is a risk of significant adverse effect upon the visitor economy in terms of affecting longer term visitor perceptions. These negative perceptions will need to be mitigated.</p>

Topic Area	Description of required mitigation
	In terms of land use and planning, impacts on the long-term use of Ehen/Keekle Valleys Tourism Opportunity Site; Lillyhall Industrial Estate, Whitehaven Commercial Park and Derwent Forest Site, Whitehaven Commercial Park and the Port of Workington, necessary mitigation is required to avoid these sites becoming sterilised to future development.

Table 6.5, Sub Section B2 – Seaton to Tallentire

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>The decommissioning of the two 132kV lines and introduction of the 400kV line at a greater distance to Broughton Moor will reduce the construction stage effects in the long term, it is anticipated that the construction effects could potentially be higher than that stated as the decommissioning works on both 132kV lines and the 132kV undergrounding works will occur in very close proximity to the town. The effect of undergrounding the 132kV cable in proximity to the settlement may result in the loss of vegetation, and any replacement planting will take 10-15 years to fully contribute a mitigating effect. Further mitigation is therefore necessary to off-set the short to medium term effects.</p> <p>Concern is expressed at the absence of supporting photography or photomontages included within the PEI which can help to verify the likely impacts of the 400kV line on the setting of the LDNP and the Solway Coast AONB.</p> <p>Further mitigation may be necessary to off-set potential adverse operational impacts.</p>
Ecology	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues relating to this Sub Section, given the potential increases in flow (particularly HGV) there may be significant issues on the A594 through Dovenby – potential for increased severance, pedestrian amenity, fear and intimidation, and potentially accidents.</p> <p>The multi modal option reduces the volume of HGVs on the strategic network – by</p>

Topic Area	Description of required mitigation
	over 100 per day on the A66 east of Cockermouth. There are slight increases on the A595/A594 from the A66 to Dearham.
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters and land use and planning, impacts on the long-term use of Ehen/Keekle Valleys Tourism Opportunity Site; Lillyhall Industrial Estate, Whitehaven Commercial Park and Derwent Forest Site, Whitehaven Commercial Park and the Port of Workington, necessary mitigation is required to avoid these sites becoming sterilised to future development.</p>

Table 6.6, Sub Section B3 – Tallentire to Aspatria

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>There is potential for higher (major or major/moderate adverse) effects to be experienced from Hayton and Prospect and scattered individual properties, and moderate adverse effects from Bullgill, Gilcrux, Oughterside, and Yearngill as there will be a range of construction and undergrounding works occurring within proximity to the settlements. Consideration should be given to mitigate the effects of the construction period on these locations. There may also be localised adverse effects on PRowS between Bullgill and Gilcrux.</p> <p>For the operational phase, further consideration is required to mitigate the effects of the proposed 400kV route, which departs from the existing 132kV routes in several locations so there is potential for higher levels of effect to be experienced from individual properties where the new pylons will be located in proximity to the 132kV lines (such as at Whitelees (NE of Hayton), Moor Pit Cottage, Westmoor End, Gallowbarrow Cottages (this is located close 400kV line and there is proposed 132kV undergrounding work here), Housenrigg and Housenrigg Cottages. This more erratic alignment could potentially lead to a more cluttered appearance than the long, linear 132kV alignment, but there is insufficient photography and photomontages to verify this.</p> <p>Consideration should be given to further mitigate these adverse effects, including undergrounding the 132kV line.</p>
Ecology	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.

Topic Area	Description of required mitigation
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues relating to this Sub Section, given the potential increases in flow (particularly HGV) there may be significant issues on the A596 through Aspatia – potential for increased severance, pedestrian amenity, fear and intimidation, and potentially accidents.</p> <p>Accesses 400N42/400N41 are located on the B5301 off the Aspatia loop road. As the loop road goes past Beacon Hill School, extra mitigation measures such as restricting the hours during which HGVs can use the route should be considered. The loop road re-joins the A596 via North Road. In places this road is approx. 4.4m wide and so is not capable of accommodating two lorries or a car and a lorry to pass each other and so a clear mitigation solution is required to understand how this proposal would work.</p>
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters and land use and planning, impacts on the long-term use of Ehen/Keekle Valleys Tourism Opportunity Site; Lillyhall Industrial Estate, Whitehaven Commercial Park and Derwent Forest Site, Whitehaven Commercial Park and the Port of Workington will require necessary mitigation to avoid these sites becoming sterilised to future development.</p>

Table 6.7, Sub Section C1 – Aspatia to Wigton

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>The predicted effects of the 400kV line and 132kV line on the setting of the AONB and the LDNP have not been assessed in the PEI. The proposed 400kV route departs from the existing 132kV route corridor across much of the subsection so there is potential for an increased effect as a result of OH line infrastructure extending across a wider overall corridor.</p> <p>After the construction phase, the proposed route will extend closer to the southern edge of Blencogo than the existing 132kV line (to be removed) and as evidenced on</p>

Topic Area	Description of required mitigation
	<p>Figure 7.10.3b (Viewpoint C1-107), the new pylons would break the skyline in views looking south and south east towards the lakeland fells. In addition, when combined with the existing 132kV lines, the 400kV line will envelope properties at Gill Farm, Low Scales and Greenrigg Villa. As such, there is potential for the new pylon structures to appear more prominently in views from these locations. Similar effect will occur in Waverton.</p> <p>There is potential for the new pylons to appear more prominently in views from Low Scales, Blencogo, Waverton and individual properties. These may break the skyline in views looking south and east towards the Lakeland fells. Moderate adverse effects are also predicted for Bromfield, Wheyrigg, Langrigg, Waverbridge and Moor Row.</p> <p>Consideration should therefore be given to additional mitigation the adverse effects of the development upon these locations to include further undergrounding of the 132kV line. Concerns are raised as to the fact that the visual interaction between locations within the Solway Coast AONB and its setting (including the LDNP) are not considered within the PEI and we would expect the Environmental Statement to fully address and assess these settings.</p>
Ecology	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues relating to this Sub Section, access 400N40 is located on the unnamed road that connects the A596 to the Langrigg crossroads. The access point itself is adequate. This access point serves eight pylon construction sites and is anticipated to carry 46 extra HGVs a day. To accommodate construction traffic the whole length would need to be temporality widened. However if construction traffic was routed via the Langrigg-Sandraw Bridge road then the bridge would be avoided and the extent of temporary works could be reduced.</p> <p>Within this area two long distance cycleways (NCR 72, NCR 7) are identified as high sensitivity. Two long distance footpaths (the Hadrian's Wall Path, Cumbria Coastal Way) are also identified as high sensitivity, as are the footpaths that run along them. Two footpaths (FP261004, FP120030/120012) are identified as medium sensitivity and the remaining 19 PRoWs are identified as low sensitivity. Mitigation: Impacts on NCR 72 and NCR 7 will be mitigated by Packages 1 to 5. National Grid have concluded that the impacts on the Hadrian's Wall path would not be mitigated by the measures included in Packages 1 to 6 and propose to develop a Hadrian's Wall</p>

Topic Area	Description of required mitigation
	Mitigation Plan. Whilst the package of mitigation measures are generally considered to be appropriate, for the importance of the footpaths and cycleway the measures are considered generic. We would wish to see more detailed proposals to fully understand how impacts will be mitigated.
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, there is potential for significant effects on the Hadrian's Wall Path and the adverse effects upon the visitor economy in terms of affecting longer term visitor perceptions will need to be mitigated.</p>

Table 6.8, Sub Section C2 – Wigton to Harker

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>Construction effects identified within the PEI include vegetation removal around pylons and along cable routes and in this regard, six areas of woodland may be affected. These are woodland south east of Wiggonby and south east of Great Orton; a linear strip of woodland east of Great Orton; two strips of riparian woodland lining tributaries of the River Eden at Kingmoor; and an area of woodland at Harker Moss. No assessment of predicted effect is provided so there is insufficient evidence to understand the effect on these landscape components. Similarly, construction of bellmouths and new access tracks at locations across the subsection are described, but there is no supporting assessment of predicted effect, and it is expected that mitigation will be required in these locations.</p> <p>The proposals include cable undergrounding works below Hadrian's Wall, the Hadrian's Wall Path and the River Eden corridor but there is no reference to this, no indication of the extent of works and no indication of even what the likely effects will be. As there are a number of sensitive receptors in this area (Solway Coast AONB, Hadrian's Wall (Frontiers of the Roman Empire WHS), and the Hadrian's Wall Path), there is insufficient information available in this stage of the DCO process to understand how these key receptors would be affected as a result of the combined construction stage activities. Information is required to demonstrate that sufficient mitigation will be provided in these areas.</p> <p>Insufficient information is made available to determine the required mitigation on landscapes to the west and north of Carlisle and the setting of the AONB.</p> <p>Major/moderate adverse effects are predicted in the PEI for residents in Wigton, Oulton, Parton, Thornby, Great Orton and Rockcliffe due to separation distance and</p>

Topic Area	Description of required mitigation
	<p>the increased scale of the new infrastructure compared to the current baseline.</p> <p>Higher levels of effect could also be experienced by properties in Little Orton. Major/moderate adverse effects are also predicted for users of the Hadrian's Wall Path, the Coast to Coast Walk, and NCRs 72 and 7.</p> <p>In addition, the 400kV line would be positioned on local high points north of Wigton, particularly where existing infrastructure visible on the skyline is likely to be replaced with larger pylons across a wide view arc, which would exaggerate their appearance in views and would be at odds with guidance in the Holford Rules.</p> <p>Although some mitigation is proposed, including planting (e.g. at Harker and Rockcliffe), further mitigation is considered necessary to off-set these potential adverse effects at all these locations, including the need for substantive adjustment of the route alignment to avoid adverse effects on the amenities of the local communities living in the Rockcliffe and Harker areas.</p>
Ecology	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, ecological features have been scoped out based on desk study data (or absence of such data), yet habitats are considered to be suitable for certain species, for example white-clawed crayfish scoped out in Subsection C2 - Wigton to Harker. Appropriate mitigation is considered necessary to off-set potential adverse effects on important habitats.</p> <p>It appears that some sites or sections which are hydrologically linked to European or International sites have been scoped out (e.g. South Solway Mosses SAC – e.g. Subsection C2 Table 9.40) and qualifying species linked to EU sites undervalued (e.g. Comment 9.3.26) [also included in HRA issue]. Appropriate mitigation is considered necessary.</p>
Historic Environment	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.</p>
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues relating to this Sub Section, for the road based option the greatest increases are forecast to occur on the A685 Carlisle Northern Development Route (CNDR) – a maximum of 320 vehicles and 165 HGVs per day. For the vast majority of the roads affected by the northern strategic route the forecast increases are likely to have no significant effect on congestion. The exception to this is the northern section of the CNDR where there is already</p>

Topic Area	Description of required mitigation
	<p>significant congestion at the junctions with Parkhouse Road and the M6. A multi modal option would help mitigate these adverse impacts by reducing the volume of HGVs on the strategic network.</p> <p>Access 400N8 is located between Cargo and Rockcliffe and due to its width, steep slope and lack of visibility requires mitigation including vertical analysis, swept path, speed survey, mitigation/safety, divert/close PROW assessments.</p>
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, there is potential for significant effects on the Hadrian's Wall Path and the adverse effects upon the visitor economy in terms of affecting longer term visitor perceptions will need to be mitigated.</p> <p>During the construction phase, proposed site compounds would be located on employment land on Kingmoor Park Heathlands Estate, Harker, Kingmoor Park Enterprise Zone (Business Park), and west of Kingsway, Carlisle. The assessment considers that given the temporary nature of the compounds the effects are not likely to be significant, however appropriate mitigation is required to avoid these sites becoming sterilised to development in the long-term.</p>

South Route

Table 6.9, Sub Section D1 – Moorside to Waberthwaite

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>Whilst the PEI identifies beneficial effects relating to the undergrounding of the route through the LDNP, it is not clear how the residual effects (lasting 5 to 15 years) of the vegetation removal associated with the construction are factored in to the visual assessment during operation, as it is likely the route will be highly visible through the LDNP in the medium to long term.</p> <p>Greater clarity and mitigation is required to off-set these medium to long-term effects.</p>
Ecology	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, woodland south of Ravenglass will be</p>

Topic Area	Description of required mitigation
	<p>damaged and lost through underground trenching which will involve taking out a 100m swathe and will also affect the root zone of adjacent trees in the woodland. The area of loss is therefore greater than the 100m width. There is no detail for adequate mitigation provided for this loss and damage and no clear evidence provided to demonstrate that this woodland cannot be avoided, or how woodland can be restored. It is not considered possible to compensate for loss of mature trees and retention of woodland soils for replacement after trenching does not necessarily mean that the woodland ground flora can be successfully replaced after trenching.</p> <p>The construction phase impacts from helicopter operation, including specific local impacts of helicopter operating bases do not appear to have been considered. These could be significant for important species assemblages such as breeding and wintering birds. For example, impacts on Sandwich and Little Tern foraging along the coastline south of Ravenglass. The area is used by populations of these species which are of international importance and are the notified species for the proposed Duddon Estuary SPA.</p> <p>The approach to enable helicopters to transport construction materials to sites using pre-construction surveys to inform micro-siting to avoid features of importance to protected species, such as badger setts, will not avoid disturbance effects on for example assemblages of wintering birds. Appropriate mitigation of the effects of helicopter operating bases is therefore necessary.</p>
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>There a number of routes with narrow road widths and adjacent small settlements that are forecast to experience significant increases in HGVs. These have the potential for increased severance, pedestrian amenity, fear and intimidation, and potentially accidents. Routes identified include:</p> <ul style="list-style-type: none"> • A5093 to Ravenglass – nearly 230 HGVs/day <p>Within this area, there is one long distance cycleway (NCR 72), identified as high sensitivity. There are long distance footpaths (CCW, future ECP) identified as high sensitivity and two others (Eastern Hadrianic Way, Ravenber Way) identified as medium sensitivity. There are also 28 footpaths and 10 bridleways, all identified as medium sensitivity. There are a further 24 PRoWs in this area identified as low sensitivity. Impacts on NCR 72 would be mitigated through traffic management measures that ensure safe crossing for cyclists and vehicles. The impact on the ECP and CCW will be partially mitigated by Package 1 to 5. Additional measures would be required and a Local Liaison Plan would be developed. Whilst the package of</p>

Topic Area	Description of required mitigation
	mitigation measures is generally considered to be appropriate, for the importance of the footpaths and cycleways, the measures are considered generic. We would wish to see more detailed proposals to fully understand how impacts will be mitigated.
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, in areas which are seen as drivers of tourism growth, such as the West coast part of the LDNP and around the Duddon Estuary, there is likely to be the largest concentration of demand for worker accommodation. The limitations associated with National Grid's labour market assessment mean that its assumptions regarding the number of non-local workers required are not sufficiently robust to assess the potential pressure on accommodation. This will need to be mitigated to avoid the potential adverse effect of visitors being displaced due to the use of local accommodation by workers during the construction phase of the Project.</p>

Table 6.10, Sub Section D2 – Waberthwaite to Silecroft

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>While there are likely to be long term benefits resulting from the removal of the 132kV line, the assessment does not make reference to the short and medium term adverse effects upon the landscape character that may be experienced as a result of construction operations to carry out the undergrounding of the 400kV line. The main landscape effect anticipated results from the clearance of vegetation along the route of the underground cable and to enable access. The PEI also identifies vegetation clearance is required for the temporary 132kV route however it is not identified what extent of vegetation removal is required.</p> <p>The PEI assessment is understated given the intrusive nature of the works to be carried out within the LDNP in order to underground the 400kV cable. It is anticipated that the potential visual effects on Newbiggin, Hycemoor, Silecroft and scattered properties would be greater than that stated as a result of the construction operations.</p> <p>Further consideration should therefore be given to fully mitigating the effects of the development to off-set the construction and operational phase.</p>

Topic Area	Description of required mitigation
Ecology	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, there appear to be some areas with potential to support protected species yet no surveys undertaken or planned, for example in the area to the immediate east of the Eskmeals road where natterjack toads have been seen crossing the road from the dunes and heard calling from the wetland depressions in the inland fields in the recent past (Pers.comm). Mitigation is required to off-set these effects.</p>
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, in areas which are seen as drivers of tourism growth, such as the West coast part of the LDNP and around the Duddon Estuary, there is likely to be the largest concentration of demand for worker accommodation. The limitations associated with National Grid's labour market assessment mean that its assumptions regarding the number of non-local workers required are not sufficiently robust to assess the potential pressure on accommodation. This will need to be mitigated to avoid the potential adverse effect of visitors being displaced due to the use of local accommodation by workers during the construction phase of the Project.</p>

Table 6.11, Sub Section E1 – Silecroft to Arnaby

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>The removal of the 132kV line, the additional 132kV trident wooden pole, and the replacement 400kV line has been underrepresented in the assessment of the magnitude of change upon receptors in particular within the Whicham Valley, given the setting of the LDNP and the designation of the area as a Landscape of County Importance.</p> <p>Whilst there are localised areas of woodland and tree cover, it is considered that the larger scale of pylons within the valley is likely to result in a greater degree of change than that set out within the PEI. Views of the CSE compound and terminal</p>

Topic Area	Description of required mitigation
	<p>tower at Nicle Wood would remain in the views along with part of the taller pylons located within the Whicham Valley.</p> <p>Given these impacts, further mitigation is required to off-set these adverse landscape & visual impacts, including consideration of an alternative option that avoids going round the Duddon Estuary is essential.</p>
Ecology	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, the PEI states that the effects on Morecambe Bay and Duddon Estuary pSPA and Drigg Coast SAC (the PEI states SSSI here) would be significant at international level. Mitigation would therefore be required to offset these effects. As there will be significant effects and potential for adverse effect on site integrity a full Appropriate Assessment will be required. The proposed scheme will have to demonstrate IROPI² and offer adequate compensation for adverse effect in order to be allowed to proceed.</p> <p>The ecology assessment does not compare the relative impacts and benefits to ecology of a tunnel route as opposed to overhead lines or underground cables. It should be noted that it is proposed to route two overhead lines around the Duddon Estuary on separate routes (400kV and 132kV). The overall land take, impact on habitats and species is therefore likely to be significant. As a tunnel route is proposed across the Morecambe Bay as the preferred option, there would appear to be no reason (applying the same logic) why a tunnel route below the Duddon Estuary should not be preferable from an ecological perspective.</p>
Historic Environment	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.</p>
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>There a number of routes with narrow road widths and adjacent small settlements that are forecast to experience significant increases in HGVs. These have the potential for increased severance, pedestrian amenity, fear and intimidation, and potentially accidents. Routes identified include:</p> <ul style="list-style-type: none"> • A595 Whicham Valley – nearly 250 HGVs/day; • A5093 west of Millom – 230 HGVs/day. <p>In terms of specific transport issues relating to this Sub Section, access 400S7 is a field gate located on the A5093 immediately to the south of the Kirstanton north</p>

² Imperative Reasons of Overriding Public Interest.

Topic Area	Description of required mitigation
	<p>level crossing. This access is at the southern end of the cut and cover tunnel and there is also a large construction area. Improved visibility splays and a speed survey are required to mitigate the substandard access.</p> <p>Construction accesses 400S11, 400S12 and 400S13 are all intended to be served from a road that provides access towards Brockwood Hall and Mire House Farm, Dunningwell Hall and a number of residential properties in a one-way system from the A595 to the priority junction with the A5093 south of The Green. These construction routes were identified for having issues regarding narrow road widths and steep gradients, which require mitigation. In addition, the initial section from the A595 towards Brockwood Hall is very narrow and as the section between the A595 and the 400kV line is not within the DCO order limits, any temporary improvements would need separate consents.</p> <p>The approach to construction accesses 400S15 from the local highway network is also viewed as challenging for construction traffic owing to a combination of the approach road, which narrows to a 3m wide single track, coupled with a very steep and tight left hand bend to reach the access point. There is the risk that construction vehicles, especially any low loaders may struggle or become grounded when navigating the junction.</p> <p>The access route from the Punchbowl has narrow turning space and will need to be checked - the road cannot be widened as it is constrained by a stream and houses. Appropriate traffic management to allow safe two-way passage of HGVs and existing non-construction traffic needs to be shown.</p> <p>Within this area, there is one long distance footpath (CCW), identified as high sensitivity. There are 24 footpaths and one bridleway identified as medium sensitivity. A further 18 footpaths are identified as low sensitivity. The impacts on the CCW and on the medium sensitivity routes will be mitigated through implementation of Package of Measures 1 to 5. The impacts on the low sensitivity routes will be mitigated through implementation of package measures 1 to 4.</p>
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, the area around the Duddon Estuary (within the setting of the Lake District National Park – e.g. the slope of Blackcombe, the open access land and views from major roads such as the A595 and the A5903) and the settlement of Broughton-in-Furness (which is in part within the National Park), in economic terms, benefits from tourism visitors. The other parts of Furness, also, increasingly, benefit from tourism/visitors.</p> <p>In areas which are seen as drivers of tourism growth, such as the West coast part of the LDNP and around the Duddon Estuary, there is likely to be the largest</p>

Topic Area	Description of required mitigation
	<p>concentration of demand for worker accommodation. The limitations associated with National Grid's labour market assessment mean that its assumptions regarding the number of non-local workers required are not sufficiently robust to assess the potential pressure on accommodation. This will need to be mitigated to avoid the potential adverse effect of visitors being displaced due to the use of local accommodation by workers during the construction phase of the Project.</p> <p>Robust and adequate information on the impact on the visitor economy (tourism) is needed, and appropriate mitigation be provided.</p>

Table 6.12, Sub Section E2 – Arnaby to Lindal-in-Furness

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>The PEI assessment identifies major/moderate (adverse) effects upon the settlements within the Subsection. However, for Ladyhall, Foxfield and in particular Beck Side (Kirkby-in-Furness), following the review of the change in views described, it is considered that the magnitude of change experienced may be greater than medium. The increase in pylon height is likely to alter the landscape perception and if the value of these areas is fully reconsidered it may raise the effect beyond major/moderate.</p> <p>Likewise the change scale of pylon experienced, increasing from 26m to 46.5m, within the view of four settlements (Broughton-in-Furness, Grizebeck/Bank End, Ireleth/Askam-in-Furness and Marton)) is considered to be a greater magnitude of change within the view than slight as measured in the PEI. The magnitude of change experienced by PRoW (footpath) users may be greater than that identified due to the prolonged views towards the Proposed Development.</p> <p>In light of these potential effects, consideration of the alternative route option that avoids going round the Duddon Estuary is essential.</p>
Ecology	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, the ecology assessment does not compare the relative impacts and benefits to ecology of a tunnel route as opposed to overhead lines or underground cables. As a tunnel route is proposed across the Morecambe Bay as the preferred option, there would appear to be no reason (applying the same logic) why a tunnel route below the Duddon Estuary should not be preferable from an ecological perspective. It should be noted that it is proposed</p>

Topic Area	Description of required mitigation
	to route two overhead lines around the Duddon Estuary on separate routes (400kV and 132kV). The overall land take, impact on habitats and species is therefore likely to be significant.
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues relating to this Sub Section up to 105 HGVs per day will be utilising the A595 in the vicinity of Askam-in-Furness and up to 240 HGVs on the A5087 Salthouse Road in Barrow-in-Furness. Given that a number of residential properties front onto the A595/ A5087 there are likely to be impacts for local residents, which will require mitigation.</p> <p>There a number of routes with narrow road widths and adjacent small settlements that are forecast to experience significant increases in HGVs. These have the potential for increased severance, pedestrian amenity, fear and intimidation, and potentially accidents. Routes identified include:</p> <ul style="list-style-type: none"> • A5092 – over 300 HGVs/day; • A595 south of Kirkby in Furness – nearly 180 HGVs/day; and, • A595 Grizebeck to A5093 – nearly 100 HGVs/day <p>At the temporary access junctions 400S21, 400S22 and 400S24 near Foxfield, construction vehicles must pass a series of railway crossings, and potential temporary traffic management options with National Rail should be explored.</p> <p>For all of the construction routes in this subsection that experience higher network sensitivity and traffic flows consideration is required to ensure that construction vehicles limit obstructions to existing road and rail users but also local residents.</p>
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, the area around the Duddon Estuary (within the setting of the Lake District National Park) and the settlement of Broughton-in-Furness (which is in part within the National Park), in economic terms benefits from tourism visitors. The other parts of Furness, also, increasingly, benefit from tourism/visitors. Robust and adequate information on the impact on the visitor economy (tourism) and their perceptions is needed, and appropriate mitigation provided.</p> <p>In areas which are seen as drivers of tourism growth, such as the West coast part of</p>

Topic Area	Description of required mitigation
	<p>the LDNP and around the Duddon Estuary, there is likely to be the largest concentration of demand for worker accommodation. The limitations associated with National Grid's labour market assessment mean that its assumptions regarding the number of non-local workers required are not sufficiently robust to assess the potential pressure on accommodation. This will need to be mitigated to avoid the potential adverse effect of visitors being displaced due to the use of local accommodation by workers during the construction phase of the Project.</p> <p>A proposed Electricity North West (ENW) permanent 132 kV Latticed Trident Terminal Pylon (sealing end compound) is proposed directly abutting a SLDC housing allocation site. The site is next to Burlington School, Kirkby-in-Furness. This potentially will have a significant negative effect on the allocated site –these impacts will need to be mitigated in order to avoid sterilising the future development of this site.</p>

Table 6.13, Sub Section H1 – Lindal-in-Furness to Morecambe Bay

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>During the construction and operational phase of the development, there are likely to be adverse effects experienced to parts of Dalton-in-Furness as well as those in the vicinity of North Stank, Stainton with Adgarley, Barrow-in-Furness and Hardknotts.</p> <p>Planting is proposed to mitigate views towards the tunnel shaft, head house and 400kV substation for users of Rampside Road and residents within Barrow-in-Furness. No other mitigation is proposed other than that included within the design principles. It is identified that the proposed mitigation would not be effective during construction and would take 5 to 15 years to provide screening at which time effects would be reduced to minor (adverse) however the effects associated with the proposed 400kV route would be unaltered.</p> <p>In light of these adverse effects further consideration should be given to mitigating the effects of the development during the construction and operational phase to include the alternative route option that avoids going round the Duddon Estuary is essential.</p>
Ecology	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, some of the data search feedback appears</p>

Topic Area	Description of required mitigation
	to be lacking in known species for reptiles in the Barrow area (e.g.9.5.77). Additional survey will be necessary to fill the gaps in the data records.
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues relating to this Sub Section, the study area in Barrow should be extended to include roads where a significant increase in traffic would be expected.</p> <p>Given the potential increases in flow (particularly HGV) there may be significant issues on the:</p> <ul style="list-style-type: none"> • A590 Ulverston/Swarthmoor – increases of over 350 HGVs per day are forecast; potential for increased delay, severance, pedestrian amenity, fear and intimidation, and potentially accidents; and • A5087 Roose Road/Rampside Road – increases of over 240 HGVs per day are forecast; potential for increased delay, severance, pedestrian amenity, fear and intimidation, and potentially accidents. <p>Additional work is required to assess the capacity of key junctions in Ulverston and Barrow and, for Barrow, a more detailed assignment of traffic is required. Nonetheless, the multi modal option assessed resulted in significant reductions in HGVs on the following routes: 238 HGVs per day through Ulverston; 131 HGVs per day through Barrow. From the analysis carried out it is clear that a multi modal option would significantly reduce the impact of the scheme and is justified. More detailed analysis, including an incremental assessment is required; however the final scheme should be such that the vast majority of the benefits identified in the National Grid assessment are realised.</p> <p>It is not clear, in the case of Barrow in particular, that there will be sufficient accommodation for the number of employees forecast. A realistic accommodation strategy for employees will be required to fully understand the impacts on Barrow and other local centres that maximises the opportunity for sustainable travel. Assignment of trips has been carried out in an all-or-nothing basis using journey times. Although this is generally an appropriate methodology the use of too simplistic a network in Barrow results in unrealistic assignments for light vehicles. A more detailed assessment of the impacts of commuter trips on Barrow and Ulverston should be carried out using the Barrow SATURN model.</p> <p>Within this area there are three long distance cycleways (NCR 70, 700, 6) and one</p>

Topic Area	Description of required mitigation
	<p>long distance footpath (CCW), all identified as high sensitivity, along with the footpaths that follow the same routes. There are two other long distance footpaths (Cistercian Way, Grassington to West Coast) identified as medium sensitivity. On the Cumbrian side of this section, there are 20 footpaths and 4 bridleways identified as low sensitivity. On the Lancashire side, there are 6 footpaths all considered to be low sensitivity. The impact on NCR 6 will be mitigated by the implementation of Package Measures 1 to 4. The impacts on NCR 70 will also be mitigated by Package Measures 1 to 4. The impact on the Cistercian Way and other medium sensitivity routes will be mitigated by the implementation of Package Measures 1 to 5. The impact of the low sensitivity routes will be mitigated by the implementation of the Package of Measures 1 to 4.</p>
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, in areas which are seen as drivers of tourism growth, such as the West coast part of the LDNP and around the Duddon Estuary, there is likely to be the largest concentration of demand for worker accommodation. The limitations associated with National Grid's labour market assessment mean that its assumptions regarding the number of non-local workers required are not sufficiently robust to assess the potential pressure on accommodation. This will need to be mitigated to avoid the potential adverse effect of visitors being displaced due to the use of local accommodation by workers during the construction phase of the Project.</p> <p>There is potential for the development to affect land at the Port of Barrow-in-Furness, Waterfront Business Park and Rampside Gas Terminal. There are three future development sites allocated in the Barrow Port Area Action Plan (Salthouse Paper Mill, Marina Village and Barrow Watersports Centre). Impacts upon deliverability of these sites as well as effects upon local amenities of existing residents in adjacent residential areas will require mitigation, including clarity over the storage, movement and final destination of tunnel spoil arising from construction of the tunnel heads.</p>

Table 6.14, Sub Section H2 Morecambe Bay

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>Although no major or major/moderate effects are identified in the PEI in relation to the islet and undersea route, the assessment notes that sea based receptors are likely to have closer views than land based receptors. However this would not result in major or major/moderate effects.</p>

Topic Area	Description of required mitigation
	It is considered that during the operation phase users in proximity of the islet may experience effects greater than moderate, and this should be considered further within the ES.
Ecology	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, in areas which are seen as drivers of tourism growth, such as the West coast part of the LDNP and around the Duddon Estuary, there is likely to be the largest concentration of demand for worker accommodation. The limitations associated with National Grid's labour market assessment mean that its assumptions regarding the number of non-local workers required are not sufficiently robust to assess the potential pressure on accommodation. This will need to be mitigated to avoid the potential adverse effect of visitors being displaced due to the use of local accommodation by workers during the construction phase of the Project.</p>

Table 6.15, Sub Section H3 Morecambe Bay to Middleton

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>No mitigation is proposed during the construction period, and there is no space for any mitigation in the form of planting. A Landscape Mitigation Plan should be provided for the construction phase, which should include early screening along the north eastern boundary between the compound and the residential area, and could be in the form of a bund planted with fast growing trees and shrubs.</p> <p>Mitigation for the final sub-station and tunnel head at Middleton is limited, to the north and east, to belts of woodland and shrub planting. Belts of woodland planting should be at least 20 m wide in order to allow trees to mature and form an effective screen. A belt of planting is shown on the northern boundary of the substation. This</p>

Topic Area	Description of required mitigation
	<p>is also the location of the PROW. Adequate land should be provided for the woodland belt and the footpath. Additional planting should be considered beneath the 400kV line to the east of the site to screen views from the A683. The mitigation planting does not cover the whole of the DOL, and there is a need to consider the east side of the plan.</p> <p>The islet is shown as an angular and vertical structure in a flat and featureless seascape. It is suggested that the sides are tapered to soften its outline and assimilate it into the seascape. Careful consideration should be given to its colour. Furthermore, the shaft diameter should be reduced given it is for ventilation/access and not for cables, which would help reduce its bulk.</p>
Ecology	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, Chapter 4 refers to soil storage (for the temporary shaft and substation site) at Middleton tunnel head site, with intermediate shaft excavated material stored on land to the east of the Middleton Tunnel Head site (paragraph 4.5.65). It is unclear where precisely this soil storage is proposed, e.g. Figure 4.14.1 tunnel temporary works plan shows soils storage in the northernmost part of the substation site, and apparently not to the east of the tunnel head location. All temporary and permanent elements of the proposals should be clearly identified to aid the assessment.</p> <p>Preliminary landscape mitigation (Middleton substation extension and tunnel head house site) indicates areas of woodland planting, some of which is proposed <i>"to mitigate visual effect of proposed substation on residents of Heysham"</i> and <i>"on users of local PROW"</i>. However, some of this proposed planting was actually proposed previously to mitigate effects of the original 400kV substation (Lancaster planning application 14/00422), e.g. areas marked <i>"woodland belt of native trees and shrubs"</i> and <i>"existing hedgerow to be supplemented with additional planting and hedgerows trees"</i> on Figure 16 Landscape Mitigation Plan. The Environmental Statement should avoid double-counting proposed mitigation. It would be useful if the Environmental Statement could clearly indicate what is previously approved landscape mitigation and what is newly proposed.</p>
Historic Environment	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.</p>
Transport	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of specific transport issues affecting this Sub section, for the road based option there are significant increases forecast for HGV flows between the M6 at</p>

Topic Area	Description of required mitigation
	<p>Junction 34 to the A683/A589 roundabout – over 330 per day. There are also large increases in non HGV traffic on the A589 between Heysham and Morecambe and the A683 to Port Way. In terms of environmental impact it is assessed that there will be little impact on these roads as all are suitable for carrying the forecast volume of traffic.</p> <p>Whilst it is accepted that the impact on the roads considered is likely to be acceptable in environmental terms, the analysis has not fully considered the impact of worker trips in Heysham and Morecambe. The analysis has loaded trips onto one of three routes – A683 from Lancaster, A683 via various junctions between the M6 and Heysham and the A589 from Morecambe. In reality trips could originate from a variety of locations in Heysham and Morecambe and could impact on a number of junctions that currently experience congestion such as A589/B5327, Regent Road/Balmoral Road, A589/B5273 and A589/B5274. The modelling should be capable of assessing the impact at these (and potentially other) locations. It should therefore utilise the SATURN model covering this area.</p>
Socio-Economic Recreation and Land-Use	<p>Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.</p> <p>In terms of Sub Section specific matters, there is a particular issue with the adequacy of the data in the PEI on the provision of bed spaces in and around Heysham and the Lancaster area. The PEI does not assess the quality of the bedspaces and therefore mitigation might be necessary if there is a shortfall in adequate quality provision. Reference is made to an Accommodation Plan proposed for Barrow and South Lakeland but not Lancaster. In this regard, PPA authorities require that National Grid and their contractors prepare and agree a contractors' workforce accommodation strategy. This need not include the direct investment in or provision of workforce accommodation, but must show engagement with suppliers to provide quality accommodation.</p> <p>The detailed proposals for the development of land at Middleton Substation will require clarification, and appropriate mitigation to avoid harmful effects to local amenities.</p>

Table 6.16, Natland substation – near Kendal

Topic Area	Description of required mitigation
Landscape and Visual	<p>Specific Landscape & Visual points in relation to Sub Section A1 are as follows.</p> <p>Location specific woodland planting is proposed to the north and south of the proposed pylons and shrub planting to the east and west below the overhead lines</p>

Topic Area	Description of required mitigation
	at the substation in Natland. It is recognised within the PEI that this mitigation will not provide screening during construction and identifies that the planting would not provide effective screening until approximately 15 years. Further consideration should be given to mitigating the adverse landscape & visual effects over the short to medium term.
Ecology	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.
Historic Environment	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this section as well.
Transport	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.
Socio-Economic Recreation and Land-Use	Please see comments above in relation to Sub Section A1 – Moorside to Thornhill as applying to this sub section as well.

7.0 EIA Approach and Methodology

- 7.1.1 The overall assessment methodology is laid out in Volume 2.2 Chapter 5 EIA Approach and Methodology.
- 7.1.2 In Paragraph 5.3.5 of Chapter 5 it is evident that the Applicant disagrees with the Planning Inspectorate over some topics which the Planning Inspectorate has scoped in, but which the Applicant is still intending to scope out further to carrying out additional work.
- 7.1.3 In relation to this the Planning Inspectorate's Advice Note 7 states the following in Paragraph 12.4: *"Applicants should note that matters are not scoped out unless specifically confirmed as being scoped out by the Secretary of State in the scoping opinion. Whilst the Secretary of State may not agree to scope out certain topics or matters within the scoping opinion on the basis of the information available at the time, this does not prevent applicants from subsequently agreeing with the relevant consultees to scope matters out of the ES, where further evidence has been provided to justify this approach. This approach should be explained fully in the ES."*
- 7.1.4 It is therefore important that as the Applicant is seeking to scope out topics not already agreed through the Secretary of State's Scoping Opinion, this should be agreed with relevant consultees and further evidence should be provided to justify the approach.
- 7.1.5 Paragraph 5.7.6 of Chapter 5 states: *"Similarly, criteria for the magnitude of effect have also been derived on a receptor basis. A combination of the magnitude of the likely effect and the sensitivity of the receptor determines the overall significance of effects."* The term 'Magnitude of Effect' is then used throughout Chapter 5, although best practice would dictate that the term 'Magnitude of Impact' should be used (impacts are usually defined as the changes resulting from an action, with effects being defined as the consequences of impacts). The methodologies for the topic chapters provided in chapters 6 to 22 of Volume 2.2 are not consistent, in some cases referring to 'Magnitude of Effects' and in others to 'Magnitude of Impacts'. To avoid confusion a consistent approach should be taken throughout, ideally referring to 'Magnitude of Impact' rather than 'Magnitude of Effect'.
- 7.1.6 Paragraph 5.7.11 of Chapter 5 also states that *"Unless specified otherwise within individual topic chapters (Chapters 6 to 21, Volumes 2.1 to 2.5) the following parameters are considered within the assessment in accordance with Schedule 4 of the EIA Regulations 2009:*
1. *Positive or negative effects;*
 2. *Extent (the area over which the effect occurs);*
 3. *Duration (the time for which the effect is expected to last prior to recovery or replacement of the resource or feature);*
 4. *Reversibility (permanent or temporary); and*
 5. *Timing and frequency".*

Chapter 7 – EIA Approach and Methodology

7.1.7 However, Schedule 4 of the EIA Regulations also requires the following to be considered:

- direct and indirect effect;
- secondary effects; and
- cumulative effects.

7.1.8 The Applicant should therefore ensure that the potential for these types of effects is also considered in the various technical chapters.

7.1.9 Paragraph 5.7.14 of Chapter 5 states the following: *"In this PEI the assessment has been completed for the permanent infrastructure associated with the 400kV and 132kV requirements and certain elements of the temporary works. Design work is ongoing for some aspects of construction activity (temporary scaffolding works) and for lower voltage connections at 33kV and below. While it has not been possible for these to be considered in this PEI Report, these will be fully assessed in the ES. The nature of these works, the general use of wooden pole infrastructure and the methods of construction mean that any environmental effects associated with them would be minor and below the level of effects assessed for the 400kV and 132kV infrastructure. Therefore, such effects would be well below any level that could be considered significant."*

7.1.10 It is welcomed that the smaller scale works will be fully assessed in the Environmental Statement, however, it is not agreed that the potential for these works to result in significant effects can be completely ruled out until that assessment has taken place.

7.1.11 Paragraph 5.8.4 of Chapter 5 states that *"Table 5A.1 Appendix 5A, Volume 2.7 comprises a matrix of anticipated interrelationship effects between each of the topics being assessed."* Following the Secretary of State's Scoping Opinion this now includes individual effects even if they are not significant, because even the interaction of individually insignificant effects can potentially result in a combined effect which is significant. However, Table 5A.1 does not identify which combination of effects are considered to be significant and this information should be added.

7.1.12 Paragraph 5.7.28 of Chapter 5 states that *"As the horizontal tunnel alignment is subject to further study and detailed design, there is a 3km diameter LoD area in which the islet and associated temporary construction works may be located within which has defined the Draft Order Limits around the Islet."* It is unfortunate that the tunnel alignment and position of the islet cannot be more precisely defined at the PEI stage as this would make it easier for detailed feedback to be provided by consultees.

7.1.13 Paragraph 5.7.7 of Chapter 5 states that *"A matrix showing the levels of effect on a scale has been presented on a topic by topic basis, except for Waste and Materials Management and Terrestrial and Avian Ecology (see Chapters 6 to 21, Volume 2.2). In the case of Terrestrial and Avian Ecology, the CIEEM guidelines for EcIA method does not use a matrix based approach (see Chapter 9, Volume 2.2)." Even though the Terrestrial and Avian Ecology chapter uses the CIEEM guidelines, it maps the description of effects back to the*



standard methodology given in Chapter 5, which is welcomed. However, it is considered that there is no logical reason for the Waste and Materials Management chapter not to use the standard methodology for determining the level and significance of effects, when all other chapters have either used this, or the methodologies published by their respective professional bodies. This lack of consistency will make it harder to identify and compare significant effects when reading the Environmental Statement .



8.0 Landscape and Visual

8.1 Introduction

8.1.1 This section contains a review of the information in the PEI relevant to the Landscape and Visual assessment. The PPA Group acknowledge that there is a large quantity of data and information contained within the PEI which has been prepared over a long time period. Whilst the review acknowledges where changes in approach and methodology are welcomed, this review focuses on the areas that still require expanding upon within the ES.

8.1.2 In preparing this review, the reviewer has carried out desk and field studies in relation to the landscape and visual topics; however it should be noted that they have not carried out an assessment and any comments in relation to the assessment are in relation to the assessment contained within the PEI.

8.2 Landscape and Visual Key Issues

8.2.1 This section summarises the key issues identified in the review of the landscape and visual assessments presented in the PEI. These issues have been identified following a review of the reports set out in the following Section.

8.2.2 Table 8.1 contains the key issues contained in the PPA Group's Volume 1 Joint Consultation Response Executive Summary. Table 8.2 contains additional comments and further detailed commentary on the methodology. Table 8.3 provides detailed commentary on key landscape and visual subsection specific issues in the PEI. This is a summary of the matters raised in Section 8.15 of this Chapter.

8.2.3 To conclude, the lack of detail relating to the construction and potential effects, particularly in relation to the undergrounding, is a key concern. The lack of supporting information to justify conclusions and the underplaying of sensitivity and magnitude of change also raise concerns which will need to be addressed in the subsequent ES. There are still a number of issues contained within the various methodologies that should be addressed. Should these issues progress into the ES stage they may result in a skewed and potentially flawed assessment of landscape and visual effects and a failure to design appropriate mitigation measures.

Table 8.1 Landscape and Visual Key Issues

Key Issue	Comment
Landscape and Visual General Comment	
1. The approach taken fails to consider appropriate mitigation as part of the design process.	It is considered the basis for impact appraisal set out in the OAAT methodology falsely raises the bar for determining the implementation of mitigation measures resulting in only 'particularly significant' effects being mitigated. It is considered by the PPA Group that the level of effects set as 'particularly significant' is inappropriate and mitigation measures should be implemented to reduce significant impacts below this threshold where appropriate



Key Issue	Comment
	<p>(See Section on The Design Approach taken to appropriate mitigation as part of the design process below 8.11).</p> <p>Previous concerns have been raised in relation to the methodology contained within Volume 2.8 section 2.8.8. Concerns are raised relating to how the threshold for 'particularly significant' has been set, although it is noted that the bar has been amended to include 'major/moderate adverse (receptors relevant to the purposes of nationally designated landscape areas)' since the previous version reviewed. The PPA Group would query the justification for setting the threshold at this level and why it does not include all EIA significant effects, 'major/moderate adverse' and 'moderate adverse' as defined in the diagram. The PPA Group would also query what is considered as a receptor 'relevant to the purposes of nationally designated landscape areas', as it is felt that this should include landscape and visual receptors which fall within the setting of the national designations, however, from the subsequent assessment this is not the case. In light of the outstanding uncertainties within the methodology, which have the potential to introduced inaccuracies within the process, it is felt that this methodology in its current form is flawed and requires revision.</p>
<p>2. The PEI fails to adequately conserve and enhance the Solway Coast AONB and LDNP and their setting.</p>	<p>The assessment presented within the PEI fails to consider the potential effects experienced by users of the LDNP and Solway Coast AONB from within the setting of the designations due to a flawed interpretation of national policy which is inconsistent with the precedent cases (See Section on Key Issues Affecting Designated landscapes - 8.12).</p> <p>The methodology does not address the issue of value applied to the setting of the national designations, nor does it attempt to define what is considered as the setting of national designations. By omitting to identify areas considered to form the setting of the national designations the value of these landscape receptors is likely to be under assessed. National Grid should provide a full assessment of the likely effects experienced by users within the setting of these national designations in addition to those users within the designations.</p> <p>Concerns are expressed in relation the methodology used to determine setting contained in Volume 2.7 Appendix 6A. The PPA Group feel this Appendix does not address the issue of setting in relation to National Landscape Designations. It only addresses issues which would be expected for any type of development as standard, and does not address the 'complementary setting' (the area surrounding the national designation; the margins of the national designation) nor the need to consider the impacts of landscape and visual receptors both within the Park and within its setting, and how this has been considered within the assessment.</p>
<p>3. The proposals fail to mitigate against cumulative landscape</p>	<p>It is considered that the current proposals do not adequately mitigate the potential cumulative impacts, including sequential cumulative impacts, that are likely to arise from the presence of</p>



Key Issue	Comment
and visual impacts of all development infrastructure.	<p>pylons, overhead cables, substations, sealing end compounds and other associated infrastructure. It is also considered that the presence of the proposed 132kV trident line is not fully considered (see Section in this Chapter on The Approach Taken to Appropriate Mitigation as Part of the Design Process - 8.11).</p> <p>There are a number of areas of particular concern where a lack of mitigation is proposed which should be addressed to mitigate local adverse impacts.</p>
4. Cumulative impacts of NWCC at Moorside are not adequately addressed.	The likely cumulative landscape effects of NWCC alongside the development of Moorside are not considered within the PEI. Whilst it is acknowledged that full details of the Moorside development are not available, outline information is within the public domain and should be considered within the cumulative assessment of the projects (See Section in this Chapter on Application of Methodology - 8.14).
5. The PEI fails to carry out a preliminary cumulative assessment and has failed to use the Cumulative Impact of Vertical Infrastructure (CIVI) tool within the baseline studies.	<p>The submitted information does not provide an initial assessment of cumulative effects which if carried out at the preliminary stage would assist in the identification of potentially significant adverse visual effects which could potentially be avoided through design mitigation measures (see section in this Chapter on Cumulative Impact of Vertical Infrastructure: Addendum 2 - 8.22.15).</p> <p>The PEI refers to a short list being drawn up of other developments, and no consideration of other developments is currently included within the PEI. The short list of cumulative developments should be agreed prior to the preparation of the ES. In addition, it is considered that the ES must consider all cumulative impacts within the National Park and to its setting, including the cumulative impacts of the Trident and 400kV line in the head of the Duddon.</p>
6. The PEI does not address all anticipated landscape and visual effects of the proposed development.	The PEI does not systematically address all effects likely to result from the Proposed Development. A greater level of detail is required to assess all landscape and visual receptors identified through baseline studies and consultation, and provide adequate supporting information in the form of visualisations and narrative to support the relevant assessments (see Section 8.14 – Application of Methodology 8.14).
7. The PPA Group is concerned that potential impacts of the Proposed Development may have been pre judged.	The assessment presented within the PEI provides an assessment of the likely effects of the proposed development without providing a systematically robust application of the methodology. The verification of the assessment outcomes contained within the PEI cannot be fully verified as a result of this (see Sections in this Chapter on Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusions and Application of Methodology 8.13 and 8.14).
Landscape Specific	



Key Issue	Comment
8. The assessment does not consistently consider the Lake District and Cumbria landscape character assessments.	The PEI carries out an assessment of the likely effects upon landscape character along the proposed route corridor however it is considered the assignment of landscape value in relation to character areas inside and outside the areas of national designation is not consistent. The assessment makes reference to character areas located immediately outside the boundaries of national designations being of lower value without making reference to the intrinsic landscape qualities and features of the character area which, in some instances, is replicated on both sides of the designation (see Section in this report on Assessing the impacts on the setting of designated landscapes – Methodology - 8.12.6).

8.3 Landscape and Visual Issue in PEI

8.3.1 Table 8.2 below provides further detailed comments in relation to the PEI following review of the methodology and application of methodology within the assessment provided.

Table 8.2: Landscape and Visual PEI Issues

Additional Issues	Supporting Evidence
Landscape	
1. The PEI does not systematically address all anticipated effects of the proposed development in a clear format.	The assessment fails to provide a fully transparent step-by-step approach in the identification of the sensitivity of each receptor through the identification of value and susceptibility leading to a judgement on the potential effects through a discussion of the magnitude of change. Judgements on whether the identified effects are significant or not significant should then be provided with the appropriate supporting narrative to support the assessment of significant effects. This issue applies to each of the subsections (See section on Application of Methodology 8.14).
2. Construction effects are not addressed adequately.	<p>It is considered that the likely construction effects of the Proposed Development are not adequately assessed within the PEI as a lack of detail is provided in relation to the phasing of the works and the duration of construction of sections. The PEI fails to identify the phasing of the construction of the 400kV and decommissioning of the 132kV line; the construction and duration of temporary 132kV routes and the potential combined effects of more than just the existing 132kV route being present at any time during the construction phase. THE PEI does not distinguish between construction effects that finish at completion and those which extend into the operation period. Further comment on this is provided within the Application of Methodology, Landscape General Comments section. This issue applies to each of the subsections (see 8.14 and 8.14.2).</p> <p>The summary tables provided do not include a summary of construction effects and omit the use of the word 'adverse' where</p>



Additional Issues	Supporting Evidence
	relevant, which is potentially misleading should someone review the summary tables only.
3. Detail is not provided to confirm how locally specific landform will be reinstated following construction; particularly where undergrounding takes place.	The methodology for landscape reinstatement identifies that following implementation of the proposed 400kV underground line (in particular through the LDNP) that hedgerows and trees will be replaced. It is not confirmed within the information provided if the existing, locally distinctive landforms present within differing character areas will be reinstated to their current topography. The reinstatement of topography following the construction of the proposed 400kV route is seen as fundamental in assisting the development in re-integrating with the surrounding landscape. Confirmation should be provided to identify where this will be carried out and where reinstatement to existing profiles is not practicable to ensure the assessment of effects upon landscape character is appropriately assessed. This issue applies to each of the subsections although is more relevant where locally distinctive landforms prevail (see section Landscape Assessment Methodology 8.13).
4. Summary tables are potentially misrepresentative as they exclude relevant information	<p>Construction effects for a selection of landscape receptors are assessed through the provision of narrative text however there is no summary table provided drawing together the findings of the assessment during construction (see section in this Chapter on Application of Methodology - 8.14 and Sub Section by Sub Section Review 8.15).</p> <p>The word 'adverse' is not used within the assessment, only beneficial where relevant. Omitting the word could be seen as misleading. This issue applies to each of the subsections.</p>
5. The sensitivity of receptors is not clearly explained and 'susceptibility' is not clearly addressed in to the assessment.	<p>The summary tables contained within the PEI are not, in some places, reflective of the preceding narrative, particularly in relation to the identification/use of the term 'susceptibility'. This results in the outcome of the assessment in some instances being questionable in its accuracy and presentation of likely effects of the Project. This general issue applies to the PEI on the whole and should be verified to ensure consistency across all assessments in the presentation of the forthcoming ES (see Section in this Chapter on Application of Methodology - 8.14).</p> <p>Regarding landscape value and sensitivity, a lower category of value and sensitivity has been added to the methodology since previous reviews, however there appears to be a reluctance to add a higher category of value and sensitivity, which could be applied to international designations. It is unclear why there is reluctance as it is felt that this would be a worthwhile addition. In addition, although a lower category of value and sensitivity has been added, the supporting assessment image and table (Image 6.1 and Table 6.12) have not been updated to incorporate this addition, resulting in a discrepancy within the methodology that requires updating. The methodology for the visual assessment has not been updated in line with this change and the PPA Group would recommend</p>



Additional Issues	Supporting Evidence
	consistency across methodologies;
6. Inconsistencies in the 'value' applied to the same character areas within different subsections.	The 'value' applied to some LCT/LCSTs is identified as being different for the same character type/subtype within different subsections without the provision of supporting narrative to ratify this approach. Where differences such as these are to be applied these should be supported by an appropriate narrative to fully explain the rationale for the variation to enable the assessment to be verified. This general issue applies to the PEI on the whole and should be verified to ensure consistency across all assessments in the presentation of the forthcoming ES (see section in this Chapter on Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion 8.13).
7. The PEI fails to assess the likely effects of the proposed development upon landscape features apart from trees and hedgerows.	<p>The PEI only addresses the landscape effects on the landscape subtypes, it does not address the potential effect on landscape features or landscape amenity. It therefore does not currently cover the range of landscape elements that would usually be expected to be covered.</p> <p>The assessment of likely landscape effects identifies the removal of hedgerows and trees that would take place to facilitate the implementation of the Proposed Development; there is however no discussion relating to the potential direct and indirect effects that may occur on other landscape features along the proposed route corridor. The full implications and extent of likely effects of the proposed development cannot be fully ascertained unless the effect upon all landscape receptors is identified and discussed fully. This issue applies to each of the subsections (see Sub Section by Sub Section Review 8.15).</p>
8. There are areas where it appears the assessment may underplay the likely effects.	Of particular relevance is the assessment of the Whicham Valley on the southern edge of the LDNP and LCSTs located within the Duddon Estuary. The Whicham Valley is identified as being of national value within the LDNP however immediately beyond the LDNP boundary on the east slope of the 'u' shaped valley the value of the land is identified as of local value. It is considered that the value of the land immediately beyond the boundary of the LDNP is of equal value to that located within the LDNP boundary and that it provides the landscape setting to the designated area. This is also the case with a number of LCSTs located in the head of the Duddon its estuary and mosses, which should be appropriately addressed in the ES. This issue applies to each of the subsections however the above text identifies where this issue appears most prevalent; although it is understood National Grid's proposed moderating exercise may address some of these issues (see paragraph 8.12.10).
9. There are a number of locations where significance of effect is referred to without	There are a number of references to the identification of likely significant effects with the assessment of landscape and visual effects and supporting technical documents without the provision of any accompanying assessment narrative to support the



Additional Issues	Supporting Evidence
supporting assessment being provided.	<p>identification of significant effects. Where the identification of likely significant effects is identified this must be supported by an appropriate level of assessment to ensure the information presented is robust. This general issue applies to the PEI on the whole and should be verified to ensure consistency across all assessments in the presentation of the forthcoming ES.</p> <p>There are several arbitrary references to significance of effect throughout the landscape and visual chapters. These are inconsistently applied and generally do not have any supporting narrative to clearly describe how these conclusions are reached (see section this Chapter on Key Issues Affecting the settings of designated landscapes 8.12 and paragraph 8.12.7).</p>
10. Insufficient evidence is provided to assess the potential effects on 'valued landscapes' as set out in paragraph 109 of the NPPF	<p>It is unclear if an assessment of 'valued landscapes' is to be carried out for those landscapes that are not designated either nationally or locally. The assessors attention is drawn to GLVIA paragraph 5.26 (incl. subsequent paragraphs), particularly box 5.1, in determining potentially valued yet undesignated landscapes (see Sub Section by Sub Section Review 8.15).</p>
Visual	
11. The PEI does not carry out an assessment of the individual viewpoints identified.	<p>The PEI provides photomontages for up to five viewpoint assessment locations although there is no assessment of any location specific viewpoints contained within the PEI. It is therefore not possible at this stage to provide any comment upon the assessment of views from specific locations. This issue applies to each of the subsections (see Section on Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusions 8.13, Application of Methodology 8.14, and Sub Section by Sub Section Review 8.15).</p> <p>A selection of photomontages were provided to support the PEI but no wirelines at this stage. The methodology needs to provide clarity on what will be provided in the ES stage in relation to wirelines and photomontages from the various viewpoints.</p> <p>A key concern is the use of the image and table to determine the magnitude of landscape change (landscape Volume 2.2 chapter 6 Image 6.2 and Table 6.11; visual volume 2.2 chapter 7 Table 7.9 and Image 7.2). The Image does not appear to allow for all combinations of geographic extent; size and scale; and duration and reversibility, resulting in an underplay of magnitude of change in the subsequent assessment. For example, during construction, substantial changes may occur, even if these are for a short duration, but the use of the image does not allow for a large extent, large change and short duration. The table attempt to cover this by saying 'or other relevant combinations of these three factors as in Image 6.2' but the image does not allow all combinations and the text should be expanded upon to acknowledge the potential combinations.</p> <p>Without additional photomontages or supporting wireframes,</p>



Additional Issues	Supporting Evidence
	conclusions within the text can only be based on the word of the assessor and these are required to give some justification to the statements made.
12. Moorside is not represented in the photomontages.	It is acknowledged that Moorside is a separate application, however, the requirement for Moorside and the NWCC project are interdependent and therefore both should be represented within the photomontages prepared for the ES. This issue is relevant to subsections where the proposed Moorside development is theoretically visible within the photomontage views (see section in this Chapter on Application of Methodology Visual Concerns 8.14).
13. Conclusions within the text are based upon the judgement of the assessor and not supported by associated photomontages.	The photomontages provided, up to five for each Subsection, do not relate to the assessment of likely effects carried out for the proposed development as they represent individual receptor locations rather than receptor groups identified within the PEI. As a result of this, it is difficult to provide comment upon the outcome of the assessment as there is no visual materials to cross refer to. This issue applies to each of the subsections (see Section in this Chapter on Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusions 8.13).
14. Photomontages do not present all components of the Proposed Development.	<p>Review of the photomontages presented to accompany the PEI demonstrate the view following the removal of the existing 132kV overhead line and either the land reinstated or the proposed 400kV overhead line. The photomontages do not however illustrate all components of the Proposed Development; for example Viewpoint D1-433 fails to illustrate the re-routed 33kV route which is identified as being relocated to the west of the CSE compound within the view presented. In order to correctly represent the potential change in view, all components of the Proposed Development should be included. This issue applies to each of the subsections (see section in this Chapter on Application of Methodology and section Concerns relating to Figures Volume 2.6 Chapter 7 – Visual 8.14).</p> <p>Concerns are also raised in relation to Volume 2.7 Appendix 7A. A key concern is in relation to the photography being presented at twice the height of that recommended in SNH guidance. Whilst the PPA Group can understand the reasoning for a greater vertical angle of view to be included for close up views to allow the extent of the pylons to be included, a large proportion of the photography is from more distant locations where the panoramic view should be the focus of the view. By including an increased amount of skyline and foreground than is recommended in SNH guidance, there is a large risk that the proposals appear smaller in the view than if the recommended height was used. This does appear to be the case when viewing a sample of the photomontages. The PPA Group would wish to see this addressed within the ES to avoid misrepresentation of the proposals. The PPA Group would also stress caution should be highlighted when recommending in the methodology that 'the visualisations can also be reduced by 50% and printed on A3 paper for the provision of reference copies'. This</p>



Additional Issues	Supporting Evidence
	suggestion should come with heavy caveats to avoid misrepresentation of the imagery produced.
15. PRoW are not identified on any of the supporting Figures.	The assessment of likely visual effects identifies and assesses a number of PRoW however these are not identified on any of the supporting figures and therefore it is not possible to identify the assessment locations or provide comment upon the assessment presented within the PEI. This issue applies to each of the subsections (see section in this Chapter on Application of Methodology 8.14).
16. Construction effects are under- represented and not addressed adequately	It is considered that the likely construction effects of the proposed development at the Middleton substation site are not adequately assessed within the PEI as a lack of detail is provided in relation to the proposed construction phases. i.e. no photomontage or elevation drawings. The PEI fails to identify any mitigation during the construction phase (see Sub section by Sub Section Review 8.15).
17. There are areas where it appears the visual assessment may underplay the likely effects.	It is considered that in some locations, particularly within the Duddon Estuary and the Whicham Valley that the assessment of likely effects may be understated due to the value attached to the views, the susceptibility of receptors and magnitude of change identified for the receptor (see section in this Chapter on the Approach taken to appropriate mitigation as part of the design process - 8.11 and 8.11.6).

Table 8.3 Landscape and Visual Route Specific Issues

Route Section	Key Issue
North Route	
1. A1	<p>Landscape:</p> <ul style="list-style-type: none"> • There is inconsistent application of value judgments on designated landscapes; • as there is no 'international' value rating for internationally designated landscapes (LDNP - candidate WHS, Frontiers of The Roman Empire WHS) these have been attributed a 'national' value. Consideration should be given to introducing an 'international' value rating; • the value of the Copeland East LoCI should potentially be raised to reflect its position next to the LDNP; • the value and predicted effect on the Low Farmland LCST may have been underplayed and its important role between two LoCI's and the LDNP has not been fully considered; • there is insufficient assessment of construction or operational stage cumulative effects resulting from the proposed Moorside Power Station and



Route Section	Key Issue
	<p>substation. As such, the predicted effects given are understated and there is likely to be a far higher overall effect on the Low Farmlands LCST; and,</p> <ul style="list-style-type: none"> there are inconsistencies in the application of assessment methodology and inconsistencies between the narrative and the corresponding summary tables. <p>Visual:</p> <ul style="list-style-type: none"> Construction stage effects are generalized and there is no location specific detail. Stated effects are likely to be much higher than that stated in some locations; the proposed Moorside Power Station and substation have not been considered sufficiently within the assessment so stated effects are likely to be higher at some locations; and, operational stage effects on users of the NCR72 seem to include the existing 132kV line which is to be removed. This suggests that the 132kV line will remain beyond the construction stage. As such, there is potential for differing effects to be experienced during the operational stage (i.e. with the 132kV line in place; while it is being removed; then when it has been removed.
	<p>Landscape:</p> <ul style="list-style-type: none"> The St Bees Head Heritage Coast is not mentioned within the baseline description at the start of the subsection and the PPA Group would expect this important designated landscape to be identified and described here; no reference is made to the cable undergrounding works or the proposed helicopter operating bases within both the construction effects and operational effects sections. As such, the assessment is incomplete and does not cover the full scope of works proposed; as the proposed cable undergrounding works have not been assessed, there is no consideration given to the effects of vegetation clearance which will extend through the construction stage into the operational stage; there is no consideration given to the visual interaction between the St Bees Head Heritage Coast and the LDNP and, as west facing views towards the distinct backdrop of the Lakeland fells are key aspect of other designated landscapes, the PPA Group would expect to this should fully explored. In addition, there is no supporting photography or photomontages to illustrate views from within this designated landscape; and, with regard to mitigation and residual effects, the proposed Moorside Power Station and substation have not been considered within the assessment and as such, the assessment is incomplete. <p>Visual:</p>



Route Section	Key Issue
2. A2	<ul style="list-style-type: none"> Value judgments are generally consistent between each subsection however; in some instances these vary with no supporting narrative to explain the change; the proposed Moorside Power Station and substation developments have not been included within the assessment and as such, the predicted effects on views have not been sufficiently assessed; higher than predicted levels of effect could be experienced from properties at Thornhill, Middletown, Bigrigg, Whitehaven and Keekle during the construction stage; cable undergrounding works and location specific features such as the helicopter operating bases have not been described or assessed and as such, construction stage assessment is incomplete and does not consider the full scope of works proposed; construction stage effects on users of the A595, NCRs and PRoWs are generalized and predicted effects are likely to be higher from parts of the routes located near the 400kv OH line route; major or major/moderate effects discussed within the narrative are not carried through to the summary table; and, there are arbitrary references to significance of effect, but these are inconsistent and there is no supporting narrative or references to methodology.
3. B1	<p>Landscape:</p> <ul style="list-style-type: none"> The PEI notes that some construction activity would occur at the existing Siddick substation and a railway compound would be established at the Port of Workington. No further information on the extent and type of activity is described so it is difficult for the reader to fully understand the extent of works likely to be occurring at this location, or its duration; and, construction and operational stage effects do not adequately consider the works associated with the proposed 400kv substation or the existing 132kv substation extension at Stainburn, and the cumulative effect of the proposals alongside the existing wind energy developments in this subsection are not discussed or assessed. As such, there could be a higher level of effect than that predicted on the Ridge and Valleys LCST. <p>Visual:</p> <ul style="list-style-type: none"> Construction stage effects are generalized and do not consider the proposed 132kV, 33kV and 11kV cable undergrounding works. As such, the assessment is incomplete; the construction stage effects on properties located at East Town End Farm, Stainburn Hall Farm, and Gale Brow are underplayed as the 400kV route will



Route Section	Key Issue
	<p>extend in very close proximity to these properties and it will be located closer than the existing 132kV lines. Undergrounding works are also proposed in close proximity;</p> <ul style="list-style-type: none"> the cumulative effect of vertical infrastructure has not been adequately considered as there is no consideration given to the East Town End and Fairfield Wind Farms, both of which would be located near the proposed 400kv route; and, the Preliminary Landscape Mitigation proposals plans show the extent of existing infrastructure to be retained and removed, and whilst the proposed above ground infrastructure is shown (400kV line), there is no indication of the proposed undergrounding works, particularly around the proposed 132kV substation extension works to the east of Stainburn. It is therefore suggested that the mitigation proposals have been prepared to mitigate the effects of above ground infrastructure, but no consideration is evident of the undergrounding proposals.
4. B2	<p>Landscape:</p> <ul style="list-style-type: none"> Whilst the distant views of the Lakeland Fells to the east and south east are identified as a key characteristic of the Solway Coast AONB, it is noted that no viewpoints have been selected within the AONB and there are no supporting photomontages to illustrate views across the proposed 400kV route towards the Lake District National Park and Lakeland Fells. It is therefore suggested that additional viewpoints are selected accordingly; and, the Ridge and Valley LCST extends across the landscape between the Solway Coast AONB and the LDNP and as such, it forms a transition between two nationally designated landscapes. As noted above, views between the two designated landscapes are important and as such the role the LCST plays is underplayed and the 'community' value rating could be heightened accordingly. <p>Visual:</p> <ul style="list-style-type: none"> It is anticipated that the construction and operational stage effects predicted for Broughton Moor have been underplayed and could potentially be higher than that stated as the decommissioning works on both 132kV lines and the 132kV undergrounding works will occur in very close proximity to the town, and any replacement planting / mitigation works will not become effective until after the operational stage has begun; and, the PEI predicts minor adverse effects on the A594 and the NCR 71 however, it is anticipated that there is potential for higher localised effects to be experienced where the 400kV route crosses the road corridor and cycle route.



Route Section	Key Issue
5. B3	<p>Landscape:</p> <ul style="list-style-type: none"> • The PEI notes that the Solway Coast AONB Landscape and Seascape Character Assessment was used to inform the baseline but that the identified seascape character areas have not been assessed. The ES should therefore consider these seascape character areas and assess them alongside the landscape character types; • as noted for earlier subsections, the LCTs / LCSTs located between the Solway Coast AONB and the LDNP play an important role in forming a transition and part of the setting to the two nationally and internationally designated landscapes. As such the value rating attributed to the Ridge and Valley sub type should potentially be raised from community level value to match the local authority value of the adjacent Low Farmland sub type; • there is no consideration of construction stage effects on the landscape character types which extend across the Solway Coast AONB; and, • the PEI narrative concludes that 'While the 400kV overhead line has the potential to increase the size of electricity infrastructure in the landscape, the intervening distance is likely to mean that the resulting change would not undermine the key characteristics of the LDNP or Solway Coast AONB'. There is no supporting photography or visualisations available within the PEI to verify this as there is only one viewpoint located within the AONB in this subsection, and it has not been presented within the supporting figures. <p>Visual:</p> <ul style="list-style-type: none"> • It is considered that from Hayton, there is potential for a higher level (major or major/moderate adverse) effect to be experienced as there will be a range of construction and undergrounding works occurring within close proximity to the southern edge of the settlement; • whilst operational effects are predicted in the PEI from Bullgill, Gilcrux, Oughterside, and Yearngill (moderate adverse effects), there is no discussion relating to construction stage effects from these same locations; • it is noted that the proposed 400kV route departs from the existing 132kV routes in several locations so there is potential for higher levels of effect to be experienced from individual properties where the new pylons will be located in closer proximity than the existing 132kV pylons; and, • the proposed 400kV route does not extend through the subsection in a consistently straight line, and instead, it departs from the existing 132kV corridor near Hayton and Aspatia. This more erratic alignment could potentially lead to a more cluttered appearance than the long, linear 132kV alignment.
6. C1	Landscape:



Route Section	Key Issue
	<ul style="list-style-type: none"> As noted previously, the landscape which extends between the LDNP and the AONB form part of the setting to the designated landscapes, as the introduction of new elements within them could potentially have an effect on views. As such, it is considered that this value rating for the Ridge and Valley sub type should potentially be raised from community value to match the local authority value of the adjacent Low Farmland sub type; the predicted effects on the AONB or the LDNP are not discussed at all within the construction stage narrative; and, the proposed 400kV route departs from the existing 132kV corridor across much of the subsection so there is potential for an increased effect as a result of OH line infrastructure extending across a wider overall corridor. The proposed route alignment here is questioned as the two 132kV lines which currently extend across the subsection run in a straight line and immediately parallel to each other. A straighter, less irregular alignment of the 400kv route would be preferable. <p>Visual:</p> <ul style="list-style-type: none"> As the proposed 400kv route alignment is more erratic and irregular than the existing 132kv alignment, there is potential for increased visual clutter; there is potential for higher levels of effect on properties at Gill Farm, Low Scales and Greenrigg Villa as the proposed 400kv alignment, when combined with the retained 132kv line, will partially envelope the properties; higher than reported effects could also be experienced by users of local PRoWs as they extend below the 400kv route; and, the visual interaction between locations within the Solway Coast AONB and its setting (including the LDNP) are not considered within the PEI and the PPA Group would expect the ES to fully address and assess this, with additional viewpoints included to illustrate the effects.
7. C2	<p>Landscape:</p> <ul style="list-style-type: none"> It is considered that this value rating for the Ridge and Valley sub type should potentially be raised from community value to match the local authority value of the adjacent Low Farmland sub type; the Coastal Plain LCST has been attributed a local authority value in the PEI, even though the Frontiers of the Roman Empire World Heritage Site lies within its boundaries. As such, the value attributed to this LCST should potentially be raised to national value, or subject to modification of the methodology and value rating approach, an international value rating; there is insufficient information available to understand the likely effects on the six areas of woodland identified as being affected; the PEI acknowledges that there will be construction activity related to the



Route Section	Key Issue
	<p>rationalisation works and undergrounding of 132kV cables near the Hadrian's Wall Path and the Frontiers of the Roman Empire WHS, but there is no further discussion or assessment of what these effects would be;</p> <ul style="list-style-type: none"> • construction stage effects on the Low Farmland and Ridge and Valley LCST's have not been adequately described or considered; • there is insufficient assessment and supporting information available (including viewpoint photography and photomontages) within the PEI to demonstrate the likely effects on the Solway Coast AONB and the landscape character types within it; and, • subsection specific mitigation proposals for Aikhead Hall and Parton Hall have been prepared however, no reference is made to these proposals and there is no indication of how these have been designed and what the resulting residual effects are likely to be. <p>Visual:</p> <ul style="list-style-type: none"> • It is noted that the PEI includes only two viewpoints located within the northern part of the AONB. These are located on the outer edges and there are no viewpoints located within the interior of the designated landscape, even though analysis of the ZTVs suggests that a number of proposed pylons are likely to be visible. Additional viewpoints are therefore required to illustrate the effects on views from within this area; • there is potential for higher level effects than that predicted to be experienced from users of the Hadrian's Wall Path where the route passes in close proximity to the 400kv line and the undergrounding works; • higher levels of effect than that stated could also be experienced by properties in Little Orton where the proposed 400kv route partially encloses the southern and eastern edge of the settlement. However, there is no supporting photomontage or viewpoint photography to help verify this effect; • the proposed 400kv route alignment to the north and north east of Wigton is questioned as it appears that some of the proposed pylons will be located on localized high points rather than aligned through lower lying areas; and, • the proposed 400kV route alignment to the west of Cargo and east of Rockcliffe will require amendment due to its proximity to these settlements, and to avoid adverse higher level visual effects for the local communities in these localities
South Route	
1. D1	<p>Landscape:</p> <ul style="list-style-type: none"> • The baseline does not identify the presence of the Low Level Waste Repository (LLWR) at Drigg and should be included;



Route Section	Key Issue
	<ul style="list-style-type: none"> the consideration of susceptibility of LCTs and LCSTs has not been clearly set out; the value and susceptibility of the LDNP is not identified within the baseline; the assessment of construction operations is not broken down in relation to overhead line effects and undergrounding effects; assessment does not make clear how major beneficial effects for the Intertidal Flats LCST and Major/moderate beneficial effects of the Low Farmland LCST and High Fell fringe LCST have been assessed considering the clearance of landscape features required in these area which will take a considerable period of time to re-establish; the loss of landscape features due to undergrounding does not appear to have been factored into the assessment; undergrounding is likely to have a greater impact and effect than what has been identified, particularly during construction; the assessment does not make clear how the effects on the LDNP and its' setting have been identified; and, there is no reference to the residual effects of the ancillary works associated with the construction phase. <p>Visual:</p> <ul style="list-style-type: none"> Effects on receptors are identified from the implementation of five temporary sites, however, the receptors are not stated; during construction, the potential effects upon users of the local road and PRoW network, including the English Coastal Path (ECP) route are described as minor adverse – the PPA Group feel this is under assessed and the effects would be greater, albeit for a short duration; decommissioning effects are not fully addressed; and, residual effects from vegetation removal have not been considered within the assessment. Major and Major/moderate beneficial visual effects have been identified within the PEI however the PPA Group feel this does not consider the vegetation removal and the time it will take to reestablish.
2. D2	<p>Landscape:</p> <ul style="list-style-type: none"> Consideration of susceptibility of the LCT/LCSTs to the proposed development is not clearly set out in determining overall sensitivity of receptors; landscape value and susceptibility of the LDNP as a whole to the Proposed Development is not stated; the extent of vegetation clearance for the temporary 132kV route is not



Route Section	Key Issue
	<p>stated;</p> <ul style="list-style-type: none"> no indication has been provided on the restoration of topography/levels along the route alignment. This is considered an intrinsic part of the landscape; during construction, the effects identified upon the Coastal Sandstone LCT are identified as moderate adverse. The PPA Group would disagree with this assessment and consider the medium/slight magnitude of change identified is understated given the intrusive nature of the works to be carried out within the LDNP in order to underground the 400kV cable. It is considered that the magnitude of change is likely to be Substantial or Substantial/Medium as there is likely to be a large level of change affecting all of the landscape receptor, particularly in the narrower tract of land in the south, which is likely to last between five and 15 years; the PEI assessment identifies moderate beneficial effects upon the Rugged/Angular Slate High Fell and High Fell Fringe LCTs as a result of the removal of the existing 132kV route. It is acknowledged that there are likely to be long term benefits resulting from the removal of the 132kV line however the assessment fails to consider the short and medium term adverse effects upon the landscape character that may be experienced as a result of the construction operations to carry out the undergrounding of the 400kV line; and, a full assessment of the effect on the LDNP is not included. <p>Visual:</p> <ul style="list-style-type: none"> The PEI does not provide sufficient description of the visual difference between the north and south sections of the Subsection; during construction, the assessment of effects upon residents in Newbiggin, Hycemoor, Silecroft and scattered properties is identified as moderate/minor (adverse) for the residents. This is understated and the potential effects are likely to be greater than stated; two rail compounds and a construction compound are proposed within this Subsection but the duration is not stated; once in operation, the assessment identifies major/moderate beneficial effects for Newbiggin, Hycemoor, Silecroft and scattered properties within 1 km of the Proposed development although omits any reference to the short/medium term residual visual effects resulting from the undergrounding operations This comment also applies to the assessment of users on the slopes of Black Combe, the emerging ECP and A595 tourist route; and, moderate beneficial effects are generally identified for high sensitivity receptors located over 1 km from the Proposed Development alignment, although the text does not provide sufficient detail to support this statement.



Route Section	Key Issue
3. E1	<p>Landscape:</p> <ul style="list-style-type: none"> • A summary of the wider study area should be provided which is included within adjacent Subsections; • the baseline description fails to fully set out the context of the Whicham Valley and its importance in providing the Setting to the LDNP; • it is considered the landscape value of the Upland Fringe foothills LCST 11a/136 may be underrepresented as the LCST and LoCI forms the setting of the LDNP; • the figures fail to identify the temporary 132kV connection between Silecroft and Haverigg; • it is considered the magnitude of change upon the Upland Fringe Foothills LCST may be underrepresented; • the application of magnitude of change in relation to construction effects does not appear to be balanced across LCSTs although it is appreciated a moderating exercise is to be carried out; • the PEI fails to provide visual representations to enable the assessment to be verified e.g. in relation to 'backgrounding' of the Proposed Development; • it is considered the Upland Fringe Foothills LCST is likely to experience greater effects than those identified due to its direct relationship with the LDNP; • the assessment fails to carry out an assessment upon the LDNP designation as a whole; and, • the PEI fails to adequately assess the decommissioning effects i.e. those experienced during decommissioning and provides a generic comment only. <p>Visual:</p> <ul style="list-style-type: none"> • The 'value' applied to visual receptors is generally considered appropriate; • for consistency, the overall width of the development area should be stated (ref paragraph 7.3.38) rather than the distance from the centre line for consistency and to avoid confusion; • it is anticipated the magnitude of change experienced by residents at Whicham is likely to be greater than the medium/slight identified taking into consideration the change in views described; • the beneficial effects identified at Whicham and Silecroft require further narrative to support the outcome considering the effects likely to arise from the CSE compound and terminal tower to be installed within this area; • it is considered that the increase in tower height of the Proposed



Route Section	Key Issue
	<p>Development may be under represented in the assessment of magnitude;</p> <ul style="list-style-type: none"> the assessment of long term effects post decommissioning fail to reference or assess the proposed 132kV trident line; the PEI fails to adequately assess the decommissioning effects i.e. those experienced during decommissioning and provides a generic comment only; and, additional viewpoints should be included in the EIA.
4. E2	<p>Landscape:</p> <ul style="list-style-type: none"> The figures referred to in the baseline do not identify all of the LCT/LCSTs referred to in the PEI assessment and therefore the assessment of these LCT/LCSTs cannot be reviewed; the existing baseline does not reference the existing wind turbines located on the ridge extending towards Barrow-in-Furness which are a strong characteristic of the area; the baseline description fails to fully set out the context of the Duddon Estuary and mosses and its importance in providing the setting to the LDNP; it is considered the 'value' of the landscape located immediately beyond the LDNP boundary may be understated as it is a natural extension of the landscape within the LDNP boundary and forms the setting to the LDNP; the PEI does not provide an assessment of all LCT/LCSTs which should be provided in the ES; the assessment fails to carry out an assessment upon the LDNP designation as a whole; and, further detailed assessment is required in relation to the long term presence of the realigned 132kV trident line following decommissioning of the Proposed Development. <p>Visual:</p> <ul style="list-style-type: none"> The 'value' applied to visual receptors is generally considered appropriate; the assessment at ES stage requires a greater level of detailed assessment for individual settlements rather than grouping nearby settlements; due to panoramic views across the Duddon Estuary it is considered that views of construction operations are likely to last longer than the two year period identified and should be considered in the ES; not all high value receptors identified within the baseline are assessed within the PEI and should be included within the ES; it is considered that effects arising at Ladyhall, Foxfield and Beck Side may be greater than those identified within the PEI and review of this would be



Route Section	Key Issue
	<p>welcomed within the ES;</p> <ul style="list-style-type: none"> it is considered that the effects experienced by footpath users may be greater than that identified however footpath numbers are not identified on the associated figures and therefore this cannot be verified; it is considered that the increase in height of pylons present within the view may be under represented within the PEI assessment; there is no information or assessment provided on the long term presence of the 132kV trident line post decommissioning of the Proposed Development; there is limited information contained within the PEI to support the reduction in residual effects identified at 15 years post completion; and, additional viewpoints should include in the EIA.
5. H1	<p>Landscape:</p> <ul style="list-style-type: none"> It is uncertain if the Proposed Route through Subsection H1 is to be over ground or underground as there is contradiction between the PEI assessment and the accompanying Figure; there is limited assessment of LCT/LCSTs within the PEI. A greater level of assessment should be provided within the ES; it is considered that the likely effects upon the Drumlin Field LCST may be greater than those identified due to the increased scale of the Proposed Development and therefore a greater level of narrative is required to support the outcome of the PEI assessment; and, a greater level of narrative is required to support the likely beneficial effects resulting from post decommissioning for transparency in the assessment. <p>Visual:</p> <ul style="list-style-type: none"> The downgrading of the value of views from settlements should be clearly explained and justified which is not currently present; it is considered moderate adverse construction effects may be under represented due to the short duration of the likely effects which requires further clarification; it is not clear how the temporary compounds, present for up to six years, have been factored in to the assessment of construction effects; the PEI only assesses a limited number of receptors identified within the baseline section of the PEI; it is considered that the effects upon residential receptors at Dalton-in-Furness may be under represented due to inconsistencies in the magnitude of change applied within the assessment; and, the PEI fails to identify where the 'neutral or potentially adverse effects' post



Route Section	Key Issue
	decommissioning are likely to be experienced.
6. H2	<p>Landscape:</p> <ul style="list-style-type: none"> Confirmation is required of the size/design of the islet (no dimensions are provided within the PEI); the photomontages within Lancashire are not in accordance with the previously agreed methodology and therefore the likely effects cannot be verified; given the PEI states the crane used within Morecambe Bay would be 'especially apparent' it is unclear how the assessment identifies that significant effects are not expected to arise. Further clarification to support this outcome is required; the PEI does not identify the magnitude of change likely to be experienced and therefore the likely effects cannot be verified; the PEI fails to fully assess the likely effects upon the AONB in all weather conditions and further narrative/explanation is required; and, the PEI fails to identify the degree of effect anticipated post decommissioning. <p>Visual:</p> <ul style="list-style-type: none"> It is considered that further assessment of construction effects is required once the construction method is confirmed; sea based receptors are likely to experience close proximity views and it is considered the effects may be under represented; and, the PEI fails to identify the degree of effect post decommissioning.
7. H3	<ul style="list-style-type: none"> The clarity of information contained within the PEI is poor and there is inadequate detail generally; it is noted that there has been significant changes since the last presentation to stakeholders earlier in the year and there is insufficient detail available to clearly understand the likely effects; there description of construction stage works is inadequate and there is no indication of phasing and timescales; it is not clear what the proposals are relating to the tunnel excavation spoil, including the temporary shaft; there is insufficient detail available to illustrate the heights of new facilities



Route Section	Key Issue
	<p>within the proposed construction compound or the scale and extent of the proposed islet;</p> <ul style="list-style-type: none"> • further clarification is required as to whether an access to a segment manufacturing facility is located within the DOL; • further clarification is required as to whether the temporary shaft spoil storage area east of Middleton substation site is within the extended DOL to east of the site; • it appears that photomontages prepared for viewpoints within Lancashire have been prepared to SNH standards and not Highland Council standards which was previously agreed; • there is no viewpoint register included or any reference to a viewpoint register, and there is no reference to ongoing discussions about viewpoint locations; • a number of viewpoints have been amended or omitted since the last consultation and there is no supporting justification to explain why. Further clarification on viewpoint selection changes is required; • there is insufficient information available (including viewpoint photography or photomontages) to understand the likely effects arising from the proposed Middleton substation and site compound; • it is considered that the predicted effects are understated/under-represented and effects are likely to be higher; • mitigation proposals for the final Middleton sub-station and tunnel head are inadequate and a further review of the mitigation proposals is required to ensure proposed tree belts are wide enough to provide a screening effect and to ensure proposals respond to the nearby PRoW; • significant visual effects are predicted relating to the proposed tunnel islet however no mitigation proposals are identified. Further clarification is required; and, • there is insufficient information available (including viewpoint photography or photomontages) to understand the likely effects arising from the proposed



Route Section	Key Issue
	islet.
8.Natland Substation	<p>Landscape:</p> <ul style="list-style-type: none"> It is considered that the value identified and applied to the landscape immediately beyond the LDNP boundary may underplay its actual landscape value in forming the setting to the LDNP; it is considered the location of the Proposed Development is in the transitional area between the two LCSTs identified and therefore it is unclear why one is assigned a greater magnitude of change than the other during construction and operation. Further narrative is required to provide clarification; and, there is no narrative explaining how the proposed landscape mitigation planting will contribute or otherwise to the existing landscape character. <p>Visual:</p> <ul style="list-style-type: none"> The PEI appears to have downgraded the value of some visual receptors without providing reasoning for this; a greater level of assessment is required within the ES to fully understand the likely effects of the Proposed Development rather than grouping receptors as in the PEI; it is considered residential receptors on the south edge of Natland are likely to experience greater effects than those identified and therefore further explanation of the assessment provided is required; and, the assessment of residual effects fails to identify the likely effects in the initial 15 year period post construction and the effect that the proposed mitigation is likely to result in.

8.4 Overall Context Description

8.4.1 This Landscape Specialist Report provides a detailed review of the National Grid NWCC Project and relates specifically to the North and South Route Assessment contained within the following documents:

- Volume 2.4 Preliminary Environmental Information Report, North Route Assessment, Chapter 6 – Landscape;
- Volume 2.4 Preliminary Environmental Information Report, North Route Assessment, Chapter 7 – Visual;
- Volume 2.5 Preliminary Environmental Information Report, South Route Assessment, Chapter 6 – Landscape; and



Chapter 8 – Landscape and Visual

- Volume 2.5 Preliminary Environmental Information Report, South Route Assessment, Chapter 7 – Visual.
- 8.4.2 The above documents have been reviewed with reference to the following Chapters which contain the associated Figures:
- Volume 2.6, Chapter 6 Landscape Figures; and
 - Volume 2.6, Chapter 7 Visual Figures.
- 8.4.3 In order to review the landscape and Visual chapters, reference is also made to:
- Volume 2.2 Introduction and Methodology Chapter 6 – Landscape;
 - Volume 2.2 Introduction and Methodology Chapter 7 – Visual;
 - Volume 2.3 Project-wide Information Chapter 6- Landscape;
 - Volume 2.3 Project-wide Information Chapter 7 – Visual;
 - Volume 2.3 Project-wide Information Chapter 22 – Cumulative Assessment;
 - Volume 2.8: 2.8.2 Northern Substation Siting Study;
 - Volume 2.8: 2.8.3 Cable Sealing End Siting Study;
 - Volume 2.8: 2.8.4 Furness Peninsula Substation and Tunnel Head Siting Study;
 - Volume 2.8: 2.8.5 Options Appraisal of a 400kV Connection via a Duddon Tunnel;
 - Volume 2.8: 2.8.6 Head of Duddon Alignment Options Appraisal;
 - Volume 2.8: 2.8.7 Options Appraisal for a 132kV Wood Pole Trident Line Connection to Millom BSP; and
 - Volume 2.8: 2.8.8 Options Appraisal of Alternative Technology.
- 8.4.4 The following relevant Appendices have also been reviewed in relation to the landscape and visual chapters:
- Volume 2.7 Appendix 1B Response to the Secretary of State’s Scoping Opinion - Table 1B.4 Landscape and Visual;
 - Volume 2.7 Appendix 1C Response to the Appendices of the Scoping Opinion;
 - Volume 2.7 Appendix – 2A Local Planning Policy;
 - Volume 2.7 Appendix 6A Landscape and Visual Approach to the Setting of National Landscape Designations;
 - Volume 2.7 Appendix 6B Record of Landscape Fieldwork;
 - Volume 2.7 Appendix 6C Consultation;
 - Volume 2.7 Appendix 7A Visualisation Methodology;
 - Volume 2.7 Appendix 7B Viewpoints and Consultation Feedback;
 - Volume 2.7 Appendix 22D The Current ‘Evolving’ ‘Long List’;
 - Volume 2.7 Appendix 22E Additional Long List Projects; and
 - Volume 2.7 Appendix 22F The Preliminary ‘Short List’.



Chapter 8 – Landscape and Visual

- 8.4.5 Only those appendices and volumes where issues have been identified of relevance to the landscape and visual assessment are commented upon within this review.
- 8.4.6 Reference has also been made to Cumulative Impacts of Vertical Infrastructure: Addendum 2 – Assessment Update for North West Coast Connections, November 2016.

8.5 Commentary on Policy and Legislative Context

- 8.5.1 The following provides a general review of the approach within the PEI to the planning policy context in relation to the assessment. For further detail reference should be made to the overall planning policy review contained within Chapter 2.

Landscape

- 8.5.2 Volume 2.2 of the PEI, Chapter 6 – Landscape, Section 6.2 Policy, Legislation and Guidance sets out the relevant international and national policy relevant to the assessment of potential landscape effects of the Proposed Development. Reference should be made to Volume 2.2 Chapter 6 – Landscape, Table 6.1 International and National Policy for policy relevance and how it is to be addressed in the ES Chapter.
- 8.5.3 The PEI landscape methodology contained within Volume 2.2, Chapter 6 – Landscape identifies the international and national planning policy relevant to the assessment of potential landscape effects of the Proposed Development; it also provides a critique of how policy is addressed in the assessment. It is noted that Chapter 6 does not contain information relating to local planning policy or identify how this has been addressed within the assessment of potential effects. Local planning policy is identified within Volume 2.7, Appendix – 2A Local Planning Policy. For consistency, local planning policy should be included alongside international and national policy with associated commentary on how the policy is addressed within the ES.

Visual

- 8.5.4 Volume 2.2, of the PEI Chapter 7 – Visual, Section 7.2 Policy, Legislation and Guidance sets out the relevant international and national policy relevant to the assessment of potential visual effects of the Proposed Development. Reference should be made to Volume 2.2 Chapter 7 – Visual, Table 7.1 International and National Policy for policy relevance and how it is to be addressed in the ES Chapter.
- 8.5.5 The PEI landscape methodology contained within Volume 2.2, Chapter 7 – Visual identifies the international and national planning policy relevant to the assessment of potential visual effects of the Proposed Development; it also provides a critique of how policy is addressed in the assessment. It is noted that Chapter 7 does not contain information relating to local planning policy or identify how this has been addressed within the assessment of potential

effects. Local planning policy is identified within Volume 2.7, Appendix – 2A Local Planning Policy. For consistency, local planning policy should be included alongside international and national policy with associated commentary on how the policy is addressed within the ES.

8.6 Adequacy of Baseline and Data Sources

8.7 Commentary on Study Area

Landscape

- 8.7.1 Volume 2.2 of the PEI, Chapter 6 – Landscape identifies a 5 km Study Area for the assessment of potential visual effects as a result of the Proposed Development which is identified through the preparation of Zone of Theoretical Visibility (ZTV) mapping for the 400kV route alignment. The ZTVs identify the theoretical visibility of groups of pylons from locations within the 5 km Study Area based upon a 'bare earth' terrain model i.e. excluding existing mapped woodland blocks and built development. The omission of woodland blocks and existing built development may result in a much greater ZTV being identified. It would be of benefit if within the ES, ZTV mapping were produced including woodland and existing built development. However, based upon the existing ZTV mapping provided a study area of 5 km is considered to be appropriate. ZTVs are also provided for a distance of up to 15 km from the 400kV route to consider potential effects of the Proposed Development upon receptors identified by consultees; again, these ZTV would benefit from the inclusion of woodland blocks and built development.
- 8.7.2 Within Volume 2.7 of the PEI, Chapter 1, Appendix 2C, National Grid's response to the Appendices to the Scoping Opinion, a number of reasons are provided by National Grid on why ZTVs run on DSM are not provided (paragraph 4.1.9). These reasons would benefit from a sample ZTV run on DSM for a section of the route to be provided to support the statements made and validate the reasons provided.

Visual

- 8.7.3 Volume 2.2 of the PEI, Chapter 7 – Visual, sets out the process of ZTV analysis used to identify the area in which effects are likely to be experienced. Paragraph 7.4.3 states 'Experience of assessing transmission projects in the team advising National Grid indicates the main effects on visual receptors are likely to occur within 5km of an overhead line with the effects most likely to be significant within 2 or at most 3km.' It is not clear if the experience upon which this assumption is based is related to lines of this scale, nor is it set out within the report the experience of the assessors making the statement. Whilst the assumptions may be valid, for transparency this information should be provided.
- 8.7.4 The inclusion of visual receptors within the wider study area up to 15km is welcomed to include sensitive receptors at promoted viewpoints within the LDNP.



8.8 Commentary on Existing Environment

Landscape

- 8.8.1 PEI Volume 2.4 and 2.5, Chapter 6 – Landscape provides a description of the landscape baseline (Existing Environment) for each Subsection contained within the North and South Route. A review of the baseline descriptions is contained within the Application of Methodology section below.
- 8.8.2 The PPA Group consider that in most instances the landscape baseline identifies relevant landscape features which are of importance within each subsection at a subsection wide scale. It is noted within the assessment that the only local level site features referred to is existing hedgerows and trees that may be affected by construction operations where the proposed alignment passes through these. The PEI currently omits to identify other landscape features within the DOL which the PPA Group would expect to see included within the ES. Landform is also not addressed as a landscape feature and the Group would expect this to be covered in the ES.

Visual

- 8.8.3 PEI Volume 2.4 and 2.5, Chapter 7 – Visual provides a description of the visual baseline for each Subsection within the North and South Route. A review of the baseline descriptions contained within the Application of Methodology section below.
- 8.8.4 The PPA Group would comment that in most instances the visual baseline description for each Subsection identifies the prominent visual qualities of the Subsection. Where it is considered that the baseline has overlooked elements within the description this is identified within the relevant Subsection review below.

8.9 Commentary on Factors influencing Future Baseline

Landscape and Visual

- 8.9.1 PEI Volume 2.2, Chapter 6 – Landscape and Chapter 7 – Visual briefly addresses future baseline within the methodology.
- 8.9.2 The conclusion of the future baseline is that if the Proposed Development does not proceed, there would be little change in the landscape or visual baseline as the existing 132kV overhead line is likely to remain. It is not made clear if the existing 132kV overhead line is likely to be refurbished in the future and if so how this is likely to be carried out; this should be clarified within the ES as this may occur if the proposal does not go ahead.



- 8.9.3 The PPA Group have assumed the construction of Haverigg II Wind Farm will be considered as part of the cumulative assessment. The PPA Group are aware of the recent decision by the developers of Haverigg Wind Farm to withdraw from their connection agreement with ENW. However, the implications of the extant planning permission should be addressed within the ES as appropriate.
- 8.9.4 The future baseline does not make reference to the potential landscape changes that may occur within the study area within the duration of the Proposed Development. Landscape Character Assessments at a national and local level identify potential drivers for change within the landscape that are likely to influence the landscape over future years. It is not clear how this information has been considered within the future baseline and should be clarified within the ES.

8.10 Commentary on Consultation Activity and Data

- 8.10.1 Some elements of the PEI have been consulted upon in draft prior to its release, although these have generally been concise pieces of work relating to methodology (e.g. Appendix 7A – Visualisation Methodology). It would have been advantageous to review some of the technical appendices in advance of the release of the PEI, but these were not made available.
- 8.10.2 Responses to various consultation and feedback have been provided within the Appendices of the PEI, including the following:
- Volume 2.7 Appendix 6C Consultation includes minute notes in relation to a LVIA post-scoping workshop with the PPA Group in November 2015 and a LVIA Topic Workshop in March 2016. It is noted that an action from the minutes was for SLR to provide examples of visualisations (not of the final project). Although methodology was provided in advance of the PEI, no photomontage examples were provided in advance as requested. At this meeting it was also requested that the viewpoint photography is shared with the stakeholders, but this was not carried out. Other points raised included the consideration of setting and the request that effects on the Lake District National Park (LDNP) and its setting should be treated equally – this was to be addressed in subsequent meetings although there are no minutes to support further meetings and this request has not been taken forward within this PEI; and,
 - Volume 2.7 Appendix 7B Viewpoints and Consultation Feedback includes feedback on how consultee comments regarding viewpoints have been addressed to date. This refers to comments provided following review of the scoping opinion in August 2015 and a viewpoint list provided for discussion in March 2016. From a review of Appendix 7B a number of comments have been addressed and responded to within this document, resulting in amendments to the data previously issued or further explanation into various viewpoints. The PPA Group note that for a number of comments, the response is 'noted, location will be reviewed for the ES', identifying that there is still further work to be carried out regarding viewpoint location selection and agreement. A response has been provided to relevant viewpoint comments in



our response per subsection below where relevant.

8.11 The approach taken to appropriate mitigation as part of the design process.

- 8.11.1 This is an important matter of concern, which is identified in Table 8.1 above in the Landscape and Visual key issues. The PPA Group is particularly concerned about the significant impact of the proposed transmission technology (overhead line with pylons) directly and cumulatively on the landscapes across Cumbria, including impact on the landscapes and special qualities of the Lake District National Park, both within the Park and its setting beyond the Park boundary, as well as impacts on the landscape surrounding the Solway Coast AONB, St Bee's Head Heritage Coast and Hadrian's Wall and the World Heritage Site.
- 8.11.2 Previous concerns have been raised in relation to the methodology contained within Volume 2.8 section 2.8.8 relating to how the threshold for 'particularly significant' has been set¹, although it is noted the bar has been amended since the previous version was reviewed. For landscape, the PEI methodology is considered to be where '*substantial magnitude effects are most likely to occur upon highly sensitive landscapes located outside nationally designated landscape*' (it is assumed that this should read substantial magnitude of change), or '*medium (or above) magnitude effects are most likely to occur upon highly sensitive landscapes located within nationally designated landscape areas*' (the PPA Group again assume this should read medium magnitude of change). For visual impacts, the PEI thresholds are defined as '*the proposed development causes a substantial magnitude of change for highly sensitive visual receptors (e.g. settlements, popular tourist destinations, valued or well used routes) that are not relevant to the purposes of nationally designated landscape areas, or the proposed development causes a medium (or above) magnitude of change for highly sensitive visual receptors that are relevant to the purposes of nationally designated landscape areas. In this context, residential receptors are not considered to be relevant to the purposes of designation but users of recreational routes/areas within the designated area are considered relevant*'.
- 8.11.3 The PPA Group would query the justification for setting the threshold at this level and why it does not include all EIA significant effects, 'major/moderate adverse' and 'moderate adverse' as defined in the PEI. The Group would also query what is considered as a receptor 'relevant to the purposes of nationally designated landscape areas', as it is felt this should include landscape and visual receptors which fall within the setting of the national designations (i.e. outside of) as well as those within the designations, however, from the subsequent assessment this is not the case.
- 8.11.4 The approach taken by National Grid to the interpretation of National Policy Statement EN-5 and the use of 'particularly significant' as a trigger for mitigation using alternative approaches to pylons is inappropriate and must be reviewed. The PPA Group considers that

¹ See PPA Group NWCC Key Impacts Report (July 2006) and PPA Group Response to the Stakeholder Feedback Questionnaire (September 2016)

the well established and widely applied semantic scale and threshold in EIA guidance for the significance of impacts must be used as the trigger for consideration of appropriate mitigation.

- 8.11.5 EIA guidance sets out a threshold that requires mitigation to be considered if a 'major or major/moderate' impact is likely to occur. National Policy Statements EN-1 and EN-5 and the Planning Inspectorate's Advice Notes Two and Nine provide the basis for determining NSIPs. However, due to the text in EN-5 that refers to 'particularly sensitive' and 'particularly significant', National Grid has itself chosen to develop a different assessment approach that sets a higher threshold of 'particularly significant' for triggering mitigation using alternative technologies. While EN-5 recognises that in 'particularly sensitive locations' this term is not defined in policy for assessing the effects of new development upon landscape character and visual receptors and consequent mitigation. The use of 'particularly significant' in the Options Appraisal for Alternative Technology (OAAT) methodology therefore sets an artificially high bar for the establishment of 'Focus Areas' areas for mitigation. It is not in accordance with current guidance and is also in conflict with National Grid's 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology' (February 2016), which states that mitigation will be considered for the entire length of the route. It is also inconsistent with EIA guidance and established practice, and with approaches that National Grid has taken elsewhere in the UK. The PPA Group take the view that the guidance in EN-5 does not set a threshold, and to use the wording in this way is not consistent with EIA guidance and established practice.
- 8.11.6 A robust methodology must therefore be used to assess the options for mitigation, including undergrounding across the whole route. Appropriate mitigation must be provided in all areas affected by the scheme in accordance with the national legislation, policy and local baseline studies and policies as required by EN-5. The PPA Group would argue that mitigation using alternative technologies must also be considered for all areas of the route where 'significant' effects are likely to occur to ensure appropriate mitigation is provided, and in particular for all parts of the Lake District National Park and Solway Coast AONB setting that would experience major or major/moderate impacts, and in particular E1 Whicham Valley and E2 Duddon Estuary and Mosses. As a result of the PEI assessment approach, landscape and visual impacts within the Park and its setting fall below the threshold for mitigation despite resulting in 'significant' effects. In other areas the assessment underplays the effects of the development, suggesting effects are likely to be significant where it may not be the case. A re-evaluation of the significance of impacts and the need for mitigation will be needed in the EIA.
- 8.11.7 The Secretary of State was also not made aware of the additional assessment process in the Scoping Report. The SoS only agreed to the use of the EIA semantic scale. National Grid has not taken such an approach in other developments elsewhere, such as National Grid's Afon Glaslyn VIP project proposals, where no reference was made to 'particularly significant' and the proposals include putting existing pylons and cables from the 1970s underground and under the Afon Drywyd estuary near Porthmadog in the Snowdonia National Park to address landscape and visual impacts, and protect the setting of the National Park affording iconic views into the central part of it.

- 8.11.8 National Grid's approach to defining the preferred route of the Hinkley Point C Connection Project (HPC Project) used a more thorough and robust approach where no reference was made to 'particularly significant' in assessing landscape and visual impacts in that case either. This has not been undertaken for the NWCC Project.
- 8.11.9 In light of the outstanding uncertainties within the methodology, arising from inaccuracies in the process, the PPA Group feel this methodology in its current form is flawed and requires revision.

8.12 Key issues affecting the settings of designated landscapes

- 8.12.1 This section provides evidence in the support of Key Issue 2 as the PEI fails to adequately assess the setting of the LDNP and Solway Coast AONB.

Assessing the impacts on the setting of the designated landscapes – policy interpretation

- 8.12.2 The PPA Group consider that National Grid's interpretation of the duty to have regard of the setting of designated landscapes is flawed. National Policy Statement EN-1 paragraph 5.9.12 states that the duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas, which may have impacts within them. The aim should be to avoid compromising the purposes of designation, and such projects should be designed sensitively given the various siting, operational, and other relevant constraints. The PEI also fails to refer to LDNPA Core Policy CS01 or the actions and objectives set out in the Solway Coast Area of Outstanding Natural Beauty Management Plan 2015-2020.
- 8.12.3 The approach taken by National Grid to the setting of designated landscapes is inappropriate and must be reviewed (i.e. Volume 2.7, Appendix 6 - Landscape and Visual approach to the Setting of National Landscape Designations, paragraph 6A1.10 and 6A1.12 and 6A3). The landscape and visual effects must be assessed fully for receptors both within the setting of the designations (i.e. outside the LDNP and Solway Coast AONB looking into it) as well as within the designations (i.e. inside looking out). National Grid has chosen to interpret the guidance in EN-1 restrictively and this is flawed. Many examples are available both within Cumbria and elsewhere in the UK where impacts on the setting are normally considered for receptors both within the setting, as well as within the protected area.
- 8.12.4 The impacts on visual receptors on the approaches to gateways to the designated landscapes that are outside the setting, but with important views across the setting to the protected area should also be considered. The policy review must also reflect the duty National Grid has on designated landscapes, their special qualities, purposes and setting as set out in national and local policy. The PEI currently reduces the scope of the setting, the relevant special qualities and the impacts on the recreation and quiet enjoyment purpose of designation.

- 8.12.5 Examples of policy that give support to the PPA Group's case are contained in: LDNP Core Policy CS10 – "*Achieving Design Excellence*" and LDNPA Park Partnership Plan; Hinckley C Connections, Grid's Environmental statement; Hinckley C Connections, Inspector's report; Solway Coast AONB policy on setting; Cotswolds AONB policy on setting; and Snowdonia National Park SPG 2014 Landscapes and Seascapes.

Assessing the impacts on the setting of designated landscapes – Methodology

- 8.12.6 The PPA Group challenge National Grid's inconsistent and flawed methodology in relation to the setting of the designated landscapes. The PEI fails to take a consistent approach to the setting (see Volume 2.2 Chapter 6 Table 6.1 and Volume 2.3 Chapter 6: 6.6.8), is inconsistent with the national GLVIA3 approach and does not fully reflect the details of the LDNP and Cumbria landscape character assessments, Solway Coast AONB Landscape and Seascape Character Assessment and undervalues these landscapes. (Volume 2.7 Appendix 6 - Landscape and visual approach to the Setting of National Landscape Designations Value and LCTs Paragraph 6A 1.23 and Volume 2.2 Chapter 6 6.6.15 and Table 6.4 Value Attached to Landscapes). Although, the PEI refers to the setting in several places and sections, it does not appear to apply a consistent approach to its definition or assessment of impacts. There needs to be greater consistency in the definition and approach to considering impacts on the setting of the designated landscapes in both the project wide methodology and landscape and visual methodology.
- 8.12.7 The landscape assessment identifies: "*receptors are often areas of particular landscape character which are wholly or partly covered by a designation.*" (see Volume 2.2 Chapter 6 6.6.15 and Table 6.4 Value Attached to Landscapes). The failure to adequately identify the value, sensitivity and susceptibility of the designated landscapes setting and assess the magnitude of change against the proposal has resulted in the significance of effects being underplayed. Importantly this under valuing has led to large parts of Section E1 Whicham Valley and E2 Duddon estuary and mosses not being considered appropriate for options appraisal of alternative technology. This must be revisited and a more consistent approach to the landscape and visual impact assessment carried out for the setting. The ES must address this issue, identify the major and major/moderate impacts of the proposal on the designated landscapes setting and set out mitigation.
- 8.12.8 As set out in the previous section on policy and setting, the PPA Group disagrees with the approach that National Grid has taken to the setting of the designated landscapes where it fails to fully consider the definition and description of the setting and impacts on receptors within the setting. The Appendix on the setting of protected areas identifies that the methodology will not define a setting and that primary considerations is for effects on receptors within designated landscapes. This is a direct result of the interpretation of NPS EN-1 (See comments to EN1 above). The Environmental Statement (ES) must define and assess the full landscape and visual impacts on the setting of designated landscapes and for landscape and visual receptors both within the setting and within the landscapes.

- 8.12.9 The PEI fails to adequately describe the setting of the designated landscapes in a consistent way. It fails to recognise the landscape characteristics that go beyond the boundary of the designated areas and are important to defining its setting. The ES must address this issue in full.
- 8.12.10 In relation to the LDNP the PPA Group would maintain that land north of Drigg (D1), the Whicham Valley (E1) and the Duddon Estuary and mosses (E2) all form the setting of the LDNP in relation to this proposal. They have the same characteristics and quality as the adjacent landscapes in the National Park. This is evidenced in the LDNP landscape character assessment where Landscape Character Types (LCT) and Areas of Distinctive Character (ADC) abut and flow beyond the park boundary as follows:
- Around Drigg – LCT Lowland
 - Whicham Valley – LCT J High Fell Fringe and ADC 61 Whicham Valley.
 - Duddon estuary and mosses – LCT F Rugged Craggy Volcanic High Fells and Type B Coastal Margins, with sub type Coastal Mosses, and ADC 54 Broughton and Torver
- 8.12.11 The Cumbria Landscape Character Assessment reinforces the setting and landscape character flowing beyond the National Park boundary as follows:
- Around Drigg – LCST 5b Lowland - Low Farmland
 - Whicham Valley - LCT 11a Upland Fringe: Foothills adjacent to the park boundary and across Lowscates Bank
 - Duddon Estuary and Mosses – LCT 11a Upland Fringe: and
 - Foothills at Foxfield Ridge, and LCT 2b Coastal Margins; Coastal Mosses around the Duddon.
- 8.12.12 In a similar manner, this is identified in relation to the Solway Coast AONB within the Landscape and Seascape Character Assessment which notes that *"To the east, lowland plains extend across the Solway Basin towards the Eden Valley"* whilst. *"To the south, the setting includes the northern foothills and fells of the Cumbrian Mountains, with Skiddaw forming a key focal point. Windfarms visible in this direction, against the backdrop of the fells, include High Pow and Wharrels Hill"*. In this respect, the following subsections will play a role in defining the setting to the Solway Coast AONB:
- B2 Seaton to Tallentire;
 - B3 Tallentire to Aspatria;
 - C1 Aspatria to Wigton; and
 - C2 Wigton to Harker Substation.
- 8.12.13 In Volume 2.3 Chapter 6 6.6.41 and generally Volume 2.3 Chapter 6: 6.6.6 onwards, the PEI acknowledges that the Duddon Estuary and Mosses forms the setting of the LDNP, yet it is inconsistently defined and assessed. Although the assessment acknowledges in this paragraph that the Duddon Estuary does form the setting of the Park, it only considers the impacts of the landscape character types within the park, and not within its setting.

Chapter 8 – Landscape and Visual

- 8.12.14 The GLVIA (3rd Edition) paragraph 5.46 sets out guidelines for assessing the value of a landscape receptor. National Grid's methodology does not take this guidance into account. The ES must take this into account.
- 8.12.15 Failure to assess the setting of the national park and the impacts of the proposal of the special qualities and purposes of designation also impact on the setting of the World Heritage Site (WHS). Please see additional comments in the Historic Environment section on this issue.
- 8.12.16 The detailed assessment of the route sections below provides further evidence in support of the above issues.

Application of Methodology relating to the LDNP

Additional Issues relating to the LDNP

- 8.12.17 This section provides detail on the Key Issues in relation to the Lake District National Park.
- 8.12.18 The PPA Group considers that the application of the methodology for both landscape and visual assessment is flawed and inconsistent. This must be reviewed and addressed in the ES. Although the PEI uses GLVIA3 to guide its methodology, there are inconsistencies on how it has been applied. Some of these are set out below, with others being described in the Assessment section.
- 8.12.19 The ES should include a higher value rank for WHS and their settings. A lower level ranking has been introduced for degraded land, but a higher level ranking for globally recognised World Heritage Sites has not been introduced. The WHS is of national importance.
- 8.12.20 The value, susceptibility, sensitivity, and magnitude of change for landscape must be reviewed in the ES. The narrative justifying the assessment is lacking and must be included in the ES. The susceptibility to change and magnitude of change is understated for the Whicham Valley (E1) and the Duddon estuary and moorlands (E2).
- 8.12.21 The visual impacts on receptors that use the Park for recreation and enjoyment have been understated. They are likely to be significant and warrant consideration of mitigation. This needs to be addressed in the ES.
- 8.12.22 For visual the value of the receptors generally appears to be acceptable. However the overall impacts appear to be severely understated for recreational users using national routes and footpaths in the setting of the Park north of Drigg (D1), and medium to high level paths in the Park in the Whicham Valley (E1) and around the head of the Duddon (E2). The description of the development and impacts on receptors is inadequate and appears to understate the impacts of pylons and the cable sealing end compounds. The wider narrative

is also inadequate making it difficult to understand the professional judgement that leads to the concluding impacts. There appears to be no consideration of sequential impacts of receptors travelling/experiencing the western part of the park and its setting.

- 8.12.23 Sequential views of visual receptors have not been properly addressed. The ES must address this and consider mitigation if impacts are significant. Many of the visual receptors will experience the pylons in sequential views along walking and cycling and scenic driving routes. The impacts of this must not be understated and must be addressed in the ES. Appropriate mitigation should be applied to address any significant affects that may arise. This is particularly the case for sections D1, E1 and E2.
- 8.12.24 The iterative nature of the EIA allows for the design of a scheme to minimise environmental effects. The PEI fails to minimise the environmental impacts of the scheme in section E1 Whicham Valley and E2 Duddon estuary and mosses (see Volume 2.2 Chapter 5 5.2). The need to minimise environmental impacts during the EIA process need to be addressed in the determination of impacts for section E1 Whicham Valley and E2 around the Duddon Estuary and mosses. So far the iterations have not gone far enough. National Grid acknowledges the iterative nature of EIA *"National Grid recognises that a key benefit of the EIA process is the opportunity it gives to integrate environmental considerations into an iterative design process for a project. This allows potential effects to be considered and minimised so that environmental effects are accounted for in design from the earliest stages."*
- 8.12.25 The PEI has not applied the methodology to assess significance of impacts consistently in section E1 Whicham Valley and E2 Duddon Estuary and mosses (see Volume 2.2 Chapter 5 paragraph 5.7.4). The assessment of the significant impacts on both landscape and visual receptors is inconsistently applied. The ES must review this approach. In order to aid the clear and robust identification of significant impacts, specific and targeted sensitivity, and magnitude of effect the PIE has developed thresholds on a topic by topic basis (see Chapters 6 to 21, Volume 2.2). These aim to provide well defined criteria for assigning sensitivity and magnitude of effect for each identified receptor type. It should be noted that the definition of these has been developed in line with topic specific good practice guidelines – GLVIA 3rd edition. Despite this, the application of the thresholds is understated for Sub sections E1 and E2.
- 8.12.26 The PEI fails to recognise the sub regional importance of Landscapes of County Importance (LoCI) when determining their value (see Volume 2.2 Chapter 5 paragraph 5.7.5). The ES must review the value given to LoCI. The landscape assessment gives a local value of LoCI. There is a limited recognition of the character of the LoCIs and the characteristic setting of the Park. National Grid has understated the value and susceptibility to change and therefore the overall sensitivity of the LoCI's that form part of the setting in the Whicham Valley (E1) and Duddon estuary and mosses (E2). The sensitivity of a receptor has been assessed with reference to the relative importance of existing environmental features on or near to the Project (e.g. whether features are of national, regional or local importance) and by the sensitivity of receptors which would potentially be affected by the Project. Sensitivity is not an absolute criterion, but one which needs to be considered in relation to the characteristics

of the Project and the anticipated effects. As noted above, the proposed criteria for the determination of sensitivity have been established for each of the receptors on a topic by topic basis, based on legislation, statutory designations, guidance and professional judgment.

Assessment Findings

- 8.12.27 As set out above the PPA Group consider that the landscape impact assessment is flawed due to inappropriate application of policy, failure to define and describe the setting of the Park and the impacts arising to receptors both within the park and its setting. This results in the effects on the landscape receptors in the Park and its setting being understated for section E1 Whicham Valley and E2 around the Duddon estuary and mosses. The assessment particularly underplays the role of the national park to: conserve and enhance the natural beauty, wildlife and cultural heritage. The description of the proposal in relation to landscape character underplays its effects and resulting impacts. The landscape assessment concludes that impacts on the landscape character around Drigg (D1) are moderate, in the Whicham Valley (E1) are moderate and around the Duddon Estuary and mosses (E2) are major/moderate. These conclusions are not accepted. The PPA Group considers that the judgment of these effects should be significant and that appropriate mitigation should be undertaken to moderate or remove these impacts.
- 8.12.28 The case is the same for the visual impact assessment (Volume 2.3 Chapter 7. Paragraph 3.48 -55). The assessment is flawed due to inappropriate application of policy, failure to define and describe the setting of the Park and the impacts arising to receptors both within the park and its setting. The effects on visual receptors in the Park and its setting have been understated in section D1 between Seascale and Drigg, E1 Whicham Valley and E2 around the Duddon estuary and mosses. The description of the proposal in relation to visual receptors underplays its effects and resulting impacts. The assessment particularly underplays the role of the national park to: Promote opportunities for the understanding and enjoyment of the special qualities of national parks by the public, and the duty to seek to foster the economic and social well-being of local communities within the national parks. The visual impact assessment concludes that the majority of impacts on visual receptors within the Park in relation to the Whicham Valley (E1) and Duddon estuary and mosses (E2) are moderate/minor. In a few minor cases the assessment considers some major/moderate impacts. The impacts of users of NCR72 along the coast road from Seascale to Drigg and other receptors in the area need to be assessed as there are sensitive views across the open farmland up Wasdale to the High Fells which will be interrupted by the proposal. It is not accepted that impacts in these areas are generally judged to be moderate/minor. Again the PPA Group considers that the judgment of these effects should be significant and that appropriate mitigation should be undertaken to moderate or remove these impacts.
- 8.12.29 The PEI fails to recognise the value of the setting of the Park which results in the landscape and visual impacts being understated. The ES must give a national value to the landscapes that form its setting and reassess the sensitivity and magnitude of change. The failure to identify the sensitivity and susceptibility of the setting of the park and assess it against the proposal has resulted in the significance of effects being underplayed. Importantly this

under valuing has led to large parts of Section E1 and E2 not being considered appropriate for options appraisal of alternative technology. This must be revisited and a more consistent approach to landscape and visual assessment carried out. The assessment builds on the policy principles and approaches set out in the project methodology and landscape and visual methodology. This results in the understating of impacts, and where significant impacts are expected, the failure to consider appropriate mitigation in line with EIA regulations. The landscapes adjacent to the Park that forms its setting around Drigg (D1), the Whicham Valley (E1) and around the Duddon estuary and mosses (E2) have the same quality and condition as the landscape within the park. These areas should be recognised as its setting, should be given a national value in landscape and visual impact assessments and the impacts reassessed accordingly. The sensitivity of the setting to the development in the Whicham Valley (E1) and around Duddon Estuary and mosses (E2) is expected to increase the level of impacts to major/moderate and possibly major.

8.12.30 The need to refine and expand the landscape and visual impact assessment following consultation is supported. The preliminary assessments do not take into account:

- The national value of the setting of the Lake District national park;
- the full range of landscape characteristics, sensitivity, susceptibility, magnitude of change and effects of the development on the setting of the Park; and,
- the full range of special qualities of the Park and Outstanding Universal Value for the candidate WHS.

8.12.31 The PEI fails to address all the 13 special qualities of LDNP and the 3 themes of the Outstanding Universal Values of the proposed WHS (See Volume 2.3 Chapter 11 paragraph 6.3.4 and 6.3.7 and Volume 2.3 Chapter 6: paragraphs 6.6.45 and 46). This is explored further in the LDNPA's WHS section comments. The ES must consider all of the relevant special qualities of the Park for the landscape and visual impact assessments. The current assessment states that a special report of the Park's special qualities will be produced for the ES. This is supported and must be used to ensure the landscape assessment covers all the relevant special qualities. At present, it only covers 3. This is unacceptable for landscape. It has resulted in the impacts of the proposal on the special qualities of the Park and its setting being understated. It should include: world class cultural landscapes, complex geology and geomorphology, rich archaeology and historic landscape, wealth of habitat and wildlife, mosaic of lakes, tarns, rivers and coast, a long tradition of tourism and outdoor activities, and opportunities for quiet enjoyment.

8.12.32 The approach taken in the landscape and visual assessments in the landscapes that include undergrounding, sealing end compounds and overhead lines understates the negative impacts of the overhead lines (see Volume 2.3 Chapter 6. Paragraph 6.35 (Drigg) and Volume 2.3 Chapter 7.3.46 (Whicham)). The approach taken in the landscape and visual assessments to balance the overall impacts on landscape and visual receptors adjacent to Drigg (D1) and the Whicham Valley (E1) understates the negative impacts of the overhead lines. This must be reviewed in the ES. The PEI seeks to balance the beneficial impacts of undergrounding with the negative impacts of overhead pylons and the sealing end compounds. By taking this approach the PEI suggests that the negative impacts won't be

significant – they are in effect moderated by the beneficial impacts. This understates the negative impacts of the pylons on large areas of landscape, particularly in the Whicham Valley (E1). This approach must be reviewed to enable a fairer assessment of the negative impacts in the ES.

- 8.12.33 The PEI is inconsistent in its approach to the considering the impacts on the World Heritage Site and its setting (see Volume 2.3 Chapter 11 paragraph 6.3.9). The ES must assess the impacts of the candidate WHS and its setting consistently and consider appropriate mitigation if significant impacts are likely. Grid confirms in some sections that as the LDNP documents have been submitted to UNESCO it is being treated as if the WHS is designated. However, it is unclear how these impacts are being consistently addressed in the landscape and visual impact assessment, especially in regard to the setting of the WHS (and Park).
- 8.12.34 It is unclear how the assessment has taken into account the deviation of the pylons – which could be +20m from the centre of the pylon line in each direction (See Volume 2.2 Chapter 6: paragraph 6.7.3 and Volume 2.2 Chapter 5 5.7). The deviation methodology for the pylons could move some pylons into the Park boundary in the Whicham Valley (E1). The ES must assess the impacts as if the pylons were in the Park boundary. In the Whicham Valley (E1) the deviation would result in several of the pylons moving into the park or to within less than 12m of the National Park boundary. Therefore the assessment should assume that pylons MR-01-93A, 94D, 95D and 96D4 of the 12 pylons along the Whicham Valley would be within/only just outside the park. The PEI also fails to acknowledge and assess the impacts of the pylon in E1 Whicham Valley which is sited right on the edge of the Park boundary and oversails the Park. The route along the park boundary in E1 Whicham Valley should not ingress or oversail into the Park. There is a pylon which oversails land designated as part of the Park, at the bridge near Po House. This design needs reviewing to help avoid a route design which is aligned with the Park boundary.
- 8.12.35 The low height pylon proposed on the Foxfield Ridge (Section E2) would be obtrusive, dominant and cause significant impacts on landscape and visual receptors. Mitigation must be sought in the ES to reduce the significant effects of the proposed pylon on the Foxfield Ridge (section E2 around the Duddon estuary and moorland). Locating a pylon that is significantly taller and wider than existing pylons, in a highly prominent location on the Foxfield Ridge would cause significant impacts. This location is highly sensitive, visible from many locations and angles and within the Park's setting. The PEI fails to consider the full impacts of the proposal on the setting of the Park and people's views and enjoyment of this landscape.
- 8.12.36 The assessment of beneficial effects from undergrounding in the National Park fail to consider the residual impacts as the land recovers from the construction impacts (see Volume 2.3 Chapter 6: paragraphs 6.6.6 – 6.6.19). The ES should consider construction residual effects for a period of 10-15 years post construction. The PEI only considers the construction impacts during a 2 year construction period. It then considers the impacts during the operation period. It fails to assess the residual effects of undergrounding works. There will be a period post construction where there will be landscape and visual impacts of the developed land. In some cases, it could take up to 15 years for the land to recover fully.

These residual effects should be assessed. Failing to assess these could result in a higher than appropriate beneficial impact being stated from undergrounding.

- 8.12.37 The PEI fails to recognise that the development may have impacts on adjacent landscape types in the setting of the park (see Volume 2.3 Chapter 6: paragraph 6.6.8). The PEI only assesses impacts on adjacent landscape types within the Park. It should also assess the impacts on adjacent landscape types in the setting of the Park as well.
- 8.12.38 The project wide assessment fails to acknowledge the Whicham Valley in its description of NCA 8 Cumbria High Fells (see Volume 2.3 Chapter 11 paragraph 6.2.13). The assessment fails to reflect that that section in the Whicham Valley (E1) falls within National Character Area 8. It is a characteristic U shaped valley radiating from the high fells to the sea. It is in by low valley characteristics are typical of those described in the NCA. This should be acknowledged in both the project wide and landscape assessment. It adds evidence to the fact that the Whicham Valley (E1) outside the Park boundaries has the same characteristics as that within. This reinforces its role as the setting of the Park and the need for this national value to be recognised in the assessment.

Cumulative Impacts

- 8.12.39 The PEI does not consider cumulative impacts. The ES must consider all cumulative impacts within the Park and to its setting.
- 8.12.40 Of particular concern arising from this major linear development is the cumulative and sequential impacts on receptors of viewing the infrastructure repeatedly as they travel through the National Park approach the National park through and its setting – be that by driving along a scenic route, riding or walking a national or local route.
- 8.12.41 The PEI does not consider the cumulative impacts of the 132kV trident line in section E2 around the Duddon Estuary and mosses (see Volume 2.3 Chapter 6: paragraph 6.6.30). The cumulative impacts of the Trident and 400kV line in the setting of the Park must be assessed. Cumulative impacts have not yet been assessed. The trident line will cross into the Park for 1.2km at Greety Gate, and passes through the setting of the Park in the Duddon Estuary. This could cause significant cumulative effects on both the Park and its setting.

8.13 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

- 8.13.1 This section provides more detailed information in relation to Key Issue 2. The PEI does not systematically address all effects likely to result from the proposed development. A greater level of detail is required to assess all landscape and visual receptors identified through baseline studies and consultation, and provide adequate supporting information in the form of visualisations and narrative to support the relevant assessments.

Landscape Assessment Methodology

8.13.2 The landscape assessment methodology included within volume 2.2 Chapter 6 is similar to that included within the scoping report and includes a number of updates in response to comments made at the scoping stage. The PPA Group are generally in agreement with the methodology stated; however, the following is noted (where applicable, cross reference to the visual methodology has been made to avoid duplication):

- Paragraph 6.1.3 notes that 'the landscape comprises several elements, which are referred to within GLVIA3, and within this chapter as landscape receptors. These can be summarised as the following: 1. Individual elements such as woodlands or hedgerows; 2...'. GLVIA3 does refer to these elements listed in section 5.4, however it also includes physical influences such as landform. Landform is a key element that should be considered within the baseline, as this influences the character of a number of areas (for example within Subsection D2, specifically Landscape Character Type (LCT) E/5b Coastal Sandstone, as shown on PEI Figure 7.13.3c Viewpoint D2-466 Photomontage (3 of 3)). The identification of this element is key in addressing the potential change and effect in relation to the proposed ground works associated with the undergrounding of the Proposed Development;
- paragraph 6.1.5 notes that survey work and consultation is still ongoing and that the assessment is likely to expand and refine as part of the ES. The PPA Group would note that there are areas which appear to still be work in progress as this statement suggests and would therefore welcome this expansion and refinement;
- paragraph 6.1.6 details how the landscape resources cross over subsections and how this will be handled. Where landscape resources fall within multiple subsections, it is expected that a summary on how the overall project is likely to effect the individual resource would be provided, rather than just a segmented assessment per subsection as is currently included in the PEI;
- under section 6.5.10 it is noted that the CIVI study has been referenced as being reviewed. It is not referred to elsewhere within the report or assessments and the Group would question what data has been included from this report. It is recommended that it is referred within the ES;
- under 6.5.11 it is noted that 'four teams of experienced landscape architects' carried out the field work. Volume 2.7 Appendix 6B Record of Landscape Fieldwork lists landscape architects who have carried out the fieldwork and photographers. The appendix does not detail how these teams were arranged, however, 6.5.12 does highlight that discussions on judgement were carried out with other experienced landscape architects in accordance with GLVIA3, which is welcomed (this comment also applies in relation to paragraph 7.5.6, volume 2.2 Chapter 7 Visual);
- It is noted that under 6.5.15 data collection has been cut off at 30th April 2016 for the PEI. The PPA Group would expect this date to be amended for the ES and data updated accordingly (this comment also applies in relation to paragraph 7.5.7, volume 2.2 chapter 7 Visual);
- table 6.4 Value Attached to Landscape, introduces the category of degraded landscapes which has been added since the methodology included within the scoping report was reviewed. It is acknowledged that this category is a worthwhile addition, but question in that respect why a higher value category could not be added for

International value to cover World Heritage Site Status (as raised in previous consultations);

- it is noted that under 6.6.25 relating to the determination of sensitivity, the methodology states 'in a few limited cases a category of less than low (very low) may be used where the landscape is of low value and susceptibility is particularly low'. This is additional text since the methodology issued at scoping stage. The PPA Group would query why a similar approach has not been taken for landscapes of high value and high susceptibility, resulting in a very high sensitivity;
- it is noted that 6.6.28 states that effects of construction traffic have not been taken into account at the PEI stage and the PPA Group would welcome this inclusion for the ES;
- the image 6.3 Levels of Landscape Effect and Significance and Table 6.12 Levels of Landscape Effect do not take into account the new 'very low' landscape sensitivity that has been introduced to the methodology. This should be accounted for in the methodology and the tables updated accordingly;
- paragraph 6.6.41 details that there will be a benchmarking exercise carried out to ensure that each moderate effect is considered in a consistent way when judging significance. The PPA Group would welcome this approach in the ES (this comment also applies to paragraph 7.6.45 volume 2.2 Chapter 7 of the visual assessment);
- paragraph 6.6.45 details how the collation of information to be used in the cumulative assessment is still underway with regards to the preparation of a 'long list' and a 'short list'. The PPA Group welcome this approach and note that it is acknowledged that Moorside is included in the list. Additionally, it is suggested that National Grid should also add that Haverigg II should be included and would welcome review of the long and short lists when completed. The PPA Group would wish to discuss the production of cumulative photomontages once the sites have been agreed (this comment also applies to paragraph 7.6.49, volume 2.2 Chapter 7 Visual);
- it is acknowledged that the limitations stated in paragraph 6.7 (and paragraph 7.7 of the visual methodology) regarding access to the vicinity of Sellafield and the details relating to the construction of the islet. The PPA Group anticipate these can be resolved for the ES;
- paragraph 6.7.3 (and paragraph 7.7.4 of the visual methodology) notes the limits of deviation and how the assessment has not taken into account the precise location of the pylons. It is not made clear if the precise location will be made available for the purpose of the ES and this should be clarified;
- table 6.13 Rational for Incorporation of Design Principles and Environmental Measures includes the incorporated design principles for landscape features. The landscape features does not include landform and it is considered that this should be included in this table and how design measures have been incorporated to mitigate the potential effect (this also related to the visual methodology); and,
- paragraph 6.7.9 (and paragraph 7.7.6 of the visual methodology) details the future baseline in the absence of this project. This should be expanded upon as detailed under Commentary on Factors Affecting Future Baseline in this response.

Visual Assessment Methodology

8.13.3 The visual assessment methodology included within volume 2.2 Chapter 7 is similar to that

included within the scoping report and includes a number of updates in response to previous comments made at the scoping stage. The PPA Group are generally in agreement with the methodology stated; however, the following is noted (where applicable, cross reference to the landscape methodology has been made to avoid duplication):

- Paragraph 7.1.6 clarifies that the viewpoints selected to date are still preliminary and that new viewpoints may be added following the PEI stage. This is welcomed. The consideration of the viewpoint consultation is included in Volume 2.7 Appendix 7B. This states, amongst other responses, that comments are still being responded to;
- paragraph 7.4.4 states that 'ZTVs have been produced for other features of the Project such as the substations, CSE compounds and tunnel head houses. However, ZTVs (in addition to the overhead line ZTVs) have only been provided for Middleton and Natland. The additional ZTV should be included in the ES, along with ZTVs for the existing 132kV route as discussed within the Response to the Appendices of the Scoping Opinion section below;
- paragraph 7.4.7 states that intermediate ZTVs have been produced to illustrate the theoretical visibility of the pylons at distances of 3km, 5km, and 10km. ZTV's to 10km have not been provided within the PEI. It would be a useful reference tool to provide in the ES where relevant;
- paragraph 7.6.7 states that 'the PEI Report does not report on an individual residential receptor basis but are grouped and predicted based on their context and relationship with the Project infrastructure'. 'A more detailed reporting of effects on individual receptors will be included in the ES'. A more detailed reporting of effects is required within the ES with reference made to the viewpoint locations and supporting photomontages, which is not currently made in the PEI report;
- paragraph 7.6.12 states that 'for the ES a greater number of viewpoints will be illustrated as photomontages, and these will be agreed with the stakeholders'. The PPA Group would welcome the inclusion of more photomontages within the ES, and would request clarity regarding the potential provision of wirelines for the remainder of the viewpoints or any supporting visualisations;
- paragraph 7.6.17 has been added to the methodology since the scoping stage. This details how the value attached to views experienced by residential receptors will be considered. The PPA Group would suggest this approach is carried out with care as the text states, for example, that 'views in an urban context and/or where locations of residential receptors are not positioned to take advantage of the view, will generally be considered low value'. It is not the case that all views in an urban context would be of low value, and hence caution is recommended with this approach in the ES;
- table 7.5 Sensitivity of Visual Receptors indicates the visual receptor sensitivities range between high, medium and low. It is noted that in the Landscape sensitivity methodology a new category of very low has been included in the methodology. Although it is recognised that the landscape and visual assessments are separate assessments, consistency across the methodologies would be preferred within the same ES;
- 7.6.28 states 'representative viewpoints are used as 'sample' points to assess the typical change experienced by different groups of visual receptors at different distances from the Proposed Development. The size and scale of the change is the

assessed at each viewpoint'. This assessment is not included within the PEI Report and should be included in the ES;

- it is noted that in table 7.8 Duration and Reversibility of Change, short term reversible effects have been amended to 0-2 years (previously 0-5 years in the scoping methodology). This reduction in the duration of the short term definition is welcomed; and,
- table 7.9 provides the criteria for magnitude of Visual Change, assessed as substantial, medium, slight or negligible. It refers to 'other relevant combinations of the three factors' as shown in image 7.2 (geographical extent, size and scale, duration and reversibility) can be used as the criteria to determine the magnitude. However, the triangle diagram does not allow for all combinations of outcome to be made and the PPA Group would question how this is to be used. For example, what would the outcome of a large change over a large extent for a short duration result in? Short term changes can be substantial, and this is not made clear (this comment also applies to the Image 6.2 and table 6.11 of the Landscape methodology, volume 2.2 chapter 6). A verbal description should be provided within the methodology as to how the diagram is applied within the assessment. The criteria describing the magnitude of change in tables 7.9 (Landscape) and 6.11 (Visual) should be expanded upon. The methodology should enable the identification of substantial changes of short duration.

8.14 Application of Methodology

- 8.14.1 This section considers all the matters raised by key issue 7, which is identified in Table 1 above in the Landscape and Visual Key issues.
- 8.14.2 This section relates to the contents of the landscape and visual chapters and the application of the methodology within the landscape and visual chapters contained within volumes 2.4 and 2.5. A number of the issues identified under 'Landscape Concerns' also apply to the visual chapter, but they have not been repeated within the 'Visual Concerns' to avoid repetition.

Landscape Concerns

- In its current format, the PEI report does not systematically address all the anticipated effects of the development in a clear format. The narrative should clearly set out how the sensitivity of each receptor has been ascertained through correlation of value and susceptibility, and judgements on potential effects should be established through discussion about magnitude of change and the established sensitivity of receptors. Judgements on whether these effects are significant or not can then be applied with a clear proceeding narrative. This systematic approach should be provided in the ES (See Key issue 6 in Table 8.1 above);
- construction effects have not been addressed adequately within the PEI report and the PPA Group would expect more detail to be provided within the ES. Key issues that

have not been addressed include the phasing of the works, for example the construction effects section acknowledges the decommissioning and removal of existing 132kV infrastructure, but it is not made clear when this will take place and how this relates to the construction of the new 400kV lines. The construction of temporary sections of 132kV route is not addressed adequately neither are the effects when the existing 132kV route and proposed 400kV route would both present in combination at any time during the construction and/or operational phase and for what duration. A provision of a timeline and summary of works within each subsection contained within Volume 2.5, Chapter 6 Landscape, and Chapter 7 Visual, would aid understanding of this (See Key issue 6 in Table 8.1 above);

- with regards to undergrounding proposals (particularly within the southern route), the effects during construction have not been explained in sufficient detail and it is considered the assessment in these effects may be underplayed although this cannot be confirmed. This is a key omission from the PEI report and the PPA Group would expect it to be covered in further detail within the ES (See Key issue 6 in Table 8.1 above);
- with regards to the undergrounding, the PPA Group have concerns that there is no detail provide on how the ground levels will be reinstated following the works and whether it is possible to match the exact landform currently present. For example, Landscape Character Sub Type (LCST) E/5b, as shown on photomontage Figure 7.13.3c, which displays a distinctive landform within the landscape. To minimise the long term effects of the undergrounding it will be essential that this landform is recreated, however, the feasibility of this is not addressed in the PEI. The PPA Group would expect this to be addressed in the ES (See Key issue 8 in Table 8.1 above);
- there is little/no reference to the continuation of construction effects experienced during the operational phase through the removal of vegetation for the undergrounding of the proposed 400kV route; this is despite the vegetation removal identified as being evident for between 5 and 15 years (potentially long term). If this is the case it should be noted within the landscape and visual assessments and clearly factored into the assessment of landscape and visual effects during the operational period and, if necessary, the assessment of operational effects broken down in to two separate phases; short to medium term, and medium to long term. It should be clear where construction effects end at the end of construction, or if they continue into the operational phases (as would re-establishment of vegetation) (See Key issue 7 in Table 8.1 above);
- the summary tables (e.g. Volume 2.5, Chapter 6 – Landscape, Table 6.4 Summary of Major and Major/moderate Landscape Effects), included at the end of each subsection assessment are a useful tool, setting out each landscape type and its value, susceptibility, sensitivity, magnitude of change and overall effect. This allows the reader to identify the range of receptors and associated effects without navigating through the document. This is a useful tool which should be included in the ES. However, this should be updated to include similar summary tables for construction stage effects (See Key issue 6 in Table 8.1 above);
- the PPA Group would stress that the summary tables are 'summary' tables and the information summarised within them should be clearly represented within the main ES text, which is not the case for the PEI. Without the foundations to support the statements made in the summary tables the PPA Group are unable to comment on

the assessment outcomes of the preliminary assessment in detail (See Key issue 7 in Table 8.1 above);

- the summary tables make a judgement on the susceptibility of the receptor; however, there is no previous discussion on how this has been ascertained. Criteria are provided with Volume 2.2, Chapter 6 – Landscape Table 6.5 Factors Considered in Assessing Landscape Susceptibility in Relation to Pylon Lines although there is no evidence of how this has been applied within the supporting text. This should be provided within the ES (See Key issue 7 in Table 8.1 above);
- the summary tables include a summary of the major and moderate effects assessed. A narrative paragraph is included to describe other effects. It would however be useful to the reader to review a table which tabulates all effects anticipated within each subsection (See Key issue 6 in Table 8.1 above);
- it is noted that with regard to Moderate effects, the narrative notes that no judgement is made on whether effects are likely to be significant or not. It states that 'Effects assessed as moderate have the potential to be defined as being significant or not significant dependant on the nature and extent of the change and how this relates to the existing landscape character. Such effects will be reviewed in more detail during the preparation of the ES to establish whether moderate effects would or would not be significant.' The PPA Group would require these to be addressed in the ES as stated (See Key issue 6 in Table 8.1 above);
- volume 2.3 Chapter 6 Section 6.1.5 states that 'Landscape effects are adverse unless specifically noted as beneficial'; and Volume 2.3 Chapter 7 Section 7.1.4 states that 'Visual effects are adverse unless specifically noted as beneficial'. Adverse effects should be stated where they have been identified throughout the report as the absence of the word 'adverse' but the inclusion of the word 'beneficial' can easily become misleading, especially if the summary tables are reviewed without a prior review of the supporting text. This should be addressed in the ES (See Key issue 6 in Table 8.1 above);
- It is noted that currently the report provides an assessment of the potential change and effect on the landscape character subtypes within the subsections defined. It does not address the potential effect on landscape features or landscape amenity at this stage nor does the report state if this will be addressed at the ES stage. The PPA Group would expect this to be addressed within the ES (See Key issues 6 and 8 in Table 8.1 above);
- where character types and subtypes overlap route subsections, and have been assessed in each subsection, a statement relating to the combined effect on the type/subtype should be made. Equally, where character types/subtypes cross over Subsections, reference should be made to the assessment of effects within each subsection (See Key issue 8 in Table 8.1 above); and,
- it is noted that there are several arbitrary references to significance of effect throughout the landscape and visual chapters. These are inconsistently applied and generally do not have any supporting narrative to clearly describe how these conclusions are reached. This should be addressed within the ES (See Key issue 6 in Table 8.1 above).

Visual Concerns

- The PPA Group note that the Visual report does not carry out an assessment of the magnitude and effect of the development on the individual viewpoints selected, or from a selection of individual viewpoints at this stage. This makes it difficult to correlate any of the photomontage images provided to the assessments given. Therefore at this stage, the photomontages provided can give little guidance in commenting on the assessments provided. Within the ES it is expected an assessment of magnitude of change and visual effects to correlate to the representative viewpoint and photomontage locations (See key issue 6, 7 and 8 in Table 8.1 above);
- the assessment identifies within each Subsection a number of PRoWs and assesses the potential effects of the Proposed Development upon users of the routes. There is no supporting figure provided in the list of figures at the start of each Subsection that identifies where these routes are located and therefore it is not possible to provide comment upon the outcome of the assessment contained within the PEI. The PPA Group would expect this information to be provided within the ES to enable easy cross reference of information (See Key issue 6 in Table 8.1 above);
- no wireframe views from the viewpoint locations have been provided. The lack of wireframe views available within the PEI has severely limited the ability to review the effect on views along the route. There are several locations where the proposed pylon structures and OH lines could potentially break the skyline in views, but there is insufficient information to verify this or assist us in forming an opinion. Within the South Route, this is of particular relevance around the Duddon Estuary where it is not possible to ascertain if the proposed 400kV route will break the skyline when viewed across the estuary (See Key issue 6 in Table 8.1 above);
- up to 5nr photomontages are produced for each subsection along the route alignment however the spread of these does not always represent the full subsection. In addition, the photomontages are not referenced within Volume 2.5, Chapter 6 and/or Chapter 7. It would be helpful for the reviewer if the photomontages were referenced within the Subsection assessment at the relevant location and it is expected that this would be provided within the ES (See Key Visual issues 1,3 and 4 in Table 8.2 above);
- as the proposed Moorside Power Station and substation are not represented in photomontages, it is difficult to review the overall cumulative effect on views. Whilst the Moorside Power Station is a separate application the two projects are interdependent and it is therefore considered the power station should be represented. This should be considered within the ES and cumulative photomontages be provided (See Key issue 4 in Table 8.1 and Key Visual issues 1,3 and 4 in Table 8.2 above);
- the photomontages are produced with a greater height (260mm) than usually presented. In some instances where the proposed pylons are viewed at a distance this results in the pylons appearing under-represented within the view due to the expanse of foreground and sky within the view. This is addressed in further detail in the review Volume 2.7 Appendix 7A (See Key Visual issues 1,3 and 4 in Table 8.2 above); and,
- the photomontages do not appear to illustrate any other works apart from the 400kV

line and proposed ceiling end compounds. There are instances it is noted where proposed 132kV lines are not shown on the photomontages, which leads to a misrepresentation of the potential views afforded in some locations. Whilst a number of photomontages have been prepared showing the existing view and the proposed development, these are sporadic and often do not cover views over the previously identified focus areas sufficiently (See Key Visual issues 1,3 and 4 in Table 8.2 above).

Concerns relating to Figures Volume 2.6 Chapter 6 Landscape

- Figures 6.4.5 to 6.4.15 – Landscape Character and Viewpoint Locations: Labelling of Landscape Character Types and Sub Types are generally poor and it is often difficult to clearly identify LCTs or LCSTs. The drawings should be reviewed to ensure the labels for each LCT or LCST is shown on each drawing;
- figures generally do not show the full extent of works proposed as part of the application and only show the proposed 400kV route. It is also noted that the GIS datasets released at the same time as the PEI clearly show the full extent of proposals, so the PPA Group are aware this information is available. Whilst it is acknowledged that showing the full extent of proposals (including temporary diversions, access and undergrounding works etc) is difficult on large scale plans, the information is not represented at all, and as such, the information shown on this set of drawings is incomplete; and,
- there is reference to the undergrounding of a fibre optic line along the A5093 near Kirksanton although the location of this is not identified on Figure 6.4.13. The location of associated development should be illustrated on the relevant figures.

Concerns relating to Figures Volume 2.6 Chapter 7 Visual

- The visual assessment makes reference to PRoW footpath numbers which are not contained on the accompanying Figures within the PEI for each Subsection and therefore the routes cannot be accurately identified where more than one PRoW is within close proximity. Figures should clearly identify the PRoW referred to in the forthcoming ES;
- viewpoint A1-351 – the proposed Moorside Power Station and Moorside substations are not shown on the photomontage so the effects illustrated are misleading and incomplete;
- viewpoint A1-352 – the proposed pylons illustrated in the photomontage (1 of 2) appear very light against the background and whilst the lighting and contrast of existing pylons is noted, it is considered that the proposed pylon located at near the centre of the view would be more prominently visible;
- viewpoint A1-354 – The photomontage view shows the nearest proposed pylon located behind foreground vegetation (Figure 7.5.3a), and with the removal of the existing 132kV pylon (Figure 7.5.3b), the suggestion is of an overall beneficial effect. Whilst the corresponding narrative notes that from Beckermat, effects will range from adverse, to neutral to beneficial depending on location (paragraph 7.1.51), it is suggested that the viewpoint could be microsituated or an alternative viewpoint location

found that shows a 'worst case scenario' rather than the scenario illustrated on the photomontage. It is also noted that this viewpoint location is not identified on supporting plans / figures;

- viewpoint A1-356 - the proposed Moorside Power Station and Moorside substations are not shown on the photomontage so the effects illustrated are misleading and incomplete;
- viewpoint A2-317 – The proposed Moorside Power Station and Moorside substations are not shown on the photomontage. The viewpoint location is not identified on the supporting figures / plans;
- viewpoint A2-327 – The nearest proposed pylon is shown largely hidden behind foreground vegetation and with the removal of existing 132kV infrastructure, the overall effect appears beneficial. It is considered that the viewpoint could be microsituated or relocated to show the proposed pylons equally as visible as the existing pylons so a more balanced representation of change is given. It is also noted that the low voltage 11kV lines visible in the view would be undergrounded at this location and this is not shown;
- viewpoint A2-319 – Undergrounding of fibre optic cables will occur in this view and it is considered that this may have an effect on the photomontage view;
- viewpoint B1-256 – The proposed 132kV substation extension at Stainburn (including mitigation proposals) should be shown in the foreground of the photomontage;
- viewpoint B2-206 – The proposed 400kV pylons appear very light against the horizon and it is suggested that the clarity of the photograph and/or the lighting effects attributed to the photomontage are reviewed within the ES;
- it should be made clear on photomontages and within the main text that the views represented are those likely to be experienced at year 15 once vegetation is fully re-established;
- a number of the photomontages are presented as 180° views with the Proposed Development centred within the view resulting in the Proposed Development being in the centre of the view and across two images e.g. Viewpoint D1-433. The Proposed Development would be better represented on a single image;
- viewpoint D1-433 does not show the re-routed 33kV located to the west of the proposed CSE compound. The existing 33kV line has been removed from the view but the proposed replacement not identified. This should be included on photomontages;
- viewpoint D2-466 shows the existing pylons as silver grey in colour although the proposed pylons are shown as grey/black which enables the pylons to be picked out against the fields within the Whicham Valley but are lost against the woodland. The PPA Group would suggest the baseline photographs are retaken on a clearer/brighter day;
- viewpoint E1-504 is not identified on the associated Subsection figure;
- viewpoint E1-504 represents a 90° view with the CSE compounds located to the left of the view. It is not clear from the view if the CSE compound would be visible from this location and would be beneficial if represented within the photomontage; and,
- viewpoint E2-588 does not show the 132kV line. There is a cluster of pylons in the eastern extent of the view and it is unclear which are existing/proposed/retained.

8.15 Sub-section by Sub-section Review

- 8.15.1 The following section provides a review, subsection by subsection, along the proposed route heading north and south from Moorside. The information set out below provides further detail to that summarised within Table 8.3 Landscape and Visual Route Specific Issues above (see Table 3 8.3).

North Route

- 8.15.2 The following text relates to landscape and visual comments on the specific subsections of the route in the north.

Subsection A1

Landscape

Baseline

- 8.15.3 The Baseline section describes the extent of designated landscapes within the subsection. The designated landscape descriptions generally do not include a judgement of value as reference is made to the various LCTs / LCSTs which extend across the designation, and it is assumed that the value judgements assigned to each LCT / LCST is applicable. In contrast, when describing the Copeland East and Copeland West LoCI's, an overall judgement of value is provided. This inconsistency in the application of value judgements will need to be amended within the ES.
- 8.15.4 LCTs and LCSTs have generally been given a Local Authority value where they are covered by a local landscape designation or where they play a key role in the wider landscape setting. LCTs / LCSTs which are covered by national landscape designations (such as the AONB and LDNP) are given National value ratings. It is however noted that the methodology and rating criteria used to determine the value of these landscape designations is limited by the lack of an 'international' value rating. In this regard, it is noted that the Frontiers of the Roman Empire World Heritage Site and the LDNP, which is a candidate World Heritage Site, are internationally designated landscapes, but they are given a 'national' value. It is therefore considered that the application of a national value rating on internationally valued landscapes underplays the value of the landscapes and this should be reviewed and adjusted as appropriate within the ES. In addition, if the methodology is adjusted to include an international value rating, this would have a corresponding effect of elevating any assessment findings related to the designated landscape in question.
- 8.15.5 It is also noted that the Copeland East LoCI abuts the western edge of the LDNP and as such, plays a role in defining the setting to the National Park. It is therefore considered that the value rating (local authority value) should be reviewed and potentially raised to reflect this role.

- 8.15.6 Paragraph 6.1.12 notes that with regard to the Low Farmland LCST, agricultural change and development has affected landscape quality, particularly through removal of trees and hedgerows and notes that the Landscape Character Guidance and Toolkit (LCGT) promotes the need for energy related infrastructure to be carefully sited to prevent this landscape character sub type becoming an energy landscape. It is also considered that this landscape character sub type forms a transition between the two LoCIs (Copeland East and Copeland West) and new vertical infrastructure located within the sub type could have an effect on inter-visibility between the two LoCIs and from the Copeland west LoCI towards the LDNP. Consideration of the wider role the sub type plays should be included within the ES.

Potential effects – Construction

- 8.15.7 Paragraph 6.1.30 sets out the likely effects on LCT4 and LCST 5d and a judgement on predicted magnitude of change and overall effect is given. However, there is no reference to specific construction effects within each LCT/LCST and no explanation as to how the stated judgement on sensitivity or overall assessment of effect has been derived. Further to this, the concluding paragraph (paragraph 6.1.33) sets out a generalised summary about the anticipated significance of effects, but again, there is no clear explanation about how this has been derived.
- 8.15.8 Whilst it is noted within paragraph 6.1.32 that cumulative effects resulting from the proposed Moorside Power Station and substation developments will be considered within the ES, it is considered that there is insufficient information included within the narrative or the supporting figures to validate the findings set out here. The proposed 400kV line proposals are dependent on the Moorside developments going ahead and whilst there is no information in terms of scale and massing available at this stage, these large scale developments should have been taken into account when concluding a 'slight' magnitude of change on LCT 4 and LCST 5b. In addition, the ES should clearly describe and assess the sequence and phasing of construction works for both the North West Coast Connections project, and the proposed Moorside Power Station and substation developments.

Potential effects – Operation

- 8.15.9 No major or major/moderate adverse effects are predicted within the subsection however, the earlier comment regarding the potential for cumulative effects resulting from the construction of the proposed Moorside Power Station and substation is noted. These two developments are likely to contribute significantly to the overall change in landscape character in this subsection, and major or major/moderate adverse effects may result when a cumulative assessment is carried out. In this context, it is considered that there is insufficient information available to fully understand the scale and extent of landscape effects at the operational stage.
- 8.15.10 There are inconsistencies in summary reporting within this section. Paragraph 6.1.36 notes that no major or major/moderate adverse effects are predicted within the subsection, but paragraph 6.1.40 (which discusses the predicted effect on the Coastal Sandstone LCT)

states that this LCT is predicted to experience a major/moderate and significant adverse effect.

- 8.15.11 There are also inconsistencies in the correlation between stated sensitivities, magnitude of change and the overall effect. The Low Farmland LCST is judged in the PEI to be a medium sensitivity landscape which will experience a medium magnitude of change and an overall moderate adverse effect. The Coastal Sandstone LCT is also judged in the PEI to be a medium sensitivity landscape which will experience a medium magnitude of change, but the overall effect will be major/moderate.
- 8.15.12 Further inconsistencies between summary tables are evident. Table 6.4 identifies the Coastal Sandstone LCT as having a major/moderate adverse effect however, Table 6.5 identifies it as having a moderate adverse effect. Inconsistencies between summary tables and between the narrative and associated summary tables are crucial as the reader will often use the summary tables when cross checking different parts of the document. The ES should thoroughly review all stages of the assessment to ensure these inconsistencies are not carried through from the PEI.
- 8.15.13 The PEI notes that Moderate adverse effects are predicted within the Low farmlands LCST (5b) although the narrative notes that the assessment does not take into account the proposed Moorside Power Station and substation. As noted above, it is considered that the inclusion of these proposed developments in the assessment may result in a higher level of effect than that stated.

Potential effects – landscape designations

- 8.15.14 It is noted that within paragraph 6.1.52, the Copeland East LoCI is likely to experience a moderate/minor adverse effect and that this is not significant. As noted previously, judgements relating to significance of effect have not been made elsewhere and there is no judgement on the significance of the effect on the adjacent Copeland East LoCI. It is assumed that the ES will include judgements on significance of effect throughout the assessment, but references within the PEI seem to be arbitrary and inconsistently applied.

Mitigation and Residual effects

- 8.15.15 No subsection specific mitigation proposals have been identified. Whilst it is agreed that mitigation proposals such as new planting would be difficult to implement given the prevailing landscape character, there may be opportunities to introduce location specific mitigation once the full extent of the proposed Moorside Power Station and substation are understood. In addition, whilst no subsection specific mitigation proposals are identified, the ES should consider and assess any mitigation proposals set out within the Moorside Power Station and substation proposals.
- 8.15.16 No residual effects are identified as no subsection specific mitigation proposals are included however, as noted above, the ES should include any mitigation proposals included within



the Moorside Power Station and substation proposals in its assessment of residual effects.

Visual

Potential effects – Construction

- 8.15.17 The generalised assessment of construction stage effects noted within the overarching points above is evident when reviewing the effects on the settlement of Braystones, which is located in close proximity to the proposed 400kV line. The construction effects in the PEI are judged to be slight magnitude of change on high sensitivity receptors, resulting in a moderate to moderate/minor adverse effect however, at operation stage, the effect from the same location is judged to be a major to major/moderate adverse effect. It is considered that construction stage effects from Braystones are likely to be higher than that stated and the assessment of a slight magnitude of change may underplay the levels of effect experienced, particularly when the cumulative effect of the Moorside developments is assessed.
- 8.15.18 It is also noted in paragraph 7.1.42 that users of NCR 72 to the west of Beckermat would experience a slight magnitude of change and a minor adverse effect, but also acknowledges that scaffolding would be used over the route during the cable stringing process and that the route would pass below the 400kV line. In this context, the assessment judgements seem to be applied to the NCR as a whole and the effect from nearby parts of the route have not been separated from the more distant sections as a higher than slight magnitude of change would be expected where the route passes under the 400kV line. In addition, the PEI states that operational stage effects experienced from this route are also judged to be slight magnitude of change on a highly sensitive receptor, but the overall effect is judged to be potentially major or major/moderate (adverse). There is an obvious discrepancy between how the established sensitivity and magnitude of change relate to the assessment of overall effects. This will need to be addressed within the ES.

Potential effects – Operation

- 8.15.19 Paragraph 7.1.48 notes that 'There is the potential for major/moderate adverse effects for users of NCR72 as a result of the 400kV overhead line crossing these routes between Beckermat and Braystones where it would be seen in conjunction with the retained 132kV overhead line, and the more easterly 132kV overhead line which is being removed, resulting in a slight magnitude of change for high sensitivity users of these routes.'. This operational stage effect seems to take into account the existing 132kV line (the easterly of the two 132kV lines) which will be removed. This suggests the line will be removed during the operational stage, not the construction stage. There needs to be clear definition of which works fall into the respective construction and operation stages, as if the existing 132kV line to be removed is not taken down until the operational stage, this will result in two different effects (for the operational stage). The first effect will include the 400kV line and both 132kV lines in place, and the second effect will be after the 132kV lines are removed. The works required to remove the 132kV line will also result in short term decommissioning

activity (to un-string the cables and remove pylons), so in effect, construction activity will be taking place during the operational stage.

- 8.15.20 Inconsistencies between narrative and summary tables are evident again in this section. Paragraph 7.1.48 notes that there is potential for major/moderate adverse effects for users of the NCR72 and that a slight magnitude of change will be experienced. In contrast, Table 7.1 below notes that the magnitude of change experienced from NCR72 will be medium. In addition, when discussing moderate effects, paragraph 7.1.54 notes that NCR72 will experience a moderate adverse effect as it passes below the 400kV route. This is supported in the Summary of Moderate Visual Effects (Table 7.2) which notes a moderate adverse effect. Whilst it is acknowledged that effects would vary along the length of a linear route, the assessments described above relate to the same section of the NCR, so the ES will need to be thoroughly cross checked to ensure inconsistencies are omitted.

Mitigation and Residual effects

- 8.15.21 No subsection specific mitigation proposals have been identified in the PEI. As noted within the Landscape chapter response above, whilst it is agreed that mitigation proposals such as new planting would be difficult to implement given the prevailing landscape character, there may be opportunities to introduce location specific mitigation once the full extent of the proposed Moorside Power Station and substation are understood. In addition, whilst no subsection specific mitigation proposals are identified, the ES should consider and assess any mitigation proposals set out within the Moorside Power Station and substation proposals.
- 8.15.22 No residual effects are identified as no subsection specific mitigation proposals are included however, as noted above, the ES should include any mitigation proposals included within the Moorside Power Station and substation proposals in its assessment of residual effects.

Consultation responses on specific viewpoints

- 8.15.23 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
A1	Need to consider the viewpoints used in the NuGen Moorside LVIA	Viewpoint data to be obtained from NuGen and considered in the ES	Further investigation welcomed and outcome to be reported on
Viewpoints for Discussion, March 2016			

Subsection	Consultation Feedback/request	How Addressed	Further Comments
A1	Approach road to Nethertown (299511, 507055)	Alternative viewpoint suggested closer to Nethertown to represent residents as well	It is unclear if this referring to A2-319 which is likely to view the route in a different perspective than the approach road suggested. Suggest revisited.

Subsection A2LandscapeBaseline

8.15.24 Baseline paragraphs 6.2.1 to 6.2.5 provide an overview of key landscape components within this subsection however, it is noted that there is no reference to the St Bees Head Heritage Coast. It is considered that this is a key, nationally designated landscape and it should be referenced as appropriate throughout the baseline section.

8.15.25 As noted in Subsection A1, the designated landscape descriptions generally do not include a judgement of value as reference is made to the various LCTs / LCSTs which extend across the designation however, for subsection A1, judgements on the value of the Copeland East and Copeland West LoCI's, were given. For subsection A2 no judgements on value are given within the corresponding section. And again, this inconsistency in the application of value judgements will need to be amended within the forthcoming ES.

Potential effects – Constriction

8.15.26 The proposals for this subsection includes undergrounding of 132kV, 33kV and low voltage 11kV cables in a number of locations however, no reference is made in the PEI to the associated construction works including vegetation clearance and trenching works. As such, it is considered that the narrative is incomplete and the accompanying assessment of construction stage effects is understated. The ES should take into account all construction stage activities and assess them accordingly. There is also no indication of what works will be required to form the helicopter operating bases to be located to the east of Whitehaven, and to the east of St Bees (within the Copeland West LoCI).

Potential effects – Operation

8.15.27 As noted above, there is no indication of operational stage effects relating to the proposed

cable undergrounding works which will take place at various locations across the subsection, and the ES will need to fully assess the effects. Whilst the vegetation clearance and trenching works will take place during the construction stage, the replacement planting will not be established for 5-10 years after planting, so the construction stage effects will extend into the operational stage for a number of years.

- 8.15.28 No major or major/moderate adverse effects are predicted within the subsection however, moderate adverse effects are predicted within the PEI for the Coastal Sandstone LCT, the Low Farmland and Ridge and Valley LCST (sub types of the Lowland LCT), and the Urban Fringe. Whilst it is considered that these assessments are appropriate, the added affect of the undergrounding works (and residual effect of planting establishment within the operational stage) needs to be considered within the ES stage assessment.

Potential effects – landscape designations

- 8.15.29 Effects on the St Bees Head Heritage Coast are predicted to be a slight magnitude of change and moderate/minor adverse effect. The indirect nature of effects is noted and the PEI states there will be no effect on west facing coastal views, however, there is no indication if there are any views across the designated landscape towards the LDNP and Lakeland fells to the east considered within the PEI. The distant backdrop of the fells plays a key role in east facing views from a number of locations and it is unclear if similar views are afforded from this location. This visual relationship has been identified as a key characteristic of the Solway Coast AONB located further to the north, and the effect on the setting to these nationally designated landscapes should be fully explored in the ES. As such, there is insufficient supporting information (no photomontage views) to verify this.

#Mitigation and Residual effects

- 8.15.30 Subsection specific mitigation proposals have been prepared for Keekle and it is noted in paragraph 6.2.4 that these have been prepared to mitigate significant visual effects. The narrative acknowledges that these would improve the local landscape but would not mitigate the overall landscape effects identified. The mitigation proposals prepared for the proposed Moorside Power Station and substation developments could influence the assessment of mitigation proposals and residual effect, so these will need to be included within the ES.

Visual

Baseline

- 8.15.31 It is noted that the value judgements are generally consistent between each subsection however; in some instances these vary with no supporting narrative to support the change. For example, major roads within subsection A1 were judged to be of medium value however, in this subsection, they are judged to be of medium/low value. The ES will need to ensure these judgements are consistent, and if they vary, there is a clear explanation why.

Potential effects – Construction

- 8.15.32 Moderate or moderate/minor adverse effects are predicted in the PEI on properties within Thornhill, Middletown, Bigrigg, Whitehaven and Keekle, and a slight magnitude of change is attributed due to the limited extent of works and short duration. Keekle in particular is located very close to the proposed 400kV route as well as undergrounding routes for existing 132kV and 11kV lines, and whilst subsection specific mitigation proposals have been prepared for this settlement, there is potential for the magnitude of change to be much higher from this location, albeit for a short duration, as mitigation planting will not have established sufficiently to mitigate against construction stage views. In addition, a range of cable undergrounding works will take place to the west of the settlement and there is no indication of the effects resulting from the works within the narrative.
- 8.15.33 There is also no indication of construction stage effects relating to the two helicopter operating bases within the narrative. The ES will need to fully assess all construction stage works.
- 8.15.34 Construction stage effects on a number of local roads, the A595, NCRs and PRoWs (including the Coast to Coast Walk) are predicted to experience a slight magnitude of change and minor adverse effect, even though it is acknowledged that there will be temporary scaffolding relating to cable stringing erected over each of the respective routes. It is therefore considered that localised magnitudes of change could be higher than that stated and the effects of the works have been underplayed within the assessment.

Potential effects – Operation

- 8.15.35 Major or major/moderate adverse effects are predicted in the PEI for properties in Middletown and Keekle, which lie close to the proposed 400kV route. The assessment predicts a medium magnitude of change however, the PPA Group note that the proposed mitigation planting to the west of Keekle will not have established sufficiently to effectively mitigate views, and it is suggested that the magnitude of change experience from these locations could be higher. It is also noted that there is no supporting wireframe view or photomontage to support this assessment.
- 8.15.36 Major or major/moderate adverse effects for individual properties are noted within the descriptive text (paragraph 7.2.52), but are not included within the summary table 7.3. As noted previously, the ES will need to comprehensively cross reference all assessment narrative with summary tables to ensure consistency.
- 8.15.37 The assessment paragraphs 7.2.50 – 7.2.53 discuss major and major/moderate effects but whilst the text notes that 'it is not predicted that significant effects would occur in relation to all residential properties within a settlement.', it does not explicitly state that where major or major/moderate effects are available, they would be significant. It is also noted that paragraph 7.2.70 states that 'Although significant visual effects have been identified with respect to other receptors in Subsection A2' there is no indication within the narrative that

clarifies which effects are significant or not. This will need to be clarified and the methodology consistently applied within the ES.

- 8.15.38 Localised major or major/moderate adverse effects are predicted in the PEI for parts of the Coast to Coast path but these localised effects are not carried through to the summary table 7.4, which summarises the overall effect as moderate adverse.

Mitigation and Residual effects

- 8.15.39 Subsection specific mitigations proposals have been prepared for Keekle and it is noted in paragraph 6.2.4 of the landscape chapter (Chapter 6) that these have been prepared to mitigate significant visual effects. However, there is no supporting photomontage showing the change in view from Keekle, so the effect of the proposed mitigation strategy cannot be verified.
- 8.15.40 The effect of any mitigation proposals related to the proposed Moorside Power Station and substation developments should also be incorporated into the ES assessment as the cumulative effect of all of the proposed developments and their respective mitigation strategies needs to be fully understood.
- 8.15.41 The mitigation proposals near Keekle will not be established sufficiently to alter the potential effects identified for the construction stage whoever, as these establish, the assessment notes that after approximately 15 years, the predicted overall effect will reduce from major to moderate adverse. Again, it is noted that there is no supporting photomontage to verify this assessment.
- 8.15.42 As noted above, mitigation proposals relating to the proposed Moorside Power Station and substation developments will need to be incorporated into the ES assessment.

Consultation responses on specific viewpoints

- 8.15.43 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
A2	Additional viewpoints requested from the general area of the 'Colourful Coast' and St Bees Head	3 to 4 viewpoints are being considered in Whitehaven.	What is the outcome of this consideration?
A2	Relates to Flat Fell and Dent Fell	National Grid is liaising with NuGen regarding their landscape and visual assessment and	The PPA Group assume the outcome of this liaison will be reported in the ES

Subsection	Consultation Feedback/request	How Addressed	Further Comments
		the location of their viewpoints	

Subsection B1LandscapePotential effects – Construction

8.15.44 It is noted that some construction activity would occur at the existing Siddick substation and a railway compound would be established at the Port of Workington. No further information on the extent and type of activity is described so it is difficult for the reader to fully understand the extent of works likely to be occurring at this location, or its duration.

8.15.45 The PEI notes that the Ridge and Valleys LCST is predicted to have a localised moderate/minor adverse effect where the new 400kV Stainburn substation is sited, whilst the remaining extent of the sub type is predicted to receive a minor adverse overall effect. However, the proposed extension to the existing 132kV substation at Stainburn or any of the nearby cable undergrounding works, which will also be located at the edge of this LCST, is not discussed. In addition, as noted within baseline paragraph 6.3.10, wind energy developments located within this LCST contribute to the extent of vertical infrastructure and there is no discussion within this section relating to the potential cumulative effect. In the context of the above, it is considered that there is potential for this LCST to experience a higher than moderate/minor adverse effect during both the construction and operational stages of development.

Potential effects – Operation

8.15.46 No landscape receptors are predicted to experience **major** or **major/moderate** adverse effects in the PEI, and **moderate** adverse overall effects are predicted for the Ridge and Valley, Broad Valley and Open Moorlands sub types. Whilst this is acknowledged, as noted above, there is potential for the Ridge and Valley sub type to experience higher localised effects due to the accumulation of infrastructure at the new 400kV switchgear station, the extended 132kV substation, and the cumulative effect of introducing larger vertical infrastructure elements next to existing wind farms (East Town End Wind Farm).

Mitigation and Residual effects

8.15.47 Subsection specific mitigation proposals have been prepared for the 400kV substation, and the 132kV substation extension near Stainburn. The narrative acknowledges the role this will play in reducing significant adverse visual effects (although there is no explanation as to which effects are significant), but it does not discuss the effects the proposals will have on landscape character. The new planting proposals are designed to mitigate views towards

the new infrastructure, but the introduction of new planting areas will also introduce new landscape components into the area and as such, there would be some effect on landscape character, however localised and minor. The ES should acknowledge this and fully discuss the mitigation proposals in both landscape and visual terms.

8.15.48 In addition, paragraph 6.3.56 states that 'Although significant landscape effects have been identified with respect to Subsection B1 no mitigation (other than the design principles and environmental measures set out in section 6.7, Volume 2.2) would be practicable to ameliorate the effects.' however, in paragraph 6.3.38, it is concluded that 'No landscape receptors have been predicted to receive a major or major/moderate effect from the Project within the Study Area or Wider Study Area of Subsection B1'. It is considered that there is a disconnection between these assessments as there is no discussion relating to which effects are significant, but significant effects are referred to even though there are no major or major/moderate adverse effects predicted.

8.15.49 Residual effects identified relate to visual effects set out in Chapter 7. Whilst this is acknowledged, there is potential for the new mitigation planting (which includes larger areas of structure planting) to contribute to the overall landscape character and the introduction of new large planting features such as should be assessed in landscape terms as well as visual terms.

Visual

Potential effects – Construction

8.15.50 The PEI predicts construction stage effects on views from Moresby Parks, Winscales, Stainburn, Seaton, Great Clifton and scattered individual properties adjacent to these settlements, are assessed as moderate to moderate/minor adverse however, it is noted that the proposed 400kV substation and the 132kV substation extension are located in close proximity to the eastern edge of Stainburn and the minor road which extends between Great Clifton and Stainburn. Whilst mitigation planting has been proposed around both substations, it is considered that this will not provide an effective screening effect until after the construction stage is complete, so the PPA Group would anticipate that a higher than slight magnitude of change and a higher overall adverse effect could be experienced. In addition, undergrounding works to 132kV, 33kV and 11kV cables are proposed in this area and there is insufficient detail and assessment of the effects of this, particularly as it could result in the removal of existing vegetation which currently provides a screening effect to the substation locations.

Potential effects – Operation

8.15.51 No major or major/moderate adverse effects are predicted in the PEI and only moderate adverse effects are predicted from Moresby Parks, Great Clifton, Little Clifton, Stainburn, Low Seaton, Seaton and High Seaton, and the individual properties and small building groups. Whilst this assessment may apply to many of these settlements and properties, it is

considered that the properties at East Town End Farm, Stainburn Hall Farm, and Gale Brow may experience a higher than slight magnitude of change and corresponding overall effect, as the 400kV route will extend in very close proximity to these properties and it will be located closer than the existing 132kV lines. Undergrounding works are also proposed in close proximity to these properties and any replacement planting required as a result of the works may not be sufficiently established to have a mitigating effect during the early part of the operational period (subject to phasing and duration of construction works). In this context, it is considered that the receptor groupings described within these paragraphs do not adequately reflect the likely range of effects on individual receptors and these should be considered in greater detail within the ES.

- 8.15.52 As noted above, there is potential for an increased cumulative effect as a result of locating the new 400kV OH line near existing wind farms (East Town End Wind Farm, Fairfield Wind Farm). These effects should be discussed within the ES.

Mitigation and Residual effects

- 8.15.53 Subsection specific proposals have been prepared for the proposed 400kV substation and existing 132kV substation extension. This predominantly includes areas of native species based structure planting and some new hedge planting. The Preliminary Landscape Mitigation proposals plans (Figures 6.5.2 to 6.5.4) show the extent of existing infrastructure to be retained and removed, and whilst the proposed above ground infrastructure is shown (400kV line), there is no indication of the proposed undergrounding works, particularly around the proposed 132kV substation extension works to the east of Stainburn. It is therefore suggested that the mitigation proposals have been prepared to mitigate the effects of above ground infrastructure, but no consideration is evident of the undergrounding proposals. These effects should be considered in the preparation of mitigation proposals within the ES.

- 8.15.54 Paragraph 7.3.65 acknowledges that the mitigation proposals (planting) would not have established sufficiently during the construction stage to reduce the effects identified in the 'Potential Effects' section however, for the operational stage, it is noted that after 10-15 years after planting, the residual effects would reduce the overall effect from major/moderate adverse to moderate adverse (paragraph 7.3.66). This contradicts the summary set out in paragraph 7.3.47 which states that no major or major/moderate effects are predicted within this subsection, and there is no accompanying narrative to describe how these effects would reduce as a result of the proposals. The ES should therefore include a detailed assessment of the residual effects and there should be consistency and cross referencing between assessments made at each stage.

Consultation responses on specific viewpoints

- 8.15.55 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
B1	CIVI VP 23: Workington West	Two locations to the west of Workington have been identified as potential viewpoints in the ES	These are not included in the PEI and the PPA Group welcome further consideration
B1	Viewpoint relating to the A66 requested	Further checks to be undertaken in the field to identify an additional location further ES for the ES	The PPA Group welcome this further investigation for the ES
Viewpoints for Discussion, March 2016			
B1	Further viewpoint suggested at Greysouthern (307272, 529441)	Noted – will be investigated in the ES	The PPA Group welcome this further investigation for the ES

Subsection B2LandscapeBaseline

8.15.56 The Solway Coast AONB is described as having 'a seaward outlook across the Solway Firth and includes distant views of the Lakeland Fells to the east and south east.' (paragraph 6.4.32). Whilst this is identified as a key characteristic of the nationally designated landscape, it is noted that no viewpoints have been selected within the AONB and there are no supporting photomontages to illustrate views across the proposed 400kV route towards the Lake District National Park and Lakeland Fells. It is noted that two viewpoints have been selected to the south west and north east of Crosby (B3-175 and B3-176) however, these are located at the edge of an urban area and whilst they afford views from the same view angle, they do not represent views from within the designated landscape. It is therefore suggested that additional viewpoints and accompanying wireframes and/or photomontages are introduced as appropriate to adequately assess the effect on views from within this subsection.

8.15.57 The Ridge and Valley LCST extends across the landscape between the Solway Coast AONB and the LDNP and as such, it forms a transition between two nationally designated landscapes. Paragraph 6.4.11 describes the landscape components of this sub type and gives it a Community value rating. Whilst it is acknowledged that the LCST is not designated, the east facing views towards the LDNP Lakeland fells from within the AONB is noted as a key characteristic, and as such, any elements located within the landscape in between (i.e. within the Ridge and Valley LCST) could have an effect on this key characteristic. It is therefore considered that the role this landscape type plays between two

important landscape designations has been underplayed and the value attributed to it may need to be heightened accordingly.

- 8.15.58 Paragraph 6.4.34 notes that the Copeland East LoCI is considered to be of local authority value however, as noted in other subsections, specific value judgements are not generally given to designated landscapes, and instead, reference is made to the value judgements made for the corresponding LCT / LCST. This inconsistency of applying and describing judgements on value should be addressed within the ES.

Potential effects – Construction

- 8.15.59 Moderate/minor adverse effects are predicted in the PEI for the Ridge and Valleys LCST, across which the 400kV line will extend, with only minor or negligible effects predicted on the remaining landscape types during the construction stage. No reference is made to predicted effects on the landscape of the AONB, even though the baseline section acknowledges the importance of east facing views towards the Lakeland fells from within the AONB. It is again noted that no viewpoints have been selected to represent views from within the AONB in this subsection.

Potential effects – Operation

- 8.15.60 Paragraph 6.4.43 summarises that no major or major/moderate adverse effects are predicted within this subsection and paragraph 6.4.45 notes that the Ridge and Valley sub type of the Lowland LCT is predicted to experience a moderate adverse effect. Paragraph 6.4.47 then goes on to note that 'The pylons would contrast with the scale of the existing landscape character in this area, particularly when crossing ridgelines where pylons would be prominent. This would result in a medium magnitude of change for the medium sensitivity landscape, resulting in localised significant effects for the parts of the LCT which are situated in close proximity to the 400kV overhead lines'. As noted in other instances, this application of judgements on significance is sporadic and there is no supporting discussion on how this assessment has been made and what level of effect is considered to be significant. This inconsistency will need to be addressed within the ES.

Potential effects – landscape designations

- 8.15.61 Further evidence of this inconsistent application of methodology is available within paragraphs 6.4.52 to 6.4.55, where statements relating to the significance of effects are made on the LDNP and Copeland East LoCI, but not on the Solway Coast AONB.
- 8.15.62 Paragraph 6.4.53 predicts only a minor adverse effect on the LCTs located within the Solway Coast AONB due to the separation distance and presence of intervening features. Paragraph 6.4.54 then goes on to state that 'While the 400kV overhead line has the potential to increase the size of electricity infrastructure in the landscape, the intervening distance is likely to mean that the resulting change would not undermine the key characteristics of the LDNP or Solway Coast AONB'. Whilst this is noted, there is no

supporting photography or photomontages included within the PEI which can help to verify this assessment and the ES should include viewpoints from within this nationally designated landscape.

Visual

Potential effects – Construction

8.15.63 Paragraph 7.4.41 notes that moderate or moderate/minor adverse effects are predicted on Broughton Moor however, whilst the long term effect would include the removal of both existing 132kV lines and the introduction of the new 400kV line at a further distance away, it is anticipated that the construction effects could potentially be higher than that stated as the decommissioning works on both 132kV lines and the 132kV undergrounding works will occur in very close proximity to the town. A detailed assessment of construction stage effects should be included from this location within the ES.

8.15.64 The PEI predicts minor adverse effects on the A594 and the NCR 71 however, it is anticipated that there is potential for higher localised effects to be experienced where the 400kV route crosses the road corridor and cycle route, particularly as there are undergrounding works proposed for 132kV cables (near A594 crossing) and 11kV cables (at NCR 71 crossing).

Potential effects – Operation

8.15.65 Construction stage effects on Broughton Moor are discussed in earlier paragraphs, but there is no onward discussion about operational effects from the same location. It is assumed therefore that it is attributed a minor adverse or negligible effect. Whilst the decommissioning of the two 132kV lines and introduction of the 400kV line at a greater distance will reduce the construction stage effects in the long term, it is noted that the effect of undergrounding the 132kV cable in close proximity to the settlement may result in the loss of vegetation, and any replacement planting will take 10-15 years to fully contribute a mitigating effect. As such, there is likely to be higher levels of effect experienced for the early part of the operational period. This should be assessed in detail within the ES.

Consultation responses on specific viewpoints

8.15.66 There are no prior comments relating to specific viewpoints however, it is suggested that additional viewpoints and accompanying wireframes and/or photomontages are introduced as appropriate to adequately assess the effect on views from within the AONB, as discussed in the visual related comments above.

Subsection B3

Landscape

Baseline

- 8.15.67 Paragraph 6.5.7 acknowledges the Solway Coast AONB LSCA (Ref. 6.3) but goes on to note that the seascape character is used to inform the landscape character baseline and is not presented and assessed separately. It is considered that the ES should assess the Seascape and Intertidal Landscape Character Types (SILCT) set out in the baseline section.
- 8.15.68 As noted for earlier subsections, the LCTs / LCSTs located between the Solway Coast AONB and the LDNP play an important role in forming a transition and part of the setting to the two nationally and internationally designated landscapes. As such the value rating attributed to the Ridge and Valley sub type should potentially be raised from community level value to match the local authority value of the adjacent Low Farmland sub type.

Potential Effects – Construction

- 8.15.69 Paragraph 6.5.30 notes that general vegetation clearance around pylons and along cable routes will take place and in addition, 4 areas of woodland are likely to be affected by the proposed works. These areas are woodland at Rose Gill, woodland at Gill Beck, West Plantation, and woodland at Housenrigg. The narrative goes on to note that the effects would be temporary and short term and that the 'the loss of trees would be compensated by replacement planting.' However, no subsequent assessment of predicted effects is then given. Whilst replacement planting within the woodland areas is noted, it is considered that this would take 5-15 years to establish sufficiently to provide a similar screening effect to the existing woodland and the effects on these areas should be fully assessed within the ES.
- 8.15.70 The following paragraphs discuss construction effects relating to the construction of bellmouths and access tracks across the subsection, and the predicted effect on the Ridge and Valleys sub type however, the narrative does not discuss the potential effects on the Solway Coast AONB (or the LCTs / LCSTs which extend across it), which extends into the study area (as acknowledged in the earlier baseline section (paragraph 6.5.25). It is therefore considered that the ES should fully discuss and assess the effects on this nationally designated landscape.

Potential effects – landscape designations

- 8.15.71 Potential effects on the Solway Coast AONB are discussed within paragraphs 6.5.44 and 6.5.45 and it is predicted in the PEI that there will be an overall **minor** adverse effect on the designated landscape due to intervening landform and vegetation and a limited perception of the new OH lines. The PEI narrative concludes that 'While the 400kV overhead line has the potential to increase the size of electricity infrastructure in the landscape, the intervening distance is likely to mean that the resulting change would not undermine the

key characteristics of the LDNP or Solway Coast AONB'. Whilst the assessment is acknowledged, it is noted that there is no supporting photography or visualisations available within the PEI to verify this as there is only one viewpoint located within the AONB in this subsection, and it has not been presented within the supporting figures.

Visual

Potential Effects – Construction

- 8.15.72 No major or major/moderate adverse effects are predicted in the PEI however, moderate or moderate/minor adverse effects are predicted from Hayton and Prospect and scattered individual properties. It is considered that from Hayton, there is potential for higher (major or major/moderate adverse) effects to be experienced as there will be a range of construction and undergrounding works occurring within close proximity to the southern edge of the settlement. The 132kV undergrounding works will extend over a number of fields located immediately to the south of the settlement and any vegetation clearance and excavation works are likely to be visible in close proximity. Any replacement planting along field boundaries will take a number of years to establish so effects resulting from the undergrounding works could extend through the construction stage into the operational stage.
- 8.15.73 Whilst operational effects are predicted in the PEI from Bullgill, Gilcrux, Oughterside, and Yearngill (moderate adverse effects), there is no discussion relating to construction stage effects from these same locations. The ES will need to fully assess all identified visual receptors at all stages of development (construction, operation and decommissioning).
- 8.15.74 Moderate or moderate/minor adverse effects are also predicted within the PEI on PRoWs which would be crossed by the 400kV line. These are located between Bullgill and Gilcrux; to the south west of Oughterside; and between Hayton and Aspatia. Whilst moderate adverse effects may be attributable across the full extent of the routes, localised change may well be higher than the slight magnitude of change identified in paragraph 7.5.53.

Potential effects – Operation

- 8.15.75 No major or major/moderate adverse effects are predicted in the PEI in this subsection, but moderate adverse effects are predicted from Hayton, Bulgill, Gilcrux, Oughterside, Prospect and Yearngill as well as the individual properties near the 400kV route. These receptors are all predicted to experience a slight magnitude of change. In contrast to subsection B2, it is noted that the proposed 400kV route departs from the existing 132kV routes in several locations so there is potential for higher levels of effect to be experienced from individual properties where the new pylons will be located in closer proximity to the 132kV lines (such as at Whitelees (NE of Hayton), Moor Pit Cottage, Westmoor End, Gallowbarrow Cottages (this is located close 400kV line and there is proposed 132kV undergrounding work here), Housenrigg and Housenrigg Cottages).

Chapter 8 – Landscape and Visual

8.15.76 It is noted that the proposed 400kV route does not extend through the subsection in a consistently straight line, and instead, it departs from the existing 132kV corridor near Hayton and Aspatria. This more erratic alignment could potentially lead to a more cluttered appearance than the long, linear 132kV alignment, but there is insufficient photography and photomontages to verify this.

Consultation responses on specific viewpoints

8.15.77 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
-	-	-	-
Viewpoints for Discussion, March 2016			
B3	Requesting the residents of Glicrux to be considered	'Noted. Location on south west of village identified and will be included in the ES	This is welcomed
B3	VP suggestion on PRow leading from school (313424, 544344)	'Noted. Location will be reviewed for the ES'	This is welcomed
B3	Allonby from eastern edge , on Wigton Road (308270, 542892)	'Noted. Location will be reviewed for the ES'	This is welcomed
B3	Bullgill – southern end of settlement (309763, 538271)	Viewpoint B3_174 is nearby, but location will be reviewed for ES	This is welcomed
B3	Allerby (308862, 539432)	Viewpoint B3_168 is nearby, but location will be reviewed for ES	This is welcomed

Subsection C1

Landscape

Baseline

8.15.78 The proposed 400kV route extends through the subsection, predominantly crossing the extensive Low Farmland sub type of the Lowland LCT, with only a small section of the proposed route, and some of the 132kV decommissioning work occurring within the Ridge and Valley sub type. As noted previously, the landscape which extends between the LDNP and the AONB form part of the setting to the designated landscapes, as the introduction of new elements within them could potentially have an effect on views. As such, it is noted

that whilst the Low Farmland sub type has been attributed a local authority value, the adjacent Ridge and Valley sub type has only been attributed a community value in the PEI. As such, it is considered that this value rating should potentially be raised to local authority value.

Potential Effects – Construction

- 8.15.79 A slight magnitude of change and overall minor adverse effect is predicted in the PEI on the two Lowland sub types which will be directly affected by the works (Low Farmland and Ridge and Valley). It is noted that like subsection B3, the proposed 400kV route departs from the existing 132kV corridor across much of the subsection so there is potential for an increased effect as a result of OH line infrastructure extending across a wider overall corridor. The two 132kV lines which currently extend across the subsection run in a straight line and immediately parallel to each other, whilst the proposed 400kV route will be set further to the north west, and the proposed alignment does not run in a straight line. The proposed route alignment here is questioned as a straighter, less irregular alignment would be preferable.
- 8.15.80 The predicted effects on the AONB or the LDNP are not discussed at all within the construction stage narrative however, the ES will need to fully assess the predicted landscape effects on these two nationally designated landscapes.

Potential effects – landscape designations

- 8.15.81 It is noted that the Ridge and Valley and Low Farmland sub types which extend through much of subsections B2, B3, C1 and the southern part of C2 lie between the Solway Coast AONB and the LDNP. Whilst these landscape sub types have been assessed in landscape terms to determine direct and indirect effects, it is noted that they play a key role in defining the visual context of both of these designations. As established in the baseline sections, one of the key characteristics of the AONB is the availability of views to the south and east towards the Lakeland fells, and from the low lying predominantly flat landscape within the AONB, the striking backdrop provided by the western fells is often a key component in views. In this respect, the views extend over the intervening Ridge and Valley and Low Farmland sub types, so any vertical elements introduced in these landscapes have the potential to affect the views described above. It is therefore noted that the ES should fully consider this and ensure that appropriate judgements on value and sensitivity are placed on the two landscape sub types.
- 8.15.82 The southernmost tip of the Solway Coast AONB (Abbeytown to Edderside LCA) is also predicted in the PEI to experience a moderate adverse overall effect as it is the closest part of the AONB to the proposed route. Other more distant LCAs located within the AONB and the LDNP are predicted in the PEI to experience only minor adverse overall effects, primarily due to increased separation distances.

8.15.83 The predicted effects on the AONB or the LDNP are not discussed at all within the construction stage narrative however, the ES will need to fully assess the predicted landscape effects on these two nationally designated landscapes.

Visual

Potential effects – Construction

8.15.84 Moderate or moderate/minor adverse effects are predicted in the PEI for Langrigg; Bromfield; Low Scales; High Scales; and Blencogo and scattered individual properties in between these settlements. These settlements have been attributed a high value, with a slight magnitude of change predicted. As noted above (for landscape effects), the proposed 400kV route departs from the existing 132kV corridor across much of the subsection so there is potential for an increased effect as a result of OH line infrastructure extending across a wider overall corridor. The two 132kV lines which currently extend across the subsection run in a straight line and immediately parallel to each other, whilst the proposed 400kV route will be set further to the north west, and the proposed alignment does not run in a straight line. The proposed route alignment here is questioned as the irregular alignment could lead to visual clutter and a straighter, less irregular alignment would be preferable and more in keeping with the design guidance set out in the 'Holford Rules'.

8.15.85 It is also noted that the proposed route will extend closer to the southern edge of Blencogo than the existing 132kV line (to be removed) and as evidenced on Figure 7.10.3b (Viewpoint C1-107), the new pylons would break the skyline in views looking south and south east towards the lakeland fells. In addition, when combined with the existing 132kV lines, the 400kV line will envelope properties at Gill Farm, Low Scales and Greenrigg Villa. As such, there is potential for the new pylon structures to appear more prominently in views from these locations. It is also likely that Waverton will experience similar effects to Blencogo, but this is not acknowledged here (it is predicted to experience major or major/moderate adverse operational effects in the PEI). Landscape mitigation proposals could potentially reduce these adverse effects. It is therefore considered that effects from these locations could potentially be higher than moderate or moderate minor adverse.

Potential effects – Operation

8.15.86 In contrast to the predicted construction stage effects (moderate to moderate/minor adverse), major or major/moderate adverse effects are predicted in the PEI for residents at Low Scales, Blencogo, Waverton and individual properties within close proximity of the proposed route due to scale of change from baseline and properties with open outlook towards route, and it is considered that this assessment is appropriate.

8.15.87 Moderate adverse effects are predicted for Bromfield, Wheyrigg, Langrigg, Waverbridge and Moor Row; although no construction stage effects are noted at all for Wheyrigg and Moor Row.

Chapter 8 – Landscape and Visual

8.15.88 Moderate adverse effects (slight magnitude of change) are predicted for users of local PRoWs however it is noted that localised effects could be higher where these pass under the route (at construction stage and operations stage).

8.15.89 The visual interaction between locations within the Solway Coast AONB and its setting (including the LDNP) are not considered within the PEI and the PPA Group would expect the ES to fully address and assess this, with additional viewpoints included to illustrate the effects.

Consultation responses on specific viewpoints

8.15.90 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
C1	VP9 now C1_102 . hedgerow may restrict views from this road location. PRoW a preferred location.	Winter photography should provide open views from road.	No photomontage has been provided so this cannot be confirmed as addressed.
Viewpoints for Discussion, March 2016			
C1	Low Row (319077,544914)	'Noted. Location will be reviewed for the ES'	This is welcomed
Additional Viewpoint(s) Request, November 2016 following PEI review			
C1	New request. The visual interaction between locations within the Solway Coast AONB and its setting (including the LDNP) are not considered within the PEI and the PPA Group would expect the ES to fully address and assess this, with additional viewpoints included to illustrate the effects.	To be addressed within the ES	

Subsection C2

Landscape

Baseline

- 8.15.91 Paragraphs 6.7.36 to 6.7.41 describe the characteristics of the Solway Coast AONB and how it related geographically to the proposed development. It is considered that whilst paragraph 6.7.38 describes the section of AONB which extends into the Study Area (up to approximately 300m from the proposed 400kV route), much of the narrative describes the character of the areas of AONB located within the Wider Study Area. In this respect, there seems to be an imbalance of focus where more descriptive text is used to describe the more distant parts of the designated landscape, rather than the closest parts which are more likely to experience higher levels of effect.
- 8.15.92 As noted previously, the landscape which extends between the LDNP and the AONB forms part of the setting to the designated landscapes, as the introduction of new elements within them could potentially have an effect on views from within the AONB towards the Lakeland fells. As such, whilst it is noted that the area of Low Farmland LCST which the proposed 400kV route passes through to the north east of Wigton has been attributed a local authority value, the adjacent Ridge and Valley LCST (which the proposed 400kV route also passes through) has only been attributed a community value. As such, it is suggested that this value rating is elevated to local authority value.
- 8.15.93 It is also noted that the Coastal Plain LCST (sub type of the Coastal Margins LCT) has been attributed a local authority value in the PEI, even though the accompanying narrative recognises the presence of the Frontiers of the Roman Empire World Heritage Site within its boundaries. It is therefore considered that the value attributed to this LCST is raised to national value, or subject to modification of the methodology and value rating approach, an international value rating. The assessment of effects on this LCST should then be adjusted accordingly. Further to this, the LCAs identified within the Solway Coast AONB which also lie within the boundaries of the WHS and its buffer zone, should also be attributed an international value rating rather than a national value rating.

Potential effects – Construction

- 8.15.94 Paragraph 6.7.48 acknowledges that there will be construction activity related to the rationalisation works and undergrounding of 132kV cables, but there is no further discussion or assessment of what these effects would be. The proposals include cable undergrounding works below Hadrian's Wall, the Hadrian's Wall Path and the River Eden corridor but there is no reference to this, no indication of the extent of works and no indication of what the likely effects will be. As there are a number of sensitive receptors in this area (Solway Coast AONB, Hadrian's Wall (Frontiers of the Roman Empire WHS), and the Hadrian's Wall Path), there is insufficient information available to understand how these key receptors would be affected as a result of the combined construction stage activities.
- 8.15.95 A moderate adverse overall effect (slight magnitude of change) is predicted in the PEI on the Coastal Plain LCST where the route crosses it to the north west of Carlisle however, importantly there is no reference or discussion relating to construction stage effects relating to the two main landscape sub types which the route crosses in this subsection. In this respect, much of the proposed 400kV route to the south west of Carlisle (up to the boundary of subsection C1) crosses Low farmland or Ridge and Valley landscapes, both of

which are sub-types of the Lowland LCT. Paragraph 6.7.49 notes that 'Elsewhere within this subsection, due to the fact that effects on landscape character would be indirect, temporary in nature and limited in geographic extent, it is considered that there would not be any significant effects on landscape elements or landscape character during the construction phase.' It is therefore assumed that the Low Farmland and Ridge and Valley sub types are included within this statement. On this basis, it is suggested that the narrative does not give sufficient weight or detail to construction stage effects across a large percentage of the subsections' landscape and there is insufficient information to understand overall construction stage effects in this subsection.

Potential effects – Operation

8.15.96 Moderate (indirect) adverse effects are also predicted within the PEI for the River Eden Floodplain and the Burgh by Sands and Beaumont LCAs, both of which are located within the Solway Coast AONB and the narrative notes that 'The 400kV overhead line would be located outside the River Eden Floodplain and the Burgh by Sands and Beaumont LCAs, but has the potential to indirectly affect them. Existing development in adjacent areas, including overhead lines, settlement and transport infrastructure, currently has a limited effect upon the character of these LCAs.' (paragraph 6.7.59) Moderate effects are also predicted for the River Floodplain and Marshy Grassland LCT and the Undulating Coastal Farmland LCT, both of which are located within the AONB however, there is no supporting information, viewpoints or photomontages to support this. The ES should consider effects on these nationally important areas in more detail. Additional viewpoints located within the AONB are suggested to support this.

Mitigation and Residual effects

8.15.97 Subsection specific mitigation proposals have been prepared for the area to the east of Rockcliffe and around Harker substation however, the narrative notes that these have been prepared to mitigate visual effects. It is considered that even if the mitigation proposals have been prepared to mitigate visual effects, they would also contribute to the change in landscape character, and as such, the ES should take this into account and assess the proposals in landscape terms as well as visual terms.

8.15.98 It is also noted that Figure 6.5.3 shows subsection specific mitigation proposals for Aikhead Hall and Parton Hall however, no reference is made to these proposals and there is no indication of how these have been designed and what the resulting residual effects are likely to be.

Visual

Baseline

8.15.99 It is noted that the PEI includes only two viewpoints located within the northern part (C2-54 and C2-62). These viewpoints are located on the outer edges of the AONB and there are no

viewpoints located within the interior of the designated landscape, even though analysis of the ZTVs suggests that a number of pylons are likely to be visible (e.g. Figure 7.2.7 shows 18+ no pylons are likely to be visible from PRoWs located to the north of Beaumont). Analysis of the updated CIVI mapping, which has been revised to include the North West Coast Connections project proposals shows that generally, a greater number of pylons will be visible from locations within the AONB than in current views. It is also noted that no photomontages from these viewpoints have been prepared as part of the PEI.

Potential Effects – Construction

8.15.100 Construction stage works described in paragraphs 7.7.66 to 7.7.75 include undergrounding and temporary diversion works relating to 132kV cables and the differing technical solutions to undergrounding cables are described and the resulting construction effects identified. Whilst this discussion and assessment relating to undergrounding and temporary diversion works is welcomed, it is noted that similar undergrounding and temporary diversion proposals in other subsections are not discussed or assessed at either construction or operational stages, and within the ES, all proposals should be fully and comprehensively assessed.

8.15.101 It is also noted that there is potential for localised higher level effects to be experienced from users of the Hadrian's Wall Path, as where the path crosses the 400kV route, there will be a range of construction activities occurring, including erection of new 400kV pylons, decommissioning and taking down existing 132kV pylons, directional drilling and trenching works (along with associated vegetation clearance) associated with the undergrounding of 132kV and low voltage 11kV lines. Subject to construction stage phasing of works (which are not described), it is considered that the accumulation of construction activity would potentially lead to higher levels of effect to the slight magnitude of change, and overall moderate adverse effect identified.

8.15.102 As noted previously and as discussed in the general notes, no specific discussion or assessment is included relating to visual effects experienced from locations within the nearby AONB, although it is acknowledged that parts of the Hadrian's Wall Path extend through the edge of the AONB to the east and west of Burgh by Sands. It is acknowledged that there is potential for indirect effects on the LCAs located closest to the 400kV route, but there is no supporting evidence to demonstrate this.

Potential effects – Operation

8.15.103 It is considered that higher levels of effect than that stated could be experienced by properties in Little Orton (which has been predicted in the PEI to experience a slight magnitude of change and a moderate adverse overall effect). Whilst the proposed 400kV route would be set back to the south of the existing 132kV line (to be undergrounded) and therefore further away from the settlement, the proposed route then returns northwards to wrap around the eastern edge of the settlement. This partially enclosing effect could increase the overall perception and dominance of pylons however, there is no supporting

photomontage or viewpoint photography to help verify this effect (although it is noted that viewpoint C2-74 has been identified at the south eastern edge of the settlement).

8.15.104 It is noted that the proposed 400kV route alignment to the north of Wigton extends between the two existing 132kV lines and that the nearest (southernmost) line would be removed. Whilst the 400kV route would be set back from the 132kV line to be removed, analysis of the proposed route suggests that it extends over localised high points and high ground between shallow valleys, rather than extending through the shallow valleys (which the 132kV lines do). In this respect, it is noted that proposed pylon locations to the north of Grange Farm, to the south of Dockrayrigg Farm, and to the south east of Moorhouse Hall extend across localised high points. As such the proposed route alignment is questioned at these locations as locating pylons on local high points would exaggerate their appearance in views and would be at odds with guidance set out in the 'Holford Rules'.

8.15.105 Major/moderate adverse effects are also predicted in the PEI for users of the Hadrian's Wall Path, the Coast to Coast Walk, and NCRs 72 and 7. Table 7.10 summarises the major and major/moderate adverse effects however, it is again noted that there are inconsistencies and lack of clarity about how these summaries have been reached. As noted in the general points above, the table includes predictions about susceptibility but there is no prior discussion on how this has been ascertained, and the preceding paragraph (7.7.81) notes that table 7.10 includes a summary of significant visual effects. Again, there is no prior discussion about what effects are significant or not.

8.15.106 Moderate adverse effects are predicted in the PEI for 11 settlements (paragraph 7.7.83) with a slight magnitude of change predicted for all. It is considered that higher than slight magnitudes of change may be experienced from some of these settlements, particularly where existing infrastructure visible on the skyline is likely to be replaced with larger pylons across a wide view arc, or where the new pylons may partially wrap around the settlement edges (Little Orton). Again, due to the limited supporting photography and photomontages included within the PEI, it is difficult to review and comment on these predictions and the ES will need to include a much larger suite of supporting viewpoint photography.

Mitigation and Residual effects

8.15.107 Subsection specific mitigation proposals have been prepared for the area to the east of Rockcliffe and around Harker substation. It is also noted that Figure 6.5.3 shows subsection specific mitigation proposals for Aikhead Hall and Parton Hall however, no reference is made to these proposals in the narrative.

8.15.108 The narrative acknowledges that the mitigation proposals would not influence the potential effects identified during the construction stage as the proposed planting would not be sufficiently established to provide the screening effect it is designed to do. Operational stage residual effects are identified and the narrative states that the proposals would reduce the levels of significance reported from Rockcliffe or Harker after 10-15 years following successful establishment of the planting. Whilst this is noted, there is insufficient

information available to verify the predicted reduction of effect and the ES will need to clearly describe the change in view, with supporting photomontage(s) included to allow the reader to verify the assessment.

Consultation responses on specific viewpoints

8.15.109 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
C2	Relates to VP7, now viewpoint C2_95, suggesting an alternative track VP location.	This is to be investigated further for the ES	Further investigation welcomed and outcome to be reported on
C2	CIVI VP 18: A595 Carlisle – Wigton. Additional VPs should be added along this route corridor to assess these effects	Further locations will be investigated for the ES between Wigton and Thursby	Further investigation welcomed and outcome to be reported on
Viewpoints for Discussion, March 2016			
C2	Suggests VP (325441, 549290)	'Noted. Location will be reviewed for the ES'	This is welcomed
C2	Hazel Gill, Warnell Fell (333576, 541485) (C2-A)	VP C1_100 is nearby and similar elevation, but location will be reviewed for the ES	This is welcomed
C2	Rear of residential dwellings on north edge of Wigton (325441, 549290) (C2-D)	VP C2_22 is nearby, but location will be reviewed for the ES	This is welcomed
C2	Crofton, at junction (330255, 550284)	VP C2_17 is nearby, but location will be reviewed for the ES	This is welcomed
C2	Wampool, south east of Kirkbride (330255, 550284) (C2-i)	VP C2_13 is nearby, but location will be reviewed for the ES	This is welcomed
C2	Minor road from A7 at Harker to Low Harker (339172, 560888) (C2-iii)	VP C2_3 is nearby, but location will be reviewed for the ES	This is welcomed
C2	333737, 556712 (C2-iv)	Noted. Location will be reviewed for the ES	This is welcomed

Subsection	Consultation Feedback/request	How Addressed	Further Comments
C2	332883, 552438 (C2-v)	Noted. Location will be reviewed for the ES	This is welcomed
Additional Viewpoint(s) Request, November 2016 following PEI review			
C2	New request. The visual interaction between locations within the Solway Coast AONB and its setting (including the LDNP) are not considered within the PEI and the PPA Group would expect the ES to fully address and assess this, with additional viewpoints included to illustrate the effects.	To be addressed within the ES	

South Route

8.15.110 The following text relates to landscape and visual comments on the specific subsections of the route in the south.

Subsection D1LandscapeBaseline

8.15.111 The Baseline description notes the presence of Sellafield Works in the north of the area in respect that it contrasts with the surrounding rural landscape; however, the baseline does not identify the presence of the Low Level Waste Repository (LLWR) at Drigg. The repository also contrasts notably with the surrounding rural and coastal landscape.

8.15.112 As set out within Landscape Specific General Comments, the consideration of susceptibility of LCTs and LCSTs should be clearly set out. This should be addressed in the ES.

8.15.113 The LDNP is identified as a landscape designation located with Subsection D1 however the value and susceptibility of the LDNP and its setting is not identified within the baseline.

Potential effects - Construction

8.15.114 The assessment provides a single assessment of the potential effects upon landscape character for each LCT/LCST however the construction operations required for an overhead line greatly differ to those required for an underground line. Whilst it is appropriate to provide a combined assessment for each LCT/LCST it would be beneficial if in LCT/LCSTs

where both methods are proposed that the assessment is also broken down to fully understand the localised potential effect upon landscape character.

8.15.115 The assessment of construction effects is provided through narrative text and identifies a slight/negligible magnitude of change for high and medium sensitivity receptors. Prior to this point in the assessment the susceptibility and sensitivity of each receptors is not identified. The value, susceptibility and resulting sensitivity for each LCT and LCST should be clearly set out with the ES to enable the step by step assessment process to be followed.

8.15.116 The assessment of effects omits to clearly set out the potential effect upon each LCT/LCST during the construction period. The tabulated approach used within the assessment of operational effects e.g. Table 6.4 Summary of Major and Major/moderate Landscape Effects would assist in clearly presenting the potential effects upon each area.

Potential effects – Operation

8.15.117 The PEI assessment identifies major beneficial effects for the Intertidal Flats LCST and Major/moderate beneficial effects of the Low Farmland LCST and High Fell fringe LCST. Whilst it is acknowledged that the undergrounding of the 400kV and removal of the existing 132kV would result in benefits to the character of these areas in the long term, it is unclear how the direct effects upon the landscape of the LCA/LCST have been incorporated within the assessment process. The undergrounding process requires the clearance of landscape features which contribute towards the overall landscape character along the Proposed Development alignment; features that will take a number of years to re-establish.

8.15.118 Greater explanation of how the loss of landscape features that contribute towards landscape character has been factored into the assessment of effects is required within the ES.

Potential effects – Landscape Designations

8.15.119 Due to the extent of landscape disturbance anticipated through the undergrounding of the 400kV route it is anticipated that the medium to long term effects of the groundwork operations required for the undergrounding would have a greater impact than those identified at the start of the operational phase. To aid the understanding of the potential operational effects upon the LDNP it would be helpful to have the effects at completion or two years post completion (short/medium term reversible effects) and the long term reversible effects of the Proposed Development identified individually.

8.15.120 The potential effect of the Proposed Development upon landscape designations is identified in the PEI as moderate to minor adverse within the northern part of the LDNP. It is unclear how this potential effect has been identified apart from 'aggregating' the effects upon the LCT/LCSTs identified within the LDNP. This should be made clear within the ES.

8.15.121 The potential effect of the undergrounding works associated with the 400kV route and the

decommissioning of the 132kV route is discussed within the magnitude of change narrative however there is no reference to the residual effects of the ancillary works associated with the construction phase e.g. the temporary railway compound.

Potential effects - Decommissioning

8.15.122 The section describes the general works that would be required to decommission the Proposed Development and considers the worst case scenario including the removal of the 400kV underground line. The assessment identifies a beneficial residual effect in comparison to the present baseline resulting from the removal of the 132kV line currently present. The assessment currently omits to identify the effects during the decommissioning period except for stating that they would 'be expected to be less than that of the construction phase'. Whilst this may be the case, the ES should set out the anticipated decommissioning effects including the removal of overhead/underground lines, sealing end compounds and associated infrastructure requirements.

Mitigation and Residual effects

8.15.123 Location specific mitigation around Drigg is not anticipated to alter the potential effects upon character areas. Given the scale of development this assessment is considered appropriate.

Visual

Baseline

8.15.124 The visual baseline sets out the existing visual context of the Subsection and identifies the main visual receptors. Reference is made to the accompanying figures including a selection of five photomontages from previously agreed viewpoint locations; however, it is noted that there is no reference back to the photomontages within the following baseline or assessment narrative.

Potential effects – Construction

8.15.125 The description of construction effects identifies that there may be 'effects that persist such as the restoration of the corridor associated with the buried cables. This effect would gradually reduce with the successful establishment of reinstatement works, with such establishment expected to take 5 to 15 years depending upon the landscape resource.' The assessment identifies that construction effects are likely to be short to medium duration; however, an establishment period of up to 15 years for reinstatement works is identified. It is not clear how this has been factored into the assessment of construction effects and requires clarification in the ES.

8.15.126 The PEI (Volume 2.5, Chapter 7, paragraph 7.1.54) identifies the implementation of five

temporary site compounds within the Subsection and states the effects of these would result in 'moderate to minor effects on views for these receptors' however the receptors are not stated.

8.15.127 The potential effects upon users of the local road and PRow network, including the English Coastal Path (ECP) route are described as minor adverse on these highly sensitive receptors. Whilst it is accepted that the duration of the effects may be considered short term, this does not negate the potential for a greater magnitude of visual change to be experienced which would result in an effect greater than minor adverse, albeit for a short duration.

8.15.128 In summary, it is considered that the potential effects of the Proposed Development considered within the construction effects may underplay the actual effects experienced during the construction phase as it is not transparent to what extent the duration of effects has been weighted within the assessment. The PPA Group would anticipate seeing the potential construction effects for each receptor identified within the ES with accompanying narrative.

Potential effects – Operation

8.15.129 Paragraph 7.1.56 of the assessment identifies that the assessment of effects is carried out upon the 'receptors described in the baseline that are most likely to be affected.' Whilst it is acknowledged that the assessment is PEI, it should be noted that the ES should contain a step-by-step analysis and assessment of each visual receptor identified. The following provides a review of the identified grouped receptors.

8.15.130 Major and Major/moderate visual effects identified within the PEI assessment are identified as being beneficial as these relate to the undergrounding of the route through the LDNP. It is not clear how the residual effects (lasting 5 to 15 years) of the vegetation removal associated with the construction works within the LDNP are factored in to the visual assessment during operation as it is likely the route will be highly visible through the LDNP in the medium to long term.

Potential effects – Decommissioning

8.15.131 The section describes the general works that would be required to decommission the Proposed Development and considers the worst case scenario including the removal of the 400kV underground line. The assessment identifies a beneficial residual effect in comparison to the present baseline resulting from the removal of the 132kV line currently present and the 400kV line no longer being present. The assessment currently omits to identify the effects during the decommissioning period except for stating that they would 'be expected to be similar to or less than that of the construction phase due to the lower level of activity required'. Whilst this may be the case, the ES should set out the anticipated decommissioning effects whether beneficial or adverse including the removal of overhead/underground lines, sealing end compounds and associated infrastructure

requirements for the visual receptors identified.

Consultation responses on specific viewpoints

8.15.132 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
D1	Need to consider the viewpoints used in the NuGen Moorside LVIA	Viewpoint data to be obtained from NuGen and considered in the ES	Further investigation welcomed and outcome to be reported on
Viewpoints for Discussion, March 2016			
D1	Viewpoint from edge of Seascales (304616, 502016) better than D2-405 potentially (D1-i)	The refinement of this location will be investigated through further field work to determine the best position overall	Further investigation welcomed and outcome to be reported on

Subsection D2

Landscape

Baseline

8.15.133 Each LCT/LCST is identified, described and assigned a value in accordance with the criteria set out within the methodology. All character areas located within the LDNP are assigned a high value which is considered appropriate given their location with the National Park.

8.15.134 As set out within Landscape General Comments, the consideration of susceptibility of the LCT/LCSTs to the proposed development is not clearly set out in determining overall sensitivity of receptors and should be addressed in the ES.

8.15.135 The LDNP is identified as a landscape designation with Subsection D2 however the landscape value and susceptibility of the LDNP as a whole to the Proposed Development is not stated. This should be stated within the ES.

Potential effects – Construction

8.15.136 The main landscape effect anticipated as a result of the construction phase results from the clearance of vegetation along the route of the underground cable and to enable access. The

PEI also identifies vegetation clearance is required for the temporary 132kV route however it is not identified what extent of vegetation removal is required. This should be confirmed within the ES.

8.15.137 The assessment acknowledges the vegetation clearance required for the underground cable is likely to remain visible into the operational period for between five and 15 years; this acknowledgement is welcomed within the assessment. Whilst the long term nature of the vegetation re-establishment is identified there is no indication of the restoration of topography/levels along the route alignment which is considered an intrinsic part of the landscape, particularly in the south with the pronounced rolling landscape as illustrated in PEI Figure 7.13.3c. Confirmation of the proposed topographical land restoration along the undergrounding route should be confirmed.

8.15.138 The effects identified upon the Coastal Sandstone LCT are identified as moderate adverse. The PPA Group would disagree with this assessment and consider the medium/slight magnitude of change identified is understated given the intrusive nature of the works to be carried out within the LDNP in order to underground the 400kV cable. It is considered that the magnitude of change is likely to be Substantial or Substantial/Medium as there is likely to be a large level of change affecting all of the landscape receptor, particularly in the narrower tract of land in the south, which is likely to last between five and 15 years.

Potential effects – Operation

8.15.139 The assessment identifies major/moderate beneficial and major beneficial effects upon landscape character during the operational phase as a result of the removal of the 132kV line and undergrounding of the 400kV line. It is acknowledged that there are likely to be long term benefits resulting from the removal of the 132kV line however the assessment does not make reference to the short and medium term adverse effects upon the landscape character that are likely to be experienced as a result of the construction operations to carry out the undergrounding of the 400kV line. This should be addressed within the ES.

8.15.140 The PEI assessment identifies moderate beneficial effects upon the Rugged/Angular Slate High Fell and High Fell Fringe LCTs as a result of the removal of the existing 132kV route. It is acknowledged that there are likely to be long term benefits resulting from the removal of the 132kV line however the assessment does not make reference to the short and medium term adverse effects upon the landscape character that may be experienced as a result of the construction operations to carry out the undergrounding of the 400kV line. This should be addressed within the ES.

8.15.141 As set, the assessment of landscape designations is carried out by combining the assessment carried out on LCTs/LCSTs. A full assessment of the potential effects of the Proposed Development should be carried out within the ES identifying the value, susceptibility, sensitivity, magnitude of change and effect upon the LDNP.

Potential effects – Decommissioning

8.15.142 The section describes the general works that would be required to decommission the Proposed Development and considers the worst case scenario including the removal of the 400kV underground line. The assessment identifies a **beneficial** residual effect in comparison to the present baseline resulting from the removal of the 132kV line currently present and the 400kV line no longer being present. The assessment currently omits to identify the effects during the decommissioning period except for stating that they would 'be expected to be similar to or less than that of the construction phase due to the lower level of activity required'. Whilst this may be the case, the ES should set out the anticipated decommissioning effects whether beneficial or adverse including the removal of overhead/underground lines, sealing end compounds and associated infrastructure requirements for the visual receptors identified.

Mitigation and Residual Effects

8.15.143 Paragraph 6.2.54 sets out that no subject specific mitigation is proposed and as a result of this the residual effects are likely to be as per those reported within the Potential Effects section. Whilst this may be the case the PPA Group would draw the attention of the assessor to the comments made in relation to the assessments carried out within the Potential Effects section.

Visual

Baseline

8.15.144 The baseline provides a brief description of the visual context of the Subsection although it is considered that greater description of the visual difference between the north and south sections of the Subsection are required to provide contextual understanding. This should be provided within the ES.

Potential effects – Construction

8.15.145 Potential effects upon visual receptors are considered to result from the clearance of vegetation along the 400kV routes; temporary and permanent 132kV routes, both above and below ground, and the construction of the 400kV route. It is noted within 7.2.32 that 'The corridor of disturbance and vegetation removal associated with the underground cable would form a prominent element during the construction phase'. The assessment of effects upon residents in Newbiggin, Hycemoor, Silecroft and scattered properties is identified as moderate/minor (adverse) for the residents; the effects are noting as having regard to the geographical extent and temporary nature, distance and intervening vegetation. It is acknowledged that these factors affect the potential effects although it is not clear as to the weighting applied to these factors in arriving at the assessment outcome as it is anticipated that the potential effects would be greater than that stated as a result of the construction operations forming 'a prominent element during the construction phase', even if for a short duration.

8.15.146 The assessment identifies two rail compounds and a construction compound within the Subsection and states that the 'compounds would be temporary and reversible' although does not state the duration in accordance with Volume 2.2 Chapter 7 Visual, Table 7.8 Duration and Reversibility of Visual Change. This should be confirmed within the ES.

Potential effects – Operation

8.15.147 The assessment identifies major/moderate beneficial effects for Newbiggin, Hycemoor, Silecroft and scattered properties within 1 km of the Proposed development although there is no reference to the short/medium term residual visual effects resulting from the undergrounding operations during construction which are likely to be adverse in nature. It is unclear how this has been considered within the assessment of effects during the re-establishment period lasting up to 15 years. This should be clarified within the ES. This comment also applies to the assessment of users on the slopes of Black Combe, the emerging ECP and A595 tourist route.

8.15.148 Major/moderate beneficial effects are identified from a number of PRoW located within the subsection however there is no figure cross referenced to identify the location of these PRoW. This should be provided within the ES to enable identification of receptors.

8.15.149 Moderate beneficial effects are generally identified for high sensitivity receptors located over 1 km from the Proposed Development alignment. Whilst it is likely that this is the case further clarification is required as to the magnitude of change anticipated for receptors/receptor groups as this information is currently only contained within the Summary Table 7.4.

8.15.150 Minor beneficial and negligible effects are identified (7.2.53 and 7.2.54) although there is no discussion of magnitude of change upon the receptors. This should be provided within the ES.

Potential effects – Decommissioning

8.15.151 The assessment currently omits to identify the effects during the decommissioning period except for stating that they would 'be expected to be similar to or less than that of the construction phase due to the lower level of activity required'. Whilst this may be the case, the ES should set out the anticipated decommissioning effects whether beneficial or adverse including the removal of overhead/underground lines, sealing end compounds and associated infrastructure requirements for the visual receptors identified.

Mitigation and Residual Effects

8.15.152 Paragraph 6.2.54 sets out that no subject specific mitigation is proposed and as a result of this the residual effects are likely to be as per those reported within the Potential Effects section. Whilst this may be the case the PPA Group would draw the attention of the assessor to the comments made in relation to the assessments carried out within the

Potential Effects section.

Consultation responses on specific viewpoints

8.15.153 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
D2	Stresses the importance of sequential cumulative effects on the A595 south of Ravensglass, and Grizebeck –Askham route	A number of viewpoints identified and 'sequential assessment and cumulative effects will be examined using representative 'viewpoints and fieldwork	The PPA Group welcome the assessment of sequential and cumulative effects and would wish to see them addressed in the ES

Subsection E1

Landscape

Baseline

8.15.154 The subsection does not consider the wider study area as it is contained within adjacent subsections. It would be beneficial if a summary of the wider study area was provided for reference of direct the reader to the relevant subsection/information within the PEI.

8.15.155 The baseline description provides a very generic description of the study area but fails to describe the intrinsic qualities of the areas such as the Whicham Valley that are uniquely distinctive within the locality. There is no description of the landscape to the south east of Great Knott which is identified as the potential alignment of the proposed 132kV route on timber poles. It is considered a greater level of baseline description is required within the ES.

8.15.156 The value of the Upland Fringe Foothills LCST (11a/136) is identified as of Local Authority value although paragraph 6.3.19 identifies the importance of this area of land and its inter-relationship with the LDNP immediately adjacent to its boundary. For this reason it is considered that the value stated may be underplaying the value of the character area within the Lowscales Bank LoCI. Although it is accepted that a moderation process is yet to be carried out. In this context, the baseline narrative should fully consider and describe the setting to the LDNP so that the following assessment(s) can appropriately consider the actual value of the landscapes surrounding it.

8.15.157 LCST 11a/137 Foothills is described as 'an extension to the fells to the north within the LDNP'. The character is similar to that located immediately north (within an unidentified LCST) with the LDNP and contributes to the setting of the LDNP. The LCST is identified as being of local authority value however taking into consideration the 'extension to the fells' and contribution to the setting of the LDNP that the area provides it is considered appropriate to upgrade the value to national value. Consideration of this would be welcomed within the forthcoming ES.

Potential effects – Construction

8.15.158 The description of construction operations is consistent with activities along the alignment of the Proposed Development. Volume 2.5 Chapter 6 paragraph 6.3.30 identifies the requirement for a temporary 132kV line between Silecroft and Haverigg; the location of this is not identified on Figure 6.4.13 and should be identified within the ES.

8.15.159 The construction activities are identified in the PEI as resulting in a medium/slight magnitude of change within the 'Foothills' LCST (Upland Fringe Foothills). It is considered that the magnitude of change during construction would result in at least a medium magnitude of change due to the construction operations set out. It is considered the outcome of the assessment upon the Upland Fringe Foothills LCST may be understated.

8.15.160 It is considered that the magnitude of some construction effects identified for the subsection may not accurately reflect the extent of works to be carried out; in particular those for the Upland Fringe Foothill LCST when compared with the Lowland Low Farmland LCST. It is acknowledged that a moderating exercise is still to be undertaken.

Potential effects – Operation

8.15.161 The High Fell Fringe LCST is identified as experiencing a moderate (adverse) effect however the narrative states in paragraph 6.3.35 'Compared to the existing 132kV overhead line, the 400kV overhead line would be more prominent in the landscape. However, it would appear back-grounded and its prominence in the landscape would be reduced as a result'. Although the route is likely to be back-grounded this cannot be confirmed as no supporting visual information has been provided and it is anticipated that the magnitude of change and resultant effect may be understated. Greater clarity should be provided within the ES.

8.15.162 The Upland Fringe Foothills LCST is identified in the PEI as experiencing a moderate (adverse) effect however given its direct inter-relationship with the land immediately to the north west within the LDNP it is considered the LCST value is understated and the resultant effect is likely to be greater as a result of this.

8.15.163 Low Farmland and Coastal Urban Fringe LCSTs are identified in the PEI as experiencing moderate/minor (adverse) effects; and the Dunes and Beaches LCST as experiencing minor (adverse) effects. The PPA Group would generally concur with this preliminary assessment.

8.15.164 As set out the assessment of landscape designations is carried out by combining the assessment carried out on LCTs/LCSTs. A full assessment of the potential effects of the Proposed Development should be carried out within the ES identifying the value, susceptibility, sensitivity, magnitude of change and effect upon the LDNP and its setting.

Potential effects – Decommissioning

8.15.165 The assessment identifies a beneficial residual effect in comparison to the present baseline resulting from the removal of the 132kV line currently present and the 400kV line no longer being present. The assessment currently omits to identify the effects during the decommissioning period except for stating that they would 'be expected to be similar to or less than that of the construction phase due to the lower level of activity required'. Whilst this may be the case, the ES should set out the anticipated decommissioning effects whether beneficial or adverse including the removal of overhead/underground lines, sealing end compounds and associated infrastructure requirements for the visual receptors identified.

Visual

Baseline

8.15.166 The baseline provides an adequate description of the visual context of the Subsection and identifies the key visual receptors located within the Study Area with their associated value. The values are generally considered appropriate. It is also considered that the baseline narrative should fully consider and describe the setting to the LDNP so that the following assessment(s) can appropriately consider the actual value of the landscapes surrounding it.

Potential effects – Construction

8.15.167 Paragraph 7.3.38 identifies that the construction of the overhead line would require vegetation 'clearances to a maximum of 30m from the centre line of the 400kV overhead line, and 15m from the centreline of the re-routed 132kV overhead line'. It is considered that the maximum width of clearance, i.e. 60m wide for the 400kV route and 30m wide for the 132kV route should be stated rather than the distance from the centre line for consistency with the forthcoming ES and avoidance of confusion as the route within the LDNP (Subsection D2) describes a clearance width.

8.15.168 Given the extent of views that are likely to be available to residents at Whicham as described in paragraph 7.3.41 it is anticipated that the magnitude of change experienced is likely to be greater than medium/slight potentially resulting in visual effects greater than moderate (adverse). Although it is accepted that the duration of the works may be short term the visual change during this period is likely to be great.

8.15.169 As identified above it is anticipated that in general, construction effects may be greater than those identified as it is not clear how duration of effect is factored into the assessment.

Potential effects – Operation

8.15.170 The assessment of major and major/moderate (adverse) visual effects in the PEI appears reasonable in general terms although it is considered that there are likely to be a number of major adverse effects identified from visual receptors in the detailed assessment contained within the ES.

8.15.171 The major/moderate beneficial effects identified in the PEI at Silecroft and Whicham are considered to require further narrative to support the extent of beneficial effects identified as although the existing 132kV route would be removed, views of the CSE compound and terminal tower at Nicle Wood would remain in the views along with part of the taller pylons located within the Whicham Valley. Moderate (adverse) effects identified in the PEI for receptors in key settlements at Kirksanton, Hallthwaites and Millom, which are likely to gain views of the CSE compound, terminal tower and conductors following the removal of the existing 132kV route. It is however acknowledged that a moderating exercise is yet to be carried out however it is considered that a greater extent of narrative is required to fully understand the assessment and comparison of effects within the above locations.

8.15.172 Generally, it is considered that the removal of the 132kV line and replacement with the Proposed Development 400kV line has been underrepresented in the assessment of the magnitude of change upon receptors in particular within the Whicham Valley. Whilst there are localised areas of woodland and tree cover, it is considered that the larger scale of pylons within the valley is likely to result in a greater degree of change than that set out within the PEI. A greater level of narrative in the ES to substantiate outcomes would be welcomed.

Potential effects – Decommissioning

8.15.173 The section describes the general works that would be required to decommission the Proposed Development and considers the worst case scenario including the removal of the 400kV underground line. The assessment identifies a beneficial residual effect in comparison to the present baseline resulting from the removal of the 132kV line currently present and the 400kV line no longer being present. The assessment of effects upon decommissioning do not reference the long term presence of the 132kV trident line to be realigned to the south east of Great Knot and extending north towards Strands. This should be referenced in the forthcoming ES.

8.15.174 The assessment currently omits to identify the effects during the decommissioning period except for stating that they would 'be expected to be similar to or less than that of the construction phase due to the lower level of activity required'. Whilst this may be the case, the ES should set out the anticipated decommissioning effects whether beneficial or adverse including the removal of overhead/underground lines, sealing end compounds and associated infrastructure requirements for the visual receptors identified.

Mitigation and Residual Effects

8.15.175 Location specific mitigation is proposed around Nicle CSE compound as illustrated on Figure 6.5.5, Volume 2.6. No additional topic specific mitigation is proposed.

8.15.176 Residual effects associated with the construction and decommissioning phases are identified as remaining as those identified in the Potential Effects section which the PPA Group would agree with subject to the specific comments above relating to the assessment of effects during these phases. The location specific planting around the CSE compound is identified as providing some screening around the CSE and base of the terminal tower and reducing visual effects from major/moderate (adverse) to moderate or less (adverse). Due to the limited screening of the terminal tower that the location specific mitigation would provide it is considered that a reduction to less than moderate adverse is unlikely. The PPA Group would however welcome narrative to support the anticipated effects in the ES.

Subsection E2

Landscape

Baseline

8.15.177 It is noted in reviewing the Subsection that a number of LCS/LCSTs are not identified on all drawings; these should be reviewed and reference numbers added accordingly for the production of the ES. Noted in particular within the Subsection are:

- LCST 1b/14 Coastal Marsh is not identified on the Figures 6.4.14 and 6.4.15;
- LCST 5c/77 Rolling Lowland is not identified on Figures 6.4.14 and 6.4.15;
- LCST H2/280 Valley Floor with River Floodplain is not identified on Figures 6.4.14 and 6.4.15; and
- H3/292 Enclosed Valley Side is not identified on Figures 6.4.14 and 6.4.15.

8.15.178 The baseline description of LCST 9d/130 Ridges does not reference the existing wind farms located along the ridge which are a strong characteristic of the area.

8.15.179 LCST 11a/137 Foothills is described as 'an extension to the fells to the north within the LDNP'. The character is similar to that located immediately north (within an unidentified LCST) with the LDNP and contributes to the setting of the LDNP. The LCST is identified as being of local authority value however taking into consideration the 'extension to the fells' and contribution to the setting of the LDNP that the area provides it is considered appropriate to upgrade the value to national value. Consideration of this would be welcomed within the forthcoming ES.

8.15.180 As with LCST 11a/137 Foothills above, LSCT 2b/27 Coastal Mosses is identified as local authority value as it is outside the LDNP and LCST B2/16 Coastal Mosses identified as

national value as located within the LDNP. Both LCSTs are of similar landscape characteristics and quality and therefore questions if LCST 2b/27 should be elevated to national value as it is a natural continuation of the designated area and contributes towards the setting of the LDNP.

Potential effects – Construction

8.15.181 The assessment of construction effects at paragraph 9.4.45 identifies a slight magnitude of change upon all character areas that the Proposed Development passes through and identifies moderate/minor and minor (adverse) effects on the LCST's identified. The effects on each individual LCST should be addressed within the ES for transparency.

8.15.182 There is no assessment of potential indirect effects upon character areas that are located within the study area and identified within the baseline. This assessment should be included within the ES.

Potential effects – Operation

8.15.183 Major/moderate (adverse) effects are identified for LCTs located primarily at the head of the Duddon with the effects noted resulting from the increase in size of pylons with the Proposed Development and the associated perception within the landscape. It is agreed that the increase in pylon height is likely to alter the landscape perception and if the value of these areas is reconsidered may raise the effect beyond major/moderate. The above comments relating to value should therefore be considered within the ES.

8.15.184 It is not possible to comment upon the anticipated effects upon the four unidentified LCSTs within the baseline as the location and extent of these is not illustrated on the figures.

8.15.185 LCSTs identified in the PEI as experiencing moderate/minor effects include the Low Fell and Moorland Ridge; this is due to the limited change and distance from the Proposed Development. These conclusions are considered appropriate at this PEI stage.

8.15.186 The PEI identifies a number of LCSTs within the subsection to the east of the Duddon Estuary that are likely to experience minor and negligible (adverse) effects. These areas are located a considerable distance from the proposed route alignment and generally separated by urban areas and therefore the conclusions are considered appropriate at this PEI stage.

8.15.187 As set out above, the assessment of landscape designations is carried out by combining the assessment carried out on LCTs/LCSTs. A full assessment of the potential effects of the Proposed Development should be carried out within the ES identifying the value, susceptibility, sensitivity, magnitude of change and effect upon the LDNP and Lowscals Bank/Duddon Estuary LoCI.

Potential effects – Decommissioning

8.15.188 The assessment identifies a beneficial residual effect in comparison to the present baseline resulting from the removal of the 400kV line; the permanent 132kV trident line would however remain. It is considered that a greater level of detail is required in the ES to clarify the beneficial effects of the proposed development as these are not currently presented within the section.

Visual

Potential effects – Construction

8.15.189 For the purpose of the PEI settlements and individual properties are grouped relating to the outcome of the assessment. Whilst this provides an overview at this PEI stage, the individual receptors should be identified and assessed within the ES to ensure grouped receptors are not under assessed.

8.15.190 The construction effects are identified as being of short duration however due to the inter-visibility across the Duddon Estuary it is anticipated that construction effects may be visible for a greater duration than the two year short term period. This should be considered within the ES.

8.15.191 It is noted that not all of the high value receptors identified within the baseline are addressed within the assessment of construction effects. All receptors should be assessed within the ES.

Potential effects – Operation

8.15.192 The PEI assessment identifies major/moderate (adverse) effects upon the settlements within the Subsection however, for Ladyhall, Foxfield and in particular Beck Side, following the review of the change in views described, it is considered that the magnitude of change experienced may be greater than medium. These should be reviewed during the preparation of the ES.

8.15.193 As the PRoW assessed are not identified on the accompanying Figures it is not possible to confirm the footpath locations, however, it is believed that footpaths identified in the PEI as experiencing major/moderate (adverse) effects are located within the area of Duddon Mosses Local Nature Reserve. If this is the case it is believed that the magnitude of change experienced by PRoW (footpath) users may be greater than that identified due to the prolonged views towards the Proposed Development. This should be considered within the ES.

8.15.194 Moderate (adverse) effects are identified from four settlements (paragraph 7.4.79). The assessment identifies a slight magnitude of change for each of these receptors however the

change scale of pylon experienced, increasing from 26m to 46.5m, within the view is considered to be a greater magnitude of change within the view than slight. The PPA Group would welcome the review of the magnitude of change within the ES. This comment also applies to the identified PRow and scenic routes within the vicinity of the settlements.

Potential effects – Decommissioning

8.15.195 Following the decommissioning of the 400kV line and associated infrastructure the assessment identifies beneficial residual effects in comparison to the baseline. Whilst the assessment acknowledges the long term presence of the 132kV trident line following decommissioning there is no narrative to set out the potential localised effects the rerouting of the existing 132kV route may have on receptors if the 400kV line was no longer present. The PPA Group would welcome this inclusion within the ES.

Mitigation and Residual Effects

8.15.196 Subsection specific mitigation is proposed at Beck Side along Lady Moyra Incline to mitigate views. The Assessment acknowledges that this planting would not be of sufficient size to mitigate views during construction however it does identify a reduction in the likely effect approximately 15 years post completion reducing the effect from major/moderate to moderate (adverse). Whilst this may be the case it is difficult to confirm this without supporting visual information.

Consultation responses on specific viewpoints

8.15.197 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
E2	Stresses the importance of sequential cumulative effects on the A595 south of Ravenglass, and Grizebeck –Askham route	A number of viewpoints identified and 'sequential assessment and cumulative effects will be examined using representative 'viewpoints and fieldwork	The PPA Group welcome the assessment of sequential and cumulative effects and would wish to see them addressed in the ES
Viewpoints for Discussion, March 2016			
E2	View from layby adjacent to A595 (322262, 486579)	A viewpoint from Wrecks Level on the A595 will be considered in the ES	The PPA Group welcome this further consideration

Subsection H1

8.15.198 It is not clear from Figure 6.4.15 if the proposed realigned 132kV route is to be over ground or underground as indicated in the figure Legend; 'Existing 132kV Overhead Line – To be Realigned (Overhead Line or Underground Cable)'. The text within the PEI suggests it is likely to be over ground for much of its length and therefore the following comments are provided on this basis.

Landscape

Baseline

8.15.199 It is noted in reviewing the Subsection that a number of LCS/LCSTs are not identified on all drawings; these should be reviewed and reference numbers added accordingly for the production of the ES.

Potential effects – Construction

8.15.200 The PEI assessment of construction effects provides a general narrative of only those character areas that the Proposed Development passes through and provides a single assessment of minor to moderate (adverse) for each of the character areas. A greater level of detailed assessment would be welcomed within the ES.

8.15.201 There is limited reference to the assessment of character areas that the line does not pass through within the subsection as contained within paragraph 6.5.54 which identifies minor to negligible (adverse) effects due to geographic separation. A greater level of detailed assessment would be welcomed within the ES.

Potential effects – Operation

8.15.202 Magnitude of change described with paragraph 6.5.58 within the Drumlin Field LCST is medium as a result of the greater area over which the Proposed Development would be experienced. Although one of the existing 132kV routes is to be removed the presence of the proposed 400kV line would be an addition within the landscape at a greater scale and it is considered that the change as a result of this may be greater than medium when considered alongside the effects upon the landscape character alongside the over/undergrounding of the retained 132kV route. It is not however clear which sections of the 132kV route would be over or underground and clarification should be provided within the ES.

Potential effects – Decommissioning

8.15.203 The assessment identifies a beneficial residual effect in comparison to the present baseline resulting from the removal of the 400kV line; the permanent 132kV line would however

remain. It is generally agreed that there would be beneficial effects as a result of one 132kV route rather than two, however, a greater level of detail would be welcomed in the ES to clarify the beneficial effects upon the character areas affected.

Mitigation and Residual Effects

8.15.204 Subsection specific mitigation planting is proposed at the site of the tunnel shaft, head house and 400kV substation to mitigate visual effects. Mitigation is to reduce visual effects and is discussed within the 'Visual' section below. The residual effects are considered to be as those reported within the Potential Effects section which is considered appropriate as there is no landscape specific mitigation proposed.

Visual

Baseline

8.15.205 Paragraph 7.5.6 identifies views from settlements are typically considered high however a medium value applies to some depending upon the main focus of the view. Those downgraded within the ES should be clearly identified along with an associated narrative explaining the reason why.

Potential effects – Construction

8.15.206 Construction effects Paragraph 7.5.59 identifies a moderate (adverse) effect during construction due to the temporary/short term nature of the works although it is anticipated that the effects experienced are likely to be greater than this although for a short duration which should be defined within the ES if this is likely to be the case.

8.15.207 The duration of the temporary compound at the Rampside tunnel is not defined (paragraph 7.5.61) although the temporary compound at Cavendish Docks (paragraph 7.5.62) is identified as remaining for up to 6 years. The inclusion of duration of all temporary works associated with the Proposed Development should be included within the ES for clarity.

8.15.208 The assessment of construction effects provides a general discussion of effects and is considered to cover only a limited number of receptors identified in the Baseline section. A greater level of assessment of construction effects would be welcomed within the ES.

Potential effects – Operation

8.15.209 A slight magnitude of change is identified in the PEI for receptors within Dalton in Furness located within 1km of the proposed realigned 132kV route which would be seen simultaneously with the proposed 400kV route (paragraph 7.5.66) whereas paragraph 7.5.67 identifies medium magnitude of change for residents in close proximity 'in particular those within 1km of the pylons'. It is considered there may be inconsistencies within the

magnitude of change identified. Clarity would be welcomed within the ES.

8.15.210 It is not possible to identify the PRoW assessed within paragraph 7.5.69 as these are not identified on the accompanying Figure 6.4.15. Footpath numbers should be included on the accompanying figures within the ES.

Potential effects – Decommissioning

8.15.211 The effects post decommissioning are generally identified as being beneficial as only one 132kV line would be present rather than two although paragraph 7.5.91 identifies a 'few cases' where effects 'would be neutral or potentially adverse but does not identify where these receptors are located. A greater level of detail would be welcomed within the ES.

Mitigation and Residual Effects

8.15.212 Subsection specific planting is proposed to mitigate views towards the tunnel shaft, head house and 400kV substation for users of Rampside Road and residents within Barrow-in-Furness. No other mitigation is proposed other than that included within the design principles. It is identified that the proposed mitigation would not be effective during construction and would take 5 to 15 years to provide screening at which time effects would be reduced to minor (adverse) however the effects associated with the proposed 400kV route would be unaltered. It is unclear how the assessment of effect has been separated out for this part of the PEI and greater narrative would be welcomed within the ES.

Consultation responses on specific viewpoints

8.15.213 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Scoping paper response feedback, August 2015			
-	-	-	-
Viewpoints for Discussion, March 2016			
H1	Dalton Lane (321476, 472181)	Noted. Location will be reviewed in the ES	This is welcomed
H1	Rakesmoor Lane, Near Howcoat (320558, 472908) (updated to correct grid reference)	Noted. Location will be reviewed in the ES	This is welcomed
H1	Newton Road, Newton in Furness (322830, 471824)	Noted. Location will be reviewed in the ES	This is welcomed
H1	Long Lane, Dalton in Furness (323745, 472795)	Noted. Location will be reviewed in the ES	This is welcomed

Subsection H2

Landscape/Seascape

Baseline

8.15.214 The extension of the study area to include the whole of the Silverdale and Arnside AONB is welcomed.

Potential effects – Construction

8.15.215 The assessment of construction effects identifies that 'significant effects on seascape character units are not expected to arise' (paragraph 6.6.28) due to the duration and intermittent nature of the construction activities when considered with the distance. The preceding paragraph (6.6.27) however states 'The crane used to recover the TBMs would be especially apparent from many coastal locations around Morecambe Bay'. In light of this further clarification of the likely effects of the construction operations from the 'many coastal locations around Morecambe Bay' would be welcomed within the ES.

Potential effects – Operation

8.15.216 The PEI assessment does not identify any major or major/moderate effects although the assessment does not identify the anticipated magnitude of change and therefore this cannot be verified.

8.15.217 Moderate effects are identified in the PEI for SCU15 Kent Estuary only due to the AONB designation, with the remainder of the SCU experiencing minor and negligible effects as a result of the distance of the shoreline from the proposed islet. Whilst the distance from the islet is a determining factor, long distance views are possible across the bay during good visibility and the introduction of this into the assessment would be welcomed.

8.15.218 Effects experienced upon the Silverdale and Arnside AONB and the LDNP are identified as minor to negligible due to the distance of approximately 17km from the islet. This is considered reasonable at this preliminary stage of assessment given the distance from the islet however this should be confirmed within the ES. The PPA Group reserves judgement on the likely effects until revised photomontages are provided and further information is provided on the size/design of the proposed islet.

Potential effects – Decommissioning

8.15.219 The decommissioning effects are described as being less than those experienced during construction which is considered reasonable. The long term effects following the removal of the head house are described as being adverse in comparison with the existing baseline however the degree of effect is not identified.

Visual

Baseline

Potential effects – Construction

8.15.220 The assessment identifies no significant effects as a result of the construction operations although the construction operations are likely to be present for four to five years (depending on construction method). Given the duration of the construction phase and the potential proximity that users of the Bay may have to the islet it is considered that a greater level of assessment is required upon the confirmation of the construction method. This should be provided within the ES.

Potential effects – Operation

8.15.221 No major or major/moderate effects are identified. The assessment notes that sea based receptors are likely to have closer views than land based receptors however this would not result in major or major/moderate effects. It is considered that users in close proximity of the islet may experience effects greater than moderate and this should be considered further within the ES.

Potential effects – Decommissioning

8.15.222 Decommissioning effects are described as being less than those experienced during construction which is considered reasonable. The long term effects following the removal of the head house are described as being adverse in comparison with the existing baseline however the degree of effect is not identified.

Consultation responses on specific viewpoints

8.15.223 The following table refers to Appendix 7B Viewpoints and Consultation Feedback. It does not list previous viewpoint consultation that has been discussed and resolved, only issues which are still to be followed up within the ES.

Subsection	Consultation Feedback/request	How Addressed	Further Comments
Viewpoints for Discussion, March 2016			
H2	Midway point of Morecambe Bay	Noted. Location will be reviewed in the ES	This is welcomed

8.15.224 Further comments on H2 and H3 are included at the end of this chapter from Lancashire County Council.

Natland Substation

Landscape

Baseline

8.15.225 The baseline provides a good narrative of the landscape characteristics of the identified character areas and assigns landscape value. It is noted that character areas bordering the LDNP are assigned a local authority value in comparison to those within the LDNP which are stated as national value. It is not made clear how the factor of setting in respect of the LDNP has been considered in assigning a local authority value to character areas immediately adjacent to the LDNP. This should be clarified within the ES.

8.15.226 The baseline identifies the LDNP as being within the Study Area and identifies the LCT/LCSTs within it however there is no identification of the value of the LDNP. This should be stated within the ES.

Potential effects – Construction

8.15.227 The assessment of construction effects only assesses the effects upon the Broad Valleys and Drumlin Field LCSTs. In reviewing Figure PEI 6.4.18 the Proposed Natland 132kV Substation Extension is located on the border of the two LCSTs however the magnitude of change upon the Broad Valleys is considered slight/negligible and upon the Drumlin Field negligible. Further narrative would be welcomed within the ES to clarify the difference in magnitude of change considering the location of the Proposed Development is within the transition of the two LCSTs.

Potential effects – Operation

8.15.228 As set out above, the proposed development appears within the transitional zone between the Broad Valleys and Drumlin Field LCSTs. It is considered that additional clarification is required as to the difference in landscape effects during the operational phase moderate adverse and minor adverse/negligible respectively given that the Proposed Development is not clearly defined as being within one character area as shown on Figure PEI 6.4.18.

Mitigation and Residual Effects

8.15.229 Location specific woodland planting is proposed to the north and south of the proposed pylons and shrub planting to the east and west below the overhead lines. The proposed planting is identified as taking approximately 15 years to mature reducing the effects from moderate to minor adverse which is considered appropriate however there is no discussion explaining how the proposed planting will contribute or otherwise to existing local landscape character. This would be welcomed within the ES.



Chapter 8 – Landscape and Visual

Visual

Baseline

8.15.230 The baseline description provides a thorough description of visual receptors and the PPA Group would generally agree with the values assigned. The PPA Group would however welcome the explanation in the ES of the allocation of medium value to receptors of residential properties that are identified as medium value.

Potential effects – Construction

8.15.231 The assessment of construction effects groups receptors of varying types including residential, and recreational users identifying moderate/minor adverse effects during construction. Whilst this provides a general overview of the anticipated effects a greater level of assessment for individual receptors should be provided within the ES.

Potential effects – Operation

8.15.232 The assessment identifies a medium/slight magnitude of change experienced by receptors on the south edge of Natland resulting in a moderate adverse effect. It is considered that residents on the south edge of Natland are likely to experience a greater magnitude of change in the short to medium term as a result of the substation extension as the proposed mitigation would provide little screening at lower levels. Further explanation clarifying the assessment would be welcomed in the ES.

8.15.233 Minor, negligible or no effect is identified for a number of receptors in the wider area although there is limited information to support the assessment at this PEI stage. Further detail would be welcomed within the ES.

Mitigation and Residual Effects

8.15.234 Location specific woodland planting is proposed to the north and south of the proposed pylons and shrub planting to the east and west below the overhead lines. It is recognised within the PEI that this mitigation will not provide screening during construction and identifies that the planting would not provide effective screening until approximately 15 years. The assessment does not state the effects in the initial 15 year period which should be stated in the ES.

Subsection H2 and H3 from the Lancashire side

Landscape/Seascape

8.15.235 The following comments refer to sections H2 and H3:

Commentary on Consultation Activity and Data

Presentation and clarity of information

8.15.236 The documentation is poorly presented and it has been extremely difficult to find information relevant to Landscape matters within subsections H2 and H3. Once information has been located there is often a lack of clarity on many aspects of the project.

8.15.237 There have also been significant changes since the last presentation to stakeholders earlier in the year e.g. the enlargement of the DOL at Middleton and the relocation of the temporary shaft at Half Moon Bay to Penrod Way. It is understood that the project is large and complex and there needs to be a degree of flexibility at this stage. For projects such as these the worst case scenario is presented and further clarification is required to identify the effects.

Lack of information

Figure 3.5.58

8.15.238 The DOL at Middleton sub-station and tunnel head is much larger than previous plans have shown and extends to the north, east and south of the site compound area. The new buried 132kv cable accounts for part of it and further clarification is required in the additional area on the eastern most part of the DOL.

8.15.239 It is not clear what is proposed within the DOL during the various construction phases. The phasing/timescales is required during the construction period.

Figure 4.14.1

8.15.240 It is not clear what will happen to the tunnel spoil, including the Penrod Way temporary shaft. Further clarification as to whether all the spoil will be contained/stored within the batching plant and tanks shown on Fig 4.14.1.

8.15.241 There are no elevation drawings of the proposed works within the construction compound. There are references to heights of structures on the drawing but as presented the information is incomplete.

Figure 4.14.1

8.15.242 Further clarification is required as to whether an access to a segment manufacturing facility is located within the DOL.

Figure 3.3.1 (Tunnel option alignments).

8.15.243 Further clarification is required as to whether a blue route for the tunnel is located outside the DOL and whether these alternatives have been discarded.

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Paragraphs 4.5.55 – 4.5.66

8.15.244 The construction options for the islet are identified. From sketch plans it appears to be about 30m tall. However there are no scaled drawings and no details of the final colour or final appearance.

Table 4.18 Summary of Elements of Project in Subsection H3

8.15.245 Further clarification is required as to whether the temporary shaft spoil storage area east of Middleton substation site is within the extended DOL to east of the site.

Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment

Assessment Methodology

Photomontages

8.15.246 It appears that the photomontages relating to Lancashire have been provided in accordance with the SNH standards, i.e. with the use of a 50mm lens. (Volume 2.7 Figs 7.17.1-4 and Fig 7.18.1) Reference is made to SLR (on behalf of National Grid) email of 22 August 2016 to WYG (on behalf of the PPA Group), that the Highland Council standards would be adopted for viewpoints located in Lancashire. There is no evidence of this at this stage.

Application of Methodology

8.15.247 See:-

- Volume 2.5 South Route Assessment Chapter 6 Landscape - Sections 6.6 and 6.7
- Volume 2.5 South Route Assessment Chapter 7 Visual - Sections 7.6 and 7.7

Viewpoints

8.15.248 Paragraph 6.6.3. There is no Viewpoint Register or any reference to a Viewpoint Register in

this Chapter. The selection of viewpoints has been the subject of ongoing discussion between NG and the PPA authorities but there is no recognition of this within this chapter.

Figures 6.4.16/17

8.15.249 Many viewpoints have been amended or omitted since the last consultation. No justification for these changes can be found in the documentation, and these will need to be clarified in the ES.

8.15.250 Those viewpoints identified in Figure 6.4.16/17 do not represent previous discussions and correspondence relating to viewpoints. For example:-

- VPs H3-704, H3-710, H3-711 have been omitted.
- A previous request for a viewpoint at Potts Corner has not been included.
- H3-705 – has changed and is now located at the Stone Jetty, Morecambe Promenade

8.15.251 Further clarification is required as to the basis for the Viewpoints selected.

8.15.252 Due to the complexity and poor presentation of the documentation, and the inadequate timescales being imposed, the PPA Group have not been able to review the Viewpoint Register at this stage. Under the circumstances, the PPA Group would like to consider further the proposed viewpoints and will need to be considered as part of the Environmental Statement.

Middleton substation and site compound

Paragraph 7.7.38

8.15.253 There are several properties within 30m of the site compound and approximately 50 within 70m. They are in an elevated position overlooking the site. The buildings and storage areas during the construction phases at the site are likely to have the greatest visual impact within the Lancashire element. There is no photomontage of the Middleton substation site. At the PEI stage it would be expected that there would be a photomontage from viewpoint H3-712, showing the construction site.

8.15.254 Furthermore there are no elevation drawings, just a plan (Figure 4.14.1) with heights of structures. There are no proposals for any specific mitigation although the removal of the 132kv line is referenced as a mitigating factor. Clarification is sought as to why the 132kv line is to be removed and what certainty is there that this will take place. It should be borne in mind that at this stage the worst case scenario should be considered.

8.15.255 The assessment concludes that there would be major/medium effects on receptors.



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However, given the magnitude of change, the close proximity of the residents to the site, and the fact that operations are likely to last for several years, effects on local residents are considered to be major. It is recommended that the assessment is carried out again once all the information is available.

Middleton substation mitigation

Paragraph 7.7.53

8.15.256 Reference is made to Figure 6.5.7 (Preliminary Landscape Mitigation, Middleton substation and tunnel head house). Mitigation for the final sub-station and tunnel head is limited, to the north and east, to belts of woodland and shrub planting. Belts of woodland planting should be at least 20 m wide in order to allow trees to mature and form an effective screen.

8.15.257 A belt of planting is shown on the northern boundary of the substation. This is also the location of the PROW. Adequate land should be provided for the woodland belt and the footpath.

8.15.258 The mitigation planting does not cover the whole of the DOL, and further clarification is required as to what is proposed to the east side of the plan.

Paragraph 7.7.54

8.15.259 The construction phase extends to 2024. No mitigation is proposed during this period. This is unacceptable. The impacts on receptors is likely to be major and mitigation is required. Furthermore referring to Figure 4.14.1 there is no space for any mitigation in the form of planting. A Landscape Mitigation Plan should be provided for the construction phase. This should include some form of screening along the north eastern boundary between the compound and the residential area. This could be in the form of a bund planted with fast growing trees and shrubs.

Tunnel Islet

Volume 2.5 paragraphs 6.6.25 – 51

8.15.260 The Landscape assessment of the islet has been completed and it concludes that there are no significant impacts and that mitigation is not required.

Volume 2.4 paragraphs 7.6.47 – 85

8.15.261 The Visual Impact assessment has been completed and concludes that there are significant visual effects but no mitigation is identified – further clarification is required covering this point.

8.15.262 Within the above assessments there is little information on what the islet looks like or how big it is. There are descriptions of the engineering options and sketch drawings (see Volume 2.2 Ch4, paragraphs 4.5.55 – 66), but no scaled drawings or final design. The relevant photomontage (H3-708a) has not been produced in accordance with the methodology agreed with Lancashire County Council. The Landscape and Visual Impact assessments lack basic information and it is considered that the assessment has under represented the impacts. Furthermore it is considered that mitigation is required. The islet should be reassessed based on a specific design (worst case scenario) and on photomontages produced in accordance with the agreed methodology.

Islet mitigation

8.15.263 As presented in sketch form the islet is angular and vertical structure in a flat and featureless seascape. It is suggested that the sides are tapered to soften its outline and assimilate it into the seascape. Careful consideration should be given to its colour, and it is recommended that the shaft diameter be reduced given it is for ventilation/access and not for cables, which would help reduce its bulk.

8.16 Commentary on Proposed Mitigation

Design Mitigation

Landscape and Visual

8.16.1 PEI Volume 2.2, Chapter 6 – Landscape, Section 6.7 Assumptions, Limitations and Confidence sets out the 'Design principles and environmental measures' incorporated within the design and Table 6.13 establishes the Rationale for Incorporation of Design Principles and Environmental Measures. Whilst no reference is made here to the best practice guidance set out in the 'Holford Rules' and 'Horlock Rules', it is assumed that these principles are developed and expanded from the design criteria set out within the rules.

8.16.2 Whilst the application of many of these design principles is evident through analysis of the PEI, there has been insufficient time available to fully review all of the supporting documentation and appendices. Importantly, it is also noted that the PEI contains insufficient evidence to verify the application of some of the design principles as for example; there is limited supporting viewpoint photography or photomontages available to verify if the route alignment has been designed to make best use of background landform. There are also instances where the proposed route alignment is questioned, particularly where it appears more erratic than the more linear alignment of the existing 132kV OH lines. However, due to the limited time available to review the PEI, the PPA Group have not been able to fully understand the design rationale behind specific sections of the proposed route.

8.16.3 Consideration of alternative technologies is a key design principle where designated areas cannot be avoided, and it is noted that Volume 2.8 Optioneering Reports - 2.8.8 Options

Appraisal of Alternative Technology sets out a comprehensive review of the identified focus areas. There has been insufficient time available to fully consider the comprehensive information contained in this document and comment is reserved until it has been reviewed in detail.

- 8.16.4 It is also noted within Table 6.13, that the construction stage potential effects identified for landscape character do not refer to any of the undergrounding works which are proposed throughout the north and south routes. As such, clarification is required that the stated design principles incorporate these works.

8.17 Good Practice Mitigation

- 8.17.1 The application of good practice mitigation principles such as that contained in the 'Holford Rules' and 'Horlock rules' is incorporated into the design mitigation response above.

8.18 Bespoke Mitigation

- 8.18.1 Location specific mitigation proposals have been prepared for several of the subsections and these are discussed within the subsection responses above.
- 8.18.2 The narrative describing the subsection specific mitigation proposals notes that the proposals have generally been designed to mitigate potentially significant visual effects. Whilst this is acknowledged, it is noted that the introduction of new planting features into the landscape would also contribute to the change in landscape character and as such, the proposals should be assessed in landscape terms as well as visual terms within the ES. Residual effects should also be assessed on this basis.
- 8.18.3 Whilst it is noted that the mitigation proposals have been primarily designed to mitigate visual effects, insufficient supporting information has been provided within the PEI to verify its effectiveness (such as viewpoint photography or photomontages) and as such, no further comment can be provided at this stage.
- 8.18.4 In the context of the above, it is considered that further site-wide and location specific mitigation proposals should not be precluded as the ongoing assessment process and release of more detailed supporting information (such as wireframe views and photomontages) may result in the identification of further opportunities to reduce landscape and visual effects.

8.19 Commentary on Residual Effects

- 8.19.1 For most of the Proposed Development there is no subsection specific mitigation proposed and therefore the residual effects are identified as being the same as those identified within the 'Potential Effects' sections. Where mitigation is provided, this comprises landscape planting which is intended to reduce the landscape and visual effects of the low level

structures as it is noted that it is not possible to screen the proposed 400kV line. This approach is considered reasonable as the scale of the Proposed Development is of a size that it is not possible to screen it.

8.20 Commentary on Approach to Inter-Relationship Effects

- 8.20.1 Inter-relationship effects are briefly mentioned under 'Approach to inter-relationship effects' in Volume 2.2 Chapter 6 and Chapter 7. Although the Approach is listed, these have not been addressed in the PEI and should be addressed in the ES.

8.21 Commentary on Cumulative Effects

- 8.21.1 Volume 2.3 Chapter 22 – Cumulative Assessment identifies that at this PEI stage it has not been possible to identify the full short list of development to be considered within cumulative assessment. In addition to the comments below the PPA Group would draw attention to the Landscape Assessment Methodology section, bullet point twelve.
- 8.21.2 The PEI contains a provisional assessment of the cumulative effects of the Proposed Development alongside the Moorside Power Station development to be located immediately North West of Sellafeld. Volume 2.3, Chapter 22 – Cumulative Assessment, Table 22-1 Preliminary CEA with the Proposed Moorside Power Station (MPS), identifies those aspects of the cumulative assessment that are to be carried forward to the cumulative assessment stage within the ES. Paragraph 22.3.1 states 'Potential significant effects that are anticipated as a result of this preliminary assessment are identified in Table 22-1 to Table 22-3 and will be subject to further assessment within the ES. This will consider the timing of activities and will be based on more detailed design information as that emerges.' It is considered that as more detailed design information becomes available the consideration of the potential for landscape and visual effects should be reviewed and the outcome of this included within the ES.
- 8.21.3 Volume 2.7 Appendix 22F The Preliminary 'Short List' identifies those potential cumulative developments that will be progressed to the next stage of assessment. There are a total of 43 nr potential cumulative developments contained within the Preliminary Short List at this stage that relate to the Landscape and Visual Topic. Of those identified, 42 nr are related to turbines and a single application is related to a bio-fuel combined heat and power plant. Each has been identified due to the 'Potential for cumulative effects on landscape and visual'. At this PEI stage no further comment is provided in relation to the projects to be included which should be provided with the ES.
- 8.21.4 Paragraph 22.1.1 identifies that the completed short list will be presented within the ES however it is requested that the finalised short list is provided for consultation/comment prior to the preparation of the ES to ensure all major development considered relevant are included.

- 8.21.5 The ES must consider all cumulative impacts within the Park and to its setting. The sequential cumulative impacts associated with the linear development should be assessed in relation to both purposes of the Park's designation. The assessment should also assess the cumulative impacts of the Trident and 400kV line in the head of the Duddon. The trident line will cross into the Park for 1.2km at Greety Gate, and passes through the setting of the Park in the Duddon Estuary.

8.22 Key Issues/Gaps Requiring Further Assessment

- 8.22.1 The preceding sections have identified matters arising from the PEI that need to be addressed in the ES. This section highlights additional detailed information in relation to the key issues, additional issues and route specific issues. These comments will need to be considered during the EIA process..

- 8.22.2 In addition, the following generic issues of relevance to the Landscape and Visual chapters have been noted:

- With regards to document navigation and formatting, navigation through the Route Assessment chapters would be easier if the relevant subsections were identified on each page (header or footer).

- 8.22.3 Volume 2.7 Appendix 1B Response to the Secretary of State's Scoping Opinion - Table 1B.4 Landscape and Visual

- The response states that consultation is still ongoing (e.g. paragraph 3.38) with regards to agreeing viewpoints. The PPA Group agree this is still the case;
- It is noted that the methodology has been reviewed and updated in light of the comments received which is welcomed;
- in relation to mitigation influencing the assessment judgement, paragraph 3.44 states that 'the point or points in time that have been considered will also be clear e.g. influence of screen planting immediately post construction versus year 15'. Currently this has not been made clear in the PEI and it should be addressed in the ES;
- paragraph 3.49 states 'lighting, which has the potential to result in significant effects, for example construction and operational lighting at substations and the islet, will be considered in the ES.' The PPA Group note that this has not been referred to within the PEI and would expect to see it included in the ES;
- paragraph 3.50 states 'The assessment included in the PEI Report chapters does not conclude whether moderate effects are significant or not but includes these as potentially significant. Such effects will be reviewed in more detail during the preparation of the ES'. The PPA Group would expect this to be included in the ES as stated;
- paragraph 3.52 states 'Phased effects will be assessed where appropriate. It is accepted that effects that occur for more than one phase could be greater than those that occur for a single phase. This will be considered in the ES.' This is not currently addressed in the PEI and would be expected within the ES; and,

- paragraph 3.53 discusses cumulative projects and that this information is still being collected. It also states 'Sequential effects will be considered for transitory receptors such as walkers and motorists along key relevant routes in the ES.' This is not currently addressed in the PEI and would be expected within the ES.

8.22.4 Volume 2.7 Chapter 1 Appendix 1C Response to the Appendices of the Scoping Opinion

- It is noted that in paragraph 1.1.6 'a residential amenity study for individual properties will be included in the Planning Statement that will accompany the Application for development consent'. This should be prepared with reference to the LVIA;
- paragraph 1.1.7 discusses consultation carried out in relation to the viewpoint selection. The PPA Group would note that most recent comments are noted in Volume 2.7 Appendix 7B Viewpoints and Consultation Feedback and a number are still to be addressed in the ES;
- paragraph 3.1.17 states 'the removal of trees/hedgerows and field boundaries has been considered in the PEI Report and will also be reported in the ES.' The PEI acknowledges that trees and hedgerows will be removed but does not address this in detail. More detail should be provided in the ES;
- section between 4.1.7 and 4.1.8 – no number to row – states 'All comments and queries within SLDC's response, have subsequently been addressed through the Scoping Report, PPA LVIA workshops and the submission of requested data e.g. ZTVs. The exception being with respect to angle of view. Consideration will be given to where angle of view is included in the components contributing to levels of magnitude.' The PPA Group would query if this is yet to be addressed;
- paragraph 4.1.9 states that The Landscape and Visual assessments presented in the ES will use a range of ZTVs to assess the effects from various elements of the Project. It is noted that these are not included in the PEI and the PPA Group would welcome them in the ES. ZTVs of use are likely to include pylons only, pylons and overhead lines, substations only, all elements of proposals; and the current baseline with the existing 132kV route. The paragraph also puts forward a reason why they have not used DSM information to produce the ZTVs as requested. The PPA Group would recommend a sample ZTV is provided based on DSM information to provide evidence for the reasons stated;
- paragraph 4.1.11 states 'Cumulative effects will be fully assessed in the ES. Sequential effects will be considered for transitory receptors such as walkers and motorists along key relevant routes in the ES.' These have not been addressed in detail in the PEI and the PPA Group would expect to see them in the ES;
- paragraph 4.1.16 states 'The PEI Report describes the baseline and assesses the Project on a subsection by subsection basis. In addition, Project-wide impacts on the LDNP and AONBs are presented separately'. The PEI report does not present the impacts and effects of the Project on the LDNP and AONB. It refers to them within the assessment, but the effects on the landscape character units are assessed only. This should be addressed in the ES;
- paragraph 4.1.18 states 'The PEI Report provides a more comprehensive baseline than that provided for scoping and this will be expanded further to include existing vegetation and significant structures in the ES.' The PPA Group would welcome this

- expansion in the ES;
- paragraph 4.1.22 states 'The CIVI study has been used to inform baseline and will inform the cumulative landscape and visual impact assessment.' The PPA Group have been unable to find a reference to the CIVI study in the PEI and would recommend it is referred to when preparing the ES;
- in 4.1.23 the PPA Group commented 'As there are a number of phases to the development, it should be made clear how the assessment will be carried out in relation to these phases and whether a phased approach should be adopted, identifying the impacts and effects at various phases' The response states 'The EIA is considering the construction, operation and decommissioning phases of the Project. Any early works will also be considered separately in the ES.' This is not reflected in the PEI and would be expected in the ES;
- in 4.1.25 the PPA Group comment 'We would recommend post decommissioning is also considered, and year 15 assessment – should this be relevant in certain locations. The response states 'The ability of the proposed planting to provide screening, and time frame for this, is considered where relevant.' This is not reflected in the PEI and would be expected in the ES;
- 4.1.26 states 'Planting to provide screening is proposed and indicative species lists will be included in the ES. These will be selected to accord with the landscape character of the area.' The PPA Group would welcome review of this as part of the ES;
- 4.1.60 is in relation to tunnelling waste and the response states 'This aspect of the
- assessment will be assessed in more detail at the ES stage' This is welcomed as it is not covered in detail in the PEI; and,
- 4.1.61 states 'Potential effects on trees and hedgerow boundaries due to construction activities have been considered in the assessment in the PEI Report.' The PPA Group would welcome further detail on the in the ES.

Volume 2.7 Appendix – 2A Local Planning Policy

- 8.22.5 As set out within section Commentary on Policy and Legislative Context above, it is considered that local planning policy should be set out alongside the National and County policy to enable the reader to easily review relevant policy together rather than contained within a separate appendix.

Volume 2.7 Appendix 6A Landscape and Visual Approach to the Setting of National Landscape Designations

- 8.22.6 In relation to Key Issue 2, the PPA Group feel this Appendix does not address the issue of setting in relation to National Landscape Designations.
- 8.22.7 This documents purpose is stated as setting 'out the proposed approach to considering the setting of the national landscape designations, including the Lake District National Park (LDNP) and the Solway Coast and Arnside and Silverdale Areas of Outstanding Natural Beauty (AONB)'. It goes on to quote from a number of documents regarding setting but focuses emphasis on NPS EN-1 stating in 6A 1.9 'there is not a predetermined boundary to

the setting of a national designation, instead the extent of setting will depend upon the nature and scale of the development and the impacts that it has on receptors within the designation'. The PPA Group agree that the assessment needs to address receptors within a national designation when the development falls outside a national designation, and this would be expected for any type of development as standard. Further to this, receptors located outside the national designation which are located within its setting should also be considered and assessed. In this regard, receptors which have existing views into the designated landscape are considered to be located within its setting, and as such, they should be assessed appropriately.

- 8.22.8 Paragraph 6A 1.23 states 'Consideration of setting does not uniformly increase the value of all landscape character types that surround the designated landscape. Instead value should be considered in relation to the various attributes and characteristics of the Landscape Character Types/Sub Types being assessed, according to the methodology as set out in Chapter 6, Volume 2.2 the PEI Report.' Again, the PPA Group would agree that the value of all landscape character types does not uniformly increase surrounding the designated landscape, but it is likely to have an increased value due to its function at forming the setting to the national designation, and this is the issue that should be addressed in this Appendix. The methodology does not address the issue of value applied to the setting of the national designations, nor does it attempt to define what is considered as the setting of national designations. By omitting to identify areas considered to form the setting of the national designations the value of these landscape receptors is likely to be under assessed. This should be addressed in the ES.
- 8.22.9 The Solway Coast AONB Landscape and Seascape Character Assessment, on page 141, discusses the setting to the AONB and acknowledges importance of views to the east and south towards the Lakeland fells. Paragraph 7.2 notes that 'The setting of the AONB includes both those areas from where the AONB can be seen, i.e. when looking towards the AONB, and areas which are seen from the AONB, when looking out from within its boundaries.' And goes on to note that 'It will be very important to consider the effects of development in surrounding areas on the setting to the AONB, the views into the area, and those out of it, and in particular to seek to protect key views, skylines and backdrops to the AONB landscape from undesirable change'.
- 8.22.10 Within GLVIA 3, in relation to nationally designated landscapes it states 'in paragraph 1.3.8 'If the area affected by the proposal is on the margin of or adjacent to such a designated area, thought may be given to the extent to which it demonstrates the characteristics and qualities that led to the designation of the area. Boundaries are very important in defining the extent of designated areas, but they often follow convenient physical features and as a result there may be land outside the boundary that meets the designation criteria and land inside that does not.' These quotes should be considered within the ES and setting addressed thoroughly in relation to national designations.

Volume 2.7 Appendix 6B Record of Landscape Fieldwork

- 8.22.11 Appendix 6B lists all those landscape team members and photographers involved in the

fieldwork for the Project. It would be useful to see the qualifications of the landscape team members included in this list to gain an understanding of their experience.

Volume 2.7 Appendix 7A – Visualisation Methodology

Introduction

8.22.12 This response relates to Appendix 7A Visualisation Methodology of the North West Coast Connections Project Preliminary Environmental Information (PEI) and is relevant to Key Issue 6 identified in Table 8.1 Landscape and Visual Key Issues. The PAA group has previously reviewed the methodology issued in advance of the formal submission of the PEI in August 2016. This response reproduces and updates the response previously issued now the supporting visual information has been received as part of the PEI. A hard copy of the photomontages at full size was received alongside digital versions on a memory stick.

Response

8.22.13 Appendix 7A addresses the majority of our comments and queries raised in our response to the draft paper 'NWCC Visualisation Process – Justification of Adopted Guidance'. It provides much greater detail on the techniques to be employed in the production of the photomontages and the photography. In general, the photography and photomontage modelling methodology appears acceptable. There is some risk in relation to the presentation of the material with the lack of a digital viewer, the size of the photography presented, and the ease at which the visuals can be reduced to A3 for printing. This risk is in relation to misrepresentation of the proposals, which the PPA Group do express concern about.

8.22.14 The PPA Group note the following:

- Within the introduction it is noted that the Highland Council Guidance is not listed or discussed within this appendix. The PPA Group understand that approximately 13 viewpoints from within Lancashire County Council are to be produced to Highland Council (HC) as referred to in the email from SLR (on behalf of National Grid) to WYG (on behalf of the PPA Group) 22nd August 20016. There is no discussion within this document on the production of these, which the PPA Group would recommend Lancashire County Council would wish to review. Section 7.6.6 states that 'it is considered that providing one type of visualisation across the whole Project is the most appropriate approach'. The PPA Group would therefore question how/where these 13 HC visuals will be used and what documents they will be reproduced in;
- photography has been recorded in a portrait form. SNH guidance recommends landscape form. SLR state in their response (memorandum SLR to WYG 22/8/16) they have used portrait in order to ensure the full height of the pylons could be displayed on the photography. This may be relevant for close up views but not for more distant views. However, as these have already been taken it is acceptable to use them in this format;



- it is noted that the photographs presented, for the purpose of the existing and proposed views, are twice the height of that recommended in SNH guidance. This is explained in the methodology, but not entirely clear until a hard copy of the visualisations was provided for review. While the reasoning for a greater vertical angle of view to be included for close up views to allow the extent of the pylons to be included is understood, a large proportion of the photography is from more distant locations where the panoramic view should be the focus of the view. By including an increased amount of skyscape and foreground than is recommended in SNH guidance, there is a large risk that the proposals appear smaller in the view than if the recommended height was used. This does appear to be the case when viewing a sample of the photomontages. The PPA Group would wish to see this addressed within the ES to avoid misrepresentation of the proposals;
- although winter and summer photography has been taken 'where possible' only one season is included in the PEI Report. All photography is unlikely to be included in the Environmental Statement (ES), only where 'seasonal factors could influence the assessment judgements'. This seems reasonable to reduce the volume of material produced, however, the report should make it clear that seasonal factors have been considered and it is expected that consideration of this to be included within the ES. Seasonal factors are not currently addressed in the PEI information;
- It is recommend that the photographs are captured in RAW format, which is not stated;
- it is noted that the Appendix states the landscape proposals have not been shown in the photomontages included in the figures accompanying the PEI Report, but will be shown in the ES. The PPA Group would also note that other ancillary development, e.g. access roads, fencing, ground works, has also been omitted from the photomontages. This development is part of the application and should therefore be depicted in the photomontages included within the ES;
- there is no mention of a digital viewer being used. As the information is to be released digitally, a digital viewer would aid in avoiding misrepresentation of the visuals. The PPA Group note that the panoramas will be produced on a full A1 sheet and 7.6.9 states 'the visualisations can also be reduced by 50% and printed on A3 paper for the provision of reference copies'. By reproducing the visuals on a smaller paper size than intended in their production there is a risk for a misrepresentation of the scale of the Project and suitable caveats should clearly be contained within every figure, particularly that the principal distance would not apply if reduced to A3. This should be included within the photomontages contained in the ES;
- previous consultation responses from the PPA Group have requested example photomontages to be provided. It has been clarified that these were not provided due to 'ongoing design changes'. However, the PPA Group feel these could have been provided as ongoing design changes would not have affected the layout of these sheets;
- The PPA Group note that point 7 states that a separate viewing pack will not be provided. It is assumed the reduced A3 versions stated in the Appendix are intended for use out on site and the PPA Group would again highlight our concerns regarding misrepresentation and that suitable caveats should be included on the photomontages contained within the ES;
- It is noted that 7.2.1 states a 'digital single lens reflex camera with a full frame

sensor' and 'a 50mm fixed focal length lens' is being used. The PPA Group note that at least 3 cameras have been used from a review of the photomontages, and the methodology should refer to multiple cameras being used and not just one;

- 7.2.2 states that 'the camera is mounted on a levelled tripod with a calibrated panoramic head which is typically set to between 1.5m and 1.6m, accommodating adjustments made to allow for uneven ground'. This is reasonable, however, the photomontages do not state information relating to camera level or eye height, which the PPA Group would expect in accordance with the example provided in the SNH guidance. This should be stated on each photomontages sheet;
- It is noted in 7.6.9 that the principal distance is stated as 512.5mm, however, on the individual photomontage sheets this is stated as 522mm. The PPA Group would expect this to be corrected in the ES photomontages;
- generally the photography and photomontages are of a good quality, however, there are some issues the PPA Group have highlighted with a number, which are referred to under the specific subsections;
- the visuals would benefit from labelling to interpret the existing view and proposed elements in some cases where it is more difficult to pick out the features;
- no wirelines have been provided within the PEI assessment making it difficult to provide comment on/verify the assessment. Subsequently, a request was made by the PPA Group for the provision of wirelines from a selected number of locations to assist in the PEI assessment review which were provided at a later date. Wirelines and photomontages from each of the identified viewpoint locations would greatly assist in our understanding of the proposals, with potentially different colours for various elements, e.g. 400kV, 132kV and 33/11kV elements. The PEI does not state if photomontages will be provided from every viewpoint or if wirelines will be produced from some viewpoints. The PPA Group would expect some form of visualisation to be available from all the viewpoints selected within the ES landscape and visual chapter; and,
- the following statement is included on each photomontage sheet, however the PPA Group feel it would be near impossible to achieve (especially in a windy area such as Cumbria): To view the visualisation as accurately as possible you should hold the images at a distance of 522 mm and close one eye whilst curving the image in an exact arc of 90 degrees.

Cumulative Impacts of Vertical Infrastructure: Addendum 2 – Assessment Update for North West Coast Connections, November 2016

8.22.15 The Cumulative Impacts of Vertical Infrastructure (CIVI) Report has been updated to take account of the proposals provided for the NWCC Project and should be considered in relation to Key Issue 5. It takes into account the proposed 400kV pylons and the removal of the 132kV pylons along the route corridor. The pylons are considered as medium scale structures and the report addresses the anticipated changes to the magnitude of change and significance of effect on the landscape and visual receptors within the study area.

8.22.16 As a summary, the report identifies the following:

- The removal of the existing pylons through the LDNP from Ravenglass to Silecroft would result in a notable decrease in the magnitude of change and significance of effect of vertical infrastructure on the landscape receptors within this area;
- there would be an increase in clustering of vertical infrastructure in the landscape areas near Millom and Barrow-in-Furness;
- there would be a notable increase in theoretical visibility of pylons in the Solway Coast AONB and the more elevated parts of the LDNP (particularly in the north); and a decrease in theoretical visibility of pylons in the coastal area of the LDNP;
- there would be an increase in magnitude of change and significance of effect on the landscape in the coastal area around Millom, south east of Barrow-in-Furness, and at the head of the Duddon Estuary; and,
- minor changes to visual receptors including an increase in significance of effect on the footpath network around the head of the Duddon Estuary; and a decrease in significance of effect on CROW, cycleways, and roads from Ravenglass to Silecroft.

8.22.17 The November 2016 CIVI update was not available prior to the issue of the PEI however the CIVI Addendum 1, update dated June 2016, and the original October 2014 reports were available. Although the PEI makes reference to these documents, it is not evident that they have been used in its production as there is no reference to information contained within the reports within the baseline text or assessment. The CIVI report should be used to inform the baseline as it refers to the current conditions in relation to vertical infrastructure in Cumbria, focusing on existing infrastructure and proposed schemes with planning permission or development consent. The study should also be used to inform the Cumulative Assessment, alongside other relevant information not contained within CIVI (including relevant schemes that are subject to a valid planning application that have not yet been determined, and schemes that are pre planning and scoping stage).

8.22.18 The November 2016 CIVI report identified areas where there is likely to be an increase in significant effects due to the proposed scheme as summarised in the bullet points above. These should be addressed and mitigated in the subsequent assessment.

8.23 Commentary on Potential Effects Not Requiring Further Assessment

8.23.1 The scoping report proposes that the following is scoped out of the landscape and visual assessment:

- Effects of construction traffic movements;
- tunnelling activities (sub-terrain);
- routine maintenance of overhead lines, excluding pruning/vegetation clearance;
- routine maintenance of substations;
- effects on Lancashire Landscape Character Areas and Seascape Character Units from the transmission of electricity and presence of underground cables;
- routine maintenance of underground cables;
- effect on Heritage Coast and Landscape of County Importance (LOCI) from tunnel

- islet on landscape character and visual receptors; and,
- effects on landscape features such as trees from decommissioning of underground cables and infrastructure.

8.23.2 In line with comments from the Secretary of State received in the scoping opinion, within Volume 2.7, Appendix 1B, paragraph 3.24, National Grid confirm the following:

These matters remain scoped out of the landscape and visual assessments with the exception of:

- Effects of construction traffic vehicle movements (in accordance with paragraph 3.28 of the Scoping Opinion); and,
- any effects of routine maintenance (in accordance with paragraph 3.27 of the Scoping Opinion).

8.23.3 In addition, it is now proposed that due to the undergrounding of existing 132kV infrastructure in Subsection H3, the transmission of electricity and presence of underground cables has the potential to affect Lancashire Landscape Character areas in Subsection H3 and is scoped into the assessment (albeit excluding seascape).

8.23.4 Also for the purposes of clarity, effects of the islet on seascape character units and visual receptors are being considered. Designated heritage coast and LoCI are outside the Study Area and remain scoped out with respect to the islet.'

8.23.5 The PPA Group are in agreement with the above. At this PEI stage of assessment it is considered that sufficient information is not available to confidently scope out any other potential effects that do not require further assessment. Doing so at this preliminary stage of assessment may result in potentially significant effects of the Proposed Development not being identified leading to unnecessary harm to be experienced upon landscape and visual receptors within the study area as a result.

Limitations of Review

8.23.6 The review has been conducted in the timescales allowed however due to the volume of information received the PPA Group do not feel that sufficient time was provided for a thorough and detailed review of the quantity of information provided.

8.23.7 In places, the PEI contains information which is not supported by explanatory text justifying some conclusions made. There has therefore been a limit on the reviewer on how much reliance they can place on statements made with no justification or explanation. Statements made in the PEI may be correct, but without the supporting evidence presented they cannot be relied upon.

9.0 Historic Environment

9.1 Overview

9.1.1 This section provides comments on the PEI provided in respect of the effects of the Project on the Historic Environment to include World Heritage Sites, local and national heritage assets, listed building in terms of the character and settings as well as any risk of potential direct effects or impacts. The review also looks at the extent to which non-designated archaeological assets are assessed by National Grid. This review considers the information provided within the following key documents, as well as supplementary and supporting documents and figures:

- Introduction and Methodology, Chapter 8 - Historic Environment (Volume 2.2);
- Project Wide Information, Chapter 8 - Historic Environment (Volume 2.3); and,
- Technical Appendices, (Volumes 2.7, Appendix 8A and 8B).

9.1.2 Following on from the executive summary, the three areas highlighted are expanded on below; the commentary on the **World Heritage Site** (WHS) is in the key issues and in its own section, whereas full commentary on the other two parts of the executive summary **Archaeology**, and **Heritage Asset and Cultural Landscape** are commented on throughout the remainder of the document with particular reference to named areas where appropriate for context.

9.2 Historic Environment Key Issues

Table 9.1: Historic Environment Key Issues

Key Issue	Supporting Evidence
1. Inadequate assessment of OUV of English Lake District World Heritage Site	<p>The PEI does not demonstrate that the potential impact of the NWCC development on the attributes of Outstanding Universal Values (OUV) of the candidate English Lake District World Heritage Site has been adequately assessed. This is detailed in section 9.4 below.</p> <p>UNESCO has identified NWCC as the greatest threat to potential designation of English Lake District as a WHS. Removal of this risk is critical and entirely within the control of National Grid.</p>
2. A general lack of data and information on the heritage assets and the articulation of effects on the assets.	<p>There is generally a lack of data and information and articulation of effects provided within the Preliminary Environmental Information (PEI) in relation to the historic environment. It was anticipated that all preliminary information relating to the work already completed would have been provided, including the results of the walkover survey and setting assessments. This had not been included in the PEI and there is also a lack of Statements of Significance and clear assessments of the value of heritage assets, in particular Grade II listed buildings, within the</p>

Key Issue	Supporting Evidence
	PEI. See paragraph 9.5.5 onwards for more detail on outstanding detail.
3. The consideration of non-designated archaeological assets in the PEI is currently flawed	The consideration of non-designated archaeological assets in the PEI is currently flawed because: (i) significant sources have not been consulted; (ii) there is an absence of assessment of the physical impact of the development on all the non-designated archaeological assets that lie partially or wholly within the draft order limit boundary; (iii) there is an absence of assessment of non-designated archaeological assets that are recorded as being located just outside of the boundary of the draft order limit but may, in reality, be situated located within the boundary; and (iv) the significance of the numerous prehistoric flint finds along the route is undervalued as the assessment fails to take in to account the potential of the finds to reflect buried prehistoric archaeological assets that are currently of unknown significance. See paragraph 9.9.15 for more detail below.
4. The consideration of Roman Scheduled Monuments is currently incomplete.	Given the route passes along a substantial portion of The Frontiers of the Roman Empire WHS, there are numerous Roman Scheduled Monuments. A thorough and extensive archaeological investigation and interpretation programmed must be completed in advance of construction works, with the opportunity for National Grid to generate some positive engagement in the Roman heritage of Cambria. This is discussed further in paragraph 9.9.20 onwards, paragraph 9.15.26 and Table 3.

9.3 Historic Environment Issues in PEI

9.3.1 This section summarises the additional key issues identified in the review of Historic Environment data and assessments presented in the PEI Report. These key issues have been identified following a review of all the relevant reports.

Table 9.2: Historic Environment Issues in PEI

Key Issue	Supporting Evidence
1. A lack of Statements of significance and clear assessments of the value of heritage assets. Particularly applies to listed buildings/monuments.	The lack of Statements of Significance for the heritage assets affected is a particular issue requiring amendment. Within the ES, Statements of Significance need to be proportionate to the level of effect. For example, within Sub Section B1 - Whitehaven to Seaton - it is considered that the majority of residual construction impacts upon the setting of heritage assets will correlate with the residual significance of effect in the operation phase and that they can therefore be assessed only as operation phases effects. However, there are certain instances where this does not apply and therefore a separate assessment of setting impacts during construction will be required. Issues such as these are repeated

Key Issue	Supporting Evidence
	<p>elsewhere in the assessment.</p> <p>For example Vol 2.4, Chapter 8, section 8.3.30 states that construction effects upon the scheduled Dean Moor stone circle and round cairn are discussed in operation effects. The text discussing the operational effects in section 8.3.41 leads to a level of magnitude as a result of new temporary infrastructure. It is considered that effects upon the setting of the asset as a result of the new 400kV infrastructure should be discussed in the operation phase, with the effects of temporary infrastructure being discussed in the construction section.</p> <p>This issue discussed further below in paragraph 9.6.5.</p>
<p>2. Assessment Methodology – more consistency between the assessments of/for different heritage assets.</p>	<p>As an example of this issue, the justification for the value definition of Grade II listed buildings will have to be clearly articulated within the ES chapter. However, the ES chapter could clarify that the default assessment for the value of Grade II listed buildings is medium and clearly indicate where Grade II listed buildings are considered to be of high value and why. See section 9.6.5 and section 9.10 onwards for more detail.</p> <p>In addition, Volume 2.8, Chapter 2.8.8, Appendix C (which discusses the methodology used for assessing effects within the Focus Areas) states that “the assessment of effects treats Grade I and II* listed buildings as having higher value than Grade II listed buildings.” This is not a consistent approach with the methodology stated within Volume 2.2, Chapter 8, section 8.6.6 which states that Grade II listed buildings are defined as being of high or medium value. This latter statement is welcomed and should be the approach followed throughout.</p>
<p>3. Lack of visualisations for heritage assets and a lack of cross references to the landscape and visual chapters.</p>	<p>It appears that no visualisations have been produced for heritage purposes. Nor is there any indication of whether any will be, or locations provided. Therefore, it would have been beneficial to correlate the viewpoints undertaken in preparation for the Visual chapter with where they can be used for heritage purposes. This has been discussed further for example in paragraphs 9.6.5, 9.9.10 and 9.14.8 below.</p> <p>Visual representations of the Proposed Development and further baseline information (i.e. site photography and setting assessment photography) would assist in determining the significance of effect and therefore the appropriateness of proposed mitigation measures.</p>
<p>4. Proposed Mitigation –</p>	<p>In general proposed mitigation is acceptable, however, there is no</p>

Key Issue	Supporting Evidence
more detail is needed.	<p>detail provided in order to determine if the measures to be implemented are appropriate and in accordance with Best Practice standards (e.g. CIFA and Historic England guidance). The completion of some evaluation work and further surveys are listed under the mitigation for construction. However, these works will need to be undertaken prior to the construction of the Proposed Development. More detail is considered in paragraph 9.18.1 and comments per subsection below.</p> <p>It is welcomed that further investigation of the non-designated archaeological resource in areas where undergrounding is proposed or ongoing. An appropriate scheme of mitigation of construction phase effects, in the form of archaeological investigation will be necessary in these areas, as proposed in Volume 2.4, Chapter 8. The completion of some evaluation work and further surveys are listed under the mitigation for construction. However, these works will need to be undertaken prior to the construction of the Proposed Development.</p>

9.3.2 The following text considers the details of the headlines listed in tables 1 and 2 above.

9.4 World Heritage Site – Lake District National Park Review

Summary

- The PEI does not demonstrate that the potential impact of the NWCC development on the attributes of Outstanding Universal Values (OUV) of the candidate English Lake District World Heritage Site (WHS) has been adequately assessed;
- This would require a comprehensive Heritage Impact Assessment, following ICOMOS guidance, to cover all three themes of OUV that have been identified for the candidate WHS;
- The HIA should be preceded by production of a comprehensive scoping document which outlines the full scope of the required work and is agreed with stakeholders in advance of the HIA;
- The lack of an adequate HIA is particularly significant in relation to the proposals for the setting of the candidate English Lake District WHS where the impact on OUV could be greater than within the site boundary;
- The PEI documents indicate that assessment of the impacts on the attributes of OUV has been confined to the first theme (physical attributes of the historic landscape) and has not assessed impact on the second and third themes of OUV (Artistic Inspiration and the early Conservation Movement);
- The HIA assessment should not be split between the PEI sections of landscape and historic environment – all the potential impacts on OUV should be included in a single HIA assessment; and,

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- Without a demonstrably comprehensive HIA it is difficult at this stage to accept the conclusion that NWCC would have **"slight beneficial significance"** for the OUV of the candidate English Lake District WHS.

Discussion

- 9.4.1 There is a tendency within the suite of PEI documents to treat World Heritage as solely a historic environment issue. This is most clear in **PEI Vol 2.3 Chapter 8 Historic Environment paragraph 8.2.17** *"The heritage value of the WHS is conveyed by its historic landscape character and the key archaeological and historic attributes that contribute to that."*
- 9.4.2 However this approach covers only part of the first of the three themes of OUV which have been identified for the English Lake District. Theme 2 – *'A landscape which has inspired artistic and literary movements and generated ideas about landscapes that have had global influence and left their physical mark'* and Theme 3 – *'A landscape which has been the catalyst for key developments in the national and international protection of landscapes'* – do not appear to have been considered in the assessment which has been carried out so far.
- 9.4.3 The HIA takes into account the full range of OUV attributes from the three main themes.
- 9.4.4 Part of an HIA assessment of the impact of NWCC on the OUV attributes of themes 2 and 3 might well fall within the 'Landscape' and 'Visual' sections of the PEI, but the chapters relating to these only acknowledge that for WH there is some overlap with historic environment and they do not mention any specific assessment. In any case the HIA should form one assessment document and should not be split between different sections of the PEI. ICOMOS (and UNESCO) are aware of NWCC and ICOMOS has already communicated its thoughts that for NWCC "there may be a need for an independent Heritage Impact Assessment process". The PPA Group is concerned that UNESCO has identified NWCC as the greatest threat to potential designation of English Lake District as a WHS. Removal of this risk is critical and entirely within the control of National Grid.
- 9.4.5 It is likely that the PPA Group will need to demonstrate to UNESCO that the HIA process has been fully adopted and that has included an assessment of potential impact on all the attributes of OUV and not just the physical historic environment assets.
- 9.4.6 The PEI concludes that for both the FRE WHS and the candidate English Lake District WHS, the net effect of NWCC would be **"a slight beneficial significance of effect on this asset as a whole"**. This appears to be based primarily on the removal of the existing 132kV line within the National Park and improvement of the ability to appreciate the physical historic landscape. However this relates only to part of the first theme of OUV.
- 9.4.7 There is no evidence in the PEI that the potential impacts of NWCC on attributes of OUV relating to the second and third themes of OUV have been assessed using HIA

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methodology. The issues to be assessed would include the visual impact of large pylons on the immediate setting of a landscape of harmonious beauty which has inspired artists in the past and continues to do so; and impact on the authenticity of a landscape that engendered the landscape conservation movement and continues to be the focus of national and international conservation. This would appear to be particularly important in light of the Navitus Bay precedent.

- 9.4.8 The HIA should also assess the potential impact on OUV of the surface treatment of the undergrounded section within the National Park.
- 9.4.9 The full range of attributes of OUV to be assessed in relation to NWCC should be outlined in an initial Scoping Document, as advised by ICOMOS (HIA Guidance, 2011). The HIA should assess the impact of the proposed development on OUV in relation to preservation, authenticity and integrity. The HIA assessment should also look at impact of NWCC both inside and outside the National Park boundary, to ensure that all potential impacts of the development on OUV has been assessed. The results of this full HIA are crucial for the design of NWCC in relation to protecting the OUV of the English Lake District candidate WHS. The scoping document should be shared with stakeholders before a full HIA is carried out as part of the EIA.
- 9.4.10 The issue of World Heritage is picked up to a greater or lesser extent throughout the suite of PEI documents in relation to both the Frontiers of the Roman Empire (Hadrian's Wall) World Heritage site (FRE WHS) and the candidate English Lake District. Table 3 makes comment on the treatment of the WHS in assessment:

Table 9.3: General Comments on The Treatment Of The Candidate English Lake District World Heritage Site.

Location	Comment
Vol 2.1 Non-Technical Summary, paragraph 2.3	Summarises the claim in Vol. 2.2 Chapter 8 Historic Environment that the net effect of NWCC on both the WHSs would be 'slight beneficial'.
Vol 2.2 Introduction and Methodology Chapter 2 Planning Policy Context, paragraph 2.5.24 and 2.5.25	Introduction to WH issue and Statement of Outstanding Universal Value (but slightly inaccurately characterised);
Vol 2.2, Chapter 5 EIA Approach and Methodology	No mention of WH or ICOMOS Heritage Impact Assessment (HIA), although this is picked up in Vol. 2.3 Chapter 8 Historic Environment (see below);
Vol 2.2, Chapter 6 Landscape, paragraph 6.6.44	WH is included in policy consideration but it is not included in landscape assessment – instead reference is made to Chapter 8 Historic Environment;
Vol 2.2, Chapter 7 Visual, paragraph 7.6.48	WH mentioned in 7.6.48 but no detail. Again refers to Chapter 8 Historic Environment.
Chapter 8 Historic Environment, paragraph 8.6.1	WH included but only physical, historic environment attributes. ICOMOS' HIA mentioned as part of methodology;
Vol 2.3 Project Wide Information Chapter 6 Landscape paragraphs, 6.3.7, 6.3.8	<p>Contains a good overview of the WH case for the Lake District (PEI paragraph 6.3.7).</p> <p>However Table 1 from the Partnerships Plan (PP) is included as the list of OUV attributes and this is not comprehensive. They should be using The Lake District National Park Partnership's Plan Appendix 1 (the Special Qualities with OUV attributes in bold). (PEI paragraph 6.3.8)</p>
Vol 2.3 Project Wide Information Chapter 6 Landscape paragraphs, 6.6.6 - 53	<p>The WH issue is generally treated alongside National Park status, with no mention of ICOMOS HIA (PEI paragraph 6.6.7). This is a misunderstanding of the particular significance of WH attributes of OUV and how they should be assessed.</p> <p>The summary assessment of the effect of the proposed pylons in the setting of the candidate Lake District WHS again does not mention HIA methodology and again make reference to Chapter 8 Historic Environment. (PEI paragraphs 6.6.52 and 6.6.53).</p> <p>This is inadequate although the concluding sentence is accurate:</p>

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Location	Comment
	"(the OUV attributes)... do mean that as a nationally and potentially internationally important landscape, the effects on the constituent landscapes of the National Park, as described above, require the most careful consideration by the decision makers."
Vol 2.3, Chapter 8 Historic Environment	This is the key section for World Heritage issues. It confirms that ICOMOS' HIA methodology has been incorporated in the assessment of historic environment and impact on the two World Heritage sites. It also demonstrates that the assessment terminology used in the PEI is the same as in the ICOMOS HIA Guidance (2011). However it concentrates exclusively on the physical historic environment as an attribute of OUV and thus omits any assessment of the 2nd and 3rd themes of OUV (Artistic Inspiration and the early Conservation movement).
Appendix 5A - Topic Potential Inter- Relationship Effects	World Heritage not included as an issue.
The NWCC which are provided in <i>Vol 2.2 Introduction and Methodology Chapter 4 Proposed Development</i> also raise a number of issues which may need to in the HIA:	
Vol 2.2, Chapter 4, paragraph 4.5.6	Hedges to be re-instated but no trees on top of underground line (PEI paragraph 4.5.6). Clarification is required on the impact to the OUV – e.g. whether it, along with inspection hatches etc will create a visible linear 'feature'.
Vol 2.2, Chapter 4, paragraph 4.5.24	Underground sections will need working width of 100m; (4.5.24) – so the short to medium term impact will include multiple disruptions to 100m lengths of walls, hedges etc.
Vol 2.2, Chapter 4, paragraph 4.5.26 and Fig. 4.11	The impact of the location and design/impact of the above-ground inspection kiosks required for joining underground cables – every 1km (PEI paragraph 4.5.26 and Fig. 4.11) – see above.
Vol 2.2, Chapter 4, Fig 4.11	Fig 4.11 indicates that there may be land use restrictions applied to the surface of the undergrounded sections. It needs to be made clear what these may be and whether they impact on the character and authenticity of the agricultural landscape.
Vol 2.2, Chapter 4, paragraph 4.6.12	PEI paragraph 4.6.12 states that the underground cables have a life expectancy of approximately 40-50 years. After that time the cables would require replacing, assuming the connection is still required. Confirmation is required whether replacement entails complete re-opening of the underground section, with all the surface impacts repeated.
Vol 2.2, Chapter 4, paragraph 4.10.83	Paragraphs 4.10.83 etc describe the construction methods in the areas immediately adjacent to the National Park boundary: <ul style="list-style-type: none"> • E1 – 15 large pylons alongside the NP boundary along with a CSE compound; • E2 – 49 large pylons, some very close to NP boundary; and, • A1 in the northern section by Moorside.

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Location	Comment
	The large pylons in close proximity to the candidate WH site would clearly have an impact and this will need to be assessed through the HIA.

9.5 General Comments

Assessment Principles

- 9.5.1 The technique of undergrounding will have a major impact on any archaeological remains within the corridor and although it can be mitigated against, in terms of evaluation and recording, by undergrounding the cables any archaeological remains on the route will be destroyed and they are a finite and unrenewable resource.
- 9.5.2 It is therefore essential to mitigate against these adverse effects through design mitigation wherever possible. While this has been mentioned in PEI Vol 2.8: 2.8.8 paragraph 10.6.119 the approach fails to adequately address impacts by avoidance through changing the route alignment. The route of least impact should be chosen in locations where there are significant archaeological remains and the route of the cable should be either moved to avoid the archaeology or the working width should be reduced. This should be undertaken as a matter of principal, rather than expecting that excavation and recording is an acceptable alternative in these circumstances.
- 9.5.3 In Table 8.1 of Volume 2.2 of the PEI, it states that a description of the heritage significance of the heritage assets is in the baseline data. Although a value is assigned (e.g. very high, high, medium and low), it is not discussed why the asset is significant. This is necessary in order to understand how the development may, or may not, impact upon the significance of the asset and whether the assessed level of value is appropriate.
- 9.5.4 Assessment of the effects of the construction of temporary 132kV lines should be included, in particular in locations around Ravenglass Roman Fort and Muncaster Castle Registered Park and Garden.

Outstanding Data

- 9.5.5 The desk based assessment and walkover survey of the route corridor has not been completed and the results from this piece of work and other relevant projects (i.e. Western Lake District aerial mapping project/Romans in Ravenglass), have not been used in the PEI.
- 9.5.6 Therefore, the information is not available to be able to ascertain the overall impact on the historic environment – in this sense the PEI is flawed as the information required to ascertain whether the historic environment is affected is not available. The desk based assessment and walkover survey should be completed and included in the Environmental

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Statement to ensure that all the available information is used in the assessment of impact; however it is acknowledged that this is recognised and referenced in 8.7.2.

- 9.5.7 Volume 2.5 South Route Assessment: Chapter 8 Historic Environment (Comments on 8.1 Subsection D1 and 8.2 Subsection D2. This section is focused on the setting of the historic environment during the operation of the scheme rather than the damaging effects of constructing an underground cable. It is essential that this is rectified in the ES to reflect that undergrounding is the technology of choice for this section. The key risks to the historic environment will therefore arise during the construction stage.

Lack of information to undertake assessments

- 9.5.8 The PPA Group requested the provision of graphical representations in the form of both wireframe drawings and photomontages in order to further inform view analysis in connection with the settings of the listed buildings. The initial request focused on: Sand Gap Farmhouse (LB280); Angerton Farmhouse (LB275); Kirkby Hall (LB 272), and St Cuthbert's Church in Beckside (LB268). The latter two are listed at Grade I and Grade II* respectively.
- 9.5.9 This request for additional information was deemed to be essential in order to allow a properly considered evaluation of impact to take place: that it was felt to be proportionate to the status and significance of the heritage assets affected; and that it is no more than is sufficient to understand the potential impact of the proposal on the asset's significance.
- 9.5.10 This information had not been received and so the advice regarding asset, must necessarily be framed according to the 'precautionary principle' or approach. This identifies that when managing risk, it is the responsibility of the developer or proposer to establish that any risks associated with the proposed activity will not (or are very unlikely to) result in significant harm. However, in terms of the council's assessment, it also means that the PPA Group must exercise caution over any potential impact, with the consequence that the probable impacts of the proposal upon the heritage asset significance of these designated buildings has necessarily been slightly overstated in order to introduce a margin of safety.

Focus on Archaeological experience

- 9.5.11 The PPA Group have previously expressed concern regarding the Archaeological focus of the National Grid consultancy team. A section setting out the experience and qualification is not presented in the PEI, however, it is suggested that there seems to be a lack of experience in dealing with the above ground historic environment. The Group are still concerned that this continues to be a significant issue, given the narrow definitions that seem to have been applied to settings, in particular of Listed Buildings.
- 9.5.12 In the PEI Non-technical summary, Historic Environment summary of effects only includes physical effects not effects on settings. Given that some people may only read the summary and that many of the pylons will be 50m in the air, and very likely to affect at least some settings quite considerably, the PPA Group is very surprised by this approach, which seems to be an oversight.

9.6 Overall Context Description

- 9.6.1 The majority of comments within this response relate to Volume 2.4, Chapter 8 and Volume 2.5, Chapter 8. Where comments do not relate to this volume, it is specified in the text.
- 9.6.2 Whilst it is appreciated that the purpose of the chapter is to provide preliminary environmental information and welcome the statement in PEI Volume 2.2, Chapter 8, paragraph 8.1.7 that this has been prepared on a worst case basis, it should be made clear in the Environmental Statement (ES) chapter, where assessment levels have changed as a result of an increase in available information.
- 9.6.3 This section provides the responses to the Historic Environment chapter of the PEI Report excluding on undesignated below ground and marine archaeology. Comments on these topics are currently yet out in the appendix following this chapter.
- 9.6.4 It is considered that the majority of these comments relate to aspects that are intended to be covered in the ES, but the PPA Group have included them in this response for the avoidance of doubt.
- 9.6.5 There is generally a lack of data and information and articulation of effects provided within the Preliminary Environmental Information (PEI) in relation to the historic environment. It was anticipated that all preliminary information relating to the work already completed would have been provided, including the results of the walkover survey and setting assessments. This had not been included in the PEI and there is also a lack of Statements of Significance and clear assessments of the value of heritage assets, in particular Grade II listed buildings, within the PEI. It is therefore considered that the PEI would have benefited from the inclusion of further information. Furthermore, cross discipline work, such as the correlation of viewpoints and the provision of visualisations, which could have been used for assessing impacts on the historic environment, has not yet been undertaken. This relates to both the effects of the scheme on built heritage assets as well as on below ground archaeology. This lack of information and articulation has led to a level of uncertainty about the assessment levels reached within the PEI. Where appropriate these issues are discussed in the response below and should be addressed as part of the work towards the Environmental Statement (ES) chapter.
- 9.6.6 Whilst areas of inadequate information provision have been identified, it is considered that the majority of predicted impacts have been, in some way, addressed within the PEI, or have been identified through this consultation process as needing to take place. It is considered that if the following issues are addressed, then the resultant Environmental Statement should provide sufficient information with which to fully understand and assess the effects of the scheme on built heritage assets.

9.7 Commentary on Policy & Legislative Context

- 9.7.1 Volume 2.2, Chapter 8, Table 8.1 states that Chapter 8 in Volume 2.4 and Volume 2.5 has provided a description of the heritage significance of the heritage assets in the baseline data. Although the chapter assigns a value of very high, high, medium and low to the heritage assets, based on their level of designation, their heritage significance, in terms of why the asset is the significant, is not discussed.
- 9.7.2 It is not in the remit of this response to complete a detailed check that all relevant planning policies has been included in the PEI, but an initial review suggests that the policies included are appropriate
- 9.7.3 Nonetheless in terms of national policy principles, considerable importance and weight attaches to the identified harm to the significance of listed buildings including harm to their settings, as set out in connection with the Planning (listed Buildings and Conservation Areas Act 1990 (LBCA). That act makes clear that there is a strong statutory presumption contained within in Sections 16(2) and 66(1) of the 1990 Act against permission being granted. Special attention must be paid to the desirability of preserving or enhancing the character of those heritage assets whose settings would be affected by such a scheme.
- 9.7.4 The government's guidance in the NPPF requires that when considering the impact of development proposals on designated heritage assets such as listed buildings and conservation areas, great weight should be given to the conservation of the asset's significance. It also requires that if a heritage asset's significance is likely to be harmed by a development, including harm to its setting, it is necessary to decide whether or not such harm is substantial
- 9.7.5 Less than substantial harm' and 'substantial harm' are not defined in the National Planning Policy Framework, but the PPG and recent planning appeal decisions and court cases have provided helpful guidance. There is no advice that suggests there is a scale within 'less than substantial harm' or where any threshold lies, but if considerable importance and weight is to be given to a finding of harm, then an attempt to calibrate the range of 'less than substantial harm' can be helpful. This guidance has confirmed that a finding of 'substantial harm' is a high test, but as the PPG acknowledges, it is possible that a single pylon or OHL could affect a setting so significantly that its heritage significance is substantially harmed. This national policy approach to assessing the impact of the development upon listed buildings and assets must be adopted in the ES.
- 9.7.6 As an aside, it is surprising that the legislation with which the development must conform does not come above the national and local policy considerations as it more strategic, fundamental, and lack of compliance can lead to legal challenge.

9.8 Adequacy of Baseline and Data Sources

9.9 Commentary on Study Area

- 9.9.1 The study areas used within the PEI seem to correlate with the study areas proposed and discussed during consultation in February (Historic Environment workshop) and March (post-workshop consultation) 2016.
- 9.9.2 For clarity, consideration should be given to the re-ordering of Table 8.2 in Volume 2.2, Chapter 8, so that all of the 10km study areas are grouped together, rather than the table jumping between distances.
- 9.9.3 The move away from the approach of adjusting the study areas in response to the construction design is welcomed.
- 9.9.4 Whilst the addition of Volume 2.2, Chapter 8, Table 8.2, which shows the justification for the various study areas, is welcomed, there is some inconsistency between these study areas and the values given to heritage assets in Table 8.3 of the same chapter (which is discussed further below). For example there is no inclusion in Table 8.2 of Conservation Areas (CAs) which include very important buildings (given a High value in Table 8.3). Table 8.2 also includes the justification for the study area of Registered Parks and Gardens, but the value of Registered Parks and Gardens is not included in Table 8.3.
- 9.9.5 We note that some Conservation Areas can be considered of high value based on important buildings being located within. However, it is still considered that a 2km study area is an appropriate basis for initial identification of potentially significant effects.
- 9.9.6 However, Historic England's Good Practice Planning Advice note 3 (Settings) states that 'the extent of setting cannot be fixed' and of setting, 'it does not have a fixed boundary' (p2) and under Views and setting, it states that setting can include a variety of '...views of, across, or including that asset, and views of the surroundings from or through the asset.' (p3).
- 9.9.7 There does not appear to be any evidence that a site based assessment has been carried out of all of the above mentioned views. It is also not clear how stakeholders or members of the public can envisage impacts upon the (above ground) Historic Environment without photomontage images.
- 9.9.8 It is surprising that 10k is the maximum distance considered for settings to WHS and high grade Listed Buildings (LBs) and registered Parks and Gardens and 2k for other LBs and Conservation Areas. The standard 400kV pylons will be 50m high. It is difficult to envisage the exact impact on parts of the WHS or LBs without extensive site based assessment, and certainly without relevant photomontages and these should be provided in order to allow assessment of impacts, but it is suspect that in certain circumstances, where LBs

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(particularly defensive structures) were sited on strategically high sites, that structures and lines at 50m high could, depending on the topography, be very prominent at 10km and extremely so at 2km and as such could have considerable effects on views of and from a HA and therefore on their settings.

- 9.9.9 Table 8.3 includes under 'High' importance, Conservation Areas containing 'very important buildings'. This seems to be a bit of an anomaly as it is presumed that these will be listed buildings that have been taken account of in their own right and the conservation area should be treated as an entity of significance in its own right. In any event, the number of 'very important' (however that is defined) buildings in a CA does not necessarily impact upon the importance of the CA as the qualities and reasons for significance of a CA are far more complex.
- 9.9.10 Chapter 8.7 Assumptions, Limitations and Confidence talks about not having assessed unknown assets, but the lack of assessment of the effects on views and therefore settings of above ground HAs using on-site assessments as well as visualisations, including photo-montages, seems to be a considerable limitation that should be mentioned.
- 9.9.11 The approach of cross-referencing the first edition maps for Lancashire against digital scans provided by Lancashire County Council is welcomed.
- 9.9.12 The list of outstanding data in Volume 2.2, Chapter 8, and section 8.5.4 also needs to include National Mapping Programme (NMP) data from the Lake District National Park (LDNP).
- 9.9.13 Volume 2.2, Chapter 8, section 8.5.5 only makes a cursory reference to the completion of further field surveys. The completion of these surveys will be required when finalising assessments of significance, potential for further remains and impact. It is not clear from reading the assessments in Volume 2.4, Chapter 8 whether any field surveys have been completed in relation to assessing setting effects.
- 9.9.14 There are some assets missing from Volume 2.2, Chapter 8, Table 8.3 which includes the criteria for assessing the value of heritage assets: Volume 2.7, Appendix 1C (National Grid's Response to the Appendices to the Scoping Opinion), page 73 states that Registered Battlefields are included within the heritage assets of high or very high value. However, they are not included in Volume 2.2, Chapter 8, and Table 8.3. Volume 2.7, Appendix 1C, page 83 of Appendix 1C states that the PEI takes account of currently unknown archaeological assets and recorded assets which are demonstrably part of a World Heritage Site being of high or very high value. However, these assets are not included in Volume 2.2, Chapter 8, Table 8.3. Registered Parks and Gardens and Conservation Areas are also not included in Volume 2.2, Chapter 8, Table 8.3.

Non Designated Archaeological Assets

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- 9.9.15 The size of the study area for the consideration of non-designated archaeological assets and for the consideration of the potential for currently unknown archaeological assets to survive is broadly acceptable.
- 9.9.16 However, there is a concern that there is an absence of any assessment of non-designated archaeological assets that are located just outside of the boundary of the draft order limit. These assets are shown on figures 8.3.2 to 8.3.25 (figures of designated and non-designated heritage assets) and some of them are known to be actually located within, either wholly or partially, the draft order limit boundary and so could be physically impacted upon by the development. This discrepancy has occurred because the Historic Environment Record entries, which form part of the baseline data, are not always precisely accurate in the location of assets. Some record locations are based on 4-figure National Grid References, some are 6-figure NGRs and some are incorrectly located.
- 9.9.17 It is therefore advised that all non-designated archaeological assets lying within a 200 metre corridor beyond the draft order limit boundary are included in the assessment to determine accurate locations and extent and whether they lie within the draft order limit boundary. Where appropriate, this may require site visits and additional documentary research.
- 9.9.18 The following assets are of particular concern, although this is not a definitive list of all the assets along the route that lie within a 200 metre corridor beyond the draft order limit boundary that may be impacted upon by the development:
- Section B3 - Historic Environment Record no. 3241 – undated cropmark enclosure; and,
 - Section C2 - Historic Environment Record no. 5360 – undated cropmark enclosure.

Figures

- 9.9.19 The data provided on National Grid's GIS website still crops data sets to the study areas, rather than showing the full extent of the data. The information on the GIS website is incomplete and for this reason our review and comments relate to the figures provided within the PEI.
- 9.9.20 It would also be beneficial for all the historic environment figures to show the World Heritage Site (WHS) buffer zone, rather than only the 10km study area figures.
- 9.9.21 The ZTV shown on the Historic Environment figures does not match the visual assessment figures in Volume 2.6, Chapter 7.
- 9.9.22 The HLC figures in Volume 2.6, Appendix 8 are not clear and would be easier to understand if the HLC areas were colour washed, rather than only the boundaries being shown. Subsections on the Historic Environment figures in Volume 2.6, Appendix 8 have not been labelled.
- 9.9.23 Subsections on the Historic Environment figures in Volume 2.6, Appendix 8 have not been labelled.

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- 9.9.24 On some figures it is difficult to identify some assets, as the labelling is obscuring the location of the assets.

9.10 Commentary on Existing Environment

Statutory and non-designated sites

- 9.10.1 The description of the existing environment in each route subsection outlines the value of heritage assets, including non-designated assets, based on their level of designation. It does not, however, provide a statement of significance for the assets outlining why they are of value. This is necessary in order to adequately understand how the development may, or may not, impact upon the significance of the asset and also to ascertain whether assessed levels of value are appropriate. Particular assets where this is a key issue are discussed by Subsection in the following sections, but it is predominantly a project-wide omission. However, this should be proportionate to the value of the asset and could be included as part of the technical appendices. Where appropriate, the significance of similar assets can be grouped.
- 9.10.2 The justification for the value definition of Grade II listed buildings will have to be clearly articulated within the ES chapter. However, the ES chapter could clarify that the default assessment for the value of Grade II listed buildings is medium and clearly indicate where Grade II listed buildings are considered to be of high value and why. In addition, Volume 2.8, Chapter 2.8.8, Appendix C (which discusses the methodology used for assessing effects within the Focus Areas) states that “the assessment of effects treats Grade I and II* listed buildings as having higher value than Grade II listed buildings.” This is not a consistent approach with the methodology stated within Volume 2.2, Chapter 8, section 8.6.6 which states that Grade II listed buildings are defined as being of high or medium value. This latter statement is welcomed and should be the approach followed throughout.
- 9.10.3 The value of designated and non-designated heritage assets and historic landscape character areas has the potential to increase where these assets contribute to the OUV of a WHS, thus a non-designated asset of local importance that contributes to the OUV of a WHS may rise from a low value asset to medium, or higher, value asset, based on its contribution to a WHS. This potential added layer of significance, based on contribution to OUV, needs to be considered in relation to all assets that fall within, and within the setting of, WHS1 and WHS2. This approach has largely been followed for WHS1. The necessity for this approach is outlined in relation to the LDNP WHS (WHS2) in Section 8.2.17 of Volume 2.3, Chapter 8 which states that designated assets that contribute to the OUV are of very high heritage value, whilst ‘individual assets’ (presumably non-designated) that contribute to the OUV are of high and medium heritage value. Volume 2.3, Chapter 8 looks at the project-wide effects of the scheme, however, the method of assigning heightened value has not been carried through in the assessments within Volume 2.5, Chapter 8 where the assets are assigned a value based on their intrinsic level of designation/non-designation without reference to any contribution that they make or do not make to the OUV of the LDNP WHS (WHS2). This affects all assets with the LDNP WHS (WHS2) and its setting.

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- 9.10.4 There is some inconsistency with the approach of the discussion of the Historic Landscape Character (HLC) areas within the baseline. In the majority of cases the character areas are only discussed once and cross referenced throughout the rest of the text. However, there is repetition of some text in Subsection A2 Thornhill to Whitehaven (section 8.2.23).
- 9.10.5 The value of non-designated assets has not been included in Volume 2.7, Appendices 8A and 8B. In most cases throughout the assessment in Volume 2.4, Chapter 8, and Volume 2.5, Chapter 8, non-designated assets are assigned a low value. Although this is probably appropriate in most cases, without an assessment of significance it is not possible to ascertain whether the assessed level of value is appropriate. Assets of unknown date are also assessed as low value in some cases, and unknown value in others. In this instance unknown value is probably more appropriate.
- 9.10.6 There are some assets missing from Volume 2.2, Chapter 8, Table 8.3 which includes the criteria for assessing the value of heritage assets:
- Volume 2.7, Appendix 1C (National Grid's Response to the Appendices to the Scoping Opinion), page 73 states that Registered Battlefields are included within the heritage assets of high or very high value. However, they are not included in Volume 2.2, Chapter 8, Table 8.3.
 - Volume 2.7, Appendix 1C, page 83 of Appendix 1C states that the PEI takes account of currently unknown archaeological assets and recorded assets which are demonstrably part of a World Heritage Site being of high or very high value. However, these assets are not included in Volume 2.2, Chapter 8, Table 8.3.
 - Registered Parks and Gardens and Conservation Areas are also not included in Volume 2.2, Chapter 8, Table 8.3.
 - In addition to this, the value of assets discussed in Volume 2.8, Chapter 2.8.8, Appendix C does not match the values given in Volume 2.2, Chapter 8, Table 8.3.

Non Designated Archaeological Assets

- 9.10.7 Whilst a key weakness of the historic environment section of the PEI Report is that there are a number of important sources that have not been included in the baseline data. Significant information on non-designated archaeological assets contained within those sources is therefore missing from the assessment. These sources are:
- Historic England's National Mapping Programme for Hadrian's Wall;
 - Historic England's National Mapping Programme Aggregates Levy;
 - The latest up to date HER information; and,
 - LiDAR.
- 9.10.8 All of these sources, other than LiDAR, are readily available for consultation from the HER and it is understood that LiDAR information is available to North West Coast Connections Project.
- 9.10.9 The absence of consultation of these sources has led to known non-designated assets that lie within the draft order limit boundary not being included in the PEI Report (see section 2.2.5 below for a list of assets). In the north section, the issue is most significant in the

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area of Hadrian's Wall where a series of cropmark complexes of Romano-British date are recorded in Historic England's National Mapping Programme but are omitted from the PEI Report. These cropmarks are likely to have an association with the World Heritage Site and so may have a moderate or high value and some of them will probably be impacted upon. Furthermore, other assets of probable lower value, including a number of earthwork sites recently recorded on the HER, have also been missed by the PEI Report that will be impacted upon by the proposed development. In the south section, most of these assets comprise post medieval agricultural and industrial remains of low value but there is one potential prehistoric earthwork of possibly higher value which will be impacted upon by the underground cabling route.

- 9.10.10 Without the consultation of these sources and the inclusion of the information contained within them the PEI Report's historic environment assessment on non-designated archaeological assets is currently not fit for purpose. It is advised that all of these sources are consulted as a matter of urgency and the historic environment data updated and amended so that an appropriate level of assessment on the known non-designated archaeological assets can be undertaken and provided.
- 9.10.11 The walkover survey of the route has also not been completed and so the results are not included in the PEI Report. The survey is an essential method of: (i) determining the location, extent, survival and significance of known archaeological assets that survive above ground and (ii) identifying previously unknown archaeological assets. The sites that have been highlighted in section 4.2 below as lacking an assessment in the PEI should be assessed during the walkover survey in order to define their location, extent and significance. While it is acknowledged the PEI is only preliminary and does not include fieldwork results, the walkover survey is such an important element of defining the archaeological baseline that it really should be completed as part of the desk-based assessment of the route.

General Comments on Volume 2.4

- 9.10.12 Whilst setting can include more than views into, out of and around a Heritage Asset, it is expected that in most cases, if there is a direct line of sight between a HA and the power lines, pylons or other infrastructure (assuming that they are new or bigger than existing), that there would be an adverse impact on setting to some degree. However, in most assessments within this chapter, settings have been defined very narrowly, often describing settings as, effectively, no more than curtilage and a very common approach to the assessment of HAs is that because its setting does not extend as far as any project infrastructure, the impact is neutral. It is considered that many of these settings have been too narrowly defined and as such it is considered that many impacts upon settings will have been missed. However, without relevant visuals, it is not possible to make any independent assessments.
- 9.10.13 Many of the assessments state that ...the setting is informed by... (usually a local relationship with curtilage or another building) but then seems to equate whatever it is 'informed by' as the extent of its setting and then concludes, without further explanation, that the setting does not extend as far as any project infrastructure.

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- 9.10.14 None of the assessments indicated that proper account had been taken of the potential setting of the LB and the accuracy and relevance of virtually all of the assessments is doubted. As, such considerably more information is needed, amongst other things on how any relevant views are affected before the PPA Group can be confident that settings of LBs and other above ground HAs have been properly assessed. There is particular concern about the settings considered for the higher grade and more strategic LBs but there is also concern that settings generally have not been taken account of in an adequate way.

Project Wide Assessment – LDNP WHS

- 9.10.15 Section 8.2.17 of Volume 2.3, Chapter 8, outlines various values to be applied when assets contribute to the OUV of WHS2. It refers to assets within and outside the WHS boundary, but the distinction is not clear in relation to the value of assets outside the boundary that do contribute to the OUV, i.e. assets within and forming part of the setting of the WHS. This section should be re-examined and the recommendations within it should be followed throughout the assessment. Volume 2.5 currently lacks discussion of whether assets contribute to the OUV or not and whether this has led to an increase in their perceived level of value or not.
- 9.10.16 Section 8.2.20 of Volume 2.3, Chapter 8, outlines the approach to be taken with regards to the setting of the LDNP WHS (WHS2). This approach is reasonable, however the description of the LDNP WHS (WHS2) provided in Volume 2.3, Chapter 8 and Volume 2.5, Chapter 8 does not provide a clear description of which areas do and do not form part of the setting of the asset, how they contribute to the OUV of the asset and how important their contribution to the OUV is to the overall significance of the WHS. The description provided is not detailed enough to assess the effects of the scheme upon an asset of this level of significance and complexity. This makes it impossible to comment upon the assessed levels of effect arising from the scheme, since the character and importance of the areas within and outside the WHS being affected is not understood. The assessment of setting should be provided within Volume 2.3, Chapter 8 considering the effects on the WHS as a whole (as outlined within the Project and ICOMOS assessment methodology) with cross reference to any relevant areas of assessment within Volume 2.5, Chapter 8.

Subsection A2 – Thornhill to Whitehaven

- 9.10.17 There is no assessment for the potential of previously unrecorded archaeological remains of Roman date in section 8.2.4.
- 9.10.18 Historic Environment Record (HER) No. 44240 – earthworks of medieval ridge & furrow and HER 44238 – earthworks of a post medieval colliery is missing from the PEI.
- 9.10.19 Consideration should be given to the value of St. Bees Conservation Area in section 8.2.14. The inclusion of Grade II* listed buildings within the Conservation Area may make it of high value rather than medium value. A clear justification for the value of the Conservation Area should be provided within the ES chapter.

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9.10.20 Section 8.2.22 states that Sekkers Silk Mills Bombing Decoy (1698) survives in good condition, although the PPA Group believe that this asset is no longer extant and is located in the grounds of a school.

9.10.21 There is repetition of the baseline of the St. Bees HLC area in section 8.2.23.

Subsection B1 – Whitehaven to Seaton

9.10.22 Section 8.3.5 assesses the value of two Roman forts (SM91 & SM84) as being very high as part of the World Heritage Site (WHS1). However, this value rating is not articulated in Volume 2.2, Chapter 8, Table 8.3 (Criteria for assessing the value of heritage assets).

9.10.23 Section 8.3.13 assess the value of Workington Hall (RPG2) as medium, although Registered Parks and Gardens are not included in Volume 2.2, Chapter 8, Table 8.3 of the PEI.

9.10.24 HER 11488 – Undated cut stone monument is missing from the PEI.

9.10.25 There is no evidence to support that the assets of unknown date discussed in section 8.3.27 are of low value. Further information to support this should be presented within the ES. This subsequently affects the assessment of effect in section 8.3.37.

Subsection B2 –Seaton to Tallentire

9.10.26 Section 8.4.5 of the PEI states that there is low potential for previously unrecorded prehistoric remains and that the prehistoric resource is undefined. It is currently not clear what is meant by undefined and the effect this has on the potential for previously unrecorded archaeological remains. The potential should draw on a variety of sources, not just the Historic Environment Record (HER).

9.10.27 Section 8.4.6 assesses all of the Roman scheduled monuments as being of very high value. However, there is an inconsistency between the value of the assets given in the chapter and in Volume 2.7. Appendix 8A, where they are noted as being of high value.

9.10.28 Consideration should be given to the value of workers' cottages (1914) in section 8.4.17. As an asset which relates to the Industrial period, this asset could be considered to be of medium value in line with the value of other Industrial assets discussed in this section. This is also relevant to the Industrial assets discussed in section 8.4.19.

Subsection B3 –Tallentire to Aspatria

9.10.29 Section 8.5.6 of the PEI assesses all of the Roman scheduled monuments as being of very high value. However, there is an inconsistency between the value of the assets given in the chapter and in Volume 2.7. Appendix 8A, where they are noted as being of high value.

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Subsection C1 –Aspatia to Wigton

- 9.10.30 There is a section number missing from the text following section 8.6.5 of the PEI.
- 9.10.31 Section 8.5.6 of the PEI assesses all of the Roman scheduled monuments as being of very high value. However, there is an inconsistency between the value of the assets given in the chapter and in Volume 2.7. Appendix 8A, where they are noted as being of high value.
- 9.10.32 There is no evidence to support that the assets of unknown date discussed in section 8.6.15 of the PEI are of low value. Further information to support this should be presented within the ES.

Subsection C2 –Wigton to Harker Substation, Carlisle

- 9.10.33 There is some inconsistency relating to how the explanation of technical terms is encapsulated in the text. For example the explanation of a vallum in section 8.7.3 is included in brackets within the main text, whereas other explanations are included in footnotes.
- 9.10.34 Section 8.7.7 of the PEI assesses all of the Roman scheduled monuments as being of very high value. However, there is an inconsistency between the value of the assets given in the chapter and in Volume 2.7. Appendix 8A, where they are noted as being of high value. However, an area of Romano-British cropmark complexes that are related to Hadrian's Wall lie between approximately NY 3550 5573 and NY 3613 5620. These are shown on Historic England's National Mapping Programme for Hadrian's Wall and are missing from the PEI.
- 9.10.35 Section 8.7.13 of the PEI states that the NMP shows a number of unrecorded assets. As these assets are shown on the NMP they cannot be considered unrecorded assets. It is assumed that these will be fully assessed in the ES as assets in their own right.
- 9.10.36 The scheduled motte of Beaumont Castle (SM54) should also be noted as Roman in Volume 2.7, Appendix 8.A as the monument also includes a section of Hadrian's Wall.

Subsection D1 – Moorside to Waberthwaite

- 9.10.37 Section 8.1.8 of the PEI assesses all of the non-designated prehistoric assets in this subsection as being of low value due to 'the condition and/or lack of contextual associations'. This is acceptable for the majority of assets, however, more information is required regarding the possible later prehistoric settlement site (1367) in order to ascertain whether the assessed level of value is appropriate. The assessment states that there is a moderate to high potential for unknown prehistoric remains within this section of the route. Given the large number of prehistoric flint finds in this section of the route it is considered that the potential for unknown prehistoric remains is high or very high. The assessment states that there is a low potential for unknown medieval remains within this section of the route. Given the underground cabling passes close to the medieval village of Drigg with its

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good survival of medieval strip fields, it is considered that the potential for unknown medieval remains is at least moderate to high in this section.

- 9.10.38 Section 8.1.9 of the PEI discusses the potential for evidence of prehistoric settlement, ritual and industrial sites within this subsection, however none of the evidence provided in the PEI points to there being the potential for prehistoric industrial activity. This statement requires clarification with further information on the potential for this kind of activity in the subsection.
- 9.10.39 Section 8.1.10 describes Ravenglass Roman Fort (SM23) as similar to milefortlets along the Cumbrian coast, but this is only true of the fort in its first phase c. AD 122, prior to its redevelopment and expansion into a fort and *vicus* c. AD 130, which continued in occupation until the early 5th century. This misunderstanding of the historical development and importance of the fort is of concern given its recognised international significance. The fort and bathhouse are both assessed as assets of very high value in this section, however, they are noted as only high value assets in Table 6.3 of Volume 2.8.8. This should be amended for consistency. The *vicus* is not given a reference number in Section 8.1.10 and its extent or location is not mapped on Figure 8.3.15 in relation to working areas. It is assessed as an asset of high value due to its relationship with the fort forming part of WHS. Consideration should be given as to whether this asset should be assessed as being of very high value due to its association with an asset forming part of the WHS.
- 9.10.40 Section 8.1.11 discusses the Roman kilns at Muncaster Head (SM90), but does not provide a value for this asset.
- 9.10.41 Section 8.1.12 describes a series of undesignated Roman assets, including the possible site of Eskmeals Roman milefortlet (1244), as being of low/local value, however no information about the assets is provided. Given their potential to contribute to the OUV of the Hadrian's Wall WHS (WHS), more information on these assets is necessary in order to ascertain whether the assessed level of value is correct.
- 9.10.42 An area of the route located between Seascale Hall and the LDNPA boundary contains a series of earthworks identified in Historic England's National Mapping Programme Aggregates Levy. The most significant of these earthworks is an asset interpreted as being of potential prehistoric origin at SD 068 995, which is possibly of higher than low value, and this will be impacted upon by the proposed cabling.
- 9.10.43 In Section 8.1.20 St Peter's Church in Drigg (1313) is assessed as an asset of low/local value however no information about the asset is provided other than that it is a medieval building. More information on the asset is necessary in order to ascertain whether the assessed level of value is correct.
- 9.10.44 Section 8.1.24 describes Ravenglass Conservation Area (C13) as an asset of medium value. Table 8.3 in Volume 2.2. Chapter 8 does not list Conservation Areas under assets of medium value. The Conservation Area description states that buildings within it contribute to its historic character, however, the historic character is not described, neither is there any

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quantification or discussion of the number and character of listed buildings within the conservation area and their importance. More information is needed in order to understand the character of the conservation area and whether its assessed level of value is appropriate.

- 9.10.45 Section 8.1.25 describes Muncaster Castle Grade II* Registered Park and Garden (RPG1) as an asset of very high value. Table 8.3 in Volume 2.2, Chapter 8 does not list Registered Parks and Gardens under assets of very high value. This asset is assessed as high value in Appendix 8B. The value should be consistent across all references to this asset including those mentioned in Volume 2.3. The PPA Group do not agree with the statement in PEI paragraph 8.1.27. If the data from the Western Lake District Mapping and Lidar project is fully incorporated into the baseline data it would be clear that there is a huge amount of post medieval archaeology that should be included.
- 9.10.46 Section 8.1.33 describes the HLC of the Muncaster Lowlands. The assessment of HLC in subsection D2, however, notes that the West Cumbrian Coastal Plain extends into Subsection D1 as well. The two Subsections should cross reference each other in the discussion of HLC.
- 9.10.47 Section 8.1.39 describes a series of non-designated buildings of unknown date as assets of medium value. This is the same value applied to the majority of Grade II Listed Buildings within the assessment. The assessed level of value for these structures therefore seems inconsistent with the value applied to nationally designated assets of known date and to non-designated archaeological assets of unknown date which are generally assessed as low value. The reasoning behind the assessed level of value of these assets needs to be more clearly articulated with reference to local, regional and national significance.

Subsection D2 – Waberthwaite to Silecroft

- 9.10.48 Sections 8.2.6 and 8.2.7 of the PEI make reference to the Regional Research Agenda which is welcomed. There is, however, some inconsistency with referencing this document, as it is generally only referred to within the assessment for assets of prehistoric date. It is not clear whether this is because other assets within the search area do not have the potential to contribute to the Regional Research Agenda, or if this an oversight within the assessment that needs to be addressed.
- 9.10.49 The value assigned to the settlement site (1229) is not adequate (see Section 8.2.6). This is of high value, particularly when considered with the cluster of prehistoric findspots to the south. It is good to see a reference to the Regional Research Agenda in the text, however this should be consistently applied across all periods and locations.
- 9.10.50 The PPA Group consider that the statement in 8.2.17 is not true. If the data from the Western Lake District Mapping and Lidar project is fully incorporated into the baseline data it would be clear that there is a huge amount of post medieval archaeology that should be included.

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- 9.10.51 The possible site of Eskmeals milefortlet (1244) is assessed within Subsection D1 in Section 8.1.12 as well as within Subsection D2 in Section 8.2.9. Clarification is necessary as to which Subsection this asset lies within.
- 9.10.52 There is no information provided on non-designated archaeological assets of medieval date within this subsection. If no such remains are recorded in the area this should be stated within the assessment.

Subsection E1 – Silecroft to Arnaby

- 9.10.53 Section 8.3.11 of the PEI assigns values to non-designated assets, but not all of the assets listed are given a value, for example Millom Castle Deer Park (1016). This will need to be addressed within the ES chapter.
- 9.10.54 Appropriate level of assessment required on the area centred on SD 159 838 has a series of medieval and post medieval earthworks identified in Historic England's National Mapping Programme Aggregates Levy. In addition, another area between The Green and Arnaby has a series of medieval and post medieval earthworks identified in Historic England's National Mapping Programme Aggregates Levy.
- 9.10.55 In addition, the presence of prehistoric urns (HER no. 4008) at an elevation of 10 metres above sea level shows the statement in PEI paragraph 8.3.6 that prehistoric funerary activity is focussed on higher ground to be inaccurate. Funerary activity occurs on lowland and on higher ground in West Cumbria.
- 9.10.56 There is no discussion of non-designated built heritage assets of medieval date, as there is in other subsections. If this is due to no assets of this type and date being located within the study area for this subsection, this should be stated within the assessment.
- 9.10.57 Section 8.3.14 describes Millom Conservation Area (C29) as an asset of medium value. Table 8.3 in Volume 2.2, Chapter 8, does not list Conservation Areas under assets of medium value. No description of the Conservation Area is provided. More information is needed in order to understand the character of the conservation area and whether its assessed level of value is appropriate.
- 9.10.58 Section 8.3.15 discusses non-designated assets and appears to group non-designated archaeological remains and non-designated historic buildings. These assets are separated out in earlier subsections and this approach should be continued throughout for consistency and since it gives an indication of the nature of the asset.
- 9.10.59 Sections 8.3.21-8.3.24 of the PEI describe the historic landscape character in this subsection. Whilst they note that 'the topographical context of the character area is the same either side of the LDNP boundary and all the area shares a similar history of woodland industries and minerals extractions and processing', the contribution that this area makes to the OUV of the LDNP WHS is not discussed. The character area is described as an asset of

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medium value, however, this may alter when the contribution it makes to the WHS OUV is considered as part of its value.

- 9.10.60 Section 8.3.26 assigns a low value to currently unrecorded archaeological remains, it is considered it is too definitive to assess the value of unrecorded archaeological remains as their significance and therefore value is currently unknown. Further research into the nature of unrecorded archaeological remains is ongoing, or proposed, as part of the scheme and this will provide a firmer baseline from which to assess their value in the ES chapter.

Subsection E2 – Arnaby to Lindal in Furness

- 9.10.61 No non-designated Roman remains are described within the subsection. If there are no such remains this needs to be stated within the assessment.
- 9.10.62 There is agreement that the alluvium in the Duddon estuary has a high potential for palaeo-environmental remains. However, it is not just the alluvium in the Duddon area that has a high potential for such remains; the PEI should also state that areas of peat within the wider Duddon valley also have the same high potential for palaeo-environmental remains.
- 9.10.63 Section 8.4.11 of the PEI discusses non-designated assets and appears to group non-designated archaeological remains and non-designated historic buildings. These assets are separated out in earlier subsections and this approach should be continued throughout as it gives an indication of the nature of the asset.
- 9.10.64 Section 8.4.15 assesses all post-medieval Grade II Listed Buildings as being of medium value because they are 'not unique in style or construction'. This criteria is not an acceptable standard by which to judge the importance of Listed Buildings and the assignment of value should be based on an understanding of their heritage significance. National designation is not reserved for the best, oldest or most aesthetically pleasing buildings in the county, so uniqueness is not the only factor in determining significance and value. As with earlier assessments of Grade II Listed Buildings, further articulation of the reasons behind assigning a medium value to all of these buildings will need to be provided, along with the Grade II Listed buildings discussed in Sections 8.4.10 and 8.4.20.
- 9.10.65 Section 8.4.15 describes Broughton in Furness and Ireleth Conservation Areas (C14 and C15) as being of medium value. Table 8.3 in Volume 2.2, Chapter 8, does not list Conservation Areas under assets of medium value. The Conservation Area descriptions state that buildings within them contribute to their historic character, however, this is not described, neither is there any quantification or discussion of the number and character of listed buildings within the conservation areas and their importance. More information on the significance of the Conservation Areas is provided within the PEI assessment paragraphs in Sections 8.4.57 and 8.4.58 although a discussion of the character and appearance and description of key views identified should be included to allow the effects to be accurately assessed.

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- 9.10.66 Section 8.4.16 assesses a large number of non-designated post-medieval remains as being of low value. This may be appropriate, but more information is needed, both about the assets individually and about the importance of industrial assets to the historical development of this area, in order to ascertain if the assessed level of value is appropriate
- 9.10.67 Section 8.4.23 may need to be revised following reassessment of the value of this Historic Landscape Character Area as suggested in Section 2.2.24 of this response.

Subsection H1 – Lindal in Furness to MHWL at Morecambe Bay

- 9.10.68 There is no discussion of non-designated built heritage assets of medieval date, as there is in other subsections. If this is due to no assets of this type or date being located within the study area for this subsection, this should be stated within the assessment.
- 9.10.69 Section 8.5.18 describes three listed buildings as being of high significance due to their location within CA18 which itself is assessed as a high value asset. This reasoning is sound, however, it demonstrates an inconsistency in approach as assets within the LDNP WHS that contribute to its OUV and very high value are not given a heightened level of value in the assessment. The approach taken to assets of value in their own right, which also contribute to the significance of other assets, such as Conservation Areas or WHSs, needs to be consistent across the whole assessment. The listed buildings described in these paragraphs are also recorded as assets of medium value in Volume 2.7, Appendix 8B which should be amended.
- 9.10.70 An overwhelming majority of Grade II Listed post-medieval and modern buildings discussed in Sections 8.5.19, 8.5.20, 8.5.21, 8.5.23 and 8.5.28 are assessed as assets of medium value. In Table 8.3 of Volume 2.2, Chapter 8 the methodology outlines that Grade II Listed Buildings can be considered either as High or Medium value assets. The rationale for the assessed medium value for these assets within subsection H1 is only touched upon, rather than discussed. Without statements of significance for the assets, as outlined in Section 2.2.2 above, it is not possible to ascertain whether the assessed level of value is correct
- 9.10.71 Section 8.5.27 describes a large number of non-designated assets as being of low value, however, not enough information on the nature of the assets is provided with which to determine whether this assessed level of value is appropriate.
- 9.10.72 Section 8.5.32 describes the Furness Peninsula historic landscape character and assesses it as an asset of low value. The description provided is considered to qualify the area as a medium value asset according to Table 8.3 in Volume 2.2, Chapter 8, i.e. an 'an averagely well-preserved historic landscape with reasonable coherence, time depth'. Further articulation of the reasons behind the assessed low value should be included in the ES.
- 9.10.73 Section 8.5.35 assesses the value of a group of undated assets, but does not provide a value for the possible hill fort (825) or a possible castle or hillfort (2770).

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Subsection H2 – Morecambe Bay

- 9.10.74 Section 8.6.13 of the PEI describes marine assets in the Near-Field study area, but the wreck of the Vanadis (55 and 57), discussed in Section 8.6.14, is missing from the list. An unnamed obstruction is also mentioned in this list, but then not discussed any further within the assessment. More information on this asset is needed.

Subsection H3 – MHWL at Morecambe Bay to Middleton Substation

- 9.10.75 Section 8.7.11 of the PEI describes the archway south west of St Peter's Church (LB19) as an asset of medium value. The value of this asset may be considered to be high due to its group value with nearby assets, such as the high value Grade I Listed Church of St Peter (LB22), and its contribution to the Heysham Conservation Area (C25). The same reasoning may also be applied to the non-designated grave slab (96) discussed in Section 8.7.16 which is assessed as an asset of low value.
- 9.10.76 Section 8.7.27 and 8.7.30 discusses modern and undated non-designated assets, and appears to group non-designated archaeological remains and non-designated historic buildings. These assets are separated out in earlier subsections and this approach should be continued throughout as it gives an indication of the nature of the asset and the potential effects of the scheme upon them.
- 9.10.77 Section 8.7.29 discusses the historic landscape character in Subsection H3, but the level of detail is much reduced in comparison with other assessments within the PEI. The same degree of detail should be included here in order to assess whether the value applied to this area is appropriate.
- 9.10.78 Section 8.7.30 discusses assets of unknown date and assigns a low value. This value reflects a lack of information about the assets, rather than the value of the assets themselves and should be amended. There is no evidence to support that the assets of unknown date are of low value. Further information to support this should be presented within the ES.

Section by section description – Subsection Natland

- 9.10.79 Section 8.8.19 of the PEI describes Sizergh Castle Grade II Registered Park and Garden (RPG4) as an asset of medium value. Table 8.3 in Volume 2.2, Chapter 8 does not list Registered Parks and Gardens under assets of medium value. Given that Muncaster Castle Grade II* Registered Park and Garden (RPG1) was assessed as an asset of very high value, this assessment of medium value appears inconsistent and explanation of the significance should be included in the ES chapter.

9.11 Commentary on Factors influencing Future Baseline

- 9.11.1 The identified factors influencing the future baseline are considered to be appropriate, although at this stage of the assessment process there is considerable potential for the assessment baseline to change based on the applicant's own investigation of areas where undergrounding will take place and the potential for significant unknown archaeological assets to be encountered through this process. Dependent on the nature of these assets, and the nature of the proposed development in their vicinity, they may be physically affected by the construction of the Proposed Development.
- 9.11.2 The assessment of the potential for currently unknown archaeological assets is perhaps understated in some sections and this may be a future discussion point.

9.12 Commentary on Consultation Activity and Data

- 9.12.1 Volume 2.2, Chapter 8, sections 8.1.11 and 8.1.16 contain incorrect references to Appendix 5A. Section 8.1.11 states that Appendix 5A is a summary of points from the Scoping Opinion and section 8.1.16 states that it is a summary of environmental effects which have been scoped out. Volume 2.7, Appendices 1B and 1C relate to the response to the Scoping Opinion. There is no appendix which summarises environmental effects which have been scoped out.
- 9.12.2 Volume 2.7, Appendix 1C states that an assessment against the Hedgerow Regulations will be made within the ES. Although there is no discussion of effects upon hedgerows within the PEI, this will need to be clearly articulated within the ES.
- 9.12.3 Volume 2.7, Appendix 1C has not identified comments made during other consultation events, such as the Historic Environment workshop held in February 2016 or follow up correspondence.
- 9.12.4 The recent meeting with National Grid's archaeological consultant regarding the likely scope of archaeological fieldwork for the forthcoming Environmental Statement was informative and productive. Other than this, there has been a lack of focussed discussion and consultation on the historic environment.

9.13 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

9.14 Assessment Methodology

- 9.14.1 The inclusion of the consideration of the ICOMOS Guidance on Heritage Impact Assessments for Cultural World Heritage Propertiesⁱ is welcomed.

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- 9.14.2 PEI Volume 2.2, Chapter 8, paragraph 8.6.2 identifies the five steps (following Historic England guidance) for assessing effects upon the setting of heritage assets. Step 2 is the assessment of whether, how and to what degree the settings of affected assets make a contribution to the significance of the heritage assets affected. Part of this step is to consider the significance of the heritage asset itself (i.e. determine its heritage significance). The scoping chapter and subsequent draft methodology circulated after the Historic Environment workshop (February 2016) inferred that the terms used within the National Planning Policy Framework (NPPF) (i.e. archaeological, architectural, artistic or historic significance) would be used in assessing this significance. Within the chapter and the discussion of affected assets, there is limited and inconsistent description of the heritage significance of the assets. This leads to some uncertainty about how much the setting contributes to the significance of the affected assets, which is important in the assessment of the magnitude of impact and significance of effect. This may be a factor aiming to keep the PEI concise but further information, particularly for assets which have not been scoped out, should be included in the ES.
- 9.14.3 It is also considered that some assets included in the PEI should have been scoped out during Step 2 of the Historic England process, as their setting does not contribute, or makes a negligible contribution to the significance of the asset. These assets can be encapsulated within an appendix to the ES chapter or agreed within a Statement of Common Ground, with a brief articulation of why these assets have been discounted. Therefore, this will make the ES chapter more focussed on potential significant effects.
- 9.14.4 The justification for the value definition of Grade II listed buildings will have to be clearly articulated within the ES chapter. However, the ES chapter could clarify that the default assessment for the value of Grade II listed buildings is medium and clearly indicate where Grade II listed buildings are considered to be of high value and why. In addition, Volume 2.8, Chapter 2.8.8, Appendix C (which discusses the methodology used for assessing effects within the Focus Areas) states that “the assessment of effects treats Grade I and II* listed buildings as having higher value than Grade II listed buildings.” This is not a consistent approach with the methodology stated within Volume 2.2, Chapter 8, section 8.6.6 which states that Grade II listed buildings are defined as being of high or medium value. This latter statement is welcomed and should be the approach followed throughout.
- 9.14.5 Volume 2.2, Chapter 8, section 8.6.13 of the PEI discusses cumulative impacts in terms of other projects but does not discuss additive effects as a result of multiple impacts on historic environment assets.
- 9.14.6 The PPA Group believe it would be useful to see an assessment of construction impacts which would extend into the operation phase, for example the remainder of bare earth/immature planting along the route of underground cables. This is of particular relevance to the LDNP and Muncaster Castle RPG as well as the settings of assets.
- 9.14.7 Some assessment of the effects is also needed for the construction period where the existing 132kV lines and the new 400kV infrastructure would be in place together, prior to removal of the existing 132kV line, where applicable, or where temporary 132kV lines are constructed.

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- 9.14.8 It appears that no visualisations have been produced for heritage purposes. Nor is there any indication of whether any will be, or locations provided. Therefore, it would have been beneficial to correlate the viewpoints undertaken in preparation for the Visual chapter with where they can be used for heritage purposes.
- 9.14.9 Whilst the PPA Group recognise that the majority of residual construction impacts upon the setting of heritage assets will correlate with the residual significance of effect in the operation phase and that they can therefore be assessed only as operation phases effects, there are certain instances, such as undergrounding through the LDNP where this doesn't apply and therefore a separate assessment of setting impacts during construction will be required. We understand that this is a deviation from advice provided at the scoping stage. However, the newly-proposed undergrounding through the LDNP and in other areas, results in setting effects that do not correlate between construction and operation and therefore a new approach to assessment of effects is necessary in these areas.
- 9.14.10 The desk-based assessment methodology and the DMRB methodology to assess development impacts undertaken to date is adequate.

9.15 Application of Methodology

Route Wide

- 9.15.1 Where a choice has been made between two levels of significance of effect levels, an explanation of why the lesser effect has been chosen is required, particularly as Volume 2.3, Chapter 8, section 8.1.7 of the PEI states that the assessment has been prepared on a worst case basis. Given the importance of this distinction in terms of what constitutes a significant effect in EIA terms and therefore triggers mitigation within the adopted assessment methodology, further articulation as to why the lesser effect has been selected is needed.
- 9.15.2 A weakness of the PEI Report is that it fails to provide an assessment of the physical impact of the development on all the non-designated archaeological assets that lie partially or wholly within the draft order limit boundary. The assets listed below are shown on figures 8.3.2 to 8.3.25 (figures of designated and non-designated heritage assets) but no impact assessment is provided in the PEI Report.
- 9.15.3 There is a lack of more detailed assessment, for example the desk-based assessment, which makes it difficult to place the assessments included in the PEI in context, for example the assessment of potential. Therefore it is difficult to comment on these assessments.
- 9.15.4 Without information on the walkover survey, National Mapping Programme (NMP) data and historic mapping, it is not possible to identify whether assets should have been considered within the PEI or whether this alters the assessment of potential.
- 9.15.5 There are no cross references to the landscape and visual chapters.

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- 9.15.6 There is no assessment provided of effects on the setting of non-designated built heritage assets. These assets have been described as ranging from low to medium value. There is therefore the potential for significant effects to arise as a result of the proposed development. This needs to be included within the ES.
- 9.15.7 The effects of the scheme upon non-designated archaeological remains require further investigation. It is acknowledged that further investigation of the buried archaeological resource is ongoing.
- 9.15.8 There is an introductory sentence at the beginning of each discussion of operation effects stating the following PEI paragraphs present the adverse effects of the scheme, however, within these paragraphs beneficial effects and neutral effects are also discussed. These introductory sentences should be removed.
- 9.15.9 Effects upon previously unrecorded assets have not been articulated. A general comment which covers this would suffice.
- 9.15.10 Assets in close proximity, or grouped in terms of contemporary usage and date, are grouped within the assessment of setting impacts. Whilst in the majority of cases this is probably an appropriate response, in some individual cases this may not be appropriate mainly due to differences in setting and the level to which setting contributes to the asset's significance. This is compounded by the lack of Statements of Significance for the heritage assets affected. Instances where this is a particular issue requiring amendment are detailed in the discussion of the various projects subsections below. Within the ES, Statements of Significance need to be proportionate to the level of effect. The level of text included in the PEI for assets which have a neutral significance of effect or which are to be scoped out is largely appropriate, although the reasons for scoping out these assets should be clearly articulated (for example setting doesn't contribute to significance).
- 9.15.11 Many of the assessments state that the setting of assets do not extend as far as the project infrastructure, however, this needs to be more clearly articulated in terms of the extent of the setting and why the area in question does not form part of it. For example, there are instances of beneficial effects being claimed for distances of over 3-4.5km away (for example in Section 8.2.29 of Volume 2.5, Chapter 8), whereas such distances are usually taken as lying outwith the setting of assets when the potential impact would be adverse.
- 9.15.12 The initial assessment of impact should include the design measures and standard environmental measures which form part of the Project as stated in Volume 2.2, Chapter 5, Section 5.2.6 of the PEI. These measures include removal of a 132kV overhead line, undergrounding of some part of the line and the construction of low lattice pylons in some areas. However, these measures only need to be discussed when different elements of Project affect assets in contradictory or specific ways, such as setting effects during construction. The non-technical summary states that the design of the Project is part of the mitigation rather than the Project itself.

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- 9.15.13 The PPA Group welcome the discussion of micro-siting of project infrastructure within Volume 2.2. It would be helpful for discussion of this to be articulated in the assessments contained within Volumes 2.4 and 2.5 where this has been used to reduce the potential adverse effects of the scheme.
- 9.15.14 It is currently unclear how the structure of the discussion of operational effects has been ordered. Consideration should be given to ordering the assessment by asset type or in geographical location where appropriate.
- 9.15.15 The initial assessment of impact should include the design measures and standard environmental measures which form part of the Project as stated in Volume 2.2, Chapter 5, section 5.2.6. These measures include removal of a 132kV overhead line, undergrounding of some part of the line and the construction of low lattice pylons in some areas. However, these measures only need to be discussed when different elements of the Project affect assets in contradictory or specific ways, such as setting effects during construction. The non-technical summary states that the design of the Project is part of the mitigation rather than the Project itself.
- 9.15.16 There is some inconsistency with the level of detail provided within the assessments. Some give the direction and distance to the closest Project infrastructure, whereas others do not. Where possible it would be beneficial to have information about the direction and distance of the closest Project infrastructure included in the discussion of effects upon the setting of assets.
- 9.15.17 It would be useful to include a list of the names of the listed buildings as well the references numbers, for example in section 8.1.36 of the PEI.
- 9.15.18 The assessment of effects upon the setting of Conservation Areas would benefit from a more robust discussion about their settings and how this contributes towards their significance. Further discussion about why their settings do not extend as far the Project infrastructure would further bolster the assessments. Whilst the PPA Group do not disagree with the assessment levels given, the reasons for these need to be better articulated. The assessment of Conservation Areas should also identify whether a Conservation Area Appraisal is available and whether any key views have been identified. There is also generally a lack of consideration of approaches and key views towards listed buildings and conservation areas within the assessment which can and do contribute to their significance.
- 9.15.19 There are a large number of assets which have been assessed as experiencing no change and a neutral significance of effect. Therefore it is suggested that these assets are scoped out at the ES stage and encapsulated within an appendix to the ES chapter. This will also ensure that the ES chapter is focussed on potentially significant effects. There are also a number of assets which it is considered should have been scoped out as their setting has a negligible contribution to their significance or does not contribute to their significance (for example fonts or milestones). These assets have been assessed as experiencing a neutral significance effect and can also be encapsulated within an appendix to the ES chapter.

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- 9.15.20 The phrases 'magnitude of impact' and 'magnitude of effect' are used interchangeably throughout the assessments in Volume 2.5, Chapter 8. This needs to be revised to be consistent throughout all of the various documents, subsections and assets.

Project Wide Assessment – LDNP WHS

- 9.15.21 Section 8.3.17 of Volume 2.3, Chapter 8 of the PEI, outlines the construction phase effects of the scheme upon the LDNP WHS (WHS2). It refers to the presence of Muncaster Castle RPG and the prehistoric activity at Waberthwaite, Bootle, Whicham and New Buildings within the WHS boundary, but does not refer to the significant remains of the *vicus* associated with Ravenglass Roman Fort and Bath House, which are also within the boundary and are likely to be affected by the proposed undergrounding. The effects of the scheme upon the *vicus* are considered elsewhere in the assessment, but they should also be signposted and considered in this section as affecting features that convey the OUV of WHS2. Specific reference to Ravenglass Roman fort, and Roman archaeological sites more generally, is included on page 79 of Volume 1 of the WHS nomination documents as forming part of the special qualities of the Lake District candidate WHS.
- 9.15.22 Section 8.3.20 of Volume 2.3, Chapter 8, states that the removal of the existing 132kV line without reinstatement would result in a minor beneficial impact, however, with reference to Table 8.4 in Volume 2.2, Chapter 8, a negligible beneficial impact may also apply taking account of the size of the LDNP WHS, i.e. 'very minor improvement of an asset's heritage significance; baseline conditions largely unaltered'. Clearer justification is required for the assessed minor level of beneficial impact. The assessment within Volume 2.5, Chapter 8, for Subsection D1 and D2 assesses this impact as negligible beneficial resulting in a slight beneficial significance of effect. Consistency is required across Volumes 2.3 and 2.5 in this regard.
- 9.15.23 Section 8.3.21 of Volume 2.3, Chapter 8, describes the project-wide effects of the scheme on the setting of the LDNP WHS (WHS2). However, it does not include assessment of the proposed permanent wooden pole 132kV line, a section of which also runs within the WHS. This infrastructure needs to be included in the assessment, as do the Cable Sealing Head Compounds at either end of the areas of undergrounding.
- 9.15.24 Section 8.3.22 of Volume 2.3, Chapter 8, describes the overall effect of the scheme upon WHS2, however, the assessment gives the impression that the undergrounding of the 400kV line is seen as a beneficial effect in its own right. It needs to be made clear that this is part of the design mitigation which has avoided effects, rather than creating a beneficial effect compared to the baseline conditions. The removal of the 132kV line without an upstanding replacement is the key beneficial element of the scheme. The assessed significance of effect in this section may need to be revised following the advice provided in Section 4.2.16 of this response.
- 9.15.25 Section 10.9.12 of Volume 2.8.8 describes the effects of the removal of the 132kV line without replacement on the settings of a number of assets within the LDNP WHS (WHS2) and on the character of the WHS site and Muncaster Castle RPG as being moderate beneficial. This grouping of assets and effect is not appropriate and there is no information

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provided on how the moderate beneficial significance of effect has been arrived at. It is also not consistent with the level of effect reported in Volumes 2.3 and 2.5 in relation to these features.

Project Wide – WHS1, The Frontiers of the Roman Empire

- 9.15.26 These comments relate to Volume 2.3, Chapter 8.
- 9.15.27 Recorded and as yet unknown assets located within the WHS may be of very high value as they may be demonstrably part of the WHS (section 8.2.11), if they convey the OUV of the WHS. This is also true of the discussion of unknown archaeological remains in Volume 2.8, Chapter 2.8.8, Section 9.
- 9.15.28 Section 8.3.4 of the PEI needs updating to reflect the assessment made in Volume 2.4, Chapter 8, section 8.7.32.
- 9.15.29 Where section 8.3.9 relates to effects around Ravenglass in the southern section, this needs to be articulated within the text. Articulation of the justification for the choice of slight beneficial as opposed to a neutral significance of effect needs to be included in the ES.
- 9.15.30 Section 8.3.13 introduces a minor magnitude of effect whereas section 8.3.9 describes it as negligible. This is then unrelated to the subsequent sentence which describes the residual project wide effect.
- 9.15.31 Section 8.3.14 refers to beneficial effects during construction. The PPA Group believe this should read operation. This section also fails to articulate the justification for the choice of slight beneficial as opposed to a neutral significance of effect.
- 9.15.32 The significance of effect stated in section 8.4.2 should be revised subject to review relating to the above comments.

Subsection A1 – Moorside to Thornhill

- 9.15.33 Further clarification or explanation of how the setting of the scheduled cross shafts (SM26) contributes to the heritage significance of the asset in section 8.1.27 would be beneficial. This would assist in the assessment of magnitude effect and significance of effect. Although the PPA Group agree that the cross shafts' setting in the churchyard contributes to their significance, it is not considered that the wider agricultural land surrounding the churchyard contributes as much to their significance. Therefore it is considered that there will be a lesser magnitude of impact upon the scheduled cross shafts (SM26) than the Grade II* listed church (LB342). Should National Grid consider that the scheduled cross shafts (SM26) and Grade II* listed church (LB342) can be assessed together for their group value, this should be articulated in the detailed assessment. The non-technical summary has referenced the moderate adverse significance of effect upon the Grade II* listed church

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referenced in the Volume 2.4, Chapter 8 assessment but has not included the moderate adverse significance of effect upon the scheduled cross shafts.

- 9.15.34 Section 8.1.37 has combined discussion of views to and from the Grade II listed Braystones Tower (LB340). The discussion of views to and from the asset should be separated.
- 9.15.35 Historic Environment Record (HER) No. 1293 – Deserted medieval village is located in the DOL and an appropriate impact assessment and, where appropriate, mitigation measures proposed: The location, extent and significance of the remains need definition by means of a site visit.

Subsection A2 – Thornhill to Whitehaven

- 9.15.36 Further explanation of how the setting of the Scheduled Egremont Castle (SM29) contributes to the significance of the asset would be beneficial in section 8.2.44. As a defensive feature it is likely that the castle would have had wide ranging views of the surrounding landscape which may have extended as far as the Proposed Development. It is acknowledged that the assessment states that this setting has been negatively affected by the modern expansion of Egremont, but it is recommended that this, and how it has affected the significance of the asset, is further expanded in the detailed assessment.
- 9.15.37 Clarification of which cemetery the Grade II listed Toll Bar House (LB379) is in is required in section 8.2.50.
- 9.15.38 It is considered that section 8.2.53 needs further clarification or articulation and would perhaps benefit from the effects upon the two listed farmhouses (LB361 & LB365) being discussed separately. It is not considered that Project infrastructure located 450m away from the asset is a distant feature. This is also not consistent with other assessments on farmhouses which are located a similar distance from the Proposed Development.
- 9.15.39 Further clarification about why the Proposed Development would have a negligible impact on the setting of the Grade II Church of St. John (LB390) would be beneficial in section 8.2.56 in the detailed assessment. It is considered that the contribution the setting of the church makes to the significance of the asset could be better articulated. This would aid in making the assessment level easier to understand.
- 9.15.40 Further information and/or assessment about how the setting contributes to the significance of the three post-medieval listed buildings located in Cleator (LB386, LB389 & LB387) would be beneficial in section 8.2.57. For example, the local church may have a spire that is a prominent feature in the wider landscape. As this information has not been provided, it is not possible to validate the assessment.
- 9.15.41 Although it is considered that the landscape to the east of LB403 is rural, the landscape to the west becomes more urban, which should be taken into consideration in the assessment.
- 9.15.42 Effects upon the Western Fells HLC area have not been considered.

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9.15.43 The following assets are located partially or wholly within the draft order limit boundary and so may be impacted upon by the development. They need an appropriate impact assessment and, where appropriate, mitigation measures proposed:

- HER 16561 - undated earthworks. These are dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit;
- HER 6581 - undated earthworks. These are dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit;
- HER 16649 – medieval ridge and furrow earthworks. The site needs definition by means of a site visit;
- HER 44240 – earthworks of medieval ridge & furrow. The site needs definition by means of a site visit;
- HER 2749 – post medieval colliery. This is dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit;
- HER 16590 – post medieval farmstead. This is dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit; and,
- HER 12889 – post medieval colliery. This is dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit.

Subsection B1 – Whitehaven to Seaton

9.15.44 Whilst it is considered that the majority of residual construction impacts upon the setting of heritage assets will correlate with the residual significance of effect in the operation phase and that they can therefore be assessed only as operation phases effects, there are certain instances where this doesn't apply and therefore a separate assessment of setting impacts during construction will be required. Section 8.3.41 discusses effects upon the setting of the Scheduled round cairn (SM30) during the construction and operation of a temporary 132kV line along with the operation effects of the construction of the new 400kV line. This is leading to uncertainty about the level of magnitude of effect reached as a result of new and temporary infrastructure. Furthermore the effects are discussed separately in the Residual Effects section. Although the PPA Group agree with the end assessment, it is considered that the setting effects as a result of the temporary 132kV line should be discussed in the construction effects section rather than in conjunction with operation effects. The operation effects should just discuss the effects of the permanent 400kV line. This would make the assessment a lot clearer and allow the temporary nature of the construction of the 132kV to be better reflected in the residual significance of effect.

9.15.45 Further discussion about how the setting of the scheduled Hayes Castle (SM80) contributes to the significance of the asset and the reasons why it does not extend as far as Project infrastructure would be beneficial in section 8.3.46. As a defensive asset it is likely that the castle had wide ranging views of the surrounding landscape which may have extended as far as the Proposed Development. If the intervening topography prevents there from being

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views between the asset and Project infrastructure, this should be clearly articulated in the detailed assessment. Distance is not considered to be a valid reason why the setting of this asset is unaffected.

- 9.15.46 Whilst the PPA Group do not disagree with the assessment level reached for the scheduled remains of Workington Hall (SM237), it is considered that the assessment fails to recognise that the key view from the hall is screened by mature tree growth. The hall's setting on a high point overlooking the valley below, including towards the Proposed Development, would have been an important part of the asset's significance which would be negatively affected without the existing screening.
- 9.15.47 There is no articulation that the scheduled coke producing bases and slag heap (SM194) forms part of the WHS in section 8.3.55 of the PEI.
- 9.15.48 Further articulation regarding the magnitude of effect upon the setting of the listed Camerton Hall (LB434) would be beneficial. The assessment states that the Proposed Development would be located beyond the primary setting of the asset, but would have a negligible effect upon the setting of it. Text which clarifies the landscape beyond the primary setting of this asset and how it contributes towards the hall's significance would help to clarify this assessment.
- 9.15.49 There is no assessment of the Ellen and Marron Valleys HLC area.
- 9.15.50 The following assets are located partially or wholly within the draft order limit boundary and so may be impacted upon by the development. They need an appropriate impact assessment and, where appropriate, mitigation measures proposed:
- HER 12867 – post medieval gunpowder store. This is dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit;
 - HER 16642 – earthworks of undated field boundaries. These are dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit;
 - HER 4602 – limekiln. This is dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit; and,
 - HER 4672 – Roman road. This is dismissed as low value in the PEI, but the evidence on which this assessment is based is unclear. The site needs definition by means of a site visit.

Subsection B2 –Seaton to Tallentire

- 9.15.51 Further articulation about how the setting of the scheduled settlement (SM62) contributes to the significance of the asset is required in section 8.4.34 in order to determine the magnitude of effect upon the asset. The assessment currently states that it is located in a prominent position in the landscape which is likely to have been an influencing factor in its siting, but doesn't expand on this. For example this siting could be for defensive purposes and if so, it could be argued that the setting of this asset does extend as far as the Project

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infrastructure. Further discussion about the surrounding landscape and how the topography affects the views from the asset to the Proposed Development would also be beneficial here (as has been completed for the scheduled fort, SM115, in section 8.4.36).

- 9.15.52 The magnitude of impact on the setting of the scheduled motte (SM205) discussed in section 8.4.39 needs to be discussed, as only the significance of effect is included within the assessment.
- 9.15.53 Greater discussion about the significance and the setting of the Grade I listed Cockermouth Castle (LB644) is required. It is likely that the castle was built to have wide ranging defensive views, which may have already been negatively impacted. At present it is discussed as part of a small paragraph including a large number of listed buildings within Cockermouth and it is difficult to understand whether the assessment level on this asset is correct.
- 9.15.54 Further discussion of the reasons why the setting of the Grade II listed Ewanrigg Hall (LB769) does not extend as far as the Project infrastructure would be beneficial in section 8.4.51 in order to understand the assessment level. Further articulation of this argument is necessary, such as reference to the local topography blocking views towards the Proposed Development. Distance is not considered to be valid reason why the settings of these assets are unaffected.
- 9.15.55 The listed buildings located in Dovenby and discussed in section 8.4.53 (LB890 – LB893) are not shown on Figure 8.2, nor are they listed in Volume 2.7, Appendix 8A. Therefore it is not possible to comment on the assessment of these assets as the PPA Group do not know what grade they are.
- 9.15.56 Further articulation of how the agricultural land surrounding the scheduled industrial asset of a spoil tip (SM31) contributes to its significance would be beneficial in section 8.4.56. Whilst there will be a change to the landscape which surrounds this asset, our view is that it's wider landscape setting does not contribute to its significance and it should therefore be scoped out of the detailed assessment.
- 9.15.57 The explanation of effects upon the historic landscape character (section 8.4.57) is not as detailed as previous sections. It would be beneficial to have more detail here, as per the previous sections.
- 9.15.58 The following asset is located partially or wholly within the draft order limit boundary and so may be impacted upon by the development. HER 44042 – Romano-British enclosure will need an appropriate impact assessment and, where appropriate, mitigation measures proposed.

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Subsection B3 – Tallentire to Aspatia

- 9.15.59 There is no evidence to support that the assets of unknown date discussed in section 8.5.29 of the PEI are of low value. Further information to support this should be presented within the ES. This subsequently affects the assessment of effect in section 8.5.31.
- 9.15.60 Consideration should be given to separating the discussion of effects upon the setting of the scheduled settlements (SM100 & SM109) and enclosures (SM101 & SM141) in section 8.5.34 as they are not located in close proximity to one another and their settings are therefore different.
- 9.15.61 The location of a scheduled hillfort (SM170), discussed in section 8.5.34, is not clearly visible on Figure 8.2. This asset should also be discussed separately in the detailed assessment along with a clear discussion about its setting and how this contributes to the significance of the asset. The hill fort would have wide ranging views of its surrounding landscape, for defensive and functional agricultural reasons which may include views towards the Project infrastructure. The ES chapter should also include details about the distance between the asset and Proposed Development and whether there is any infrastructure between the two which could be harmful to its setting.
- 9.15.62 We welcome the recognition and assessment in section 8.5.36 that the setting of the scheduled monuments which form WHS1 are related to Roman activity on the coast, rather than inland. Therefore, although there will be views of the Proposed Development, this will not affect the understanding or appreciation of this part of WHS1.
- 9.15.63 The location of a scheduled Peel Tower (SM113) is not clearly visible on Figure 8.2. The tower would have formed part of a defensible house and would likely have had wide ranging views of the surrounding landscape which may extend towards the Proposed Development. Therefore further articulation for the reasoning that its setting does not extend as far as the Project infrastructure (section 8.5.40) would be beneficial.
- 9.15.64 It is unclear as to why the Grade I listed Hayton Castle (LB450) is discussed with scheduled enclosures and a settlement in section 8.5.41, although the PPA Group assume that this is a formatting error and there should be a new paragraph at this point. Whilst the PPA Group agree with the assessment of the setting of the asset, it is unclear whether there will be any intrusive effects based on the description provided within the text. Further articulation of the assessment level will be required in the detailed assessment.
- 9.15.65 The assessment of effect upon the setting of the Grade II listed lodge (LB894) would benefit from further discussion about its setting in connection to its relationship to Brayton Hall (section 8.5.49). Consideration should be given as to whether the Proposed Development will have a negative effect upon the relationship between the lodge and the hall.
- 9.15.66 Further discussion about the potential effects on the Grade II listed Langrigg House (LB470) would be beneficial in section 8.5.55 which currently states that there will be no change to

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the setting of the asset. The main frontage of the house faces towards the Proposed Development which will result in the construction of large pylons closer to the asset.

- 9.15.67 Whilst the PPA Group agree with the assessment of the significance of effect upon Hayton Conservation Area (C6) in section 8.5.56, further discussion about the removal and undergrounding of the existing 132kV line would be beneficial. This will increase the clarity of the assessment.

Subsection C1 –Aspatia to Wigton

- 9.15.68 Text which explains if and how the setting of the two Grade II listed buildings east of Langrigg (LB469 & LB471) contributes to their significance will need to be included in the detailed assessment. This is not articulated in section 8.6.31 of the PEI.

- 9.15.69 There is no discussion about how the agricultural land surrounding the Grade II listed farmhouses in Moor Row (LB 448 & LB489) forms part of the setting of these assets in section 8.6.33. This should be discussed in the detailed assessment in order to be consistent with the other discussion of farm and agricultural buildings. The assessment of these assets is also not consistent with the approach taken with other agricultural buildings, stating that the Proposed Development is 1.2km from them and outside of its setting, resulting in no change and a neutral significance of effect. The assessment of two farmhouses (LB895 & LB896) in section 8.6.40 states that the Proposed Development will be located between 2.6 and 3.3km away from the assets and is therefore within their wider setting. This would result in a negligible impact and a neutral significance of effect. If National Grid believes that there are reasons for the difference in assessing the importance of the agricultural landscape in relation to the setting of agricultural buildings, such as local topography, this should be clearly articulated in the detailed assessment.

- 9.15.70 The assessment of the effects upon the setting of the Grade II listed Gill House (LB467) in section 8.6.34 should consider the impact of the construction of the 400kV line and removal of an existing 132kV line together, rather than separating, as per the methodology discussed in section 5.2.1 below.

- 9.15.71 Section 8.6.36 assesses the impact as both minor and negligible. The magnitude of impact will need to be clarified in the ES and the significance of effect updated accordingly.

- 9.15.72 Clarification of the effects upon the setting of the Grade II Waver Bridge Farmhouse and barns (LB487) is needed in section 8.6.37. The assessment currently states that “the Proposed DNO works would have no impact on the setting” of the asset but overall the Project would have a minor impact on the asset. Clarification that the DNO works relates to the removal of the existing 132kV line may be beneficial here.

- 9.15.73 Articulation of what the impact is upon the listed buildings at Lessonhall (LB793) should be considered in section 8.6.41, rather than what it is not (i.e. “not totally distract”).

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- 9.15.74 The explanation of effects upon the historic landscape character (section 8.6.41) is not as detailed as per previous sections. It would be beneficial to have more detail here, as per the previous sections.

Subsection C2 –Wigton to Harker Substation, Carlisle

- 9.15.75 Section 8.7.39 of the PEI states that the rectangular enclosure (2171) is located within the Power of Deviation (PoD). Although the aim of the Proposed Development is for there to be a neutral significance of effect upon the asset, an assessment of effect should be included should the PoD be utilised.
- 9.15.76 PEI paragraph 8.7.45 should be included within Volume 2.3, Chapter 8 rather than this chapter. In addition to this, sub-sections which discuss effects upon assets which form WHS1 should cross reference to Volume 2.3, Chapter 8.
- 9.15.77 Section 8.7.48 discusses the *vallum* (SM48 & SM49) but only assesses the effects upon the setting of SM48. The effects upon the setting of SM49 should also be discussed in this section.
- 9.15.78 Consideration should be given to further clarifying the assessment of effects upon the scheduled monuments of Hadrian's Wall and the vallum (SM44, SM45, SM51 & SM52) in section 8.7.49. The assessment states that these monuments are treated as part of the whole and that the significance of effect is as described in previous sections. However, it is not clear what the 'whole' referred to is and therefore what the significance of effect is. It is considered that these assets should be assessed individually as the cumulative effect on WHS1 is dealt with in Volume 2.3, Chapter 8.
- 9.15.79 The value of a scheduled temporary camp has been given as high in section 8.7.53 and Appendix 8A. However, they are considered to be of very high value in section 8.7.7, which the PPA Group believe is the correct level of value given its relationship to the WHS. The value of the asset has therefore been given incorrectly in the assessment text. This means that for an impact of minor adverse, the significance of effect would be large or moderate adverse. It is considered that a moderate adverse significance of effect would be the appropriate assessment level.
- 9.15.80 Section 8.7.61 of the PEI states that the relationship between the two groupings of prehistoric assets near Carlisle (SM36, SM63, SM71 & SM143) and Gretna (SM250, SM249, SM254, SM251 & SM252) contribute to their settings and their significance as they are "unusual loose concentrations of prehistoric settlement activity". The following sections of the PEI (sections 8.7.62, 8.7.64 and 8.7.65) assess the impacts upon these assets as including the consideration of whether the Proposed Development would be located between these groupings of assets. However, these assessments would benefit from better articulation of why these assets have been grouped together (for example, it needs to be confirmed if they all date to the same prehistoric period or are they all different elements of one landscape).

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- 9.15.81 A clearer explanation of how and to what extent the settings of these assets contribute to the significance of these assets would also be beneficial as well as clearer articulation of how far the setting of assets extends. For example, section 8.7.64 states that the Proposed Development would be located beyond the immediate setting of the scheduled oval enclosure (SM36). There would be good views of the Project infrastructure from this asset, although it will be located further away from the existing lines. However, as the significance and setting of this asset is not clearly articulated, it is not possible to comment on the level of assessment reached by the PEI.
- 9.15.82 Section 8.7.71 references the use of the Zone of Theoretical Visibility (ZTV) in the assessment of the effect on the setting of Down Gall moated site (SM34). This is the first time the ZTV has been referenced in the assessment and it would be useful to cross reference to this in other assessment statements where appropriate.
- 9.15.83 A more detailed explanation about the significance of the scheduled motte (SM54) in section 8.7.73 would be appropriate, as the remains of Hadrian's Wall survive as buried remains and a church and churchyard have been constructed on top of the motte. Although the assessment acknowledges that the site was used for defensive purposes, it does not consider that it may have had wide ranging views of the surrounding landscape. This should also be clearly articulated in the detailed assessment.
- 9.15.84 Section 8.7.79 suggests that the Grade II listed churches (LB682, LB696 & LB887) have been built on top of Roman military sites although no further information is provided. Details about the development of these sites should be clearly articulated in Statements of Significance in the detailed assessment.
- 9.15.85 Section 8.7.85 describes the setting of the Grade II Aikhead Hall (LB490) and Clay House (LB491) in terms of the relationship with the farmland to the north. The assessment of effects upon the setting of these assets fails to articulate the benefits of the removal of the 132kV line to the south of the hall, as well as the proposed low height pylons to be introduced on the north side of the hall and the undergrounding of the 132kV line to the north of the hall. Cross referencing to Volume 2, Chapter 2.8.8, Section 7 would be beneficial here. However, there is some conflict between these two sections. Volume 2.4, Chapter 8 states that the proposed mitigation for effects upon the setting of these assets including planting would result in a residual significance of effect of slight adverse (section 8.7.109) but Volume 2., Chapter 2.8.8 states that the planting would reduce the level of effect from large to moderate adverse once planting was mature (section 7.6.11).
- 9.15.86 There is no discussion of whether the Grade II listed Parton Hall (LB506) is considered to be a medium or high value asset as per Volume 2.2, Chapter 8, section 8.6.6. The assessment describes the setting in connection to its relationship to the agricultural land to the north but fails to note the group value with the historic buildings to the south. The assessment also fails to articulate the benefit of the removal of the 132kV and partial undergrounding of the 33kV line to the south of the hall. Cross referencing to Volume 2, Chapter 2.8.8, Section 8 would be beneficial here. However, there is some conflict between these two sections. The historic environment chapter (Volume 2.4) states that the Proposed Development would have a moderate adverse significance of effect whereas Volume 2.8 states that it would

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have a large adverse significance of effect. The residual effect, as a result of the proposed planting, is assessed as slight adverse in Volume 2.4, however, Volume 2.8 states that the planting would reduce the effect to moderate adverse.

- 9.15.87 The approach of identifying and scoping out assets in section 8.7.89 could be adopted elsewhere in the assessment.
- 9.15.88 The explanation of effects upon the historic landscape character (section 8.7.101) is not as detailed as previous sections. It would be beneficial to have more detail here, as per the previous sections.
- 9.15.89 The following assets are located partially or wholly within the draft order limit boundary and so may be impacted upon by the development. They need an appropriate impact assessment and, where appropriate, mitigation measures proposed: HER 663 – cropmark enclosure. This asset does have an assessment in the PEI – it is considered to a neutral impact because the pylons avoid it. However, confirmation of the validity of this assessment is requested as the location information for the enclosure is ambiguous, and HER 41107 – Romano-British enclosure.

Subsection D1 – Moorside to Waberthwaite

- 9.15.90 Sections 8.1.41 and 8.1.42 of the PEI describes the construction phase effects of the scheme upon Muncaster Registered Park and Garden (RPG1), but does not describe the character of the park in the area affected by the scheme and the visible parkland features that may be lost/altered as a result of the scheme. It is therefore not possible to ascertain whether the assessed level of impact is appropriate. The assessments mention the nearby scheduled Roman remains and the potential, therefore, for unknown archaeological assets to be affected, however, the impact of the scheme upon these features and the known *vicus* associated with Ravenglass Roman Fort are not discussed. Further assessment of construction phase effects in the vicinity of Ravenglass is necessary.
- 9.15.91 The construction effects upon the Registered Park and Garden at Muncaster Castle are not discussed in great detail and the character of the park in the area affected by the scheme and the parkland features that will be lost or altered as a result of the works are not outlined. There is no detail on the temporary line to be constructed in this area and the effect of this on the historic environment resource in this area.
- 9.15.92 Section 8.1.46 describes the setting of SM226 as being partly derived from its relationship with other prehistoric settlement sites in the vicinity of the monument. The locations of these other settlement sites are not provided and it is therefore not possible to ascertain whether the assessed level of impact is appropriate.
- 9.15.93 Section 8.1.47 describes a number of prehistoric cairnfields and states that 'cairnfields are generally considered to be funerary monuments'. The Historic England thesaurus, however, recommends the use of the term 'cairnfield' for instances when the majority of the cairns are clearance cairns. Whilst some of the cairns discussed may be funerary monuments,

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many could be clearance cairns associated with prehistoric agricultural activities, and this adds an extra element to be considered as part of their settings.

- 9.15.94 Section 8.1.48 would benefit from a reference to an academic text regarding the patterns of travel in this area during the prehistoric period.
- 9.15.95 Section 8.1.50 reports the slight beneficial significance of effect for the negligible benefit to a group of high level assets. A large number of assets are considered within this group and the description indicates that they range is distance from 2km to 9km away from the existing 132kV line due to be removed. Slight beneficial may not be an appropriate assessment for all of these assets and the assessment may benefit from the discussion of these assets being undertaken separately.
- 9.15.96 Section 8.1.51 describes the setting of Ravenglass Roman Fort (SM23) and Bath House (SM24) and groups these features for the purposes of the assessment of effects. It is considered that the experience of these assets is different and they should be separated in the assessment and assessed individually. The bath house is an upstanding structure which is experienced in three dimensions and where the existing 132kV line is visible from, and in views of, the asset. Conversely Ravenglass Roman Fort is largely a buried asset, with low level earthworks visible which is experienced by looking down at it and across it. The relationship between both of these assets and known *vicus* and the contribution this makes to their settings also needs to be included in the assessment.
- 9.15.97 Section 8.1.53 reports a slight beneficial significance of effect for the removal of the existing 132kV line to the setting of the Roman kilns (SM90). The effects matrix allows a choice between slight and neutral in this case. With regard to this asset and its distance from the existing line, a neutral beneficial significance of effect may be deemed more appropriate.
- 9.15.98 Section 8.1.59 describes the setting of Infell Wood Enclosure (SM69). It is considered that the description should be revisited, as a Pele tower would be sited to take advantage of landscape-scale views and the site topography appears to support this. The setting of the asset is therefore likely to extend as far as the Project infrastructure.
- 9.15.99 Section 8.1.68 describes the setting and effects of the development on Sella Park Grade II Listed Building (LB344). Whilst the setting is described within this section, it is considered that further details are required on the asset itself, its significance, the gardens, its relationship with Calder Bridge and the level to which the setting contributes to its significance before the assessed level of value and hence effect can be accepted. Grade II Listed Buildings can be assessed as assets of high value, in which case the predicted impact level would result in a moderate adverse effect which is significant in EIA terms. A moderate adverse effect is reported for this asset in the Historic Environment Focus Areas Tables in Volume 2.8.8.
- 9.15.100 Section 8.1.69 describes the setting of Ponsonby Church (LB335) as related to Ponsonby Park. Further information is required on the character and extent of the park in order to ascertain whether the assessed level of effect is appropriate.

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- 9.15.101 Section 8.1.71 describes Seascale Hall (LB331) and Calder Farmhouse (LB332), both of which are located between the Project infrastructure and Sellafield. Whilst their settings are described within this section, it is our view that further details are required on the assets themselves, their significances and the level to which their settings contribute to that significance before the assessed level of effect can be accepted. Grade II Listed Buildings can be assessed as assets of high value, in which case the predicted impact level would result in a moderate adverse effect which is significant in EIA terms
- 9.15.102 Section 8.1.72 describes listed buildings in Gosforth and states that their setting informs their historical and functional connection to one another. There is no further information provided on the function and history of the buildings in order to understand what these are and how much the setting therefore contributes to their significance. Further information should be provided within the ES.
- 9.15.103 Section 8.1.75 describes LB326 and LB325 in Drigg. Whilst the PPA Group broadly agree with the assessed effects of the proposed scheme (if the assessed value is correct), the discussion needs to include consideration of the effects of the proposed Cable Sealing End Compound to the north of Drigg on these assets.
- 9.15.104 Section 8.1.76 describes the beneficial effects of the scheme upon a number of Grade II Listed buildings, but the nature of the listed buildings and detailed discussion of their individual settings is not included. Without this information it is not possible to verify the reported level of significance of effect.
- 9.15.105 Section 8.1.78 describes the listed buildings in the Muncaster Registered Park and Garden (RPG1) however the assessment is confusing in terms of the effects of the scheme with different assets assessed as neutral or moderate beneficial within the same paragraph. It would be helpful to discuss these assets in two separate paragraphs. There also needs to be a separate assessment of the operation phase effects to the RPG as an asset in its own right. This should include the effects of scarring and immature planting from the construction phase and provide details of their duration.
- 9.15.106 Section 8.1.84 deals with local-level impacts to WHS2. This section should cross reference and ensure consistency with the discussion of project-wide effects in Volume 2.3, Chapter 8. This is true of all references to impacts upon WHS within this volume.
- 9.15.107 There are several prehistoric flint artefacts in this section and at least one, HER 6463, lies on the site of a proposed pylon. These are considered to have the potential to reflect prehistoric archaeological assets buried below ground.
- 9.15.108 All non-designated archaeological assets that lie partially or wholly within the draft order limit boundary should be subject to an impact assessment. It is advised that it is made absolutely crystal clear as to whether the development will: (i) have a physical impact or not, (ii) what the scope of the impact will be, and (iii) what the effect of the impact will be on the asset. This information is probably best provided in a table format. At present, PEI

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does not provide this assessment for all the non-designated assets within the draft order limit boundary.

9.15.109 An additional area of concern is the assessment of significance of non-designated archaeological assets. Some assets have been attributed a lower value than is considered appropriate. This is particularly the case for the numerous prehistoric flint artefacts along the route which are scored a low value in the PEI. Whilst accepting that the flint finds themselves may be a low value, it should be acknowledged in the PEI that the significance of the flint finds lie in the potential for them to reflect prehistoric archaeological assets buried below ground. Any such buried assets are of unknown significance but cannot be dismissed as of low value at this stage of the assessment.

9.15.110 Furthermore, the Roman scheduled monuments are assessed as being of very high value in the PEI historic environment chapter but are only assessed of high significance in the appendix. This discrepancy needs to be addressed.

9.15.111 The mitigation measures described in Section 8.1.88 does make reference to mitigating the effects of the scheme upon features associated with Ravenglass Roman Fort, but the approach to mitigation needs to be better articulated within the assessment. This section also notes the proposal for a temporary 132kV line (duration of 8 years) but the location of this line is not shown on the associated historic environment figures.

Subsection D2 – Waberthwaite to Silecroft

9.15.112 It is considered that the significance of effect in PEI paragraph 8.2.22 should be considered to be large adverse.

9.15.113 The Site referred to in PEI paragraph 8.2.25 is an extremely complex site. There is a possible Neolithic/Bronze Age curvilinear enclosure with an inner circuit of pits, a broad ditched D-shaped enclosure of possible Iron Age or Roman date and other pits and ditches of possible later prehistoric date. It was recorded in full as part of the Western Lake District Mapping and Lidar project. The significance of effect, before mitigation, should be considered to be large adverse. This site should be avoided in the construction phase and the route of the cable moved to avoid it.

9.15.114 Section 8.2.24 describes a moderate impact upon the remains of a non-designated building (1163) as a result of the construction phase. Further information on the predicted impact is necessary as other non-designated assets in this Subsection that will be physically affected by the scheme are assessed as undergoing major impacts. The difference in assessed impact for this feature needs explanation, or the others need to be revised, for the purposes of consistency.

9.15.115 Sections 8.2.25 and 8.2.26 describe the effects of the scheme upon features (1087 and 1055) resulting in a moderate and large adverse significance of effect. However, the value of these features is not discussed in preceding sections in order to understand how these

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significances of effect have been arrived at. Nevertheless this site is of high value and should be avoided in the construction phase and the route of the cable moved to avoid it.

9.15.116 Section 8.2.30 describes the setting of several scheduled prehistoric cairnfields and concludes that their settings 'do not extend as far as the project infrastructure'. Further articulation of this argument is necessary, such as reference to the local topography blocking views towards the Project infrastructure, or views westward from the monuments not forming an important aspect of their setting. Distance is not considered to be a valid reason why the settings of these assets are unaffected.

9.15.117 Sections 8.2.32 and 8.2.33 describe the effects of the scheme on SM18. It is considered that this assessment should be revisited owing to the complex series of changes to the asset's surroundings that are proposed. Further articulation of the significance of the asset and its relationship with the scheduled stones circles (SM19, SM119 and SM120) to its east side is needed. Further description of the local topography and character of key views is needed, together with an understanding of how the present 132kV line contributes or detracts from this. An assessment of the Cable Sealing End Compound is needed and articulation of the fact that the proposed 400kV pylons will be closer in the view than the existing 132kV is also required. Once these aspects have been discussed the assessment of effects should be reconsidered. This site is a good candidate for a photomontage. It is noted from Figure 7.2.9 that viewpoint E1-511 is in the wider vicinity of the circle. Whilst this may provide an approximation of the view from the scheduled monument National Grid may wish to consider the addition of a photomontage to address this asset in particular.

9.15.118 Sections 8.2.37-8.2.39 details the effects upon a number of Listed Buildings resulting in slight beneficial significance of the effects. The effects matrix allows a choice of neutral and slight beneficial for these assets and the reason for the choice of slight beneficial over neutral needs to be articulated further.

Subsection E1 – Silecroft to Arnaby

9.15.119 Section 8.3.27 of the PEI describes the construction phase effects upon Millom Castle deer park (1016). The value of this asset is not described in the preceding section, therefore it is not possible to ascertain if the stated significance of effect is appropriate.

9.15.120 Section 8.3.29 is confusing as to whether the pit feature (2540) is extant, or whether the construction of the existing pylon has destroyed it

9.15.121 Sections 8.3.32 and 8.3.33 describe the effects of the scheme on several scheduled stone circles (SM19, SM118, SM119 and SM120). It is considered that this assessment should be revisited owing to the complex series of changes to the assets' surroundings that are proposed. Further articulation of the significance of the assets and their relationship with the scheduled stones circle at Kirksanton (SM18) to their west side is needed. Further description of the local topography and character of key views is needed, together with an understanding of how the present 132kV line contributes/detracts from this. Views of the assets from the surrounding area are not discussed except in relation to SM18. An

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assessment of the Cable Sealing End Compound is needed and articulation of the fact that the proposed 400kV pylons will be closer in the view than the existing 132kV is also required. The reference to the wooden pole 132kV line being less visually intrusive than a lattice pylon line is irrelevant as no lattice pylon line is present in that location, nor is one being proposed. The effects of the wood pole line should be fully articulated, even with this inbuilt design mitigation. Once these aspects have been discussed the assessment of effects should be reconsidered. This site is a good candidate for a photomontage. It is noted from Figure 7.2.9 that viewpoint E1-501 is in the wider vicinity of the monuments. Whilst this may provide an approximation of the view from the scheduled monuments, National Grid may wish to consider the addition of a viewpoint to address this asset in particular.

9.15.122 Section 8.3.34 describes the effects of the scheme on SM104, SM244 and SM245. Further information on the setting of these assets is necessary, particularly on the importance, or otherwise, of views south-eastwards towards the Project infrastructure. It is not considered that the argument presented in this Section provides enough information with which to determine the effects of the scheme

9.15.123 Sections 8.3.35 and 8.3.36 describe the effects of the proposal upon SM20. The assessment states that there is a likely connection between the SM and lower level settlement to the north, but later states that the proposed 400kV line, to the north of the asset, will have no impact upon the asset's setting. This section requires clarification.

9.15.124 Section 8.3.38 outlines the effect of the scheme upon the Church of Holy Trinity (LB271) and Millom Castle (SM74). The minor predicted magnitude of effect could result in either moderate or slight significance of effect to these high level assets and the assessment reports this as a slight significance of effect. Given the importance of this distinction in terms of what constitutes a significant effect in EIA terms and what triggers mitigation within the adopted assessment methodology, further articulation as to why a slight significance of effect is reported, as opposed to a moderate significance of effect, is needed. There is also no reference to the proposed 400kV line in relation to these monuments and the potential effects of that part of the scheme on their significance. There is also no assessment of operational effects on Millom Castle deer park (1016).

9.15.125 Sections 8.3.51 and 8.3.52 assess the landscape-scale effects of the scheme upon the LDNP WHS (WHS2) and the Dunnerdale and Broughton Low Fells character area. Neither assessment includes the effects of the additional wooden pole 132kV.

9.15.126 Section 8.3.52 may require revision if the value of the asset changes in response to comments made in Section 2.2.24 of this response.

Section by section description – Subsection E2

9.15.127 Section 8.4.41 of the PEI describes the effects of the scheme upon SM239. Further information on the local topography in the vicinity of this asset is necessary, together with a statement as to why views along the valley side south-west towards the Project infrastructure are not considered to be important to the asset.

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- 9.15.128 Section 8.4.42 describes the effects of the scheme on SM103. This states that views from the monument over the Duddon Estuary are part of its setting. Consideration should be given to increasing the assessed level of harm caused by the scheme since the views towards the Duddon Estuary will have 400kV larger and closer in the view than the existing 132kV line to be removed, as well as the wooden pole line with a point where the two lines cross. This concentration of Project infrastructure needs to be assessed fully in relation to views of and from the monument.
- 9.15.129 Section 8.4.44 describes the effects of the scheme on LB305. Given the site's early history as a peel tower the importance of views from the monument of the surrounding landscape should be articulated and will form part of its setting regardless of public access. This assessment should be revisited and the levels adjusted accordingly if necessary.
- 9.15.130 Section 8.4.46 outlines the effect of the scheme upon the Kirby Hall (LB272). The minor predicted magnitude of effect could result in either moderate or slight significance of effect to this high level asset and the assessment reports this as a slight significance of effect. Given the importance of this distinction in terms of what constitutes a significant effect in EIA terms and what triggers mitigation within the adopted assessment methodology, further articulation as to why a slight significance of effect is reported, as opposed to a moderate significance of effect, is needed.
- 9.15.131 Section 8.4.47 outlines the effect of the scheme upon the Church of St Cuthbert (LB268). The minor predicted magnitude of effect could result in either moderate or slight significance of effect to this high level asset and the assessment reports this as a slight significance of effect. Given the importance of this distinction in terms of what constitutes a significant effect in EIA terms and what triggers mitigation within the adopted assessment methodology, further articulation as to why a slight significance of effect is reported, as opposed to a moderate significance of effect, is needed.
- 9.15.132 Section 8.4.49 describes the neutral effect of the scheme upon a large number of listed buildings. Whilst the majority are probably correct, the ES should provide more information with which to ascertain whether the assessed level of effect is correct. It is considered that further consideration should be given to potential effects to the road bridge (LB306 and LB307) given the sensitivity of these Listed Buildings to change of their access arrangements and surrounding roads, the impact of the new route shown on the access plan should be considered.
- 9.15.133 Section 8.4.51 discusses the effects of the scheme on Angerton Farmhouse and barn (LB275) as moderate adverse, however, this effect is reported in Volume 2.8.8 as moderate to large adverse. These effects need to be consistent throughout the assessment and if the assessed level is borderline, full articulation of the reasons for choosing a particular effect level will need to be included in the ES.
- 9.15.134 Section 8.4.53 discusses the effects of the scheme on Marsh Grange Farmhouse (LB263) as moderate adverse, however, this effect is reported in Volume 2.8.8 as large adverse. These effects need to be consistent throughout the assessment and if the assessed level is

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borderline, full articulation of the reasons for choosing a particular effect level will need to be included in the ES.

9.15.135 Section 4.4.54 describes the effect of scheme upon High Haume Farmhouse as a neutral significance of effect. It is our view that slight adverse is more appropriate due to the combined effects of two lines affecting this asset.

9.15.136 Section 8.4.58 describes the effects of the scheme of the setting of Ireleth Conservation Area. It is considered that more information is needed on the character of views in the direction of the proposed project infrastructure from within the conservation area and their contribution to its significance, before an assessment of no change can be accepted. Mapped topography suggests the Project infrastructure may be a skyline feature in this area.

9.15.137 Sections 8.4.60 and 8.4.61 assess the landscape-scale effects of the scheme upon the LDNP WHS (WHS2) and the Dunnerdale and Broughton Low Fells character area. Neither assessment includes the effects of the additional wooden pole 132kV.

Subsection H1 – Lindal in Furness to MHW at Morecambe Bay

9.15.138 Section 8.5.36 of the PEI describes the construction phase effects upon a non-designated sub-rectangular enclosure (531). As the preservation of the asset is unknown this should be a target area for further investigation to establish the baseline conditions in this area, and reliably assess the effects of the scheme.

9.15.139 Section 8.5.38 reports a slight adverse significance of effect of the scheme upon a non-designated lime kiln (843). Justification should be provided in that case as to why slight adverse was selected as opposed to moderate adverse in this case.

9.15.140 Section 8.5.41 describes the effects upon lynchets and possible ridge and furrow (298), but notes that the extent of these features is not known. This should be a target area for further investigation to establish the baseline conditions in this area, and reliably assess the effects of the scheme.

9.15.141 Section 8.5.45 describes the effects of the scheme upon non-designated circular earthwork features (497), but notes that the location of these features is not precise. Further research into establishing the location and extent of these features should be a target for further work in establishing a reliable baseline for assessment.

9.15.142 Section 8.5.50 describes the effects of the scheme upon SM9 and SM10. Further information is required as to why views west from the monuments are not considered to form part of the assets' settings.

9.15.143 Section 8.5.55 describes the effects of the scheme upon Dalton Castle (SM3). It describes the proposed development as consisting of the removal of two 132kV lines and their replacement with a 400kV line, however, Figure 8.1.21 indicates that one 132kV line is to be

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removed and the other is to be 'realigned'. Given this discrepancy between the Project design and the assessment, as well as the potential for skylining and concentration of infrastructure in this view, the assessment of the impact of the scheme upon Dalton Castle should be revisited.

9.15.144 Section 8.5.57 describes the effects of the scheme upon Gleaston Castle (SM3), but the assessment is unclear regarding whether or not the project infrastructure will be visible in views from the castle or not.

9.15.145 Section 8.5.59 assesses the effect of the scheme on Piel Castle (SM117), but does not include an assessment of the potential impact of the proposed tunnel islet within Morecambe Bay on the setting of this coastal asset. Whilst this is unlikely to result in a significant effect there needs to be clear articulation that the potential effects of the islet have been considered within the assessment.

9.15.146 Section 8.5.73 describes the effects of the scheme upon Dalton Conservation Area (CA17). Whilst the project infrastructure will be outside the Conservation Area, as stated, the proposed 400kV pylons will be present in a key view from the castle east down the main street. No assessment of views within the Conservation Area is provided, but this view is one by which the Conservation Area, its topography and its buildings can be appreciated. This view also therefore forms part of the setting of many of the town's listed buildings, assessed in Sections 8.5.72 and 8.5.100 of Volume 2.5, Chapter 8, therefore the assessment of the settings of these buildings will also require re-examination.

9.15.147 Section 8.5.81 describes the effects of the scheme upon Stainton Old Hall (LB155). It describes the Proposed Development as consisting of the removal of two 132kV lines and their replacement with a 400kV line, however, Figure 8.1.21 indicates that one 132kV line is to be removed and the other is to be 'realigned'. Given this discrepancy between the project design and the assessment, the assessment of the impact of the scheme upon Stainton Old Hall should be revisited. The assessment also notes that the Project will be 550m away from the asset, but does not state in which direction. Given that the land to the south is noted as a key part of the setting of the asset, the direction of the project infrastructure should be articulated.

9.15.148 Section 8.5.90 assesses the effects of the scheme upon Listed Buildings in Roosecote. This states that the removal of one of the existing 132kV lines would be beneficial, but that its replacement with the larger 400kV line would be no change. Even with the 400kV line being located further to the south of the existing 132kV line, the assessment of no change does not seem appropriate. The existing lines in this location are a detracting feature in the setting of these listed buildings and the new lines will compound the problem by introducing more detracting features in the form of larger pylons and potentially also the sub-station to the south-west. This location would be a good candidate for a photomontage, although no such viewpoint is proposed in Figure 7.2.11. National Grid may wish to consider the addition of a photomontage specifically in relation to this asset.

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9.15.149 Section 8.5.91 assesses the effects of the scheme upon LB41, but does not name the asset or provide any information of its type. This information should be provided within the assessment paragraph.

9.15.150 Section 8.5.97 assesses the effect of the scheme on Walney lighthouse and cottages (LB725), but does not include an assessment of the potential impact of the proposed tunnel islet within Morecambe Bay on the setting of this coastal asset. Whilst this is unlikely to result in a significant effect there needs to be clear articulation that the potential effects of the islet have been considered within the assessment.

Subsection H2 – Morecambe Bay

9.15.151 Section 8.6.22 of the PEI assesses the effect of the scheme on the leading light at Rampside (LB27), but does not include an assessment of the potential impact of the proposed tunnel islet within Morecambe Bay on the setting of this coastal asset. Whilst this is unlikely to result in a significant effect there needs to be clear articulation that the potential effects of the islet have been considered within the assessment.

Subsection H3 – MHW at Morecambe Bay to Middleton Substation

9.15.152 Section 8.7.38 of the PEI assesses the effect of the scheme on St Patrick's chapel and graveyard in Heysham (SM2). It notes the headland setting of this asset, but does not include an assessment of the potential impact of the proposed tunnel islet within Morecambe Bay on its setting. Whilst this is unlikely to result in a significant effect there needs to be clear articulation that the potential effects of the islet have been considered within the assessment.

9.15.153 Section 8.7.53 assessed the effect of the scheme on Glasson Dock and notes its relationship with the North Sea. This should read Irish Sea.

Section by section description – Subsection Natland

9.15.154 Section 8.8.29 of the PEI states there will be no construction phase impacts upon the non-designated field system and Roman road (2559) due to the asset lying on the eastern boundary of the DOL. The asset is represented by a location point on Figure 8.3.25 which provides no detail regarding the extent of the asset in relation to the proposed development. Further investigation of this asset is necessary in order ascertain its extent before the construction phase impacts upon it can be assessed. The relationship between this asset and Watercrock Roman fort and civil settlement (SM284) should also be considered in relation to the value and setting of both. Any relationship between the fort and the road is not articulated in Section 8.8.34 where the setting of the fort is discussed. This concludes that the Project infrastructure lies beyond the fort's setting, but if the road is included as part of its setting, then the Proposed Development lies between the fort and the road.

9.15.155 Sections 8.8.45 and 8.8.50 discusses the effects of the scheme on Sedgewick gunpowder works scheduled monument and listed buildings (SM290, LB1019, LB1020, LB1021). It

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describes the setting, but does not make reference to the river running along the eastern side of the site as forming part of the setting or contributing to the assets' significance. The lack of statements of significance for the assets, or any form of description of the gunpowder works and its buildings, means that any relationship with the river for the functional purposes of power or transport for the works cannot be ruled out. Including the river in the assets' settings, particularly in the case of river transport, means that it would form part of approach to and from the monument, having the effect of increasing the extent of the assets' settings and potentially resulting in impacts from project infrastructure in views on approach to the assets. This assessment should be revisited to either include or rule out the river setting.

9.15.156 Section 8.8.47 discusses two listed buildings located just outside the settlement of Natland. The locations of these buildings are obscured by text on all of the accompanying figures. The figures need to be revised in order to clearly show the location of these assets. These assets are very close to the proposed infrastructure (280m away), and as farmhouses their rural setting will contribute to their significance. Therefore the assessment should provide further justification of the assessed magnitude of effect of no change.

9.16 Commentary on Proposed Mitigation

9.16.1 It is not considered that the mitigation measures have been articulated in such a way within the chapter to be able to comment extensively on these as separate points (Design Mitigation, Good Practice Mitigation and Bespoke Mitigation).

9.16.2 The PEI Report assessment on non-designated archaeological assets is considered to be deficient in a number of key areas that have been outlined in sections 9.9, 9.10, and 9.13 above, and so the mitigation measures proposed, that are based on the assessment, are also flawed with the current lack of information.

9.17 Design Mitigation

9.17.1 We welcome the approach to trying to incorporate design mitigation where possible and acknowledge significant effort has been undertaken to include this at an appropriate stage.

9.17.2 Within the assessment in Volume 2.5, Chapter 8 of the PEI, the requirement for mitigation is only triggered when the scheme will result in moderate adverse effects or worse. This neglects slight adverse effects which, although not significant in EIA terms, would result in 'less than substantial harm' to heritage in NPPF terms. The methodology prescribed in *HE GPA 3 Setting of Heritage Assets* which is being followed throughout the assessment, as stated in Section 8.6.2 of Volume 2.2, Chapter 8, has a fourth step involving maximising benefits and minimising harm. There is therefore a responsibility to minimise harm, at any level, to heritage assets as part of a proposed scheme. The information submitted as part of the PEI fails to demonstrate that the proposal does this. Micro-siting of project infrastructure would go some way towards minimising harm, however there are no

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instances discussed where micro-siting has taken place, despite it being listed as a mitigation measure in Table 8.6 in Volume 2.2, Chapter 8.

- 9.17.3 Section 8.3.24 of Volume 2.3, Chapter 8, discusses mitigation of the construction phase effects on the LDNP WHS (WHS2). It states that the effects of the scheme reduce to neutral if assets are 'avoided or reinstated'. Reinstatement is not necessarily considered to be an adequate mitigation measure for heritage features. Detailed rationale and designs for the proposed reinstatement would be required before this could become an agreed mitigation measure, and only in areas where this would be deemed an appropriate response to the impacts of the scheme.
- 9.17.4 We welcome the inclusion of lower height lattice pylons around the Grade II listed Aikhead Hall (LB490) and Clay House (LB491).
- 9.17.5 We recognise the avoidance of as many assets as possible.
- 9.17.6 Very limited design mitigation is proposed at this stage because many of the known non-designated archaeological assets along the route have been avoided.
- 9.17.7 *Section A2* - HER 1188 – St Bees Stone. There is agreement with the proposed mitigation to either protect the stone from harm during development construction or relocate it under archaeological supervision.

9.18 Good Practice Mitigation

- 9.18.1 In general proposed mitigation is acceptable, however, there is no detail provided in order to determine if the measures to be implemented are appropriate and in accordance with Best Practice standards (e.g. CIFA and Historic England guidance).
- 9.18.2 The completion of some evaluation work and further surveys are listed under the mitigation for construction. However, these works will need to be undertaken prior to the construction of the Proposed Development.
- 9.18.3 It is acknowledged that further investigation of the non-designated archaeological resource in areas where undergrounding is proposed is proposed or ongoing. This is welcomed. An appropriate scheme of mitigation of construction phase effects, in the form of archaeological investigation will be necessary in these areas, as proposed in Volume 2.4, Chapter 8. The completion of some evaluation work and further surveys are listed under the mitigation for construction. However, these works will need to be undertaken prior to the construction of the Proposed Development.
- 9.18.4 We recommend that the detail of draft Written Schemes of Investigation and Method Statements are consulted upon with the statutory consultees prior to their implementation.

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- 9.18.5 The preliminary nature of the PEI, which does not include archaeological fieldwork, means that proposed mitigation is largely non-asset specific at this stage. There is agreement with the inclusion of the generic statement in the PEI regarding the potential for unknown assets to survive and so an appropriate level of assessment and mitigation will be proposed in the ES to investigate and record assets discovered before or during construction. The details of this mitigation can only be scoped when the archaeological fieldwork has been completed.
- 9.18.6 Notwithstanding this, given that it is considered there is a high potential for palaeo-environmental remains to survive in the Duddon valley area, the proposed railway compounds in Section E2 have a high potential to impact on such remains. The PEI should recommend appropriate targeted specialist investigation and analysis of palaeo-environmental remains within the areas of the compounds and also recommend appropriate mitigation measures to record any remains revealed.

9.19 Bespoke Mitigation

North

- 9.19.1 We welcome planting around the Grade II listed Aikhead Hall (LB490), Clay House (LB491) and Parton Hall (LB506).
- 9.19.2 We welcome the avoidance or recording and relocation of the hogbacked stone (1565). This is deemed to be appropriate providing a suitably detailed method statement is agreed in advance.

South

- 9.19.3 We welcome the proposed planting in relation to LB263, LB262 and LB275.
- 9.19.4 The proposed reinstatement of ridge and furrow remains to their original profile following undergrounding of a 132 kV cable for non-designated features 345, 298 and 703, within Subsection H1, is welcomed.
- 9.19.5 Palaeoenviromental sampling and recording will need to be undertaken in relation to the construction of the islet within Morecambe Bay. A review of geotechnical information should be undertaken as part of the data gathering exercise to provide a reliable baseline for assessment in this area. The WSI for marine archaeology should be included in the CoCP.

9.20 Other Effects

9.21 Commentary on Residual Effects

- 9.21.1 This is discussed in individual sections above where appropriate. In general the only assessments where there may be issues with residual effects is where there are issues with the original assessment of construction/operation effects.
- 9.21.2 In some cases the assessment of the residual effects of the scheme, following mitigation in the form of the excavation of buried non-designated assets, states that the construction phase effects can be reduced to minor, or no change e.g. Section 8.1.91 of Volume 2.5, Chapter 8. No change is not considered to be appropriate in this instance, since the asset will no longer be extant. No change is described within Table 8.4 in Volume 2.2, Chapter 8 as no change to archaeological assets'. The resultant significance of effect should also be adjusted to reflect this. The significance of effect calculated also generally relies upon non-designated buried archaeological remains being of low to medium value. This is probably appropriate in most cases, however assets that contribute to the OUV of WHS1 and WHS2 or are demonstrably equivalent in significance to Scheduled Monuments may have a higher value than this and this should be assessed on a case by case basis
- 9.21.3 Section 8.1.92 of Volume 2.5, Chapter 8 requires reworking as the overall assessment is both adverse and beneficial, yet the section draws out the beneficial effects only and only in relation to certain assets.
- 9.21.4 Section 8.3.26 of Volume 2.3, Chapter 8 discusses the residual effects of the whole project upon the overall LDNP WHS (WHS2). This section may need to be revised following advice provided in Section 4.2.15-19 of this response. Regardless, more detail and justification for the balancing of beneficial and adverse effects needs to be provided. Considering the slight adverse setting effects, and slight adverse physical effects (following mitigation), the assessment of the scheme as a whole as slight beneficial does not seem justified, particularly if the assessed moderate beneficial effect of removing the 132kV is revised. Similarly the summary effects of the scheme may need to be revised in Section 8.3.2 of the same volume.
- 9.21.5 Section 8.6.26 of Volume 2.5, Chapter 8, discusses the residual effects from construction on marine heritage assets and states that the residual effects would be neutral. Such a statement would rely upon the project team having the ability to fully record assets such as wreck sites encountered within the development area. This may not be feasible due to depth or the method of construction, so this residual effect should be more cautious to reflect this uncertainty.

9.22 Commentary on Approach to Inter-Relationship Effects

- 9.22.1 The list of topics included in Volume 2.2 is appropriate but this has not been addressed within the PEI.
- 9.22.2 Additive effects do not appear to be addressed in the PEI and should be included in the ES, possibly in discussion of project wide effects with particular consideration of non-designated assets and Historic Landscape Character Areas.

9.23 Commentary on Cumulative effects

- 9.23.1 An initial assessment of the cumulative effects appears to be appropriate for the few which have been assessed. It is anticipated that a much fuller list will be assessed at the ES stage and will be more detailed for a more robust assessment.
- 9.23.2 This response does not comment on whether the projects selected for the cumulative assessment are appropriate

9.24 Key issues/Gaps Requiring Further Assessment

- 9.24.1 Proportionate Statements of Significance are required where appropriate in the detailed assessment provided in the ES chapter.
- 9.24.2 The provision of baseline information and further surveys will be required in order to inform an initial assessment.
- 9.24.3 The key issue is the absence of the consultation of the sources listed in PEI paragraph 2.2.1. This has led to known non-designated assets that lie within the draft order limit boundary not being included in the PEI. As a result, the PEI's historic environment assessment on non-designated assets is currently not fit for purpose. It is advised that all of the sources listed in PEI paragraph 2.2.1 are consulted as soon as possible and the historic environment data updated and amended so that an appropriate level of assessment on the known non-designated assets can be undertaken and provided.
- 9.24.4 Other elements of the PEI that require further assessment are:
- all non-designated archaeological assets that lie partially or wholly within the draft order limit boundary should be subject to an impact assessment and the results clearly provided in a table showing whether they are physically impacted or not, the scope of impact and the effect on the asset;
 - all non-designated archaeological assets that are located within 200 metres of the draft order limit boundary should be assessed to determine whether they extend within the development area and will be impacted upon by the development; and,

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- the assessment of the significance of prehistoric flint finds should be reassessed to take in to account their potential to reflect buried prehistoric archaeological assets that are currently of unknown significance. The flint finds should not be dismissed at this stage as being of low value.

9.25 Commentary on Potential Effects Not Requiring Further Assessment

- 9.25.1 Neutral effects should be included within an appendix in the ES. These could be incorporated into a Statement of Common Ground following consultation.
- 9.25.2 Otherwise no other areas have been proposed to be scoped out by National Grid.

9.26 Detailed additional Comments on South Lakeland

Introduction

- 9.26.1 Field evaluation was undertaken on the 10th and 15th November 2016 when twelve listed building heritage asset receptor sites within South Lakeland were examined, excluding those assets within the Lake District National Park. For each asset an assessment of the contribution made by the setting of each asset to its particular significance; as well as an evaluation of the potential impact that would occur upon that significance from the proposed development was made. The Ulverston Conservation Area, whose western boundary is located 4km away from the nearest pylon that is proposed as also examined and I can confirm that no harm would occur to the Ulverston Conservation Area.
- 9.26.2 The following analysis closely follows the advice contained in Section 4 of the Historic Environment Good Practice Advice In Planning Note 3 - The Setting of Heritage Assets (Historic England, March 2015), (GPA 3), which deals with assessing the implications of change by looking at how and to what degree the setting makes a contribution to the significance of individual heritage assets; while considering the effects that a proposed development, whether beneficial neutral, or harmful, will have on the asset's significance.
- 9.26.3 The GPA 3 recommends a five step approach to assessing impacts that might affect setting:
- Step 1: identify which heritage assets and their settings are affected;
 - Step 2: assess whether, how and to what degree these settings make a contribution to the significance of the heritage asset(s);
 - Step 3: assess the effects of the proposed development, whether beneficial or harmful, on that significance;
 - Step 4: explore the way maximising enhancement and avoiding or minimising harm; and,
 - Step 5: make and document the decision and monitor outcomes.

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- 9.26.4 As additional information has not been received it is necessarily to adopt the 'precautionary principle' or approach. This identifies that when managing risk, it is the responsibility of the developer or proposer to establish that any risks associated with the proposed activity will not (or are very unlikely to) result in significant harm. However, in terms of the council's assessment, it also means that the PPA Group must exercise caution over any potential impact, with the consequence that the probable impacts of the proposal upon the heritage asset significance of these designated buildings has necessarily been slightly overstated in order to introduce a margin of safety.
- 9.26.5 This recent document notes that while the consideration of setting is necessarily a matter of informed judgement, the aim of the guidance is to assist effective and timely decision-making by ensuring it takes place within a clear framework and is as transparent and consistent as possible. The council's evaluation therefore consists primarily of view analysis but, in the light of the above guidance, it needs to be made clear that we the PPA Group recognise that any effects must be significant ones; and that simply being able to see any of the pylons or associated infrastructure from receptor sites would not necessary mean that a harmful impact would result
- 9.26.6 The above approach has been employed for each of the sites assessed in order to give structure to the response, but Steps 1 and 2 have been combined, and Step 5 omitted as being not relevant to this proposed development.

SAND GAP FARMHOUSE, FOXFIELD (LB280)

The Contribution that Setting Makes to Heritage Asset Significance

- 9.26.7 Sand Gap farmhouse dates to the later C17th. Originally a farmhouse with a late C18th combination barn attached to its west end, the latter was converted to domestic accommodation in the 1990s, when a larger detached barn to the north west was also converted.
- 9.26.8 The immediate setting of the listed farmhouse now consists of a moderately sized garden to the south containing small trees and edged by mature planting; and a large tarmacked area for car parking to the north. Open pasture fields bound the property to the east while the western boundary is formed by the A595 trunk road. Approximately 150 metres to the south west a modern industrial estate contains large footprint buildings that exhibit weak design characteristics and which now constrain the setting of the listed building in this direction. A short way beyond is existing Pylon number AF38 which supports the 132kV OHL as it turns more south easterly, and which is visible in views out from the listed building.
- 9.26.9 While historically the setting of this farmhouse probably consisted of agricultural land on both sides of the trunk road, today, due to its reduced domestic status it now primarily consists of the garden and larger field to the south side, and the broader pastoral setting with more extensive outward views to the eastern and north eastern sides. The existing 133 kV OHL route slightly compromises this setting in outward views from the listed building but its impact is felt to be only slightly harmful due to the presence of screening by trees

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and other vegetation, and by the negative presence of the modern estate in the mid distance.

The Impact of the Proposed Development on the Listed Building's Heritage Asset Significance

9.26.10 No visual information or analysis is supplied with the application in connection with this listed building. However, it is clear that the impacts will primarily consist of the introduction of a substantially taller 400kV OHL with a pylon (MR-01-117A) that will be more prominent in views out from the listed building to the south. In addition a new 132kV OHL alignment on wooden trident poles will be introduced to the east and north east of the asset, with the closest pole being only 170m from the listed building on gently rising ground. Six of these poles will nominally be visible in views directly out from the listed building, while poles LM141-144 will be conspicuous new additions to the landscape setting of the listed building in views from the A595 to the south west, from where they will be seen as moderately intrusive elements to the east and north east of the listed building. These poles would not be as tall or as visually intrusive as the alternative higher metal lattice pylons but their closer spacing and their clear proximity to the listed building, together with their proposed location on higher ground means that their appearance will have a transformative impact on the landscape setting of this listed building in views of the asset from the south.

9.26.11 It is concluded that the combined impact of these two new OHL routes and associated pylons would be to introduce more than slight harm to the setting of this listed building – the impact of the new 132kV pylons to the side and rear of the property being more intrusive than the single 400kV pylon to the south.

9.26.12 No information is supplied on how the proposed construction compound to the south will be designed or will appear, and so it is not possible to determine what affect this would have on the setting of the listed building.

Possible Mitigation Measures to ensure the maximisation of enhancement and the avoiding or minimising of harm

9.26.13 Possible rerouting of the 132kV line further to the north east or the undergrounding of the route from poles LM40 – 148.

ANGERTON FARMHOUSE AND BARN, FOXFIELD (LB275)

The Contribution that Setting Makes to Heritage Asset Significance

9.26.14 This C17th grade II listed building was derelict at the time of its listing in 1970 and since then all of its roof and the majority of its external walls have collapsed, so that only the attached C19th southern barn and the north gable of the house now survive. These are set within a compact farmstead of the later C19th, and some more modern farm buildings. This area formed part of the extra-parochial lands of Angerton Moss that from 1299 belonged to Furness Abbey; and its tidal marshes were central to fishing, sheep rearing and especially

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ancient turbarry (peat cutting) rights before Angerton Moss was improved by “raising up and making more firm” in the 1550s: Angerton presumably being established as a post dissolution farm after the marsh was partly drained and enclosed.

- 9.26.15 The farmhouse was carefully positioned in a shallow cleft within a slightly raised sandstone knoll some 3m above the tidal flood reach of the Duddon estuary; and is approached by a long, low lying access track across the marsh that is subject to flooding, so that the farmstead frequently becomes stranded in its watery marshland setting. This very extensive, flat, marshland setting and the distant backcloth of tall hills on three sides is an extremely attractive landscape, and crucial to the listed building’s very distinctive estuarine/pastoral setting. However, while views that take in the former farmhouse within the foreground of this broad setting are available from on top of the adjoining knoll, outward and inward views directly of or from the listed building itself are much more limited, being confined to just a single narrow vista to the north. Mature trees on top of the knoll further restrict outward views so that the existing 132kV OHL and pylons 400m away to the north east are largely invisible, although a 11kV pole and cul-de-sac OHL are an obvious feature on top of the knoll immediately to the north east off the listed building.

The Impact of the Proposed Development on the Listed Building’s Heritage Asset Significance

- 9.26.16 The new 400kV OHL and its sequence of taller lattice pylons would be positioned much closer to the listed building at a nearest distance of 250m, while the new run of 132kV OHL on wooden poles would be set at only 140m away and would seem to crest the eastern edge of the adjoining knoll. The lack of any supplied visual information means that assessing a true impact is difficult to evaluate but it seems likely that the wooden poles LM 122 & 123 and the bulky terminal pylon LM124, along with the tall pylon MR-01-123 would become visually distracting features in views that take in the listed building and its setting from the slopes of the knoll to the south west of the listed building; and from the PROW that runs through the farmstead. Some screening by landform and by nearby trees would occur so that the pylons would probably have an intrusive but not an intensely physically domineering presence in views out from the listed building itself; but, given the generally flat surrounding topography and the visual focus that this group provides within that broad and expansive landscape, they would undoubtedly have a highly intrusive and visually damaging presence in numerous views towards the group that would severely affect our perception and appreciation of the remote nature of this historic farmstead. It is considered that the combined impact of the development on the significance of this heritage asset would be more than moderately adverse.

Possible Mitigation Measures to ensure the maximisation of enhancement and the avoiding or minimising of harm

- 9.26.17 Continue the underground routing of the 132kV line from LM 124 to LM120. Rerouting the 400kV OHL further east to the side of the existing, and to be removed, 132kV line.

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KIRKBY HALL, KIRKBY IRELETH (LB272)

The Contribution that Setting Makes to Heritage Asset Significance

- 9.26.18 Kirkby Hall is listed Grade I, the highest category of listing; a classification that amounts to just 2.5% of the most important listed buildings in England and Wales. Its significance is established by its important origins as an early manor house in the C15th, from which period the east wing is preserved; along with a later west wing with a concealed chapel of c.1530. The plan and form of the building are of great interest along with the massive axial and projecting chimneystacks and range of early fenestration. Internally, very important wall paintings and plasterwork survive along with carved stone fireplaces. For these reasons it has a very high aesthetic value.
- 9.26.19 The hall is located on a very narrow strip of workable fertile land between the high moorland ridge that includes Kirkby Moor and Lowick High Common to the east; and the broad expanse of the Duddon estuary to the west. The hall has a short formal entrance drive that is formally emphasised with an avenue of mature trees, and which continues on beyond the A595 road as Marsh Lane, which terminates after 200 metres at a navigable river channel (Kirkby Pool) that may well have afforded a landing or beaching point; and which may have given the hall an additional, strategic, maritime communications importance prior to modern improvements in road and rail transport.
- 9.26.20 A stone cross and market are reputed to have been positioned by the entrance to the hall in the medieval period, which would further reinforce its historical, social and evidential importance in the medieval period, when the hall's visually striking frontage and roofscape would have had a more solitary and authoritative presence in the landscape. The Hall's location and commanding landscape setting is thus a very significant aspect of its heritage asset significance, especially in views from and towards it from the south west.
- 9.26.21 The Hall became part of the Cavendish family estate in 1771 and had links with the nearby Burlington slate quarries in the C18th. In the C19th a short minerals railway line – 'The Long Incline' – was created to access the slate quarries on Kirkby Moor, and this passed a short way to the south and east of the Hall, though this is now disused and does not have a major visual presence in views from the Hall today. The house is now part of a working farm having slipped down the social hierarchy in the post medieval period.
- 9.26.22 The adjacent farmstead appears now to be entirely post medieval and consists of a loose and informal rectangular yard edged by traditionally constructed stone and slate farm buildings: small and low in scale to the immediate east of the hall; but larger, taller and more prominent to the south east and east. A series of moderately small garths enclosed by drystone walls with distinctive inclined slate copings are set to the south west of the farmstead. To the north east larger open pasture fields rise up to a long shallow belt of trees alongside the former railway line; and historically the hall's farmland continued on the western side of the modern A595 road to reach the marsh edge, although some of this was built on to form the Marsh Lane row of housing in the mid C19th. These agricultural fields and boundaries, the formal and informal tree planting and the steeply uprising edge of the rugged moor form a distinctive backcloth to the Hall in views from the south and west, and

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give the hall a distinctive rural setting, but one detrimentally fringed by the legacy of industrial activity; while the aspect to the south west is more open, though filtered by the avenue of trees that fronts the hall.

The Impact of the Proposed Development on the Listed Building's Heritage Asset Significance

- 9.26.23 The lack of any supplied visual information means that assessing the true impact is difficult, and that without graphically informed view analysis, it is uncertain how much of the Trident Terminal Pylon LM92 will be visible in views out from the listed building, or in views towards it from the west end of Marsh Lane. The proposed LM 93 132kV wooden pole would be in relatively close proximity to the listed building at 375m, and certainly very much closer than the current 132kV OHL, but views of it would be partly filtered by the avenue of trees in front of the house at certain times of the year. However, the mostly uninterrupted view of the listed building from the west end of Marsh Lane would be adversely affected by the positioning of this pole and OHL in the foreground landscape, and possibly by the more oblique location of the bulkier terminal pylon LM92 to the right in such views.
- 9.26.24 The upper part of the existing 132kV pylon AF27 is partly visible in views out from the listed building but the new 400kV pylon MR-01-130 would be much taller and placed slightly closer to the listed building at 575m, though in a more oblique alignment, but it still has the potential for a greater impact in such an aspect.
- 9.26.25 It is judged that the impact of the proposal on the special interest of this listed building would likely be more than slightly adverse but probably just less than moderately so.

Possible Mitigation Measures to ensure the maximisation of enhancement and the avoiding or minimising of harm

- 9.26.26 Continuing the proposed undergrounding of the 132kV route from LM92 to LM95

THE CHURCH OF ST CUTHBERT, BECK SIDE

The Contribution that Setting Makes to Heritage Asset Significance

- 9.26.27 This church has reputed origins as a chantry or private chapel, possibly established by the benefactor Alexander de Kirkby, who, in the mid C13th is said to have conveyed a church and land here to Furness Abbey. However, the parish name 'Ireleth' is of Norse/Gaelic origin and its Kirkby prefix may indicate that a church existed here before the conquest, although, significantly, no clear mention is found in the Domesday Book for either a church or a settlement here. A church at Beckside is first documented in 1190 and although substantially restored in 1881 and 1884, it retains a pointed doorway and some windows dateable to c.1170; and a nave and chancel with C16th detailing. The current two stage tower is of 1829, although the embattled top was only formed in 1903. It is listed Grade II*, a category that accounts for only 5.5% of all listed buildings in England and Wales.

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- 9.26.28 The church is located on the south west edge of a small settlement formed along the north side of Soutergate Beck, on a road that leads over the moors to Ulverston; and, like a number of other villages in the parish, it is located just inland on higher ground above the flood waters of the Duddon estuary, which gave it a strategic significance in the medieval period. As well as the early Medieval Church the village also has a reputed C16th water mill, and a later weir survives above Kirkby Mill Bridge. However, there is little else to suggest an obvious medieval morphology for the village. The houses grouped alongside the relatively small churchyard appear to be of C18th and C19th date; are mostly well preserved; and their arrangement gives this part of the settlement an extremely attractive rural hamlet appearance. To the north east a winding, very narrow, linear street now contains mostly C19th workers houses. The pre-modern population of the village, like others close by were focussed on exploiting agriculture, fishing and the estuary's cockle beds, while employment in the local slate quarries and in iron ore extraction are noted extensively in C18th and C19th records.
- 9.26.29 The immediate setting of the church is formed by the churchyard and the intermittent arrangement of houses to the west and north of it, but this urban edge is not solid, and longer views out from the church are possible to the west, and toward the steepening gradients of Out Park and Horse Head Moor to the east, which tower over the settlement. In addition, the larger form of the church; its taller, steeper roofs; and the height of the bell-tower give it an important visibility in this broader landscape, and it is clearly visible in views from the west, while it has a major visual presence in longer views across the settlement from the hillside vantages to the east, and these views are an intrinsic part of its special historic and architectural significance. The predominant experience of the setting of the church is of a traditional rural hamlet surrounded by open and mostly undeveloped countryside, although the playing fields/cricket pitch to the west and the village's playground, tennis courts and bowling green do have a more contemporary character that slightly undermines the traditional setting of the church. However, both this immediate and broader open rural settlement character and the wider rolling backdrop of the moor's pastoral foothills are key aspects of the listed building's setting that contribute positively to its heritage asset significance.

The Impact of the Proposed Development on the Listed Building's Heritage Asset Significance

- 9.26.30 The two arrays of OHLs would be split at Kirkby in Furness so that as they run south the taller 400kV line would pass across the hillslope above Beck Side to the east; while the 133kV line would run on flatter ground to the west of Beck Side on low wooden trident posts. The latter would be at only 225m at their closest point, while the much taller 400kV pylons to the east would be only 350m away but on conspicuously elevated ground.
- 9.26.31 Again, the lack of any supplied visual information such as simple wireframe diagrams or photomontage representations means that assessing the true impact on the significance of this listed church is difficult. However, in a view from the location of the proposed 400kV pylon MR-01-133 to the east, all of the church tower and most of its roof would be clearly visible, as well all of the playing fields to the west of the church and the churchyard

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extension to its north west. On this basis it is certain that the whole of that pylon would be visible from those receptor sites as a visually intrusive feature in the background of such views that contain the listed building in its foreground. It would have an overpowering presence in that landscape backcloth due to its relatively close proximity to the listed building; the harsh contrast that would be formed between the tall mass of its industrialised, fabricated appearance and the undeveloped natural moorland landscape; the conspicuously elevated location of the pylon; and because of the lack of any other comparable, vertically orientated structures in that landscape. In addition, in views from the eastern edge of the playing field it is possible that due to the angle of view the upper portions of the pylon could break through the skyline and so have a more distracting and damaging presence.

- 9.26.32 It is also very possible that pylons MR-01-132 and MR-01-134 would be visible in views from the west of the pylons that take in the church in the foreground. However, both would be in quite an oblique location and the latter pylon would be a shorter type, though with wider arms, so that the impact of these pylons would be less obtrusive although the combined cabling runs would be quite prominent as they approach pylon MR-01-133. It is considered that the impact of these two pylons and their OHL would be more than slightly adverse.
- 9.26.33 The 132kV OHL and its wooden poles would be relatively prominent despite their lower heights and simpler and more slender column designs because they would have a close spacing, close proximity to the listed building, and because they would appear to run across a small hill a short way to the south west of the church. Three pylons would be visible (LM72-74) and they would certainly have a greater visual presence than the current 132kV pylon AF23, which is concealed behind buildings in views out from the church itself. The new 132 OHL and pylons would have a more than slightly adverse impact on the setting of the listed building.
- 9.26.34 It is important to note that the experience of church users would be adversely affected by the proposals as they enter and emerge from worship, funerals, weddings and other communal events to be confronted with pylons to the west and east of the church; and that this would diminish their spiritual and aesthetic experience of the listed building as a simple but evocative place of worship and commemoration.
- 9.26.35 It is concluded that, overall, the proposal would have a discordant and distracting presence in views of the listed building from the east and west. It is considered that the scale and position of the church with its tall tower make it a notable feature in the landscape which means its setting would have a high sensitivity to change. The proposal would result in substantial features being added to the building's setting whose height would unfavourably contrast with and challenge the church, and compete with it for dominance over the surrounding land. A person's ability to view, clearly identify and appreciate the historically and architecturally designed dominance of the church tower and roofscape over the surrounding settlement and wider countryside, from which it derives considerable aesthetic heritage value, would thus be appreciably compromised. On this basis and because of its high grading status it is felt that the proposal would have a negatively transforming effect and a more than moderately adverse impact on the significance of this heritage asset.

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Possible Mitigation Measures to ensure the maximisation of enhancement and the avoiding or minimising of harm

- 9.26.36 Moving the 132kV route slightly further west from poles LM76 to LM70. Ideally undergrounding the 400kV route from pylon MR-01-132 to MR-01-136. As an alternative using lower height 400kV lattice pylons to include MR-01-133 and rerouting these so that they minimise visual impact and demonstrably do not break the skyline in views from the listed building or the key receptor points to its west.

THE SIR JOHN BARROW MONUMENT, HOAD HILL, ULVERSTON

The Contribution that Setting Makes to Heritage Asset Significance

- 9.26.37 This Grade II* listed memorial was built in 1850 to celebrate the life and achievements of local tanner's son Sir John Barrow, who in his adult life became a naval administrator, far flung traveller, and who went on to become the Second Secretary to the Admiralty. He was an inspiration to the people of Ulverston, and as result, they paid by public subscription to have the memorial erected, this being one of the earliest known examples of such a public gesture towards a person of lowly social origins. The monument thus has very significant historical associations, both with a particular person and with a spirit of public grief and memorialising.
- 9.26.38 It is an iconic and eye-catching 30 metre tall tower set on top of the 133 metre high Hoad Hill, and as a result, it acts as a very prominent landmark in views from all directions and for many miles around. As well as a formal personal memorial and deliberately designed landmark it also operated as a 'sea-mark' aid to navigation for coastal shipping in Morecambe Bay, and while the tower takes the form of a lighthouse, being closely modelled on the design for the famous Eddystone Lighthouse by John Smeaton, it is also important to its significance that it was never actually fitted with a light, and that the domed lantern room was instead purposely designed with windows so that the public could take in the panoramic views available from the top. This factor adds to the multifaceted interest of the tower and confirms the very great importance of its landscape setting. For while it was purposely designed to be a striking and dominant presence when viewed in its rural setting, it was also built to afford extensive views in all directions over that far-reaching setting – both out over the vast estuarine sands of Morecambe Bay, but also across the surrounding landscape, including that to the west and south west that would include the proposed development, and that this public access, which is still maintained today, is therefore a major aspect of its heritage asset significance.

The Impact of the Proposed Development on the Listed Building's Heritage Asset Significance

- 9.26.39 The proposed route of the 400kV OHL would be visible from the top of the monument but at its closest this would be 5.8 KM away at High Henning Farm behind Lindale Moor. The pylons would be taller than the current 133kV OHL and would follow the same route. The current pylons and OHL have a slightly adverse but not negligible impact on the setting of

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this listed building and, given that the proposed pylons would be taller, that impact would increase.

- 9.26.40 While noting that this is a nationally important grade II* listing of the monument and the fact that a major part of its heritage asset significance is that it was, in part, designed as viewing point to take in the 360 degree outlook over the bay and the Furness peninsula, it is considered that the impact of the proposal upon this listed building would remain only slightly harmful.

Possible Mitigation Measures to ensure the maximisation of enhancement and the avoiding or minimising of harm

- 9.26.41 None required

STANTON OLD HALL AND ADJOINING HOUSE (LB155)

The Contribution that Setting Makes to Heritage Asset Significance

- 9.26.42 This settlement consists of the closely paired villages originally known as 'Steintun' (mentioned in the Domesday Book) and Eadgarlith, which are broadly separated by a green common open space. It reputedly once held a market and fair and in the 1290s the settlement and surrounding land were gifted to the monks of Furness Abbey. The Victoria County History notes that "*Here there are important iron mines, but they are not now worked; a mineral branch line connected them with the Furness railway. Stone quarries are worked. To the south of Adgarley is Harbarrow, 200 ft. above the sea. On Stainton Green are a number of huge blocks of stone, from which it has been supposed that the place took its name*".

- 9.26.43 The hall dates to the 1657/58 and sits in a prominent and formerly detached location on the western side of the common. It has been altered and extended in the C20th so that the significance of its physical fabric has been reduced, but its setting is better preserved and views of the dwelling from the east across the open common are important to its significance. Behind the hall in such views is the paired route of the existing 132kV OHLs and pylons at a distance of 525m. Pylons AJ17&AK117 and AJ16&AK116R are clearly visible, while the upper portion of a pair of pylons (AK124R & AJ18) are visible above roof tops in views from the green. Their impact is appreciable in such views but it is not considered to be unduly harmful despite their relatively close proximity.

The Impact of the Proposed Development on the Listed Building's Heritage Asset Significance

- 9.26.44 The proposed development will introduce taller pylons that are slightly further away from the listed building, with the 400kV pylons having a slightly wider spacing. They will be clearly visible in the background in views from the east of the listed building that take in its eastern elevation, and pylons MR-01-168 and AJ17R will have a lightly greater prominence

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in such views. Nevertheless, it is judged that the impact of the proposal will remain one of causing slight harm to the setting of this listed building.

Possible Mitigation Measures to ensure the maximisation of enhancement and the avoiding or minimising of harm

9.26.45 None required

LOCAL AND NATIONAL POLICY CONSIDERATIONS AFFECTING THE HISTORIC ENVIRONMENT

9.26.46 CS8.6 of the Local Development Framework Core Strategy requires the *"the safeguarding and, where possible, enhancing of historic environment assets, including their characteristic settings and any attributes that contribute to a sense of local distinctiveness. Such assets include listed buildings and features (both statutory and locally listed), conservation areas, scheduled ancient monuments and registered parks and gardens"*.

9.26.47 CS7.7 provides policy on opportunities provided by energy and the *low carbon economy*. It states *"The Core Strategy will support the realisation of opportunities provided by energy development and the low carbon economy"* but that *"Projects should avoid any harmful environment impacts upon the historic environment"*.

9.26.48 *In accordance with the statutory duties set out in sections 16(2) and 66 (1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 (LBCA), special regard must be paid to the desirability of preserving listed buildings or their settings or any features of special architectural or historic interest which they may possess. The preservation of setting thus a clearly required objective, and considerable importance and weight attaches to the desirability of preserving the setting of listed buildings when weighing this factor in any planning balance.*

9.26.49 The Framework identifies a number of core principles at Policy 17. While one of these supports the transition to a low carbon future, another reminds us that statutory legislation requires the conservation of heritage assets in a manner appropriate to their significance, including their setting, so that they can be enjoyed for their contribution to the quality of life of this and future generations.

9.26.50 To summarise, the Framework defines the setting of a heritage asset as the surroundings in which it is experienced. The extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset; may affect the ability to appreciate that significance; or, may be neutral. GPA Note 3 indicates that setting embraces all of the surroundings from which an asset can be experienced or that can be experienced from or within the asset. Setting does not have a fixed boundary and cannot be defined, in perpetuity, as a spatially bounded area or as lying within a set distance of a heritage asset. The Framework says that the significance of an asset is defined as its value to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic.

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Significance derives not only from a heritage asset's physical presence, but also from its setting.

- 9.26.51 Considerable importance and weight attaches to the identified harm to the significance of listed buildings including harm to their settings, as set out in connection with the 1990 Act above. That act makes clear that there is a strong statutory presumption contained within in Sections 16(2) and 66(1) of the 1990 Act against permission being granted. Special attention must be paid to the desirability of preserving or enhancing the character of those heritage assets whose settings would be affected by such a scheme.
- 9.26.52 The government's guidance in the NPPF requires that when considering the impact of development proposals on designated heritage assets such as listed buildings and conservation areas, great weight should be given to the conservation of the asset's significance. It also requires that if a heritage asset's significance is likely to be harmed by a development, including harm to its setting, it is necessary to decide whether or not such harm is substantial
- 9.26.53 Less than substantial harm' and 'substantial harm' are not defined in the Framework, but the PPG and recent planning appeal decisions and court cases have provided helpful guidance. There is no advice that suggests there is a scale within 'less than substantial harm' or where any threshold lies, but if considerable importance and weight is to be given to a finding of harm, then an attempt to calibrate the range of 'less than substantial harm' can be helpful. This guidance has confirmed that a finding of 'substantial harm' is a high test, but as the PPG acknowledges, it is possible that a single pylon or OHL could affect a setting so significantly that its heritage significance is substantially harmed.
- 9.26.54 Framework Policy 132 states that: *When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.*
- 9.26.55 Policy 134 requires that: *Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.*

Conclusions

- 9.26.56 The application would have a moderately harmful impact on the combined significance of the six heritage assets identified above; but in all six cases that impact would be less than substantial. In applying the statutory tests of the 1990 P(LBCA) Act, the proposal would fail

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to preserve the special architectural or historic interest of the six listed buildings identified above. Having paid special attention to the desirability of preserving these designated heritage assets; and taking into account recent case law, it is important to be aware that despite finding the harm to be less than substantial, there remains a statutory presumption against granting approval for such development, and this must remain a compelling presumption when deciding whether to support or object to the NWCC development.

9.26.57 It is important to remember that the NPPF requires that “to achieve sustainable development, economic, social and environmental gains should be sought jointly and simultaneously through the planning system”. This advice relates solely to whether there are gains or losses to the historic environment but the council recognises that there may well be other, more strategic issues of an economic or social nature that have a part to bear on the determination of this infrastructure development proposal by the Planning Inspectorate

9.26.58 However, the PPA Group wish to remind the determining body that when undertaking the required planning balance, the key issue that needs addressing will be whether the public benefits of the energy that is generated and passed into the National Grid, and the temporary employment created during any construction, would be of sufficient and equivalent value with which to offset the harm that would occur to the historic environment. Accepting such harm without a persuasive case being made for such public benefits would be contrary to the Government’s objective that the historic environment and its heritage assets should be conserved and enjoyed for the quality of life they bring to this and future generations. Accordingly, it will be necessary to examine the reasons put forward as to why the harm that is identified above should be found to be acceptable, and so outweigh the appreciable, but less than substantial harm that would be caused to designated heritage assets, one of which is of the highest and two of which are of the next highest category of importance.

Summary Conclusions

9.26.59 Twelve listed buildings have been examined in order to assess the impact of the NWCC proposal upon their heritage asset significance. Such impacts primarily consist of an impact on the setting of the asset and so the assessment has examined what contribution the setting of the building makes to its significance, and how that significance would be affected by the proposal.

9.26.60 With regard to six of the listed buildings examined: Tarnside House, Leece (LB91); The Church of St Matthew and the Village Hall in Dendron (LB 133 and 132); Gleaston Water Mill and the House on Duke Street, Gleaston (LB140); and Well Head House, Little Urswick (LB162) there is agreement with the findings identified in Volume 2.5 of the PEI, that for reasons of constrained rural or urban setting, or the substantial screening of the development in views by landform or vegetation there would be no impact on the setting, and therefore the significance of these heritage assets.

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9.26.61 For the other six listed buildings the detailed assessment below concludes that the proposed NWCC development would have the following impacts: -

- It would cause more than moderate harm to the significance of two listed buildings: the Grade II* listed St Cuthbert's Church in Beck Side, and the Grade II Angerton Farmhouse and Barn in Foxfield,
- more than slight but less than moderate harm to the Grade I listed Kirkby Hall near to Kirkby in Furness, and to the Grade II listed Sand Gap Farmhouse in Foxfield; and,
- while slight harm would occur to the Grade II* Sir John Barrow memorial in Ulverston, and to Grade II listed Stainton Hall in Stainton with Adgarley.

9.26.62 Using the terminology in the NPPF, the level of harm would be less than substantial for all of these assets. Potential mitigation measures are also identified in the assessment in order to try and moderate or minimise any harm to these assets.

ⁱ ICOMOS (2011) Guidance on Heritage Impact Assessments for Cultural World Heritage Properties: A publication of the International Council on Monuments and Sites



10.0 Terrestrial and Avian Ecology

10.1 Terrestrial and Avian Ecology Overview

- 10.1.1 This section considers the Ecological baseline data, methodology and assessment of likely significant effects set out within National Grid's PEI report for the NWCC.
- 10.1.2 The review has focused, in particular, on Chapter 9 (Terrestrial and Avian Ecology) of the PEI report (Volume 2), along with the supporting information (Volume's 3-5). Chapter 9 covers the potential effects of the project on the wider Draft Order Limits (DOL) and where appropriate the wider area. The Zones of Influence and Study Areas for ecological features are also outlined. The references to paragraphs in the following section relate to the PEI unless otherwise stated.
- 10.1.3 The following section summarises the key issues identified in the review of the ecological data and assessments presented in the PEI.
- 10.1.4 Key issues presented below in Table 10.1 with further additional detailed comments provided in Table 10.2, drawing on examples from the detailed commentary.

10.2 Terrestrial and Avian Ecology Headline Issues

Table 10.1: Terrestrial and Avian Ecology Headlines

Key Issue	Comment
1. Failure to provide a framework for assessing impacts on internationally important wildlife sites and species (i.e. HRA for SACs and SPAs) (Habitats Regulations Assessment)	<p>A major concern at the emerging framework for the statutory HRA process and the lack of progress with taking the HRA forward. This could lead to significant delays to the acceptance of the DCO by PINS if this is not addressed (See Section in this Chapter on Adequacy of Assessment Methodology 10.14).</p> <p>There is a failure to identify risks to Ravensglass Estuary SAC of undergrounding/HDD operation, and of tunnel option on Morecambe Bay SAC/SPA.</p> <p>The framework for designated sites that will inform the HRA fails to include all SACs, SPAs and the impacts on their designated features and species populations. Population impacts outside of the sites are inadequately identified. Each subsection provides a Table e.g. Table 9.1 listing International and National designated sites for nature conservation. These lack any detailed list of qualifying features (SAC, SPA, Ramsar) and interest features (SSSI) which is necessary baseline information to enable assessment of likely significant effects (for example tables just refer to 'plants' or 'habitats' or 'birds').</p>

Key Issue	Comment
	<p>The construction phase impacts from helicopter operation, including specific local impacts of helicopter operating bases do not appear to have been considered. These could be significant for important species assemblages such as breeding and wintering birds.</p> <p>There is no report included in the documents to inform a Habitats Regulations Assessment, and there is concern at the lack of progress with developing the HRA and supporting information. This will be a significant task in an area with considerable biodiversity assets of international importance. (e.g. took 12+ months to develop an effective HRA for the United Utilities west Cumbria pipeline project to conclude no adverse effect on integrity).</p> <p>It appears that some sites or sections which are hydrologically linked to European or International sites have been scoped out (e.g. South Solway Mosses SAC – see subsection C2 - 9.40); [also included in scoping issue]. Land outside of SAC/SPAs that is important to their ecological function should be included within the HRA assessment – as the HRA is about integrity of sites, which can include functionally linked undesignated land (See section 10.14 of this section on Adequacy of Assessment Methodology).</p> <p>It appears that some sites or sections which are hydrologically linked to European or International sites have associated qualifying species present outside the designated site boundary undervalued (e.g. comment 9.3.26) also included in HRA issue.</p> <p>SPA Bird survey information appears to have been neglected where the route lies outside the international designated sites yet the species are functionally linked to the site and need to be assessed under the Habitats Regulations. Bird collision risk for these species and appropriate mitigation needs to be addressed, particularly in those subsections where the route lies at right-angles to the Solway Firth Marine site and where numerous records of seagull, duck, geese etc were obtained. The PPA Group have not found any proposed mitigation for collision risk or reduction in the potential for this risk through deflectors on the cables. Hen harriers need to be addressed as SPA species linked to the West Pennine SPA and other breeding site in the UK (see Section 10.14 of this Chapter on Adequacy of Assessment Methodology).</p> <p>The lack of any assessment of cumulative impacts on ecology, including EU protected sites and species, will affect the timescale for the HRA.</p> <p>In some cases the assessment states that there will be a significant effect on an international site and that the overall integrity of the site will</p>

Key Issue	Comment
	<p>not be maintained. The PEI then suggests that mitigation will be required to offset these effects (e.g. in 9.4.141 of the PEI). If this is the case and there are significant effects such that the integrity of the site will be adversely affected, then the initial consideration should be 'avoidance' and selection of alternative solution. If there is no alternative possible then the reasons for Imperative Reasons of Overriding Public Interest IROPI need to be demonstrated using robust arguments, and then detailed compensation agreed with Natural England before the scheme can be considered compliant with the Habitats Regulations. There appears to be insufficient baseline at present to put forward this argument.</p> <p>Distances from designated sites are provided but in the case of obvious hydrological connectivity the distance downstream/upstream rather than as the crow flies would be useful. In addition it is important to recognise hydro-geological connectivity between wetland sites and the works corridor (e.g. 9.3.31 of the PEI).</p> <p>The Planning Inspectorate is the competent Authority in relation to the application. There has already been liaison between Natural England and National Grid on the HRA process, and at a meeting in Feb. 2016, an intention to involve LDNPA and other Local Authorities was stated (see below). Clarity is required on the expectation of staff input on this (ideally from Natural England) but with the understanding that generic changes to the scheme (for example construction methodologies) are shared to avoid duplication in commenting on detailed specifications.</p> <p><i>Note – SLR on behalf of National Grid have been discussing the HRA process with Natural England but these discussions are not reflected in the PEI</i></p>
2. Unreliable ecology assessments based on incomplete surveys and dubious methodology	<p>Many of the ecology assessments have been based on incomplete survey data which will need updating when surveys have been completed. For example no surveys data from 2016 field surveys has been used in the PEI for roosting bats, foraging and commuting bats, breeding birds and non-breeding birds (see Table 9.14 Volume 2.2, Chapter 9). This information will now only be available for incorporation into reports at the ES stage so the PPA Group will not be able to comment on any of the final ecology evaluations and assessments (see section in this Chapter on Section by Section description 10.6 and Adequacy of Assessment Methodology 10.14).</p> <p>In places the summaries in the concluding paragraphs for each section refer to 'no significant effects' on and hence 'no effect on site integrity' (e.g. 9.4.135 of the PEI). This is before all survey information has been</p>



Key Issue	Comment
	<p>collated and detailed assessment carried out. The PPA Group are not convinced sufficient background information and potential construction and operational impact assessment has been considered to make these statements.</p> <p>Parts of the assessment rely on Aerial Photo Interpretation (API). It is not considered possible to accurately assess the habitat types and value of most habitats in this way, without undertaking ground truth samples (for example grasslands, hedgerows, open mosaic vegetation, etc).</p> <p>Survey methodologies have been adapted to the scale of the route being assessed. So for example the bat roost surveys and assessment make no attempt at this stage to identify all bat roosts along the route but to assess the bat roost resource. It is unclear whether and to what extent these assessments have been informed by dusk emergence and dawn re-entry surveys. Some sections of the PEI refer to emergence and return surveys, but the section on methodology does not include any reference to such surveys.</p> <p>Some of the assessments are based on no survey data at all (e.g. birds and bats for the Natland Sub-Station Extension see 9.8.4 and 9.8.28 Volume 2.5, Chapter 9).</p> <p>No reports of the results of ecological surveys have been included in the PEI information and in some cases, no summary of the survey results are included either. For example, there is no data presented on the number and species of breeding birds recorded in each sub section and no information on the levels of bat activity recorded in each sub section (for example see 9.1 Volume 2.4, Chapter 9).</p> <p>Throughout the PEI assessment of effects based on this incomplete baseline data is based on only two confidence limits: 50–95% (probable) where data is incomplete and surveys remain to be undertaken and over 95% (certain/near certain) where surveys have been undertaken and information is available (see 9.7.2, Volume 2.2, Chapter 9 and Table 9.8). It is not clear why lower confidence limits were not also applied (e.g. possible or uncertain) especially given that 2016 field survey data has not been taken into consideration. For example see 9.6.98 and 9.6.123 Volume 2.4, Chapter 9. The 50-95% probability limit is very wide and the latest CIEEM guidelines for EcIA no longer include confidence limits. Applying a 50-90% confidence limit where data is poor as with bats cannot be justified; especially as paragraph 9.7.18 (Volume 2.2, Chapter 9) states that: “a preliminary assessment of potential effects has been made on a precautionary worst-case basis...” Likewise for birds where paragraph 9.7.38 acknowledges the limitations of the data but</p>

Key Issue	Comment
	<p>overall considers that based on this incomplete data “the conclusions and underlying assessment outlined in this report for birds is considered to be probable (above 50% but below 90%)”.</p> <p>All bat echolocation calls recorded by automated detectors during bat activity surveys were identified through the auto-identification software SonoChiro. It is acknowledged in the PEI (paragraph 9.7.20, Volume 2.2, Chapter 9) that this software is in its infancy. However, no attempt appears to have been made to subject a sample of the results obtained to manual review to verify the accuracy of the results.</p> <p>The Methodology (paragraph 9.7.21, Volume 2.2, Chapter 9) states that it has not been possible to identify <i>Myotis</i> species bats down to species level – but states that <i>“this lack of certainty regarding species does not affect the conclusions regarding significance of potential effects”</i>. This is not a supportable position and applying the worst case scenario (as set out in the methodological approach) requires the assumption that some <i>Myotis</i> calls may be rarer bat species or that all four <i>Myotis</i> species may be present where bats were identified to genus level only.</p> <p>Assessments of the value of assemblages of breeding birds, wintering birds and foraging and commuting bats do not appear to be based on any clear and recognised methodological approach. It is not clear therefore how assessments of value were determined and whether they have been assessed in an objective and consistent way. The following approaches are therefore recommended: BATS - The assessment of the value of the bat population on Site is based on the article in the Chartered Institute of Ecology and Environmental Management (CIEEM) In Practice magazine – Valuing Bats in Ecological Impact Assessment, No. 70, December 2010 (Wray et al. 2010); BIRDS - To assess the overall breeding bird assemblage, Fuller (1980) described a method for assessing the ornithological interest of sites, whereby the importance was defined by the number of breeding species present. This is adapted so that Fuller’s “Local” importance is assumed to correspond to District importance as described in the IEEM (2006) guidelines. An assemblage comprising fewer than 25 species is therefore considered to be of local importance or less. Since the publication of the criteria in 1980, declines have occurred in many bird populations, and for this reason it is considered appropriate to recalibrate the categories in this way.</p> <p>Minimum buffers have been applied when assessing the potential effects of the project on important ecological features. It is not explained how these buffer distances were selected or on what basis. (See 9.7.7, Volume 2 Chapter 9). It is also unclear therefore why for example minimum buffers between working areas and ancient woodland are 15</p>



Key Issue	Comment
	<p>metres and those for designated sites are only 10 metres, and why 30 metre buffers have been specified between the working area and otter holts but why no minimum buffers have been specified for e.g. badger setts or bat roosts.</p> <p>National Grid has set out a commitment to apply the “<i>mitigation hierarchy</i>” to the development proposal which is welcomed and is a requirement of the NPPF.</p> <p>At the time of writing, 92% of the Phase 1 field survey had been completed and there is an acknowledgement that the outstanding information could influence the final EIA. Survey methodologies appear to be fine but, it is currently difficult to clearly identify a breakdown of all habitats (not just those deemed significant) located within the DOL and the degree to which these will be lost.</p> <p>Provision of habitat areas in table format should be sought for the DOL sections, and for LDNPA more specifically, the habitats recorded within the DOL areas located within the National Park boundary. This should be possible, given the comment in Appendix 9D1.1 (see below).</p> <p>This information could then be developed by National Grid to give an indication of the amount of each habitat that will be either be retained or removed within the DOL. Figures should then also be given for intended areas of retained habitat enhancement and areas of habitat recreation within the DOL, together with an indication of the expected time to reach maturity and the likelihood of successful establishment.</p> <p>This approach will be fundamental to more robust application of the mitigation hierarchy, allowing residual impacts to be identified and quantified and then used to assess and, if necessary, negotiate appropriate compensation package details.</p> <p>Some of the data search feedback appears to be lacking in known species for example red squirrel in the Stainburn/Workington area (e.g. 9.3.56) and reptiles in the Barrow area (e.g.9.5.77). Although this may be due to lack of records held it is not clear how the data was requested from CBDC as searches undertaken from this source in the Workington and Stainburn area have revealed tens of records of red squirrel so the PPA Group would have expected more records covering the length of the B1 route. Additional survey will be necessary to fill the gaps in the data records.</p> <p>There are no survey details or species lists provided for habitats such as semi-improved grasslands to demonstrate the value of these habitats,</p>



Key Issue	Comment
	<p>and demonstrate they do not qualify as HoPI.</p> <p>Some assessments provide a conclusion of 'no significant effect' despite the fact that surveys are still ongoing, and results not available yet.</p> <p>Appears to be some areas with potential to support protected species yet no surveys undertaken or planned, for example in the area to the immediate east of the Eskmeals road where natterjack toads have been seen crossing the road from the dunes and heard calling from the wetland depressions in the inland fields in the recent past (Pers.comm).</p>
<p>3. Unreliable scoping in/out of ecology issues based on incomplete surveys and data</p>	<p>It appears that existing incomplete information has been used to scope in or out various designated sites, habitats and species. The PPA Group do not feel that this can provide a robust assessment until all the information has been considered and by scoping out features prior to obtaining all the data which may result in these features being ignored prior to the final ES (see section in this Chapter on Adequacy of Assessment Methodology 10.14).</p> <p>No survey reports have been included in the PEI information – therefore the PPA Group are unable to check the decisions made on scoping in/out or on likely significance of impact.</p> <p>Non-breeding bird surveys have been directed at target areas that have apparently been agreed with Natural England and the RSPB. However the PEI does not explain how target areas were selected and what areas were scoped in and what areas were scoped out. For example see paragraph 9.1.78, Volume 2.4, Chapter 9 which states that "passage and winter bird vantage point surveys and breeding bird transect surveys, are not being undertaken within the Bird Study Area (DOL plus 1km) of Subsection A1, as activity of target species is expected to be low. This was agreed with Natural England and the RSPB".</p> <p>Similarly, it is not clear how the 68 vantage points were selected for breeding bird surveys or the Schedule 1 bird species selected for detailed nesting surveys, and which Schedule 1 species were considered but scoped out.</p> <p>The construction phase impacts from helicopter operation, including specific local impacts of helicopter operating bases do not appear to have been considered. These could be significant for important species assemblages such as breeding and wintering birds. For example, impacts on Sandwich and Little Tern foraging along the coastline south of Ravenglass. The area is used by populations of these species which are of international importance and are the notified species for the proposed</p>

Key Issue	Comment
	<p>Duddon Estuary SPA. Paragraph 9.7.44 (Volume 2.2, Chapter 9) notes that “there is the potential for use of helicopters to transport construction materials to site. While it is likely that helicopter flights would hover over construction sites rather than land, should construction of landing sites be required the results of pre-construction surveys would be used to inform micro-siting to avoid features of importance to protected species, such as badger setts for example”. This approach will not avoid disturbance effects on for example assemblages of wintering birds.</p> <p>Issues have been scoped out (habitats and/or species) from certain sections prior to assessing completed survey material. This is resulting in unreliable conclusions on significance of potential impacts. In one example great crested newt has been scoped out because ‘based on the results of the desk study and field surveys, GCN are considered to be absent from the study area’ – this was based on only half of the ponds having been surveyed. They have then been scoped out of consideration for this section of the route (e.g. Subsection C2; 9.7.72).</p> <p>Other ecological features have been scoped out based on desk study data (or absence of such data), yet habitats are considered to be suitable for those species, for example white-clawed crayfish scoped out in Subsection C2 - Wigton to Harker Substation, Carlisle(9.7.99).</p> <p>It is not clear in all cases why certain species have been scoped out of potential for effects during the operational and maintenance phase (e.g. badgers are mobile and hence may move into an area and may need to be surveyed prior to further works).</p> <p>It appears that some sites or sections which are hydrologically linked to European or International sites have been scoped out (e.g. South Solway Mosses SAC – e.g. Subsection C2 Table 9.40) and qualifying species linked to EU sites undervalued (e.g. Comment 9.3.26) [also included in HRA issue].</p> <p>SPA Bird survey information appears to have been neglected where the route lies outside the international designated sites yet the species are functionally linked to the site and need to be assessed under the Habitats Regulations. Bird collision risk for these species and appropriate mitigation needs to be addressed, particularly in those subsections where the route lies at right-angles to the Solway Firth Marine site and numerous records of seagull, duck, geese etc were obtained. The PPA Group have not found any proposed mitigation for collision risk or reduction in the potential for this risk through deflectors on the cables. Hen harriers need to be addressed as SPA species linked to the West Pennine SPA and other breeding site in the UK.</p>



Key Issue	Comment
4. Non-designated priority habitats not effectively assessed and protected	<p>The importance and lack of complete existing survey data on non-designated priority habitats is an issue that has been consistently raised over a long period (See Sections in this Chapter dealing with Adequacy of Baseline data 10.5, Section by Section Description 10.6, Adequacy of Assessment Methodology 10.14, Project Wide Information 10.15, Other Effects 10.1, Key Issues/Gaps Requiring Further Assessment 10.20).</p> <p>In particular there is poor survey data on the extent and quality of semi-natural grassland types in the section of the route within the LDNP. This is the section where undergrounding is proposed, which would be a significant risk if these habitats are present. It is essential these habitats are surveyed and assessed, including their quality. If present they should be avoided through design mitigation.</p> <p>There is no overlay map provided to cover biodiversity habitats which are not included within statutory or non-statutory designated sites, so there is potential for these areas to be overlooked. This is of particular significance in the southern section where undergrounding is proposed which has potential to result in more significant damage to habitats. The initial assessment of the PEI indicates a lack of inclusion of undesignated priority habitats in assessment for each section.</p> <p>Parts of the assessment rely on Aerial Photo Interpretation. It is not considered possible to accurately assess the value of most habitats in this way, for example grasslands, hedgerows, open mosaic vegetation, etc. Varying amounts of ground-truthing have been undertaken along each subsection covering from 75-95% of the Phase 1 area. It will be necessary to base the ES on 100% field evidence.</p> <p>Habitats described as species-rich semi-improved neutral grassland have been identified by API – it is not clear how this is possible without ground-truthing in the field (e.g. 9.1.13); and then conclusions state that they would be unlikely to meet the criteria for lowland meadows (Habitats of Principal Importance) – the PPA Group do not consider habitats such as this can be assessed accurately without field observation.</p> <p>Where identified the principle for the project design should be to avoid priority habitats – through design mitigation.</p> <p>The habitat areas should be excluded from the project area and proposed DCO application 'red line' wherever possible. The inclusion of priority habitat areas in the application 'red line' and then reliance on micro-siting as mitigation to avoid habitat is not acceptable, as this would</p>



Key Issue	Comment
	<p>include such habitat within the DCO permission.</p> <p>Summary statements for certain sections do not appear to reflect clearly the data and value of ecological features e.g. in 9.3.72 the assessment states 'the majority of habitats in subsection B1 comprise intensively managed farmland' yet the habitat descriptions indicate there are 49ha rush pasture and marshy grassland, 20 ha of semi-improved grassland, 31ha woodland, as well as 200ha 'improved' grassland (but with some areas still to be ground-truthed), This particular subsection appears from the Phase 1 habitat mapping to cross many potentially biodiverse habitats which are likely to be ignored when the assessment states the majority of the habitats are intensively managed grassland.</p>
<p>5. Insufficient assessment and management of risk from Invasive Non Native Species (INNS) on ecology</p>	<p>In view of the large geographic extent of the linear project it is vital that non-native invasive species are dealt with extreme care due to the risk of spread over a wide area posing potential significant risks to biodiversity (see Section 10.14 in this Chapter on Adequacy of Assessment Methodology 10.14).</p> <p>Although various invasive species have been recorded as present or absent within entire route sections there is no detail on location of Japanese knotweed where it may provide a constraint to the works – as Japanese knotweed can take many years to eradicate and the buffer zone takes out over 14m in circumference around any infestation it will be important to deal with this problem well in advance of the proposed construction schedule.</p> <p>Detailed CEMP should include the bio-security methodologies to be adopted to prevent spread of any invasive species throughout the DOL due to construction stage movements along the route, importation of any soils, contractor movements etc</p>
<p>6. Failure to consider effective mitigation</p>	<p>Not all the mitigation provisions are considered to be adequate; specific examples will be noted in the detailed response (see section in this Chapter on Section by Section Description 10.6, Adequacy of Assessment Methodology 10.8, Commentary on Proposed Mitigation 10.9, Design Mitigation 10.10, Good Practice Mitigation 10.11, Bespoke Mitigation 10.12).</p> <p>Where likely significant effects have been scoped out or underestimated based on inadequate survey data and dubious methodology (see 2 above) no mitigation has been proposed. For example see paragraph 9.1.129 (Volume 2.4, Chapter 9) which sets out a list of important ecological features for which no further mitigation is required despite the acknowledged deficiencies in surveys data. Birds were scoped out of</p>

Key Issue	Comment
<p>a. by avoiding ecological damage through design mitigation</p>	<p>requiring further mitigation despite the fact that only one wintering bird transect survey was undertaken over the entire route of Subsection A1.</p> <p>Mitigation proposed is often generic with the caveat that further mitigation measures may be required following the results of further surveys. This needs to be a requirement, that when the comments on section 2 have been addressed the mitigation requirements should be re-assessed. For example see paragraph 9.1.127 (Volume 2.4, Chapter 9) which states that, <i>"...mitigation measures may be required for the important ecological features listed below where either potentially significant effects have been identified or for legislative compliance."</i> (see section in this chapter on Design Mitigation 10.10)</p> <p>No mitigation is proposed for the effects of the significant habitat loss and fragmentation on breeding and wintering birds and foraging and commuting bats and it is assumed that birds and bats will simply move to occupy other suitable habitats. While much of this loss will be temporary, given the scale of the project and the time taken for replacement habitats to establish, these effects cannot be regarded as being short term. For example see paragraphs 9.2.104 and 9.2.105 which assesses the effects on foraging and commuting bats as being not significant while simultaneously stating that <i>"overall, the works would result in the loss of potentially important foraging habitat for bats, and cause fragmentation of woodland and hedgerow habitat that could affect their foraging or commuting behaviour"</i>.</p> <p>There are references to requirements for landscape tree planting on other important habitat to mitigate landscape impacts. But there is no indication of where exactly this would be or any justification of why this is, on balance, an acceptable approach. Further clarification is needed in relation to this – particularly if habitat in the National Park is affected.</p> <p>Also, long lengths of hedgerow have been identified for removal and in order to mitigate the loss of commuting routes for bats, the installation of Heras fencing until hedges are established has been suggested. It is not clear how much Heras fencing may be needed or the expected timescale (5 years) but there could be visual impacts associated with this).</p> <p>Furthermore there are serious doubts as to whether such an approach to mitigation for the loss of habitat for foraging and commuting bats would be effective.</p> <p>The route has not avoided passing through several County Wildlife Sites (CWS) and will damage these sites of county importance. These should</p>



Key Issue	Comment
<p>b. by effective Construction Codes of Practice (CCoPs)</p>	<p>all be avoided through design mitigation e.g. micro-siting of the lines, particularly in area of undergrounding involving damage to a wide corridor of habitat.</p> <p>The present route results in woodland areas, including parts of ancient woodland, being lost or the canopy removed. Compensation is proposed by National Grid to comprise planting of a similar area of woodland to that lost. The PPA Group do not consider this as adequate compensation. Loss of mature woodland and in particular ancient woodland cannot be mitigated or compensated for. Woodland soil can be translocated but rarely results in the original woodland ground flora being able to establish. Many species rely on mature trees as habitat or for food therefore planting of new native woodland adjacent to the existing will not compensate for the loss of this habitat. The first consideration should be the avoidance of woodland through micro-siting but the information provided does not make it clear in most cases whether micro-siting has been considered and why this cannot be achieved. In all cases avoidance should be adopted, and if this is impossible then the reasons for this need to be highlighted and explained in detail. Additional compensation will be expected where loss of mature/ancient woodland is still being considered.</p> <p>Clarification is required on the intended lifespan of reinstated habitat, particularly for the underground sections. From the documentation, it would appear that replacement of cables may need to be carried out every 40-50 years. This could result in a perpetual cycle of vegetation loss and it may be that a more strategic approach to the location of new habitat creation could be considered to ensure a more sustainable outcome.</p> <p>Also, within the National Park the larger extent of undergrounding will affect the ability to carry out any woodland planting within the DOL. It will therefore be potentially far more difficult to find suitable compensation sites within the DOL boundary than for sections outside the NP.</p> <p>It is not clear, if at this stage, there would be any potential for revisiting the extent of the DOL to include land that would benefit from habitat enhancement. But this approach could allow greater confidence in achievement of habitat restoration and enhancement and reduce risk related to reliance on the success of habitat compensation funds (see sections in this Chapter on Commentary on Proposed Mitigation 10.9, Good Practice Mitigation 10.11, Key Issues/Gaps Requiring Further Assessment 10.20.</p>



Key Issue	Comment
<p>c. through effective compensation to loss and disturbance to biodiversity</p>	<p>The PPA Group have undertaken an assessment of Construction Code of Practice and have provided comments focused on ecology – see section 5.5.</p> <p>A clear CCoPs for any development work in the vicinity of ancient or mature woodland is needed. This must state that all activities are to avoid the mature trees and a suitable root protection zone adopted to avoid any damage, including through secondary works such as temporary storage and laydown areas.</p> <p>Biosecurity issues (see above).</p> <p>As commented on in section 2 above, National Grid has set out a commitment to apply the “mitigation hierarchy” to the development proposal. The application of the mitigation hierarchy needs to be applied more robustly, allowing residual impacts to be identified and quantified and then used to assess and, if necessary, negotiate appropriate compensation package details. The Environmental Statement must set this out clearly, providing a detailed assessment of impacts, losses and compensation per habitat and species. The approach used by United Utilities for their West Cumbria water supply project is a good practice example that could help inform the NWCC application.</p>
<p>7. Inadequate evidence for assessment of protected species impacts</p>	<p>Clear rationale behind the selection of specific study areas for additional protected species survey and more detailed habitat/NVC survey is not provided other than an overview of methodology used.</p> <p>The PPA Group have noticed some surprising data search results, for example only 1 record of red squirrel on the outskirts of Workington (9.3.56) when the PPA Group know this area supports good red squirrel populations.</p> <p>It is not always apparent how disturbance to protected species will be assessed and addressed during construction and maintenance phases. One example of this relates to the Hen Harrier Protection Zone through the middle of which the proposed route passes. Hen harrier surveys were not undertaken apparently because it was argued that these would result in unnecessary disturbance to hen harriers; construction of the towers and laying of cables will result in significant human and noise/vibration disturbance. It is not known which distinct areas these species use for overwintering even though the population is functionally linked to the West Pennines SPA and as such the hen harrier protection zone is expected to be treated as if it is an SPA, and assessed in the HRA. There is a lack of clarity as to whether the route through the whole of this section would therefore be constructed outside the winter season as</p>

Key Issue	Comment
	mitigation (see section in this Chapter on Section by Section Description 10.6, Commentary on Proposed Mitigation 10.9, Adequacy of Assessment Methodology 10.14).
8. Lack of assessment of cumulative impacts on ecology	<p>The assessment of cumulative effects is a key requirement of EIA and HRA and the Cumulative Assessment in Volume 2.3, Chapter 9 is considered totally inadequate to meet these requirements (See Section in this Chapter on Adequacy of Assessment Methodology 10.8 & 10.14 10.8, 10.14, Project Wide Information 10.15, Cumulative effects 10.19).</p> <p>The assessment concentrates on breaking down the route into subsections under which habitat losses or damage is assessed for each individual stand or unit along with the effects on protected and notable species. There is no attempt to demonstrate the cumulative impact on habitat or species throughout the entire route. Woodland losses are suggested for each parcel of woodland and in most cases assessed as not significant. The PPA Group consider that total loss of woodland should be assessed and compensated for, and simply planting like for like areas of new woodland is not acceptable.</p> <p>Similarly loss or damage to many other habitats is assessed within each subsection as not significant but the overall habitat loss should be estimated for the entire scheme. The small losses per subsection represent a gradual reduction in extent of habitats which appears to be minimal until the impact of the whole scheme on ecology is assessed.</p> <p>The conclusion for every single group or assemblage of protected species including mammals, birds, reptiles and amphibians, is that the overall cumulative effects of the project will be not significant on any of them. This is despite the lack of data acknowledged throughout the PEI.</p> <p>Several potential major effects on important species groups or assemblages have not even been considered at all in the cumulative effects. For example there is no mention of the effects on the breeding bird assemblage through the cumulative loss of habitats or the cumulative effects of disturbance.</p>
9. Inadequate evidence to scope out a cable in tunnel option under the Duddon Estuary.	<p>The ecology assessment does not compare the relative impacts and benefits to ecology of a tunnel route as opposed to overhead lines or underground cables. As a tunnel route is proposed across the Morecambe Bay as the preferred option, there would appear to be no reason (applying the same logic) why a tunnel route below the Duddon Estuary should not be preferable from an ecological perspective. It should be noted that it is proposed to route two overhead lines around the Duddon Estuary on separate routes (400kV and 132kV). The overall</p>

Key Issue	Comment
	land take, impact on habitats and species is therefore likely to be significant (see Section in this Chapter on Adequacy of Assessment Methodology 10.14).

10.3 Terrestrial and Avian Ecology Issues in PEI

- 10.3.1 This section summarises the other issues identified in the review of the Terrestrial and Avian Ecology assessments presented in the PEI. These issues are related to the overall presentation of the PEI.

Table 10.2 –Terrestrial and Avian Ecology Issues in PEI

Issue	Comment
1. Presentation of PEI	<p>Lack of or very confusing cross-referencing makes following and understanding the assessments for ecology features very difficult.</p> <p>It is very time-consuming to locate the habitats described along each section as these are not labelled on the layers, for example the woodland areas which are mentioned by name.</p> <p>There is no biodiversity detail on the GIS overlays making assessment of the impact of subsections on biodiversity very time consuming.</p> <p>The headings provided for the detailed subsections is misleading – Volume 3.3 Environmental Plan 1 actually contains plans showing statutory or non-statutory sites or features of nature conservation; Volume 3.4 Environmental Plan 2 is entitled 'Habitats of Protected Species, Important Habitats or other Diversity Features and Waterbodies in a River Basin Management Plan' and contains a mixture of features but not as the title infers – it seems to be mainly the Phase 1 habitat mapping and this is not necessarily the biodiverse habitats or priority habitats. These individual maps are not easy to use and it is not clear why the information has been omitted from the GIS overlays when the Priority habitats were originally included on overlays making route assessment much easier (See Section in this Chapter referring to maps 10.14.260 and 10.14.269.</p>

10.4 Commentary on Policy and Legislative Context

- 10.4.1 As with much of the PEI Report, the reader has to chase down relevant topic information across several documents. Volume 2.2 Chapter 2 Planning Policy Context lists the main policy documents relevant to biodiversity, but fails to list relevant biodiversity legislation (table 2.1 assessment principles from NPS EN-1 mentions the Habitats Regulations; 2.6.1

(under other relevant legislation and policy) refers only to other consents such as licences and permits that will be required, and not a general need to comply with biodiversity legislation). Volume 2.2 chapter 9 Terrestrial and Avian Ecology lists relevant legislation (9.2.4) and states that a summary of conservation status and protection afforded under the legislation is provided in Appendix 9B Volume 2.7. Volume 2.7 Technical Appendix 9B Terrestrial and Avian Ecology Species Conservation Status does list the status of species, but does not appear to include a comprehensive summary of what inclusion on any particular list or schedule means in practice. It would be helpful if all policy and legislation relating to the topic could be organised in one place, and a summary of the legislative requirements included for ease of reference.

10.5 Adequacy of Baseline and Data Sources

Commentary on Study Area

Volume 2.2 Chapter 9 Terrestrial and Avian Ecology Table 9.2 sets out the study area and zone of influence for the project.

- 10.5.1 This seems reasonable in the most part although it would be helpful if the ES could provide further commentary on e.g. "other amphibians", where the ZoI is considered to be the DOL on the basis that potential for significant effects at a population level is not likely to extend beyond the DOL. The logic of this is unclear, e.g. common toads (a Species of Principal Importance) occupy a large terrestrial home range and are faithful to their natal ponds; the loss of significant habitat (such as breeding pond OR hibernation habitat) within the DOL or obstruction to/adult mortality during spring migration would therefore result in significant population effects over a wider area than just the DOL.
- 10.5.2 Paragraph 9.4.8 defines the study area as the DOL, the area covered by the phase 1 habitat survey; and the wider study area as the DOL plus 1km. The extent of the study area will be appropriate only if it encapsulates the entire ZoI of the project.

Commentary on Existing Environment

Statutory and non-designated sites

- 10.5.3 The presentation of information is confusing, for example;
- Apparently replicated plans in volume 2.6 figures and volume 3 plans, e.g. PEI 9.1.13 Designated Sites A (Statutory) H3.pdf and PEI 9.1.12 Designated Sites B (Non-Statutory) H3.pdf and NWCC EF I H3.pdf and NWCC EF II H3.pdf. There is inadequate cross-referencing in the text to explain relevance of all plans.
 - According to the document navigation booklet, volume 3 "3.3 Environmental Features Plans: Statutory or Non-Statutory Sites or Features of Nature Conservation – show sites or features of nature conservation such as sites of geological or landscape importance" and "3.4 Environmental Features Plans: Habitats of Protected Species, Important Habitats or Other

Diversity Features and Waterbodies in a River Basin Management Plans – show sites of protected species..., Local Wildlife Sites, and ponds, rivers and other water features." This is confusing since Local Wildlife Sites (apparently included on plan 3.4) are non-statutory sites (supposedly shown on plan 3.3). However, neither NWCC EF I H3.pdf nor NWCC EF II H3.pdf show Local Wildlife Sites/ non-statutory sites of nature conservation. Moreover, neither of these plans appear to be referred to in any of chapter 9.

- 10.5.4 Table 9.46 provides details of non-statutory sites, including name and reason for designation. However, in most cases the cited 'reason for designation' appears to be a summary site description rather than the qualifying feature.

Data sources

- 10.5.5 Volume 2.2 Chapter 9 Terrestrial and Avian Ecology – Table 9.3 lists sources of information. This does not appear to be entirely consistent with guidelines on data searches published by the relevant professional body, e.g. sources to consult for background data including the LERC (Local Environment Records Centre), which must always be consulted; other sources include local wildlife groups, e.g. bat, badger, bird groups; local authorities; the government's MAGIC website (in England) (<http://www.magic.gov.uk>); and the NBN Gateway (<https://data.nbn.org.uk>); and county floras or faunas.
- 10.5.6 The date of the data searches/ age of the records should be provided. The ES should be aware that historic records should not automatically be discarded; a lack of recent records may simply indicate a lack of recent survey, and not absence of the feature. The references to paragraphs in the following section by section relate to the PEI unless otherwise stated.
- 10.5.7 The ES should include a current full and adequate data search.

10.6 Section by Section description

Volume 2.2 Chapter 9 Terrestrial and Avian Ecology

P.14 Table of Potentially Important Features and ZoI

- 1.1.1 Otter – as these species are wide ranging and can use many miles of watercourse corridors, it is important to determine whether or not they are passing along any watercourse which is to be temporarily 'blocked' during construction. Surveys have been partially completed but these concentrate on 250m up and downstream of works. The Construction Environmental Management Plan for the scheme will need to address issues which might adversely affect otter to ensure they have free passage long the watercourse and that there are no temporary hazards such as uncovered deep trenches with no means of escape. Some of the otter populations are linked to European sites and are qualifying species so potential effects will need to be considered under the Habitats Regulations Assessment for the scheme.
- 10.6.1 The assessment of effects based on incomplete baseline data is based on two confidence

limits: 50—95% (probable) where data is incomplete and surveys remain to be undertaken and over 95% (certain/near certain) where surveys have been undertaken and information is available. It is not clear why lower confidence limits were not also applied (e.g. possible or uncertain) especially given that 2016 field survey data has not been taken into consideration. The 50-95% probability limit is very wide and the latest CIEEM guidelines for EcIA no longer include confidence limits.

- 10.6.2 Survey methodologies have been adapted to the scale of the route being assessed. So for example the bat roost surveys and assessment make no attempt at this stage to identify all bat roosts along the route but to assess the bat roost resource. It is unclear whether and to what extent these assessments have been informed by dusk emergence and dawn re-entry surveys. Some sections of the PEI refer to emergence and return surveys, but the section on methodology does not include any reference to such surveys.
- 10.6.3 All bat echolocation calls recorded by automated detectors during bat activity surveys were identified through the auto-identification software SonoChiro. It is acknowledged in the PEI that this software is in its infancy. However, no attempt appears to have been made to subject a sample of the results obtained to manual review to verify the accuracy of the results.
- 10.6.4 The Methodology states that it has not been possible to identify *Myotis* species bats down to species level – but states that *"this lack of certainty regarding species does not affect the conclusions regarding significance of potential effects"*. This is not a supportable position and applying the worst case scenario (as set out in the methodological approach) requires the assumption that some *Myotis* calls may be rarer bat species or that all four *Myotis* species may be present where bats were identified to genus level only.
- 10.6.5 Assessments of the value of assemblages of breeding birds, wintering birds and foraging and commuting bats do not appear to be based on any clear and recognised methodological approach. It is not clear therefore how assessments of value were determined and whether they have been assessed in an objective and consistent way. The following approaches are therefore recommended:
- 10.6.6 BATS - The assessment of the value of the bat population on Site is based on the article in the Chartered Institute of Ecology and Environmental Management (CIEEM) In Practice magazine – Valuing Bats in Ecological Impact Assessment, No. 70, December 2010 (Wray et al. 2010). Where bats (species and number) are found using certain habitats, (to roost, commute or forage) their population is assigned a relative ecological value. The value to the species is partly based upon how often a habitat is used upon the rarity of the specific bat species. In the case of commuting routes or foraging areas the number of nearby confirmed roosts is also a factor. Once the value of the bat population has been calculated, robust mitigation for any impact on the bats can be determined.
- 10.6.7 BIRDS - To assess the overall breeding bird assemblage, Fuller (1980) described a method for assessing the ornithological interest of sites, whereby the importance was defined by the number of breeding species present. This is shown in Table B1 below adapted so that

Fuller's "Local" importance is assumed to correspond to District importance as described in the IEEM (2006) guidelines. An assemblage comprising fewer than 25 species is therefore considered to be of local importance or less. Since the publication of the criteria in 1980, declines have occurred in many bird populations, and for this reason it is considered appropriate to recalibrate the categories in this way. The assessment must also of course take into consideration the number of specially protected Schedule 1 bird species and the number of Species of Principal Importance (SpOPI) under Section 41 of the NERC Act, 2006.

- 10.6.8 Figure 9.3.24 Phase 1 Habitat Categorisation – for ease of reference, it would be helpful if the legend/ key for the topic could be presented alongside the legend for the development infrastructure.
- 10.6.9 Paragraph 9.6.7 – This provides a list of inclusions in the assessment; the list is not clearly defined, with muddled species list mentioning terrestrial mammals but then listing other species such as polecat, harvest mouse, hedgehog, birds.
- 10.6.10 Section 9.7 – all these sections mention ongoing survey work, which provides no confidence in the assessments given at this stage.
- 10.6.11 Paragraph 9.7.6 - states that plants and habitats recorded are illustrated on Figure 9.3.24. However, 9.3.24 illustrates phase 1 habitat types only, with no target notes. This requires clarification.
- 10.6.12 Description of grassland (9.7.12 et seq) – it would be helpful if the ES could quantify the extent of coastal and floodplain grazing marsh priority habitat (Habitat of Principal Importance; section 41 NERC Act 2006) within the study area/ footprint of temporary and permanent development.
- 10.6.13 With reference to coastal and floodplain grazing marsh, paragraph 9.7.16 states this "*can be an important resource for wintering wildfowl, but within...Subsection H3 they are mainly improved grassland with low botanical diversity.*" According to Natural Englandⁱⁱ, coastal and floodplain grazing marsh is a landscape type which supports a variety of habitats, the defining features being hydrology and topography not botanical diversity. The low botanical diversity of this habitat is therefore not an indicator of the value of this habitat.
- 10.6.14 Paragraph 9.7.25 - refers to protected and notable flora, with specific reference to IUCN red list guidelines, nationally scarce species and Species of Principal Importance in England (NERC Act 2006). The impact assessment should also consider species of conservation value in a regional/ County level context such as those listed under Local Site selection guidelinesⁱⁱⁱ.
- 10.6.15 Paragraph 9.7.29 – great crested newt surveys have been undertaken in Spring 2016 but no information yet included here. The results of the survey must be made known in the ES.
- 10.6.16 Paragraphs 9.7.33 - et seq provide commentary on bats, but based on one survey only and

that late in the bat active season. No information on weather conditions at the time of survey is presented. The baseline for bats is not yet established. Paragraph 9.7.34 states that the likely bat population "comprises widespread species that are abundant through Cumbria", but the ES should consider H3 bats in the context of Lancashire.

- 10.6.17 Paragraph 9.7.37 – there is a lack of information about the potential disruption to migratory fish due to temporary barriers during construction. If these are qualifying species of affected SAC rivers they will need to be assessed under the Habitats Regulations Assessment for the scheme – the PPA Group have no information on any draft HRA to date. Mitigation and /or compensation may be required but it is not clear as to whether or not construction will avoid seasonal migration periods.
- 10.6.18 Paragraph 9.7.43 – as above, there is a lack of information as to temporary disruption to commuting otter might be mitigated, particularly in any tributaries or main watercourse which are hydrologically within or linked to a SAC where otter is a qualifying species.
- 10.6.19 Paragraph 9.7.45 - refers to other terrestrial mammals, and submission of records to Cumbria Biodiversity Data Centre (CBDC). It should be noted that Lancashire Environment Record Network (LERN), and not CBDC, is the local records centre for Lancashire.
- 10.6.20 Paragraph 9.7.46 - refers to priority species on the Lancashire LBAP. Since the LBAPS have now been superseded, some commentary would be helpful here.
- 10.6.21 Paragraph 9.7.47 - notes that great crested newt are a primary reason for designation of Morecambe Bay although designated site newts would not be present in subsection H3. Indeed, the designated site citation notes that the qualifying population is on the southern shore of the Duddon Estuary, so will therefore be of greater relevance to Cumbria.
- 10.6.22 Paragraph 9.7.51 - goes on to note that great crested newt survey results for H3 are not yet available, but are assumed to be present. Indeed, relatively recent surveys commissioned by DONG Energy in connection with the Walney Offshore Windfarm Extension have confirmed the presence of great crested newt in the DOL.
- 10.6.23 Paragraph 9.7.70 – avoidance of vegetation clearance within suitable habitat for breeding birds is necessary; adequate mitigation (e.g. seasonal working) and compensation for permanent loss is expected.
- 10.6.24 Paragraph 9.7.72 – deals with wintering bird survey transects. These did not apparently extend to the whole DOL extent. However, and depending on the precise nature of any proposals within the DOL, further consideration of wintering birds outside the surveyed areas may be necessary. In this respect, consultation with local ornithologists (comprehensive data search) would be useful.
- 10.6.25 Paragraph 9.7.74 – certain biodiverse designated and undesignated habitats would be expected to be avoided through micro-siting, particularly those which may not be easy to

restore such as wet woodland, lowland fen and raised bog.

- 10.6.26 Paragraph 9.7.77 – it is important to specify requirements to avoid Japanese knotweed by a minimum of 7m.
- 10.6.27 Paragraph 9.8.12 – it is noted that the hen harrier protection zone is missing (Figure 9.2, Volume 2.6).
- 10.6.28 Paragraph 9.8.28 – red squirrel populations are present in broadleaved, coniferous and mixed woodland in certain areas of the west coast such as Workington. These should be recognised.
- 10.6.29 Paragraph 9.8.51 – it is recommended that other habitats to add include in the assessment are:
- Brownfield sites with open mosaic vegetation on previously developed land;
 - Areas affected by mining and iron ore/slag sites; and,
 - Railway embankments.
- 10.6.30 Table 9.48 - potentially important ecological features within subsection H3 (features scoped in) seems reasonably comprehensive, although it is noted that this is precautionary at this stage.
- 10.6.31 Given the existing approved development at this site (with its' own planting/mitigation requirements), it would be helpful if the ES could clarify existing and proposed (temporary and permanent) layouts. It is difficult to establish what is already permitted/ developed on site and what is newly proposed as a result of the current development.

10.7 Commentary on Consultation Activity and Data

- 10.7.1 Although the applicant has been consulting stakeholders in respect of these proposals for a number of years now, there appear to be a number of 'last minute' changes to the proposals (technologies, extent of impacts, etc). Despite the long history of consultation, it is disappointing that full survey results are not available and thus consultees are not yet in a position to fully understand the likely impacts arising from the development.

10.8 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

- 10.8.1 The PEI Report outlines the approach to assessment, and in principle what is outlined seems appropriate. In the absence of the full ES it is not possible to comment on the application of the methodology or agree with the preliminary conclusions.

- 10.8.2 Use of terminology is confusing in places, e.g. paragraph 5.2.8 refers to environmental mitigation through compensation to replace features or assets. The ES needs to be clear about what constitutes avoidance, mitigation, compensation, and enhancement.
- 10.8.3 Paragraph 5.7.14 states that the assessment has been completed for permanent infrastructure and "certain elements of the temporary works"; and suggests that for lower voltage connections at 33kV and below the nature of works, wooden pole infrastructure and method of construction mean that environmental effects would be minor and below level of effects assessed for 400kV and 132kV infrastructure. If 33kV and below works were proposed in isolation then this might be the case. However, the impact of all elements of the project should be assessed. This is also pertinent to the consideration of inter-relationship effects, particularly since the PEI Report states that all individual effects (even below the level of significance) will be considered.
- 10.8.4 The PEI Report discusses the Limits of deviation (LoD), noting that all assessments will take into account potential variation. Paragraph 9.7.7 states that infrastructure and working areas would not be moved to result in increased loss/damage to important ecological receptors. The ES should make it clear that alternatives that result in less or no harm have also been considered, i.e. can infrastructure be moved to reduce impacts.
- 10.8.5 Inter-relationship effects. It would be useful to have some commentary on the inter-relationship matrix by topic area to explain which topics have been ruled in and out, e.g. why traffic and transport or land-use and recreation not have potential to affect terrestrial and avian ecology.
- 10.8.6 Cumulative effects will be assessed following identification of major developments that could have cumulative effect. The applicant should be aware that it is not only major developments that have potential to result in significant adverse effects on protected and priority species and habitats, particularly at the local scale.
- 10.8.7 Chapter 4 refers to soil storage (for the temporary shaft and substation site) at Middleton tunnel head site, with intermediate shaft excavated material stored on land to the east of the Middleton Tunnel Head site (paragraph 4.5.65). It is unclear where precisely this soil storage is proposed, e.g. Figure 4.14.1 tunnel temporary works plan shows soils storage in the northernmost part of the substation site, and apparently not to the east of the tunnel head location. All temporary and permanent elements of the proposals should be clearly identified to aid the assessment.
- 10.8.8 Volume 2.7 Appendix 9A Ecology consultation indicates that given the widespread distribution of common toad targeted surveys are only being undertaken where potentially suitable breeding habitat would be affected and elsewhere the presence of common toad is assumed in potentially suitable terrestrial habitat. Common toad is a largely terrestrial species, quite capable of occupying habitats up to several hundred metres from the breeding pond. Targeted surveys may therefore be required, depending upon the particular nature of the development at that point and the habitats affected, if there are suitable water bodies within several hundred metres of the development, e.g. see *Common toads and roads*,

Guidance for planners and highway engineers in England (Amphibian and Reptile Conservation, 2011).

10.9 Commentary on Proposed Mitigation

- 10.9.1 Volume 2.3 project wide chapter 9 Terrestrial and Avian Ecology identifies generic potential effects on Important Ecological Features, including protected and priority species. The essence of this section appears to be 'impacts on important ecological features will be avoided; where impacts cannot be avoided, mitigation measures (outlined in the ES) will be included in a biodiversity mitigation strategy/ CEMP, and works will proceed under protected species licences as necessary'. Much of the text in 9.1 does not really appear to add anything and it is not possible to comment on mitigation/ biodiversity mitigation strategy, etc since these are not yet available for comment.
- 10.9.2 Mitigation measures during site clearance and construction (to be outlined in the ES/ outline biodiversity mitigation strategy) will need to provide sufficient detail to demonstrate that significant adverse impacts can be avoided, adequately mitigated or compensated. For example, references in the PEI Report to the timing of site clearance in relation to particular species should be given further consideration, e.g. hibernation/ breeding seasons. With reference to common toad (Species of Principal Importance), paragraph 9.1.20 refers to killing/injuring during site clearance, but it does not appear to consider the need for mitigation for migration route interruption. It also does not appear to consider the potential for creation and subsequent destruction of hibernacula (soil piles, construction materials), or the need for compensation for potentially significant habitat loss (e.g. foraging, hibernation). It is of concern that Great crested newt appears to be mentioned under routine inspection and maintenance only.
- 10.9.3 Volume 5.2 Code of Construction Practice: Table 5.6 Ecology and Nature Conservation. The listed measures appear generally appropriate for the protection of biodiversity. However, while some are generic and are standardly left to pre-construction, some should properly be addressed prior to determination. Surveys for protected species immediately prior to site clearance/ development works (pre-construction) are appropriate as a precaution (i.e. for
- 10.9.4 Mobile species (which might colonise prior to works on site), but only where adequate survey has been carried out in advance of determination to inform a robust assessment of impacts. Moreover, for most protected species affected by the development, pre-construction precautionary surveys would be expected to form part of a wider biodiversity mitigation strategy which will need to be approved in advance. Whilst it will undoubtedly be appropriate for the Ecological Clerk of Works to work with the contractor where designated sites and important habitats are affected, this should be to ensure that avoidance/ mitigation/ compensation measures approved as part of the permission are implemented in full, and not to formulate/ agree mitigation on an ad hoc manner once work has commenced.
- 10.9.5 Specific comments in relation to the Code of Construction Practice include:

- Ec024, where disturbance to/ loss of bat roosts is unavoidable updated surveys and derogation licences would be obtained; specific mitigation measures to be outlined in the Biodiversity Mitigation Strategy. Where any European protected species is affected, the ES must include sufficient information to enable the determining authority to engage with the requirements of the Conservation of Habitats and Species Regulations 2010 (as amended) in the making of the planning decision;
 - Post-construction planting measures appear to be minimal, with some areas of woodland planting already approved for the existing substation. The ES should not double-count mitigation; and
 - Ec035 deals with line clearance through woodland, where scrub would be allowed to regenerate; indicates that specific mitigation will be outlined in the BMS for several subsections, but does not appear to include subsection H3 (statutory and non-statutory designated sites) as a location requiring any specific mitigation. The ES should clarify why it is considered appropriate to damage habitats within designated sites without proposing mitigation/ compensation.
- 10.9.6 Table 5.10 Protection of Water Environment. Apparently no specific mention of mitigation for H3 dewatering effects on adjacent designated sites, although this was thought to be a potentially significant impact.
- 10.9.7 Paragraph 9.1.5 – hydrogeological effects on SAC habitats dependant on groundwater will need to be assessed under the Habitats Regulations where there is hydrogeological connectivity to designated sites.
- 10.9.8 Paragraph 9.1.16 – loss of red squirrel habitat and associated fragmentation of habitat due to woodland clearance is likely to be of significance to red squirrel populations.
- 10.9.9 Paragraph 9.1.46 – Electro-magnetic fields and impact on aquatic species – where these may affect qualifying species of SACs e.g. migratory fish such as Atlantic Salmon, - this effect will need to be assessed based on robust baseline evidence under the Habitats Regulations.
- 10.9.10 Paragraph 9.2.7 – clearance of a swathe of woodland then allowing scrub to regenerate does not mitigate or compensate for loss of this habitat or for loss of habitat and fragmentation of populations of red squirrel where present.
- 10.9.11 Paragraph 9.4.2 - Compensation and Enhancement states that: *"New areas of broadleaved woodland would typically need to be created within the DOL as compensation covering an equivalent area to that being lost. It is recognised that there would be a significant time lapse before the new woodland planting has matured and offers the same ecological importance to that which would be lost during the construction phase of the Project. There could, however, be positive effects overall when the overhead line clearance corridor is restored to woodland following decommissioning. The total area of broadleaved woodland would then be larger than before the Project."*
- 10.9.12 It is important to note that in using biodiversity offsetting metrics, there may be an expectation of higher ratios of replacement than 1:1, especially where Habitats of Principal

Importance (Section 41 of the NERC Act, 2006) are affected. Ancient woodland and mature broadleaved on ancient woodland cannot be replaced, so additional compensation will be required. The clearance corridor might increase biodiversity for some species but may also fragment habitats/populations of other species such as red squirrel.

10.10 Design Mitigation

- 10.10.1 The PEI Report indicates that design mitigation includes siting, use of alternative technology, etc. The applicant has referred repeatedly, at Stakeholder Reference Groups, to the Morecambe Bay tunnel as 'mitigation'. It would seem more accurate and appropriate to refer to the tunnel as an alternative solution/ project alternative.
- 10.10.2 The ES should be clear in it's use of terminology. For example, some of the measures listed under 'design principles' seem to be good practice mitigation/ environmental measures, e.g. timing of works and lighting?

10.11 Good Practice Mitigation

- 10.11.1 It is not clear why some measures are considered to be 'good practice' rather than 'design' mitigation, for example minimisation of land take and use of soakaways and settling ponds would seem to be design mitigation.
- 10.11.2 Proposals for Ecological Clerk of Works, Tool Box Talks, Construction Environment Management Plans, etc are appropriate. Further details should be supplied as part of the ES, Biodiversity Mitigation Strategy, Code of Construction Practice; and secured through the Draft DCO.

10.12 Bespoke Mitigation

- 10.12.1 This is apparently set out by geographical subsection, where appropriate. However, very little information on mitigation for H3 is presented, despite significant adverse effects on designated sites.
- 10.12.2 Figure 6.5.7 preliminary landscape mitigation (Middleton substation extension and tunnel head house site) indicates areas of woodland planting, some of which is proposed '*to mitigate visual effect of proposed substation on residents of Heysham*' and '*on users of local PRow*'. However, some of this proposed planting was actually proposed previously to mitigate effects of the original 400kV substation (Lancaster planning application 14/00422), e.g. areas marked '*woodland belt of native trees and shrubs*' and '*existing hedgerow to be supplemented with additional planting an hedgerows trees*' on Figure 16 Landscape Mitigation Plan. The ES should avoid double-counting proposed mitigation. It would be useful if the ES could clearly indicate what is previously approved landscape mitigation and what is newly proposed.

- 10.12.3 Paragraphs 9.7.78 – 9.7.80 suggest that hydrogeological changes will result in significant adverse effects on designated sites, necessitating mitigation. No details of mitigation are provided, so comments are not possible at this time.
- 10.12.4 Pylon removal is addressed in several places including paragraphs 4.5.38 and 9.7.82. It is expected that Natural England (and the Wildlife Trust for Lancashire) would comment in detail on proposals affecting Heysham Moss SSSI. Generic proposals within the PEI Report include clearance of the area around each pylon, with pylons dismantled by crane and lowered in sections to the ground or legs cut and pulled down to the ground by tractor prior to dismantling; foundations to be removed to 1m, and subsoil and topsoil reinstated, although in sensitive locations it may be appropriate to remove only above ground infrastructure. Although paragraph 9.7.82 suggests that removal of the line would not result in any loss of habitat, the generic proposals could presumably result in damage and degradation to habitats. The ES will need to demonstrate how significant adverse effects on the SSSI resulting from pylon removal would be avoided, mitigated or compensated.
- 10.12.5 The applicant proposes a temporary line to the south of the existing, necessitating clearance of a corridor maximum width 30m through wet woodland (Habitat of Principal Importance and at least in part within the designated site). The PEI Report 'assumes' that the corridor would then be managed as lowland raised bog or if not that wet woodland would regenerate, and claims the effect would not be significant. The ES should demonstrate that there are no alternatives to clearing a swathe of priority habitat through a designated site to install a temporary line. The ES should demonstrate that appropriate and proportionate mitigation/compensation for unavoidable impacts will be delivered, i.e. that the applicant will not damage designated sites and priority habitats and leave it to the landowner to restore habitats.
- 10.12.6 Paragraph 9.7.83 of the PEI, notes that the tunnel head/ substation requires permanent and temporary removal of several hectares of coastal and floodplain grazing marsh (priority habitat) of local importance, but not significant in the context of the wider resource. CIEEM guidelines for ecological impact assessment stress that the scale of significance of an effect is not necessarily the same as the geographic context in which the feature is considered important; and effects may be significant at the local scale, particularly in view of policies for no net loss of biodiversity. In this case the assessment has identified a significant adverse effect at the local level, and it will therefore be appropriate for the ES to include proposals that demonstrate how this adverse effect will be mitigated/ compensated to ensure that the proposals do not result in a deterioration of biodiversity value.

10.13 Volume 2.7 - Technical Appendices Chapter 9 Appendices

- 10.13.1 Appendix 9A.1 - Meeting 2 Feb 2016 (LDNP attended) recommended 50m Habitat survey buffer.
- 10.13.2 Paragraph 4 - NG Response *"Extended phase 1 habitat surveys are being undertaken within a 50m buffer of the DOL during 2016 in order to build upon the dataset collected during*

2015 (refer to section 9.5, Data Gathering of Chapter 9, Volume 2.2)."

- 10.13.3 P9 Recommendations for enhancement opportunities should be sought from relevant consultees for consideration as part of the Project.
- 10.13.4 NG Response: Potential enhancement opportunities will be discussed and agreed with relevant consultees as part of the Project, with details outlined within the ES.
- 10.13.5 It is likely that habitat enhancement could form part of the mitigation / compensation package. In order to quantify the value of enhancements to set against losses, survey of the enhancement sites will be necessary (and these may be outwith the 50m buffer). National Grid should be encouraged at the earliest opportunity to begin to consider the fact that enhancement outside the DOL may be necessary and with this additional survey work to assess current condition may be beneficial to the process.
- 10.13.6 Paragraph 9 - Meeting commented: *"The LDNPA and other planning authorities should be included on the list of key group members for the HRA Evidence Plan/HRA specific topic workshops."* NG Response: *"Invitations to HRA-specific topic workshops will be extended to all relevant consultees, including the LDNPA and other planning authorities as appropriate."*
- 10.13.7 In this instance the Planning Inspectorate are the competent Authority in relation to the HRA assessment. As with the United Utilities (UU) pipeline application it is recommend that the clarification is given on responsibilities/input requirements. Additionally, the PPA Group should be kept inform of changes that may be negotiated in relation to the HRA process but that could then influence the wider scheme, either geographically or in relation to emerging/developing documentation such as construction working methodologies etc.

Appendix 9D1.1 - 9D Field Survey Methodologies

- 10.13.8 With reference to the approach to Phase 1 Habitat and protected species survey - *"This approach allows for quantitative loss/gain calculations to be determined and important information regarding notable habitats and species to be clearly presented in map form, aiding the design review process for the Project."* The intention to develop quantitative loss/gain calculations is welcomed. There is a need to stress the importance of this information in gaining a clear understanding of entire habitat losses in the National Park to allow the subsequent application of biodiversity offsetting principles to calculate appropriate compensation levels (taking into account habitat types, extent required, time for establishment and confidence in successful creation).
- 10.13.9 The following section provides a geographic section-by-section assessment of the PEI.



10.14 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment

Volume 2.4 Chapter 9 – Terrestrial and Avian Ecology – North Section

Subsection A1 - Moorside to Thornhill

- 10.14.1 Draft Order Limits (DOL) are stated as the area of Phase 1 Habitat Survey with the Wider Study Area being the DOL plus 1km but varying according to the species involved, as described in Vol. 2.2 Ch.9 Introduction. Depending on the status and type of habitat this could be more extensive due to any potential hydro-geological impacts or hydrological pathways of effect.
- 10.14.2 Paragraph 9.1.13 – This considers species-rich semi-improved neutral grassland identified through Aerial Photo Interpretation (API). In some cases there has been no ground truth checking in the field so it would not be possible to map habitats to this degree. The sentence then goes on to conclude that 'it is unlikely that they would be of sufficient quality to meet the criteria for lowland meadows (Habitats of principal importance for biodiversity)'. The PPA Group do not consider assessment to be acceptable where habitats have not been seen on the ground.
- 10.14.3 Paragraph 9.1.15 Hedgerows have been assessed as insignificant but there appears to be riparian mature hedgerows and/or trees beside the Ehen.
- 10.14.4 Paragraph 9.1.19 – The River Ehen is designated for freshwater pearl mussels and Atlantic salmon which facilitate one part of their life cycle. The route passes alongside and crosses the Ehen 3 times downstream of the designated site but these impacts along these reaches still have potential to have a significant effect on qualifying features of the European site through water pollution, siltation, noise, vibration, human disturbance, obstruction etc. All of these have potential to obstruct migration of salmon to upper reaches. It is anticipated that Habitats Regulations Assessment will be necessary, but the PPA Group have seen no evidence of any Assessment of Likely Significant Effects or full Appropriate Assessment. The section of the River Ehen within the ZoI of Subsection A1 has been assessed to be of 'County' importance for biodiversity yet there is no mention of qualifying species of the River Ehen SAC here which are of 'international' value.
- 10.14.5 Paragraph 9.1.21 – It appears that none of the 9 ponds have 'yet' been found to support GCN – does this imply they have yet to be surveyed?
- 10.14.6 Paragraph 9.1.22 – Have arable fields picked up during API now been ground-truthed?
- 10.14.7 Paragraph 9.1.27 – The various working areas for the project would be constrained should invasive species, and in particular Japanese knotweed, be found present. It appears that to date there have been lists of invasive non-native species prepared for each subsection but

this is not sufficient to inform the early treatment/eradication of JK prior to works commencing to avoid layer delays. Biosecurity throughout the length of the project and on any land to be used for associated works or storage etc should be considered as a potentially high risk to biodiversity and as such very clear guidelines must be included within the Construction Environmental Management Plan to minimise risk. This needs to be considered before the start of the scheme and clarity provided in the ES as to how this issue will be dealt with prior to any works commencing. Spread of any other invasive species needs also to be prevented through the CEMP and detailed tool box talks to all contractors involved throughout the length of the project.

- 10.14.8 Paragraph 9.1.30 – This is just one of numerous examples throughout the subsections' text stating that surveys are continuing. The PPA Group do not consider that evaluation and assessment should be attempted until this can be based on robust evidence as it may well be incorrect or misleading.
- 10.14.9 Paragraph 9.1.35 – This considers otter as qualifying species of river SACs and states that there are 'no hydrological linkages' between otter inhabiting this subsection and the SAC watercourses. This is not strictly correct as the river SACs are linked along the coast where otters are also present.
- 10.14.10 Paragraph 9.1.59 – Natterjack toad habitat ruled out; known breeding pools only 900m from DOL. Perhaps an argument for not doing surveys would be the barrier provided by the River Ehen, rather than or in addition to lack of suitable habitats.
- 10.14.11 Paragraph 9.1.70 – Freshwater pearl mussel would likely be of international significance as qualifying feature of the SAC if found to be present here.
- 10.14.12 Paragraph 9.1.79 – This states that a 'single' winter bird transect as carried out to record target wader and wildfowl species. Surely this does not provide the robust evidence required to inform the ecological assessment, as results may reflect the timing, tides, month carried out, weather etc.
- 10.14.13 Paragraph Table 9.5 Scoping – GCN have been scoped out of further assessment yet field surveys are incomplete; the PPA Group do not consider any species or habitats should be scoped out of assessment until all the evidence base is complete. Effects on otter are stated as being damage or loss of holts and disturbance; barrier effects need to be included in the assessment.
- 10.14.14 Paragraph 9.1.97 – No mention of a pre-felling check of trees for red squirrel dreys, or compensation for loss of red squirrel habitat which requires mature trees for drey building and foraging.
- 10.14.15 Paragraph 9.1.104 – Considers injury and mortality of common toad. The CEMP should advise a precautionary approach in all cases of vegetation/habitat removal or disturbance with regards common amphibians, protected species, birds, reptiles etc.

- 10.14.16 Paragraph 9.1.13 – Scheme poses risk of disturbance to fish through temporary obstruction of passage of fish during migration and due to electromagnetic forces under pylons. Habitats Regulations Assessment will be required here to determine any likely significant effects.
- 10.14.17 Paragraph 9.1.127 – This lists species where project-wide mitigation will be provided – bats; otter; red squirrel; badger. It is not clear why this has not included great crested newt, polecat, reptiles, other amphibians, migratory fish, overwintering birds, breeding birds, aquatic species etc
- 10.14.18 Paragraph 9.1.129 – Sub-section-specific mitigation – with regard to aquatic species, the ES will need to consider the effects of the development on Atlantic salmon?
- 10.14.19 Paragraph 9.1.138 - Plants and habitats – only 53% of the area has supporting field data, the rest being based on API and existing data. The PPA Group do not consider that habitats and vegetation cover can be accurately assessed without ground-truthing.
- 10.14.20 Paragraph 9.1.40 - 118 ponds still to be surveyed for Great Crested Newt so cannot reliably assess until this information is available.
- 10.14.21 Paragraph 9.1.30 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL passes through an area of semi-natural broadleaved woodland and crosses several hedgerows which may include mature trees, it is probable that some tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.22 Paragraph 9.1.32 – Low levels of bat activity were recorded, but only one static monitor was deployed due to access restrictions. Given the low level of surveys undertaken and the fact that the route crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands and hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the same section has been assessed as being of county level importance for noctule and unidentified *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.
- 10.14.23 Paragraph 9.1.89 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied.
- 10.14.24 Paragraph 9.1.91 – For the reasons given above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat population has been made due to a lack of data.
- 10.14.25 Paragraph 9.1.80 – Breeding and wintering bird surveys in Section A1 have been very limited in extent including only one wintering bird transect. There is therefore no evidence to support the assessment that the bird population within the ZOI is of local importance only

especially when considering the number of wetland habitat parcels that the DOL passes through or close to.

10.14.26 Paragraph 9.1.112 – It is considered that the PEI cannot state 'no significant' effect on freshwater pearl mussels without the adequate baseline survey data.

10.14.27 Paragraph 9.1.113 – The ES will need to assess the effects of the development on migratory fish and will need to be a robust assessment to support the HRA.

10.14.28 Paragraph 9.1.114 – For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied.

10.14.29 Paragraph 9.1.129 – The PEI considers that no mitigation is required in this case, as no significant effects have been identified, yet this assessment has been made prior to assessing the ongoing survey information. This assessment will need to be re-assessed as part of the ES in light of available survey information and consideration of it.

Subsection A2 – Thornhill to Whitehaven

10.14.30 Table 9.8 Non-statutory sites for nature conservation – this omits any mention of the important Hen Harrier Protection Area or Raptor Sensitivity Zone, which lies to the east of the coast stretching from 2km north of Cleator Moor up to Bridgefoot near Great Clifton, and roughly between Moresby Park-Winscales and Frizington-Rowrah-Ullock-Greysouthern. The northern end of the DOL appears to run straight through this area. The site has previously been valued at a similar level to SPAs and it is functionally linked to the West Pennine SPA where the hen harrier breeds during the summer months. The importance of undertaking overwintering bird surveys in the area has been previously highlighted in earlier consultations, yet no surveys have been undertaken. Issues affecting the bird populations in this area of rush pastures and marshy grassland include noise, human disturbance, temporary habitat loss, potential for bird collisions.

10.14.31 Paragraph 9.2.15 – The text states that only one area has been surveyed to NVC level and yet all the habitats are stated as not qualifying as purple moor grass and rush pasture Habitat of Principal Importance for conservation. It is not clear as to how has this been concluded when the majority of the fields have not been surveyed in any detail and some not even ground truthed. This will need to be resolved in the ES.

10.14.32 Paragraph 9.2.37 – As mentioned previously, there is hydrological connectivity along the coast although agreed this is a long distance.

10.14.33 Paragraph 9.2.38 – There are 2 Clints Quarries in western Cumbria. Please can these be differentiated in some way to avoid confusion. Clarification and confirmation is required that this Clints Quarry supports Great Crested Newt as well as the SAC further north.

- 10.14.34 Paragraph 9.2.29 – There are stands of giant JK *Fallopia sachelensis* along the A595, which risks being caused to spread by traffic along this road.
- 10.14.35 Paragraph 9.2.52 – As above, clarification is required as to whether this is referring to the correct Clints Quarry.
- 10.14.36 Paragraph 9.2.78 Passage birds and wintering birds VP surveys were not undertaken within the Bird Study Area (DOL plus 1km) of the northern part of A2 and the southern half of B1 – the explanation for this was that activity of target birds was 'expected' to be low here. The habitats in this area do not support this assumption which the text also asserts was agreed with RSPB/NE. Without being party to these discussions the PPA Group do not know how this decision has been decided as the habitats appear to be suitable to support various raptors. This issue is considered further in Subsection B1.
- 10.14.37 Paragraph 9.2.31 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL passes through several areas of semi-natural broadleaved woodland and crosses several hedgerows which may include mature trees, it is probable that some tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.38 Paragraph 9.2.36 – Low levels of bat activity were recorded. However, as the DOL route crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands and hedgerows, the assessment of local importance for the bat population is likely to be an underestimate, especially as the same sector is assessed as being of county level importance for noctule and unidentified *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.
- 10.14.39 Paragraph 9.2.105 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied especially as paragraph 9.2.104 states that: *"overall, the works would result in the loss of potentially important foraging habitat for bats, and cause fragmentation of woodland and hedgerow habitat that could affect their foraging or commuting behaviour"*.
- 10.14.40 Paragraph 9.2.106 – For the reasons given above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat population has been made due to a lack of data.
- 10.14.41 Paragraph 9.2.175 – Breeding and wintering bird surveys in Section A2 have been very limited in extent including only two breeding bird transects. There is therefore no evidence to support the assessment that the breeding bird population within the ZOI is of local importance only especially when considering the significant number of wetland and woodland habitat parcels that the DOL passes through or close to. The section has been assessed as being of regional importance for wintering hen harrier.

- 10.14.42 Paragraph 9.2.136 – For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of important habitat that will need to be removed and the fact that no wintering bird surveys have yet been undertaken.
- 10.14.43 Paragraph 9.2.78 Passage and overwintering bird VP surveys were not undertaken within the Bird Study Area (DOL plus 1km). It is stated that hen harrier surveys would have disturbed these species yet it is hard to understand why surveys over more valuable bird habitats can have been neglected. Natural England has been developing a policy to manage hen harrier habitats and enlarge the population (NE, 2006). As it is not now known where hen harriers are making use of this protection area, will all construction etc be delivered outside the wintering season so as to mitigate for disturbance? The wintering population is linked to the West Pennines SPA breeding population and as such a Habitats Regulations Assessment is likely to be required for development within the protection zone.
- 10.14.44 Table 9.10 should indicate the value of this protection area and its qualifying species which is functionally linked to an SPA.
- 10.14.45 Paragraph 9.2.99 – 1.2 ha of pylon space and access track between HM-01-198 and 195 within the hen harrier protection zone will be temporarily lost to overwintering birds. This needs to be adequately assessed bearing in mind the value of the qualifying species. It is considered that there is inadequate information presented to date in the PEI to enable robust assessment for the ES and for the HRA for the scheme.
- 10.14.46 Paragraph 9.2.148 Mitigation and compensation for overwintering birds needs to be assessed and provided here necessary.

Subsection B1 – Whitehaven to Seaton

- 10.14.47 NB Please see the subsection notes above under Subsection A2 relating to hen harriers and raptors.
- 10.14.48 Paragraph 9.3.31 – The River Keekle flows into the River Ehen SAC downstream of the designated site but drains into it. River Derwent and Bassenthwaite Lake SAC includes lower Ling Beck which supports otter and links Siddick Ponds with the SAC. This needs to be included as part of the ES
- 10.14.49 Paragraph 9.3.36 – 11 ponds are within this ZoI but states that these have not 'yet' been found to support GCN, therefore this species cannot be scoped in or out of the assessment at this stage.
- 10.14.50 Paragraph 9.3.55 – Otter are very active in the Workington/Stainburn area within the River Derwent SAC and SSSI, and in tributaries including Ling Beck.

- 10.14.51 Paragraph 9.3.56 – This states that 'only one recent record of red squirrel within the Wider Study Area' was obtained. This is very surprising as the Stainburn /Workington area supports a relatively large red squirrel population generally resulting on 100s of records from CBDC for sites in this vicinity.
- 10.14.52 Paragraph 9.3.57 – Red squirrel are very active in the Workington area; adequate mitigation and compensation for habitat losses expected. Mature woodland - not possible to replace.
- 10.14.53 Paragraph 9.3.83 – Siddick 132kV substation – likely affected species include small blue butterfly, open mosaic habitat on previously developed land, otter, rare/notable plants (Siddick).
- 10.14.54 Paragraph 9.3.21 – Total marshy grassland in subsection Study Area B1 is around 50 ha including purple moor grass and rush pasture HoPI, which is valuable as hen harrier overwintering habitat and for other raptors, and so this habitat seems to be undervalued in the PEI. This will need to be properly assessed in the ES.
- 10.14.55 Paragraph 9.3.38 – Arable farmland forms the second most extensive habitat at 47 ha – also potential for raptors and overwintering birds using stubble.
- 10.14.56 Paragraph 9.3.52 – This provides only 1 recent record of otter yet again the PPA Group have seen many records of otter on the River Derwent and tributaries from Workington area, as well as personal observations.
- 10.14.57 *Eastern area at Lillyhall – further species-rich purple moor grass and rush pasture near entrance to Lillyhall industrial estate.*
- 10.14.58 Paragraph 9.3.72 – This states that 'the majority of habitats in Subsection B1 comprise intensively managed farmland' – the PPA Group do not agree with this overview as the total for improved grassland is given as 200ha (not all ground-truthed), woodlands 31ha, rush pasture and marshy grassland 49ha, semi-improved grassland 20.8ha. Therefore it is considered that this subsection passes through relatively diverse habitats and assessment of likely effects should consider this, and the potential for GCN terrestrial habitats appears greater than described.
- 10.14.59 Paragraph 9.3.141 – There is potential for otter disturbance including breeding holt – Siddick Pond area 132kV substation; and breeding birds of the reedbeds etc including species such as bittern, kingfisher. Timing of works will therefore be important if using any noisy techniques, piling etc.
- 10.14.60 Paragraph 9.3.176 – Query why collision risk is not considered significant in this subsection despite the good bird habitats. No mitigation is provided for birds in this subsection yet there are potentially significant effects during construction and operation. Bird deterrents on overhead cables should be considered as a minimum and provisions for seasonal working to avoid disturbance of valuable bird species expected.

- 10.14.61 Paragraph 9.3.189 – Loss of ancient woodland cannot be properly compensated or re-created. There would need to be a much more extensive parcel of woodland planted to consider provision of compensation for losses. The loss of any area of mature or ancient woodland should be avoided. If this is not possible the reasons behind this need to be clearly demonstrated as felling any would result in permanent irreplaceable loss of priority habitat. In addition the idea that planting of new native woodland would compensate for loss of red squirrel habitats is not acceptable as this species requires mature trees for drey building and foraging.
- 10.14.62 Paragraph 9.3.199 – Great Crested Newts (GCN) surveys are still ongoing, and therefore GCN cannot be scoped out from this subsection as suggested in Table 9.17 in 9.3.111.
- 10.14.63 Paragraph 9.3.46 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL passes through several areas of semi-natural broadleaved woodland and crosses several hedgerows which may include mature trees, it is probable that some tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.64 Paragraph 9.1.32 – Low levels of bat activity were recorded. However the route crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands and hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate as the noctule population has been assessed as of county level importance and unidentified *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.
- 10.14.65 Paragraph 9.3.137 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied especially as paragraph 9.3.136 states that: *"overall, the works would result in the loss of potentially important foraging habitat for bats, and cause fragmentation of woodland and hedgerow habitat that could affect their foraging or commuting behaviour"*.
- 10.14.66 Paragraph 9.3.139 – For the reasons given above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat population has been made due to a lack of data.
- 10.14.67 Paragraph 9.3.104 – Breeding and wintering bird surveys in Section B1 have been very limited in extent including only one breeding bird transect and one vantage point survey for passage and wintering birds. Given that this section of the DOL is adjacent to several designated and non designated sites for their bird feature importance and supports an area acknowledged to be of importance for goosander, this level of surveys effort must be considered to be inadequate to either assess the value of the bird population or the effects of the project on birds. There is therefore insufficient evidence to support the assessment that the breeding bird population or the non-breeding bird population within the ZOI is of local importance only especially when considering the significant number of wetland and

woodland habitat parcels that the DOL passes through or close to and the confirmed presence of curlew as a breeding species and wintering flocks of lapwing and golden plover. The section has been assessed as being of regional importance for wintering hen harrier.

10.14.68 Paragraph 9.2.136 – For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of important habitat that will need to be removed.

10.14.69 Paragraphs 9.3.181 – 9.3.182 - The subsections have inconsistencies in the approach to mitigation.

10.14.70 Potential for in-combination effects of overhead cables needs to be assessed due to the number of windfarms in the vicinity.

10.14.71 There are 2 discrete areas shown within the DOL at Lillyhall Industrial Estate – one of these appears to include priority habitat rush pasture, and the other lies adjacent to the hen harrier protection zone.

Subsection B2 – Seaton to Tallentire

10.14.72 Similar observations apply to this subsection, with concern over woodland loss from Flimby Great Wood and potential impact on breeding birds. There is potential for in-combination effects with windfarms in this subsection.

10.14.73 Paragraph 9.4.27 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL passes through few areas of semi-natural broadleaved woodland and crosses few hedgerows which may include mature trees, it is probable that few tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.

10.14.74 Paragraph 9.4.31 – Generally low levels of bat activity were recorded. However, as the DOL route crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands and hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the section has been valued as of county level importance for noctule and unidentified *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.

10.14.75 Paragraph 9.4.101 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied, especially as paragraph 9.4.99 states that: *"these works would result in the loss of potentially important foraging habitat for bats, and cause fragmentation of woodland and hedgerow habitat that could affect the foraging or commuting behaviour of bats"*.

10.14.76 Paragraph 9.4.103 – For the reasons given above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat population has been made due to a lack of data.

10.14.77 Paragraph 9.4.81 – Breeding and wintering bird surveys in Section B2 have been limited in extent including only one breeding bird transect and two vantage point surveys for passage and wintering birds. Targeted non-breeding bird transect surveys within the Bird Study Area were not undertaken during the 2014/15. There is therefore insufficient evidence to support the assessment that the breeding bird assemblage or the non-breeding bird assemblage within the ZOI is of local importance only especially when considering the desk study data and the preliminary findings of field surveys undertaken to date indicate the presence of some species within the Bird Study Area that are SoPIs and/or priority species on the Cumbria LBAP. Furthermore, large numbers of ducks, geese and swans were recorded flying over, including large numbers of greylag goose. All these species may be associated with the Upper Solway SPA/Ramsar site 8.3km away to the north.

10.14.78 Paragraph 9.4.141 – For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of important habitat that will need to be removed.

Subsection B3 – Tallentire to Aspatria

10.14.79 Paragraph 9.5.23 – Text indicates that waterbodies have not yet been found but have still been evaluated in the PEI which does not seem to be acceptable and may result in scoping out without adequate survey.

10.14.80 SAC rivers are measured as the crow flies from the subsection to the edge of the designation yet it may be more appropriate to provide distances upstream or downstream along hydrological connections.

10.14.81 Table 9.28 indicates which international designated sites have been scoped out of the assessment. This table appears to neglect the potential for SPA birds to be present in the subsection using land for foraging and roosting, or as a flight path between coastal sites and during migration (passage birds) when these species may be flying over the cables. The Solway Firth SPA/Ramsar is only 2.3km away and therefore SPA birds may well make use of these coastal fields.

10.14.82 Paragraph 9.6.156 - Subsection mitigation;

- no mitigation is offered for birds in this subsection, despite the proximity of the coastal designations;
- there is loss of ancient woodland – evidence is required to substantiate why it is not possible to avoid loss of ancient woodland through micro-siting; and,
- Planting of the same area of native woodland trees as that to be lost is not considered

sufficient mitigation/compensation for loss of mature trees which should involve planting of a much greater area of native species and future management proposals over a long period to promote a useful woodland stand for the future; additional woodland management of other off-site woodland could potentially also be offered to help to compensate.

- 10.14.83 Paragraph 9.5.32 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL passes through few areas of semi-natural broadleaved woodland and crosses few hedgerows which may include mature trees, it is probable that few tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.84 Paragraph 9.5.37 – Generally low levels of bat activity were recorded. However, as the DOL route crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands and many hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the section has been valued as of the county level importance for noctule and unidentified *Nyctalus* species and *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.
- 10.14.85 Paragraph 9.5.107 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied especially as paragraph 9.5.106 states that: *"overall, the works would result in the loss of potentially important foraging habitat for bats, and cause fragmentation of woodland and hedgerow habitat that could affect their foraging or commuting behaviour"*.
- 10.14.86 Paragraph 9.5.109 – For the reasons given above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat population has been made due to a lack of data.
- 10.14.87 Paragraph 9.5.87 – Breeding and wintering bird surveys in Section B3 have been limited in extent including only one breeding bird transect and two vantage point surveys for passage and wintering birds – one of which (VP28) is actually within Section B2 not B3. Targeted non-breeding bird transect surveys within the Bird Study Area were not undertaken during the 2014/15 period. There is therefore insufficient evidence to support the assessment that the breeding bird assemblage or the non-breeding bird assemblage within the ZOI is of local importance only especially when considering the desk study data and the preliminary findings of field surveys undertaken to date indicate the presence of some species within the Bird Study Area that are SoPIs and/or priority species on the Cumbria LBAP. Furthermore, large numbers of ducks, geese and swans were recorded flying over, including large numbers of greylag goose. All these species may be associated with the Upper Solway SPA/Ramsar site 2.3km away to the east.
- 10.14.88 Paragraph 9.5.140 – For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of

important habitat that will need to be removed and the recording of large numbers of gulls, ducks and geese which may be associated with the nearby Upper Solway SPA/Ramsar site.

Subsection C1 – Aspatia to Wigton

10.14.89 Paragraph 9.6.54 – Assessment and evaluation of habitats prior to having all the survey information available does not provide any assurance that assessment has been robust. It is not considered appropriate to 'assume' a certain evaluation and assessment of effects prior to all the survey information being completed and collated.

10.14.90 Paragraph 9.6.77 – Bird data from the Solway Firth Marine Site eg geese, swans, waders, ducks etc is still being compiled together with breeding bird survey details therefore it is not considered that any evaluation and scoping in or out of habitats and species to be sensible at this stage.

10.14.91 Paragraph Table 9.32 – South Solway Mosses SAC is scoped out; however there are likely to be hydro-geological linkages or pathways of effect via watercourses from the route to the site which is only 2km away.

10.14.92 Paragraph 9.6.94 – The route passes close to the floodplain and grazing marsh of the River Waver so there may be potential risks as a result of hydrological pathways of effect which have not been addressed anywhere in this section yet may need to be considered in the HRA.

10.14.93 Paragraph 9.6.126 – The study area is functionally linked to the Solway Firth SPA and to the Upper Solway Flats and Marshes SPA/Ramsar sites; the text states that 'to date, large numbers of birds that are associated with the sites have not been recorded using the habitats in C1' – the survey evidence to support this statement is absent and it indicates that data is in any case lacking. Bird surveys in this section should include high and low tide observations to see which fields are being utilised by SPA birds. The survey details are not clear and there are no results to support assessments.

10.14.94 Additional comments regarding the HRA are that many of the assessment paragraphs within the PEI include a sentence stating that the 'integrity of the site would be maintained', yet the PPA Group cannot find conclusive evidence to demonstrate that there will be no significant effects on qualifying species. Until data and survey results are available, the assessment remains hypothetical. Much of the text seems to attempt assessment of likely significant effect and then appropriate assessment prior to having an adequate evidence base.

10.14.95 Paragraph 9.6.136 – This concludes that no operational effects have been identified due to lack of pathways. This statement is unclear as presumably there will need to be access to sites, potential further digging or storage of equipment etc, and so if this occurs in the vicinity of, for example, a badger sett or otter holt there would be potential for effect.

10.14.96 Paragraph 9.6.28 – The final number of potential bat roost sites has not yet been

determined and no roosts have been confirmed as yet. As this section of the DOL passes through few areas of semi-natural broadleaved woodland and crosses few hedgerows which may include mature trees, it is probable that few tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.

- 10.14.97 Paragraph 9.6.31 – No bat activity surveys have been undertaken in Section C1. This is justified on the basis that no suitable bat foraging and commuting habitat is present. However, as the DOL route crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands and many hedgerows, it would appear that much suitable foraging and commuting habitat is present especially in the southern part of C1 adjacent to B3 where the DOL passes close to a waterbody surrounded by trees and through a semi natural broadleaved woodland (between HM-01-87 and HM-01-86). The assessment of local importance for the bat assemblage cannot therefore be justified given the lack of data.
- 10.14.98 Paragraph 9.6.98 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied. No bat activity surveys have been undertaken and paragraph 9.6.97 states that: *"these works would result in the loss of potentially important foraging habitat for bats, and would cause fragmentation of woodland and hedgerow habitat that could affect the foraging or commuting behaviour of bats"*.
- 10.14.99 Paragraph 9.6.100 – For the reasons given above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat population has been made due to a lack of data.
- 10.14.100 Paragraph 9.6.82 – Breeding and wintering bird surveys in Section C1 have been limited in extent including only one breeding bird transect and two vantage point surveys for passage and wintering birds. Wading birds were recorded during the breeding period, though the species are not specified. There is therefore insufficient evidence to support the assessment that the breeding bird assemblage within the ZOI is of local importance only. Targeted non-breeding bird transect surveys within the Bird Study Area were do not appear to have been undertaken during the 2014/15 period. This section has been assessed as being of potentially international importance for wintering and passage birds on a precautionary basis given its proximity to the Upper Solway SPA/Ramsar site. This raises the question as to why similar value assessments were not made for Sections B2 and B3 on the same basis given that survey findings were similar.
- 10.14.101 Paragraph 9.6.123 - For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of important habitat that will need to be removed and the recording of large numbers of gulls, ducks and geese which may be associated with the nearby Upper Solway SPA/Ramsar site for which C1 has been provisionally assessed as being of international importance for its wintering and passage birds.

Subsection C2 - Wigton to Harker Substation, Carlisle

- 10.14.102 It is understood that there are areas of deep peat in this subsection which should be avoided. In-combination effects need to be assessed due to the number of vertical structure present in the Harker substation location, and potential for effects on SPA birds, migratory and over wintering.
- 10.14.103 Paragraph 9.7.30 & 9.7.52 – The River Wampool is likely to be hydrologically connected with the South Solway Mosses SAC, and hence any potential for effects needs to be considered under a HRA. Therefore it is considered unreasonable to conclude that this watercourse is only of 'local' importance.
- 10.14.104 Paragraph 9.7.34 – It is not clear from this section whether or not all the ponds have been surveyed for GCN.
- 10.14.105 Paragraph 9.7.51 – Otters has been seen in this catchment during 2015 (PW pers. Observation).
- 10.14.106 Paragraph 9.7.72 – This sections states that 'based on the results of the desk study and field surveys, GCN are considered to be absent from the C2 GCN study area and yet only half of the ponds present have apparently been surveyed. GCN are definitely present at Kingmoor, Crindledyke (WYG - Principal Ecologist personal observation), Watchtree, and so it is not reasonable for the conclusion to state an absence. Crindledyke is within 500m of Harker substation, and so GCN should be assessed in this subsection, and suitable mitigation and compensation put in place for any loss of terrestrial habitat, together with EPS licence application if required.
- 10.14.107 Paragraph 9.7.100 – Bird surveys are still being carried out in the Bird Study Area for this subsection to record flight activity, which should make particular reference to the potential for effect on SPA birds from the Solway Firth.
- 10.14.108 Table 9.40 – There is no mention of the South Solway Mosses SAC yet there are potential hydrological linkages through local hydrology/hydrogeology and via potential pollution to watercourses draining towards the mosses.
- 10.14.109 In relation to ALL habitats outside designated sites, e.g. bog, coastal and flood plain grazing, saltmarsh, raised bog etc the PEI states that there will be no habitat degradation expected – this is not necessarily the case on areas of damp inundated ground or peat which even if protected during access to the route will likely suffer from, for example, compression and potential pollution.
- 10.14.110 Paragraph 9.7.127 – This again makes reference to site integrity yet the supporting evidence is incomplete and therefore the assessment cannot be judged as sound.

- 10.14.111 Paragraph 9.7.138 – Damage to mire at Harker Moss will occur during construction – the PEI states that this habitat will be re-instated. More evidence of the damage likely and the potential for successful re-instatement is required to provide confidence in this assessment.
- 10.14.112 Paragraph 9.7.99 – White clawed crayfish have not been surveyed although suitable habitat exists in hydrologically linked catchments; however the consultants have concluded that they are unlikely to be present – there does not appear to be valid evidence to support this statement.
- 10.14.113 Paragraph 9.7.158 – As above the Harker works are relatively close to the GCN breeding pools at Crindledyke, and so there is potential for GCN terrestrial habitat to be affected.
- 10.14.114 Paragraph 9.7.192 – This states that there will be no operational or maintenance stage effects on otter, badger, terrestrial invertebrates etc yet this seems a sweeping statement, as described in 9.6.136 above.
- 10.14.115 Paragraph 9.7.197 – This should consider micro-siting to avoid any loss and if this is impossible the PPA Group need to see a robust argument and appropriate compensation provided.
- 10.14.116 Paragraph 9.7.205 – Planting new native woodland of a similar size to the area of woodland lost will not compensate for loss of mature trees for red squirrel and raptors.
- 10.14.117 Paragraph 9.7.43 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL passes through several areas of semi-natural broadleaved woodland and crosses numerous hedgerows which may include mature trees, it is probable that several tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.118 Paragraph 9.7.47 – Generally low levels of bat activity were recorded. However, as the DOL route through C2 is relatively very lengthy and crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands and many hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the section has been valued as of county level importance for noctule and unidentified *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.
- 10.14.119 Paragraph 9.7.142 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied. Paragraph 9.7.141 states that: *"these works would result in the loss of potentially important foraging habitat for bats, and would cause fragmentation of woodland and hedgerow habitat that could affect the foraging or commuting behaviour of bats"*.

- 10.14.120 Paragraph 9.7.146 – For the reasons given above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat population has been made due to a lack of data. Furthermore, paragraph 9.7.145 states that: *"of the potential bat roosts identified within the Roosting Bat Study Area to date, it is anticipated that 27 would be disturbed or lost as a result of vegetation clearance required for construction works"*. This would indicate a significance of far greater than local adverse effect.
- 10.14.121 Paragraph 9.7.118 – Breeding and wintering bird surveys in Section C2 have recorded wading birds during the breeding period, including curlew and lapwing, both of which species have had significant population declines in recent years and are both on the Red List of Birds of Conservation Concern (BOCC, 4, 2015). Additionally many SpoPI's were recorded including bullfinch; dunnoek; grasshopper warbler (*Locustella naevia*); lesser redpoll; linnet; yellowhammer; tree sparrow and reed bunting. Schedule 1 species kingfisher was also recorded. The vantage point surveys recorded large numbers of waders, rails and raptors. There is therefore evidence to support the assessment that the breeding bird assemblage within the ZOI is of greater than local importance. Targeted non-breeding bird transect surveys within the Bird Study Area do not appear to have been undertaken during the 2014/15 period although a large number of vantage point surveys were undertaken. The results of these surveys are not set out in the report and therefore it is not possible to give an independent assessment of the value and relative importance of the wintering and passage bird assemblages. This section has been assessed as being of potentially international importance for wintering and passage birds on a precautionary basis given its proximity to the Upper Solway SPA/Ramsar site.
- 10.14.122 Paragraph 9.7.177 - For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of important habitat that will need to be removed and the recording of large numbers of gulls, ducks and geese which may be associated with the nearby Upper Solway SPA/Ramsar site for which C2 has been provisionally assessed as being of international importance for its wintering and passage birds and the importance of the breeding bird population including wading birds.

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Subsection D1 – Moorside to Waberthwaite

- 10.14.123 NB - Undergrounding to be carried out between Holmrook and Silecroft.
- 10.14.124 Paragraph 9.1.25 – Species-rich lowland grasslands are of County importance in Cumbria. Without survey detail of species composition there is no evidence to support the conclusion that the species-rich grasslands are not of sufficient quality to meet the criteria for lowland meadow HoPI.

- 10.14.125 Paragraph 9.1.26 – It is not clear why this habitat has been assessed only as 'local' importance and yet is a County Wildlife Site.
- 10.14.126 Paragraph 9.1.29 – Coastal and floodplain grazing marsh HoPI has been assessed as of 'local' importance yet in this area supports important populations of wintering SPA birds associated with the Duddon Estuary SPA/Duddon Estuary and Morecambe Bay proposed SPA and Drigg Coast SAC/SSSI.
- 10.14.127 Paragraph 9.1.39 – Again the assessment of 'local' value appears to undervalue the rivers draining into the Ravenglass estuary which is a SAC and SSSI. The qualifying features may be present in these undesignated sections and the scheme may have implications for the designated watercourses due to habitat connectivity. Any upstream impacts have scope to significantly affect the lower designated sections and need to be assessed under the Habitat Regulations.
- 10.14.128 Paragraph 9.1.42 – This section mentions 9 ponds then only 7. These are valued at a local level yet support a biodiverse flora and great crested newts – survey information is not included to enable assessment.
- 10.14.129 Paragraph 9.1.47 – This states that 'no protected or notable plant species have been identified in the Study Area of subsection D1 yet this crosses saltmarsh habitats along the Ravenglass estuary where there are notable species present.
- 10.14.130 Paragraph 9.1.49 – Several stands of Japanese Knotweed (JK) recorded in the study are of subsection D1 which are not considered to be of ecological importance but these invasive species pose a considerable constraint to the construction phase of the scheme unless they are identified and treated at a very early stage, particularly where there is to be trenching across a considerable width of habitat with JK present – the 100m wide swathe would need to be located at least 7m away from any JK, which might then push the affected area into more sensitive or valuable habitats.
- 10.14.131 Paragraph 9.1.60 – Otters are present in the Ravenglass Estuary and tributaries Irt, Esk and Mite.
- 10.14.132 Paragraph 9.1.63 – Red squirrel is valued as of County importance but good populations could be argued to be of national importance as Cumbria provides one of the only remnant populations of the species in England.
- 10.14.133 Paragraph 9.1.79 – This states that 'the majority of habitats comprise improved grassland and arable fields'; however this section also supports a range of biodiverse habitats including suitable GCN terrestrial habitat.
- 10.14.134 Halsenna Moor SSSI/NNR supports lowland heath and peat habitats with fen, mire and wet woodland. The route should avoid loss of any habitat within this site through micro-siting around the habitats.

- 10.14.135 Table 9.8 – Habitats – This states that habitat degradation is not anticipated provided that standard environmental measures are provided to prevent airborne and waterborne pollution to occur. However the underground cables will involve surface trenching which is likely to significantly affect some habitats which are not necessarily easy to restore such as mature woodlands, herb-rich grasslands, wet woodland, raised bog, heath etc and very clear management proposals will need to be drawn up detailing how the habitat will be restored, how and where surface soils might be stored , aftercare etc Trenching will tend to disturb soils and their relic seed bank which may encourage growth of competitive weed species and coarse grassland where soils are more nutrient rich.
- 10.14.136 The undergrounding runs under Drigg Holme involving a working area of 200m by 30m (Figure 4.12.1 Volume 2.6). 9.1.130 - this states that 'the effect on Morecambe Bay and Duddon estuary pSPA and Drigg Coast SSSI would be significant adverse at an international level since the overall integrity of the site would not be maintained. Mitigation would therefore be required to off-set these effects.' If the integrity of the site is adversely affected the development should avoid this damage or else demonstrate IROPI, and provide appropriate compensation for loss and damages. The PPA Group have seen no detailed evidence to support any HRA.
- 10.14.137 Paragraph 9.1.130 – This states that the effects on Morecambe Bay and Duddon Estuary pSPA and Drigg Coast SAC (states SSSI here) would be significant at international level. Mitigation would therefore be required to offset these effects. As there will be significant effects and potential for adverse effect on site integrity full Appropriate Assessment will be required. The proposed scheme will have to demonstrate IROPI and offer adequate compensation for adverse effect in order to be allowed to proceed.
- 10.14.138 Paragraph 9.1.141 – Woodland south of Ravenglass will be damaged and lost through underground trenching which will involve taking out a 100m swathe and will also affect the root zone of adjacent trees in the woodland. The area of loss is therefore greater than the 100m width. There is no detail for adequate mitigation provided for this loss and damage and no clear evidence provided to demonstrate that this woodland cannot be avoided, or how woodland can be restored. It is not considered possible to compensate for loss of mature trees and retention of woodland soils for replacement after trenching does not necessarily mean that the woodland ground flora can be successfully replaced after trenching.
- 10.14.139 This comment applies to other woodlands lost due to trenching along this section.
- 10.14.140 Paragraph 9.1.143 – 'Temporary' loss of lowland meadow and lowland dry acid grassland is assessed but it is not demonstrated how these habitats can be successfully restored. Disturbed soil is likely to suffer due to colonisation by competitive coarse grasses and ruderal weedy species.
- 10.14.141 Paragraph 9.1.144 – This states that the loss of species-rich semi-improved neutral grassland will be restored after trenching. Again there is no methodology suggested.

- 10.14.142 Paragraph 9.1.145 – Loss of 7 ha of coastal and floodplain grazing marsh due to undergrounding. The PPA Group have no evidence to demonstrate the quality of this grazing marsh and the assessment of not significant. There is no detail on how this habitat will be successfully restored following 100m swathe of undergrounding.
- 10.14.143 Paragraph 9.1.146 – Loss of hedgerows due to undergrounding; this is assessed as significant adverse which the PPA Group would agree. Adequate compensation required.
- 10.14.144 Paragraph 9.1.148 – Loss of ponds expected to be adequately mitigated by 2 for 1.
- 10.14.145 Paragraph 9.1.149 – Loss of lax-flowered sea lavender is not anticipated because no saltmarsh will be affected – this statement is not clear and cannot be substantiated, for example, there will be some disturbance due to removal of the 132kV which appears to cross saltmarsh habitats.
- 10.14.146 Paragraph 9.1.157 – This considers damage to holts or resting places for otter during open cut trenching. It is not clear as to whether or not the potential for the Horizontal Directional Drilling, which could cause disturbance through vibration and noise also been addressed as part of the mitigation. This will require clarification in the ES.
- 10.14.147 Paragraph 9.1.159 – Undergrounding will affect several woodlands through this subsection. Loss of mature trees is significant as these cannot be replaced. Relying on simple regeneration of woodland is not considered to be adequate compensation. Red squirrel require mature trees for foraging and breeding so cutting a 100m swathe through woodland would be 'loss' of habitat which the subsequent regeneration of scrub would not fully compensate.
- 10.14.148 Paragraph 9.1.181 – Where reptiles may be present but have not been detected through survey, 'precautionary' working practices which offer protection from death or injury to reptiles and amphibians during trenching operations will need to be incorporated into the CEMP and a suitably qualified ecologist should be on site as Ecological Clerk of Works to supervise.
- 10.14.149 Paragraph 9.1.187 – Migratory fish species and otter could be adversely affected by noise and vibration as a result of HDD and surface trenching affecting watercourses. Where these are qualifying features of river SACs Habitats Regulations Assessment will be required. There does not appear to be any assessment of noise and vibration provided for these receptors which would provide baseline evidence for the HRA.
- 10.14.150 Paragraph 9.1.221 – Habitat compensation and enhancement is only offered for significant residual effects identified and this involves only one area of woodland in this subsection yet many others are affected. Compensation is offered for loss of woodland based on the area of that lost saying that this amount of native tree planting would offset small scale insignificant adverse effects due to woodland loss to species such as red squirrel and raptors/owls. These species benefit from mature woodland not young plantation woodland

and so this compensation is considered inadequate. Replacement of lost pond habitats should involve provision of at least 2 ponds for every one lost.

- 10.14.151 Paragraph 9.1.52 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL passes through areas of semi-natural broadleaved woodland and crosses hedgerows which may include mature trees, it is probable that several tree roosts may be affected. Desk Study records show that particularly significant roosts (maternity/hibernation) are present at Beckermets, Seascale and Calder Bridge. Roosts of the following species have been recorded: common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*P. pygmaeus*), brown long-eared bat (*Plecotus auritus*) and noctule (*Nyctalus noctula*). There are also roosts of unidentified pipistrelle and unidentified bats. No value is placed on the roosting potential of this section of the DOL.
- 10.14.152 Paragraph 9.1.55 – Generally low levels of bat activity were recorded. However, two of the planned five bat survey areas were not actually surveyed for reasons set out in the report. As the DOL route through D1 is relatively very lengthy and crosses highly suitable bat foraging and commuting habitats including several rivers and streams, woodlands and many hedgerows, and heathland, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the section has been valued as of county level importance for noctule and unidentified *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.
- 10.14.153 Paragraph 9.1.153 – For the reasons set out above, an assessment of only a local significant adverse for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied. Most of the cable route will be undergrounded resulting in much greater working widths (100m) and therefore significant habitat loss and fragmentation. Furthermore, paragraph 9.1.2006 states that: *"due to the large-scale loss of hedgerows as a result of the 400kV cable, fibre optic cable and 132kV cable undergrounding, bespoke mitigation would be required in Subsection D1 to maintain connectivity for foraging and commuting bats"*.
- 10.14.154 Paragraph 9.1.155 – For the reasons given above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat assemblage has been made due to a lack of data.
- 10.14.155 Paragraph 9.1.123 – Targeted breeding bird transect surveys within the Bird Study Area recorded a range of SpOPI's including: song thrush (also a LBAP species); bullfinch (*Pyrrhula pyrrhula*); curlew (*Numenius arquata*); dunnoek; linnet (*Cardueliscannabina*); starling; yellowhammer (*Emberiza citrinella*) and lesser redpoll (*Carduelis cabaret*). There is therefore evidence to support the assessment that the breeding bird assemblage within the ZOI is of greater than local importance. Paragraph 9.1.123 acknowledges this stating that: *"under Chartered Institute of Ecology and Environmental Management (CIEEM) guidance for determining the importance of ecological features, the passerine assemblage recorded during the breeding bird transects would*

*indicate that the breeding bird assemblage within the ZoI of Subsection D1 is of county importance for biodiversity. However, the species recorded that are listed as SoPIs and priority species on the Cumbria LBAP are still widespread and relatively common within the UK, and Cumbria as a whole. The bird assemblage within the ZoI of Subsection D1 is therefore considered to be of no more than **local** importance for biodiversity”.*

10.14.156 Recent desk study results from the Bird Wider Study Area (DOL plus 2km) returned records of the following species listed under Schedule 1 Part 1 of the WCA: whooper swan (*Cygnus cygnus*); whimbrel (*Numenius phaeopus*); greenshank (*Tringa nebularia*); kingfisher (*Alcedo atthis*); redwing (*Turdus iliacus*); snow bunting (*Plectrophenax nivalis*); fieldfare (*Turdus pilaris*); firecrest (*Regulus ignicapilla*); Mediterranean gull (*Larus melanocephalus*); merlin (*Falco columbarius*); osprey (*Pandion haliaetus*); peregrine falcon (*Falco peregrinus*); and barn owl (*Tyto alba*) which could potentially be using the habitat within Section D1. This section has been assessed as being of potentially international importance for wintering and passage birds on a precautionary basis given its proximity to the Morecambe Bay and Duddon Estuary pSPA.

10.14.157 Paragraph 9.1.188 - For the reasons set out above, an assessment of not significant for the effects of habitat loss and fragmentation and disturbance on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied. Most of the cable route will be undergrounded resulting in much greater working widths (100m) and therefore significant habitat loss and fragmentation. The recording of wading birds during the breeding period, including curlew, as well as many SpoPI's including bullfinch; dunnoek; lesser redpoll; linnet; yellowhammer and reed bunting mean that the bird assemblage is more than of local importance. In addition there will be significant short term disturbance during the removal of the existing 132kV overhead lines over the rivers Mite and Esk.

10.14.158 Paragraph 9.1.228 – Plant and habitat data only 82% from surveys – as much of this section will be subject to habitat damage and loss due to undergrounding it is expected that 100% will be surveyed and assessed.

Subsection D2 – Waberthwaite to Silecroft

10.14.159 This section lies within the Lake District National Park and it is proposed to be undergrounded for the entire subsection.

10.14.160 Paragraph 9.2. of the PEI, 61 Natterjack toad surveys do not appear to have been carried out far enough to the south-east of Eskmeals between the access road parallel to the coast and the proposed route subsection D2, whereas it appears that GCN have been surveyed for in these ponds (Ponds – 536, 537, 538, 539, 128, and 129). Natterjack toads have been heard calling from the wetland areas within this ZoI of the route, near to Williamsons' Moss northwards and in the vicinity of Monks Moor where access tracks are proposed. This wet area needs to be surveyed in more detail as it appears there is a large construction compound with rail access proposed in this area. Reptiles are also considered likely to be present.

- 10.14.161 There is an additional large construction area compound proposed to the south of this in an area potentially used by overwintering swans and other waterbirds. There appears to be a gap in the Phase 1 survey mapping right across this subsection.
- 10.14.162 Paragraph 9.2.22 - Eskmeals Pool is crossed by Study Area about 2.4 km upstream of the Esk Estuary so forming part of the Drigg Coast SAC and SSSI. Text provided indicates that there is a large distance between the watercourses and the designated site yet there is hydrological connectivity and parts are actually in close proximity to the SAC.
- 10.14.163 Paragraph 9.2.23 – Ponds in this location have potential to support natterjack toad. Text states that none of the ponds is 'known' to support GCN – clarification is necessary to demonstrate that the water bodies have been surveyed.
- 10.14.164 Paragraph 9.2.44 – Badgers are known to be present in the area around Stubb Place and from Eskmeals gun range, which contradicts the statement in paragraph 9.2.44.
- 10.14.165 Paragraph 9.2.111 – Undergrounding impacts on otter assessed as not significant yet there may be partial closure of watercourses during construction. Where otter are populations linked with Duddon Estuary SPA/Ramsar site there will need to be further evidence to support the Habitats Regulations.
- 10.14.166 Paragraph 9.2.122 – Again there has been evidence of natterjack toads using the areas of wetland to the east of the Eskmeals range road and areas of low grazed grassland provide some suitable hunting habitat for natterjack toads at night where optimal habitat in the sand dunes is not available.
- 10.14.167 Paragraph 9.2.151 – Significant adverse residual effects predicted for loss of Inmann's Tarn – therefore there is a need to consider complete avoidance of this through micro-siting; adequate compensation for loss of waterbodies will be expected.
- 10.14.168 Paragraph 9.2.32 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL crosses numerous hedgerows which may include mature trees, it is probable that several tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.169 Paragraph 9.2.36 – Generally low levels of bat activity were recorded. However, as the DOL route crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands and many hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the section has been valued as of county level importance for noctule and unidentified *Nyctalus* species and *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.
- 10.14.170 Paragraph 9.2.107 – For the reasons set out above, an assessment of only a local

significant adverse for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied. Furthermore, paragraph 9.1.2006 states that: *"The loss of foraging habitat and the reduction in habitat connectivity would affect bats in the interim, and bespoke measures would be required to mitigate these effects."*

10.14.171 Paragraph 9.2.109 – Likewise, for the reasons set out above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat assemblage has been made due to a lack of data.

10.14.172 Paragraph 9.2.84 - Breeding bird transect surveys have not been undertaken for Subsection D2, because of: "the lack of potentially important bird breeding habitat within this subsection". The Phase 1 habitat surveys shows that habitat includes farmland but the DOL passes through semi-improved and marshy grassland, close to the coast and which therefore has the potential to support an important breeding bird assemblage including wading birds. Large numbers of raptors were recorded from VP47 and large numbers of waders and rails from VP50 and VP51. These are all indicative of an important bird assemblage. There is therefore no evidence to support the judgement that the breeding bird population is of only local importance. Paragraph 9.2.87 acknowledges this stating that: *"under Chartered Institute of Ecology and Environmental Management (CIEEM) guidance for determining the importance of ecological features, the passerine assemblage recorded during the breeding bird transects would indicate that the breeding bird assemblage within the ZoI of Subsection D1 is of county importance for biodiversity. However, the species recorded that are listed as SoPIs and priority species on the Cumbria LBAP are still widespread and relatively common within the UK, and Cumbria as a whole. The bird assemblage within the ZoI of Subsection D1 is therefore considered to be of no more than local importance for biodiversity."*

10.14.173 Paragraph 9.2.89 – Likewise, the available evidence does not provide justification for the assessment of the non-breeding bird assemblage as being of only local importance, especially as the whole of Section D2 lies parallel with the Morecambe Bay and Duddon Estuary pSPA (220m from the Study Area); Duddon Estuary SPA and Ramsar site (610m from the Study Area). Furthermore, the results of the vantage point surveys undertaken over the winter period are not included within the assessment, and so independent verification of the statement that: *"a limited amount of bird activity was observed during this period, which primarily comprised transitory gull flight activity"*. Other sections of DOL lying further from international sites have elsewhere in the PEI been given a precautionary assessment for the non-breeding bird assemblage as being of international importance. There is no apparent reason to treat Section D2 any differently.

10.14.174 Paragraph 9.2.137 - For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds during construction cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of important habitat that will need to be removed, the absence of any specific breeding bird surveys and the proximity of the DOL to two internationally important sites for birds. Paragraph 9.2.92 states that: *"the construction of the Project could potentially*

have a significant adverse effect at a local level on the bird populations within these designated sites as a result of disturbance, where birds are using habitat within the Study Area that is functionally linked to the sites. Although such disturbance would only be temporary, it could affect the overall integrity of the designated sites. Mitigation would therefore be required to offset these effects”.

Subsection E1 – Silecroft to Arnaby

- 10.14.175 It is important to note that impact assessment for Section E1 (and E2) includes the effects of the 132kV Trident Centreline as well as the 400kV route. These two lines are routed through different areas and therefore the potential effects of the project are of a greater magnitude through Section E1 (and E2) than through other sections of the project.
- 10.14.176 Paragraph 9.3.22 – 44.5% hedgerows described as species-rich in this subsection, and assessed as County value which the PPA Group agree.
- 10.14.177 Paragraph 9.3.24 – Hydrological linkages to Morecambe Bay SAC and Duddon Estuary SPA so any potential effects along these watercourses will need to be assessed under the Habitats Regulations.
- 10.14.178 Paragraph 9.3.20 – The coastal and floodplain grazing marsh at Millom HoPI is assessed as of local value only yet is linked to the Duddon Estuary and Morecambe Bay pSPA and Morecambe Bay SAC, with overwintering bird species and a year round waterfowl population making use of the marshes for foraging and roosting; natterjack toad habitat.
- 10.14.179 Paragraph 9.3.26 – The watercourses are hydrologically linked to internationally designated sites and therefore will need to be considered for assessment of likely significant effects as a result of any hydrological or water quality deterioration. These may actually support the overall integrity of the international sites, so need to be considered in more detail before scoping out.
- 10.14.180 Paragraph 9.3.29 – Clarification is necessary as to the potential for the arable fields close to the coast to be assessed for use by overwintering/roosting /foraging SPA birds.
- 10.14.181 The PPA Group would draw attention to the links to HMP Haverigg Windfarm, which crosses land known to be used by SPA birds, natterjack toad, reptiles, biodiverse invertebrate population, breeding birds. This should be included in the ES.
- 10.14.182 Paragraph 9.3.34 – Japanese knotweed is present along the DOL to the north of the HMP Haverigg windfarm – this is not included in this section of the PEI and will need to be addressed in the ES.
- 10.14.183 Paragraph 9.3.36 – Natterjack toad are valued at a regional level yet the Cumbrian Coast is the UK’s stronghold for this species so as such is of national value.

- 10.14.184 Paragraph 9.3.76 – Common lizard is abundant in the Haverigg area and along the nearby coast.
- 10.14.185 Table 9.20 – Potential Important Ecological Features within Subsection E1 – The ZOI extends further than DOL plus 500m where there is hydrological connectivity. Interest features of Duddon Estuary SSSI including natterjack toad and aquatic species should be scoped in unless surveys are complete and demonstrate likely absence.
- 10.14.186 Paragraph 9.3.108 – Aim should be to avoid ancient woodland as this cannot be replaced.
- 10.14.187 Paragraph 9.3.110 – Loss of wet woodland from Blea Moss CWS has been assessed as 'not significant' yet the existing 20m wide corridor is to be extended to 60m width for the 400kV resulting in 0.86ha loss from a 5.4ha woodland; it is stated that the cleared areas will revert naturally to bog habitat although the PPA Group anticipate there would be some compression damage to the substrate during installation, and the area would need management to prevent scrub colonising the bog. Avoidance should initially be considered and if not possible then reasons for this need to be clearly demonstrated.
- 10.14.188 Paragraph 9.3.111 – It is noted that there would be 0.05ha loss of woodland from 0.4ha – this would represent a 12.5% loss, and the PEI acknowledges that this would 'fragment the woodland'. Clarification is required as to why this cannot be avoided, rather than the proposed options which include subsequent regeneration through the woodland further south.
- 10.14.189 Paragraph 9.3.113 – Disturbance of semi-improved grassland; once disturbed this is likely to result in colonisation by coarse grasses and ruderals; the habitat will need subsequent aftercare to prevent loss of this habitat following restoration.
- 10.14.190 Paragraph 9.3.114 – Undergrounding at Whicham Valley is temporarily disturbing 7.6ha of coastal and floodplain grazing marsh HoPI – this is assessed as not significant but it will need appropriate compensation as it is a large area of habitat to be lost during installation, some of which will not be restored.
- 10.14.191 Paragraph 9.3.117 – Permanent loss during undergrounding of several 20m lengths of hedgerow and temporary removal of 100m sections has been assessed as a 'significant adverse' effect. Clarification is required as to whether or not the impact on ecology been weighed up against the benefits to landscape. Clarification is also required as to whether or not these 'important' hedgerows are covered under the Hedgerows Regulations, and whether or not micro-siting could avoid this damage.
- 10.14.192 Paragraph 9.3.129 - Mitigation for loss of woodland is proposed as follows – 'to allow natural regeneration of scrub in the overhead line clearance corridors. This would ensure continuous cover of woody vegetation, helping to minimise any potential woodland fragmentation effects. As such, the effect of habitat loss and fragmentation on the likely red squirrel population within the ZoI of Subsection E1 is likely to be **'not significant'**.

Red squirrel require mature trees for food and drey building so loss of their woodland habitat is not compensated for by scrub growth, although it will help to maintain the connectivity of the habitat. If red squirrel is present in woodland to be lost it is likely to be significant and compensation is expected if avoidance measures are not possible.

- 10.14.193 Paragraph 9.3.139 – 6km permanent and 3.3 km temporary 132kV overhead on wooden poles on the coastal plain parallel to the Duddon Estuary, 8km within the 1km buffer zone for natterjack toads. The information states this is mainly unsuitable short-sward improved grassland, but this habitat can offer potential for foraging at night by natterjack toads if breeding pools and refugia are close by. The PPA Group do not consider it possible to assess this with any confidence as not significant prior to receipt of survey information.
- 10.14.194 Paragraph 9.3.159 – Surveys have not been completed so cannot assess as not significant with any confidence. Maintenance of underground cables may have significant effects on habitats and species reliant on those habitats.
- 10.14.195 Paragraph 9.3.172 /9.3.183 – Loss of 0.2ha of ancient woodland from Nicle Wood CS is assessed as significant adverse residual effect at County level, therefore avoidance of this habitat loss should be considered and if not possible reasons for this should be clearly demonstrated. Adequate compensation required, which is expected to provide more than simply planting an area of native woodland of a similar size to that lost.
- 10.14.196 Paragraph 9.3.187 – This is an example of the over-reliance on aerial photo interpretation (API) which in this subsection is for 13% of the study area.
- 10.14.197 Paragraph 9.3.188 – This explains that further NVC of marshy grasslands are being undertaken in 2016 so at this stage the PPA Group consider it is not possible to provide reliable assessment of any losses.
- 10.14.198 Paragraph 9.3.37 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL crosses numerous hedgerows which may include mature trees, it is probable that several tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.199 Paragraph 9.3.41 – Only one bat activity survey area was surveyed along the whole of the Section E1. Generally low levels of bat activity were recorded. However, as the DOL route crosses suitable bat foraging and commuting habitats including rivers and streams, woodlands, marshy grassland and many hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the section has been valued as of county level importance for noctule and unidentified *Nyctalus* species and *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area.
- 10.14.200 Paragraph 9.3.123 – For the reasons set out above, an assessment of only a local

significant adverse for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied. The combined effects of the two cable routes (400kV and 132kV) overground and underground will result in a significant loss of potentially important foraging and commuting habitat. A single bat activity surveys area across such a large area and such a diversity of habitats is not adequate for assessing either the value or potential effects of the project on foraging or commuting bats. Paragraph 9.3.122 states that: *"these works would result in the loss of potentially important foraging habitat for bats and cause fragmentation of woodland and hedgerow habitat that could affect the foraging and commuting behaviour of bats"*.

10.14.201 Paragraph 9.2.109 – Likewise, for the reasons set out above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat assemblage has been made due to a lack of data.

10.14.202 Paragraph 9.3.98 –Breeding and wintering bird surveys in Section E1 have recorded several SpoPI's including bullfinch; dunnoek; lesser redpoll; linnet; marsh tit and reed bunting. The desk study returned records of several species listed under Schedule 1 Part 1 of the WCA, that may be present in the habitats in this area including, goshawk (*Accipiter gentilis*), merlin, peregrine falcon, whimbrel, barn owl, fieldfare, redwing, brambling (*Fringilla montifringilla*) and crossbill (*Loxia curvirostra*).Furthermore, the vantage point bird surveys recorded large numbers of raptors. There is therefore evidence to support the assessment that the breeding bird assemblage within the ZOI is of greater than local importance. Paragraph 9.3.98 acknowledges this stating that: *"under Chartered Institute of Ecology and Environmental Management (CIEEM) guidance for determining the importance of ecological features, the passerine assemblage recorded during the breeding bird transects would indicate that the breeding bird assemblage within the ZoI of Subsection D1 is of **county importance** for biodiversity. However, the species recorded that are listed as SoPIs and priority species on the Cumbria LBAP are still widespread and relatively common within the UK, and Cumbria as a whole. The bird assemblage within the ZoI of Subsection E1 is therefore considered to be of no more than local importance for biodiversity"*. This seems to present conflicting arguments.

10.14.203 Paragraph 9.3.154 – For the reasons set out above, an assessment of 'not significant' for the effects of habitat loss and fragmentation during construction, on breeding and wintering birds cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of important habitat that may need to be removed. Paragraph 9.3.156 states that: *"the construction of the Project could potentially have a significant adverse effect at a local level on the bird populations within these designated sites as a result of disturbance, where birds are using habitat within the Study Area that is functionally linked to the sites. Although such disturbance would only be temporary, it could affect the overall integrity of the designated sites. Mitigation would therefore be required to offset these effects"*.

Subsection E2 – Arnaby to Lindal in Furness

- 10.14.204 It is important to note that impact assessment for Section E2 (and E1) includes the effects of the 132kV Trident Centreline as well as the 400kV route. These two lines are routed through different areas and therefore the potential effects of the project are of a greater magnitude through Section E2 (and E1) than through other sections of the project.
- 10.14.205 Appendix 3 Route Corridors Considered and Not Taken Forward - One alternative to routing the overhead lines around the estuary is to route them across the estuary on pylons 75m height. 10 would be required to span the estuary. The Duddon Estuary is an SPA and Ramsar Site and also includes part of the Morecambe Bay SAC. This option is therefore likely to have significant effects both during construction and operation.
- 10.14.206 The ecology assessment does not compare the relative impacts and benefits of a tunnel route as opposed to overhead lines or underground cables. As a tunnel route is proposed across the Morecambe Bay as the preferred option, there would appear to be no reason (applying the same logic) why a tunnel route below the Duddon Estuary should not be preferable from an ecological perspective. In this context of considering the relative impacts of the tunnel option against the preferred option, it should be noted that it is proposed to route two overhead lines around the Duddon Estuary on separate routes (400kV and 132kV). The overall land take, impact on habitats and species is therefore likely to be significant.
- 10.14.207 Paragraph 9.4.23 – As in other subsections, semi-improved meadows are not considered to qualify as HoPI; however the PPA Group do not have any survey evidence to support this conclusion.
- 10.14.208 Paragraph 9.4.27 to 9.4.30 – The route crosses large expanses of grazing marsh including 75ha in the north with 18ha (24%) in the study area, 575ha between Foxfield and Kirby in Furness of which 67ha (12%) is in the study area and 240 ha in the southern section of which 15ha (6%) is in the study area. This habitat has been assessed as of 'local importance' yet this is supporting habitat for the Duddon Estuary SPA, Ramsar and Morecambe Bay SAC; important resource for SPA bird species, natterjack toads. The PPA Group would expect a higher valuation due to functional linkage with international sites unless surveys indicate that this is not the case.
- 10.14.209 Paragraph 9.4.41 – At least 44% of hedgerows in this subsection are described as species-rich yet the text describes the majority as being species-poor giving the wrong impression of the value of hedgerows in this subsection.
- 10.14.210 Paragraph 9.4.45 – Other watercourses draining into the SAC/SPA/Ramsar where functionally linked to the designated sites are expected to be higher than local value.
- 10.14.211 Paragraph 9.4.68 – Otter are a qualifying feature of the Duddon Estuary so the PPA Group would expect the otter present in watercourses linked to the Duddon estuary to be part of



this population and hence valued at a similar level.

- 10.14.212 Paragraph 9.4.135 – This states that ‘the overall integrity of the site (Morecambe Bay SAC) would be maintained and as such the potential effects within the ZoI of subsection E2 would be not significant’. The PPA Group cannot find a sufficiently robust evidence base to support this assessment.
- 10.14.213 Paragraph 9.4.140 – Morecambe Bay and Duddon Estuary pSPA, Duddon Estuary SPA and Ramsar – the PEI assesses that there will be a ‘significant adverse effect at **international level** on the bird populations within these designated sites as a result of disturbance, since the overall integrity of the designated sites would not be maintained. Mitigation would therefore be required to offset these effects’. If there are likely significant effects and these will result in adverse effect on site integrity, the project cannot go ahead unless the scheme can prove there are no alternative routes or methods (which will need to be researched and demonstrated to be impossible) and that there are Imperative Reasons of Overriding Public Interest (IROPI). If this is the case adequate compensation would need to be agreed with Natural England. Details to inform a Habitats Regulations Assessment are required to accompany the ES with robust baseline data.
- 10.14.214 Paragraph 9.4.144 – Wet woodland loss of 1ha from 7.5ha due to swathe of 60m required. This is a notifying feature of the SSSI. This has apparently been agreed with Natural England on 4.1.16.
- 10.14.215 Paragraph 9.4.147 – Loss of 0.06ha out of 0.2ha woodland is stated to be not significant yet comprises a third of the total woodland area.
- 10.14.216 Paragraph 9.4.150 – Loss of 0.3ha from 1.7ha is also assessed as not significant yet it is a sixth of the total woodland area.
- 10.14.217 Paragraph 9.4.151 – Loss of 0.45ha from a small woodland is considered to be not significant.
- 10.14.218 Paragraph 9.4.152 – Loss of 0.1ha from 0.3ha woodland is assessed as not significant yet it is a third of the total woodland area.
- 10.14.219 As a general point, throughout each of the subsection descriptions, there are assessments of loss from woodland stating ‘not significant’. No cumulative assessment of loss of woodland or other habitats has been provided. Constant fragmentation and losses of woodland without compensation is not acceptable; in all cases avoidance should be the preferred option unless impossible in which case this needs to be clearly documented and appropriate compensation provided. It is not considered acceptable to plant a similar area of new native trees as compensation for woodland loss. A much large area would be expected. The total loss of woodland and areas of woodland fragmentation should be calculated for the entire scheme and appropriate compensation provided. Small areas of new planting do not replace the loss of mature woodland and will be of limited value for



many tens of years.

- 10.14.220 Paragraph 9.4.159 – Use of a large area 4.9ha of coastal and floodplain grassland for the railway compound south-east of Foxfield, adjacent to Galloper Pool saltmarsh. This is sensitive area lying adjacent to the Duddon Estuary designated sites and close to the Duddon Mosses SAC, with potential for natterjack toads, SPA bird roosting; yet the 6.7ha temporary and 4.9ha permanent loss of habitat in subsection E2 has been assessed as not significant.
- 10.14.221 Paragraph 9.4.162 – With regard to the temporary tracking across Angerton Moss bog habitats to avoid habitat degradation; these raised bog habitats will be susceptible to compaction and erosion – clarification is necessary to demonstrate how this compaction and/or erosion will be re-instated/mitigated/compensated.
- 10.14.222 Paragraph 9.4.164 – Temporary damage to saltmarsh – clarification is necessary to demonstrate how this damage will be re-instated to avoid habitat loss or degradation.
- 10.14.223 Paragraph 9.4.175 – Evaluation of dormouse habitat in Cumbria would be expected to be high as they are the only surviving population. Surveys are ongoing so assessment of effects on dormouse are not reliable until robust baseline information is available.
- 10.14.224 Paragraph 9.4.180 – Red squirrels require mature trees for their habitat and therefore loss or fragmentation of woodland would have a significant effect should they be present.
- 10.14.225 Paragraph 9.4.185 – There are known GCN breeding ponds only 10m and 80m from 132kV undergrounding. (This area of undergrounding also affects potential natterjack toad habitat). It is likely that terrestrial habitat will therefore be disturbed during installation, resulting in a temporary significant effect. Although this population is not located within the Morecambe Bay SAC, it is considered likely that it is linked to the designated site GCN population, and hence will need to be addressed in the HRA. It will also be important during the installation of underground cables not to create a barrier between terrestrial refugia and the breeding pools.
- 10.14.226 Paragraph 9.4.193 – The impact cannot be assessed without having the survey information available for natterjack toads.
- 10.14.227 Paragraph 9.4.248 - If Dormouse are found their habitat should be retained as really important to maintain and extend the range of this species in Cumbria where it exists at its northern limit in the UK– loss of known habitat would result in fragmentation and potential loss of population viability.
- 10.14.228 Paragraph 9.4.250 – This states that ‘compensation would not be required within Subsection E2 since significant residual adverse effects are not predicted’. Has this not therefore considered the loss of saltmarsh, grazing marsh, woodland areas, potential collision risk to birds, disturbance to birds roosting and foraging on the coastal floodplain,

deterioration of habitats due to disturbance during undergrounding, compaction and dewatering of bogs during construction etc. Damage caused to habitat through access tracks. Use of land for railway compound. Installation of new 132kV crossing the upper estuary. Cumulative losses of habitats etc

- 10.14.229 Paragraph 9.4.257 – Dormouse surveys – the PPA Group have a lack of confidence in the results due to lack of access and poor weather.
- 10.14.230 Paragraph 9.4.258 – The PPA Group have a lack of confidence in the results of Great Crested Newt surveys, and so no assessment can be made until further survey information is considered.
- 10.14.231 Paragraph 9.4.259 – The same comment in relation to Great Crested Newts above equally applies to Natterjack Toads and that no assessment can be made until further survey information is considered, as referred to in paragraph 9.4.259.
- 10.14.232 Paragraph 9.4.57 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL crosses through woodland and numerous hedgerows which may include mature trees, it is probable that several tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.233 Paragraph 9.4.61 – As the DOL routes cross suitable bat foraging and commuting habitats including rivers and streams, woodlands, marshy grassland and many hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the section has been valued as of county level importance for noctule and unidentified *Nyctalus* species and *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area. Furthermore, for the reasons set out in paragraphs 9.4.255 and 256, it was not possible to undertake bat surveys in several transects and for long periods of time.
- 10.14.234 Paragraph 9.4.171 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied. Significant areas of woodland and hedgerow will need to be cleared to facilitate the routes of the two power lines. Furthermore, paragraph 9.4.170 states that: *"these works would result in the loss of potentially important foraging habitat for bats and cause fragmentation of woodland and hedgerow habitat that could affect the foraging and commuting behaviour of bats"*.
- 10.14.235 Paragraph 9.4.172 – Likewise, for the reasons set out above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat assemblage has been made due to a lack of data.
- 10.14.236 Paragraph 9.4.128 –Breeding bird surveys in Section E2 have recorded Schedule 1 species

(barn owl) and several SpoPI's including bullfinch; dunnoek; lesser redpoll; linnet; cuckoo and reed bunting, grasshopper warbler, tree sparrow and spotted flycatcher and Red List wading birds including curlew and lapwing. There is therefore evidence to support the assessment that the breeding bird assemblage within the ZOI is of greater than local importance. Paragraph 9.4.128 acknowledges this stating that: *"under Chartered Institute of Ecology and Environmental Management (CIEEM) guidance for determining the importance of ecological features, the passerine assemblage recorded during the breeding bird transects would indicate that the breeding bird assemblage within the ZoI of Subsection D1 is of county importance for biodiversity. However, the species recorded that are listed as SoPIs and priority species on the Cumbria LBAP are still widespread and relatively common within the UK, and Cumbria as a whole. The bird assemblage within the ZoI of Subsection D1 is therefore considered to be of no more than local importance for biodiversity"*.

10.14.237 Paragraph 9.4.218 – For the reasons set out above, an assessment of not significant for the effects of the project on breeding and wintering birds due to permanent and temporary habitat loss during construction cannot be justified within the 50-95% confidence limits of probability applied, especially given the extent of important habitat that may need to be removed to facilitate two separate power lines (400kV and 132kV).

10.14.238 Significant effects at the international level are assessed for the disturbance effects on wintering and passage birds during construction. No detailed mitigation is currently proposed to address these significant effects. Furthermore, one suggestion being considered is to undertake construction works in the vicinity of SPA/pSPA/Ramsar sites during the bird breeding season. This would significantly increase the risk to nesting birds which are currently not considered to be significant.

Subsection H1 – Lindal-in-Furness to MHW at Morecambe Bay

10.14.239 Draft Order Limit passes right around Cavendish Dock which is sensitive habitat for birds. This DOL area also supports good populations of reptile (common lizard, slow worm), rare plants, dense stands of Japanese knotweed, contaminated land, breeding birds, otter, species-rich grassland and open mosaic habitat on previously developed land.

10.14.240 Paragraph 9.5.14 – Calcareous grassland not considered HoPI – is this because of the small area (<1ha) rather than the species content?

10.14.241 Paragraph 9.5.15 – This area needs to be groundtruthed – there is open mosaic habitat on previously developed land and basic grassland occurs in the Roosecote area, and around the docks – very biodiverse plant species with very good invertebrate populations.

10.14.242 Paragraph 9.5.28 – States that there are no protected or notable plant species records. There are notable plant species around the docks particularly around Cavendish Dock, so groundtruthing is recommended.

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- 10.14.243 Paragraph 9.5.29 – States that there are no desk study results of non native invasive species yet there are known dense stands of JK and other invasives such as *Rosa rugosa*, *Cotoneaster*, *Montbretia* around the docks and along the railway.
- 10.14.244 Paragraph 9.5.31 – Have bats been considered in the redundant buildings and old warehouses plus residential premises in this area?
- 10.14.245 Paragraphs 9.5.55 – 9.5.67 – GCN assessment made without surveys on at least 33 ponds which could not be accessed.
- 10.14.246 Paragraph 9.5.77 – Reptiles (common lizard and slow worm) known to be abundant along the railway and dock areas and may be County value population.
- 10.14.247 Paragraph 9.5.88 – What about the bird populations from the Roosecote Sands/Rampside areas?
- 10.14.248 Table 9.3.2 – May be notable plants within the DOL; JK around docks and railway line.
- 10.14.249 Paragraph 9.5.105 – States here that '*The effects on Morecambe Bay and Duddon Estuary pSPA, Morecambe Bay SPA, Ramsar site and SSSI, and South Walney and Piel Channel Flats SSSI would also be **significant adverse at an international level**, since the overall integrity of the designated sites would not be maintained. Mitigation would therefore be required to offset these effects*'. See previous HRA comments re. avoidance and then IROPI.
- 10.14.250 Paragraph 9.5.111 – States '*A maximum area of approximately 2.5ha of species-rich grassland would be permanently lost, along with small areas of dense and scattered scrub. Another area of approximately 2ha of species-rich semi-improved grassland would be temporarily lost for a topsoil storage area*'. Why use an area of herb-rich grassland for temporary storage as it is likely then to be lost due to nutrient enrichment and introduction of other seeds – potential for ruderals, coarse grasses and invasives. Total loss of 4.5ha species-rich grassland will need to be compensated for.
- 10.14.251 Paragraph 9.5.112 – Clarification is required as to whether or not the caves referred to in paragraph 9.5.112 have been assessed for bat potential, and therefore included in the assessment. Information will be required to understand and demonstrate the effects of the development upon these areas.
- 10.14.252 Paragraph 9.5.115 – Clarification is sought to demonstrate as to whether or not the tunnel head construction and proposed de-watering would affect the SPA bird use of the land in the Salhouse Pool area. The Hydrogeological Impact Assessment would not be sufficient in this instance.
- 10.14.253 Paragraph 9.5.124 – Clarification is sought as to the potential about impacts on otter using

Mill Beck, which discharges into north-east side of Cavendish Dock, as a result of extension of the 33kV substation at Sandgate.

- 10.14.254 Paragraph 9.5.34 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL crosses numerous hedgerows which may include mature trees, it is probable that several tree roosts may be affected. No value is placed on the roosting potential of this section of the DOL.
- 10.14.255 Paragraph 9.5.38 –As the DOL route crosses suitable bat foraging and commuting habitats including many hedgerows, the assessment of local importance for the bat assemblage is likely to be an underestimate, especially as the section has been valued as of county level importance for noctule and unidentified *Nyctalus/Eptesicus* species and *Myotis* species were recorded during the bat surveys and it is possible that some of these are the rarer *Myotis* species or that all four *Myotis* species are present in the study area. Furthermore, for the reasons set out in paragraphs 9.5.195, it was not possible to undertake deploy static detectors in two of the four target survey areas and only deploy static detectors for one month only in bat survey area 34. Therefore it is questionable whether sufficient survey effort has been undertaken to inform either a valuation of the bat foraging and commuting habitat or an assessment of potential impacts on it.
- 10.14.256 Paragraph 9.5.99 - Breeding bird surveys in Section H1 have recorded several SpoPI's including curlew; dunno; grasshopper warbler; house sparrow; lapwing; linnet and reed bunting. There is therefore evidence to support the assessment that the breeding bird assemblage within the ZOI is of greater than local importance.
- 10.14.257 Paragraph 9.5.117 – For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied. Significant lengths of hedgerow (over 20) will need to be cleared to facilitate the routes of the two power lines. Furthermore, paragraph 9.5.117 also states that: *"these works would result in the loss of potentially important foraging habitat for bats and cause fragmentation of woodland and hedgerow habitat that could affect the foraging and commuting behaviour of bats"*.
- 10.14.258 Paragraph 9.5.118 – Likewise, for the reasons set out above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat assemblage has been made due to a lack of data.
- 10.14.259 Paragraph 9.5.178 – The proposed screening to mitigate for the effects on the bird assemblage of the adjacent SPA/Ramsar site would need to include acoustic screening as well as visual screening. The Waterbird Disturbance Mitigation Toolkit (Cutts, Hemingway and Spencer, 2013, University of Hull) should be used to assess the types and level of screening that will be effective. It is likely that Natural England and local planning authorities will require an assessment of the effects of the works in this area under the Conservation of Habitats and Species Regulations, 2010 (as amended).

Subsection H2 - Morecambe Bay

- 10.14.260 Inset 9.1 – It would have been helpful if the inset maps in 9.1 had been presented in the same way as those in Inset 9.2 that show the location of the proposed Tunnel Islet Location in relation to the recordings of the wildfowl and wading birds.
- 10.14.261 Paragraph 9.6.44 - Habitat loss and damage are considered to be not significant and (paragraph) 9.6.57) disturbance during construction is also considered to be not significant. In relation to the latter assessment, no reference is made to the noise thresholds likely to be generated by the proposed construction activities, including deep piling. The Waterbird Disturbance Mitigation Toolkit (Cutts, Hemingway and Spencer, 2013, University of Hull) indicates that above the 70dB noise threshold moderate to high disturbance can occur to wading birds and wildfowl. The higher the noise levels the wider impact there is likely to be so that e.g. plant operating at 100dB at source will generate only a 70dB effect at 70m from the source. Paragraph 9.6.56 assesses the potential effects as not significant over a distance of 200m and this would appear to be a reasonable assessment. However, a formal assessment of the potential effects on SPA 's and their qualifying interest features under the Conservation of Habitats and Species Regulations, 2010 (as amended) is still likely to be required by Natural England and the local planning authorities as part of the ES for proposed the works in this area.

Subsection H3 – MHWM at Morecambe Bay to Middleton Substation

- 10.14.262 Paragraph 9.7.31 – The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. As this section of the DOL crosses through two sections of broadleaved woodland bat roosts may be affected. No value is placed on the roosting potential of this section of the DOL
- 10.14.263 Paragraph 9.7.34 – There is insufficient evidence to support a valuation of only local level for the bat foraging and commuting assemblage especially as due to limitations explained in the PEI no static monitoring was undertaken.
- 10.14.264 Paragraph 9.7.89 - For the reasons set out above, an assessment of not significant for the effects of the project on foraging and commuting bats during construction cannot be justified within the 50-95% confidence limits of probability applied. Significant areas of woodland and hedgerow, and wetland habitat will need to be cleared to facilitate the routes of the two power lines. Furthermore, paragraph 9.7.88 states that: *"these works would result in the loss of potentially important foraging habitat for bats and cause fragmentation of woodland and hedgerow habitat that could affect the foraging and commuting behaviour of bats"*.
- 10.14.265 Paragraph 9.7.90 – Likewise, for the reasons set out above, it is also not possible to conclude that the effects on roosting bats is of only a local scale since no assessment of the value of the roosting bat assemblage has been made due to a lack of data.

10.14.266 Paragraph 9.7.71 – No breeding bird surveys have been undertaken within Section H3 and therefore there is no evidence to justify a conclusion that the breeding bird assemblage is only of local value. Although the cable route is largely routed through an urban environment, the site construction compound covers a significant area of land that is on the outskirts of the urban area and the route cuts through three separate areas of broadleaved woodland and the Heysham Moss SSSI and Heysham Nature Reserve is adjacent to the route and Table 9.46 states that: "*large numbers of migrant birds occur on the reserve*". Two transect surveys for non-breeding birds have been undertaken but the results of those surveys have not been included within the PEI.

10.14.267 Paragraph 9.7.114 – It is not possible to justify an assessment of a not significant effect on breeding and non-breeding birds during construction without any evidence of the breeding bird assemblage in the DOL route or the presentation of the results of the non-breeding bird transect surveys.

Natland Substation Extension

10.14.268 Table 9.5.1 – Notes the presence of the Lancaster Canal County Wildlife Site within 55m of the site. This is not shown either on the Phase 1 habitat map or on the non-statutory sites designation map nor is it described under the habitats section of the report. There is therefore no evidence that this important ecological feature has been considered in the assessment of ecological effects.

10.14.269 Paragraph 9.8.1 (should be 9.8.16)– The final number of potential bat roost sites has not yet been determined and no roosts have been confirmed as yet. However access difficulties have meant that not all trees have yet been assessed for potential roosts sites. As this development lies adjacent to broadleaved deciduous woodland and a hedgerow, bat roosts may be affected. No value is placed on the roosting potential of this area for the reasons set out above.

10.14.270 Paragraph 9.8.4 – (should be 9.8.19) – No surveys have been undertaken to establish the value of the bat foraging and commuting assemblage or habitat. This could be high given the proximity of the Lancaster Canal (within 50m of the site).

10.14.271 Paragraph 9.8.28 – No bird surveys have been undertaken in connection with the Natland Sub Station extension and therefore there is no evidence to justify the assessment of the value of the site for breeding and wintering birds as being only of site level importance. Consequently they have been scoped out of consideration. There is no data to support the assessment of value or the scoping out of birds from the assessment of effects.

10.14.272 Paragraph 9.8.33 - The effects on roosting and foraging bats have been assessed as being not significant without any survey data on which to base the assessment. There is therefore no evidence to support an assessment of 'not significant' for the potential effects on the bat assemblage.



10.15 Project Wide Information Volume 2.3, Chapter 9, Terrestrial and Avian Ecology

- 10.15.1 Overview - There is a lack of any detailed cumulative assessment of the scheme on ecology. The overall assessments are generalised and indicate minimal significant effects overall which can be readily mitigated or compensated for. Impacts on species populations caused through habitat fragmentation and disturbance considered along the whole route have not been assessed, and overall losses of habitat within the DO need to be calculated as these may well be significant when assessed cumulatively, and in-combination with other projects. In addition mitigation is not considered to be detailed enough and adequate to cover all the potential effects of the scheme.
- 10.15.2 Bats - The cumulative assessment that the project overall (North Route and South Route) is not significant either for roosting or foraging and commuting bats is not supported by the evidence presented to date. No bat roost survey information is presented in the PEI and no valuation of the importance of individual sections of the overall route for roosting bats has therefore been possible. Data on roosting and commuting bats is incomplete but the data that is available does not support the assessment that bat foraging and commuting assemblages are of only local importance.
- 10.15.3 The overall assessment in Volume 2.3 does not even consider the cumulative effects of the habitat loss and fragmentation on roosting, commuting or foraging bats. The assessment that, overall, the effects of the project on roosting bats and foraging bats is not significant cannot be justified based on the evidence reported. The losses of habitat and fragmentation of habitat networks will be significant given the scale of the project and the number of individual habitat features that will be affected overall. Disturbance can also be significant given the nature of the works required and the area over which they will be undertaken.
- 10.15.4 No effective mitigation strategy has been set out as to how the effects on roosting and foraging and commuting bats are to be mitigated so as to meet the legal requirements under the Conservation of Habitats and Species Regulations 2010. Under the legislation, it is an offence to:
- Deliberately capture, injure or kill any bat;
 - Deliberately disturb bats, in particular where it is likely to:
 - Impair their ability to breed or reproduce, or to rear or nurture their young;
 - Impair their ability to hibernate or migrate; or
 - Affect significantly the local distribution or abundance of bats.
 - Intentionally or recklessly damage, destroy or obstruct the access to the place of shelter or protection; and
 - Damage or destroy a bats breeding site or resting place.
- 10.15.5 The report states only that: "The specific requirements to mitigate the loss of any bat roosts cannot be confirmed at this stage whilst surveys to identify and confirm the status of roosts, and analysis of the survey data, are currently continuing. Consequently, further details

regarding the mitigation that would be required to mitigate the loss of individual roosts will be outlined in the ES". Mitigation for habitat loss and fragmentation relies upon replacing lost habitat. However this may take many years to implement and to mature to the point where it actually forms effective replacement habitat and re-connects fragmented habitats. While it is therefore true that such losses will be temporary, they cannot be described as short – term. Given that it is intended to remove vegetation in winter (to avoid direct impacts on nesting birds) the clearance of large areas and sections of habitat together, is likely to have a significant effect overall on the roosting, foraging and commuting bat assemblage

- 10.15.6 Birds - Similarly, the cumulative assessment in Volume 2.3 does not consider the effect of habitat loss and fragmentation either on the breeding bird assemblages or wintering bird assemblages that may be affected by the project. The assessment that overall, the effects on breeding and wintering birds during construction is not significant cannot be justified based on the evidence reported. The losses of habitat and fragmentation of habitat networks will be significant given the scale of the project and the number of individual habitat features that will be affected overall. Disturbance can also be significant given the nature of the works required and the area over which they will be undertaken.
- 10.15.7 No effective mitigation strategy has been set out for the effects on breeding and wintering birds. Mitigation for habitat loss and fragmentation relies upon replacing lost habitat. However this may take many years to implement and to mature to the point where it actually forms effective replacement habitat and re-connects fragmented habitats. While it is therefore true that such losses will be temporary, they cannot be described as short –term. Given that it is intended to remove vegetation in winter (to avoid direct impacts on nesting birds) the clearance of large areas and sections of habitat together, is likely to have a significant effect overall on the breeding bird assemblage. Although the individual section assessments have identified wintering bird assemblages of potentially international importance and potential significant effects on these assemblages, overall the assessment is that there will be no significant effects on the wintering bird populations. The rationale for this assessment is that: *"The timing of works to minimise disturbance of breeding birds, as outlined as a standard environmental measure (see paragraph 9.7.70 in **Chapter 9, Volume 2.2**), serves to increase the potential for temporary displacement of non-breeding birds during the construction phase. However, these birds are likely to be able to make use of extensive areas of similar habitats in the surrounding area and as such, effects on local bird populations within the ZoI of the Project are likely to be minor, temporary and **not significant**".* A similar rationale is applied to the effects on the breeding bird assemblage. In other words, no mitigation is proposed and it is assumed that birds will simply move to occupy other habitats.
- 10.15.8 Red squirrel – All effects have been assessed as not significant. In woodlands which support red squirrel population any clearance of a wide swathe of mature trees will have a likely significant effect and will not be adequately mitigated for by allowing scrub growth under the pylons or through planting a similar sized area of new woodland.
- 10.15.9 Reptiles – should the undergrounding sections affect any reptile habitat there may be extensive temporary loss of reptile habitat and potential for death or injury during

construction. In these areas use of active mitigation may be required involving reptile exclusion, followed by habitat re-instatement and enhancement.

- 10.15.10 Badger – Not considered in this chapter, yet as mobile species they may be impacted during construction, operation and maintenance of the scheme. Prior to any works it would be expected for a badger survey to be carried out to establish whether or not there is any potential to damage or disturb a badger sett or sever access between setts.
- 10.15.11 Great Crested Newt and Natterjack toad – depending on the location of the maintenance works in relation to the known and potential breeding pools for these EPS, further mitigation may be required as the impacts may be greater than not significant. Update surveys likely to be required to establish presence in potentially vulnerable habitats. Significance level will depend on presence or absence of these protected species within the ZoI of the proposed works. Licences may be required.
- 10.15.12 Migratory fish – electromagnetic waves from overhead pylons are known to cause behavioural reactions in fish such as Atlantic salmon. Robust scientific evidence of potential for effects will be required to inform the Habitats Regulations Assessment when assessing qualifying SAC fish species. No evidence is presented here only a comment that it is considered unlikely that the electromagnetic waves would cause disruption to migratory fish.
- 10.15.13 Mitigation – Hierarchy should list avoidance as the optimal solution in all cases. There is the likelihood of 'significant' adverse effect if wide bands of mature woodland which support red squirrel populations, barn owls, bats etc are felled. Great care is therefore necessary so as not to destroy the connectivity between badger setts. Evidence will be required to show how this could be properly effected.
- 10.15.14 Compensation – woodland compensation providing similar area to that felled is not considered to be acceptable. Destruction of ancient woodland groundflora and felling of mature/veteran trees is not replaceable. Substantial additional compensation would be expected should ancient woodlands/ancient woodland sites be damaged or destroyed as a result of the scheme.

10.16 Other Effects

10.17 Commentary on Residual Effects

- 10.17.1 Although the PEI Report appears to rule out residual effects, it is not possible to agree this at this stage since it is not possible to comment on residual effects until the full survey results, full assessment, and full details of avoidance/ mitigation/ compensation have been presented.
- 10.17.2 The PEI Report conclusion of no residual effects is based on assumptions, e.g. paragraph 9.7.135 expects that if mitigation is required for tunnel head construction then this would

prevent drying out of groundwater dependent habitats in the adjacent designated sites. Such conclusions clearly need to be adequately evidenced, and the ES will therefore need to present a robust assessment of the likely impacts together with details of how the impact will be avoided or, if unavoidable, what mitigation measures will be implemented (and what is the confidence in the efficacy of the proposed mitigation).

- 10.17.3 The ES will clearly need to be underpinned by adequate field survey. For example, paragraphs 9.7.140-141 indicate that not all of each subsection will have been subject to field survey; paragraph 9.7.142 notes that the PEI Report is based on limited bat survey, undertaken late in the season; and paragraph 9.7.144 notes that the PEI Report assessment is not based on the results of surveys for great crested newt.
- 10.17.4 Paragraph 5.3.4 of National Policy Statement for Energy (EN-1) states that "*The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.*" Volume 2.3 Chapter 9 paragraph 9.4.7 gives examples of biodiversity enhancement measures including the replanting of hedgerows with native species to increase species richness and provide food for birds and badger. Reinstatement of native hedgerows with native hedgerows appears to be compensation rather than enhancement; badgers are not a conservation priority in England and are not known to be present in subsection H3. The ES will need to be precise in its use of terminology, i.e. measures required to mitigate and compensate impacts do not constitute enhancement; the ES will need to demonstrate maintenance of existing biodiversity value and then additional enhancement.

10.18 Commentary on Approach to Inter-Relationship Effects

- 10.18.1 It would be helpful if the ES could provide further commentary on the approach since it is unclear from the matrix why some topics/ effects are ruled out, for example why terrestrial and avian ecology could not interact with traffic and transport or land use (including recreation).

10.19 Commentary on Cumulative effects

- 10.19.1 The section in the PEI relating to cumulative effects on ecology is not complete.
- 10.19.2 The PPA Group would also point out that, as noted above, it may not only be the effects of 'major' developments that will be relevant to an assessment of potential cumulative effects. The ES should consider the effects of 'non-major' developments, which are also quite capable of resulting in impacts on protected and priority species and habitats, which could be 'significant'. This should be addressed in the ES.

10.20 Key issues/Gaps Requiring Further Assessment

- 10.20.1 Surveys have either not yet been completed and/ or have not been reported in full. The

assessment, and conclusions, within the PEI Report are therefore based on incomplete information.

- 10.20.2 In the absence of full survey results and impact assessment it is not possible to comment on the adequacy of the surveys, assessment or proposals for avoidance/ mitigation/ compensation, or conclusions of the PEI Report.
- 10.20.3 The PEI Report suggests that not all of the DCO extent has been surveyed. Clearly the assessment of impacts needs to be based on adequate information. The ES will need to be clear where assessment is based on survey results and where desk-based information has been relied upon.
- 10.20.4 On the basis of the preliminary information submitted, it appears that the subsection H3 proposals would result in a large loss of habitat (including conservation priority habitat, and habitat of protected and priority species) as a result of substation and tunnel works (significant at the site level at least); and direct and indirect effects on the adjacent statutory and non-statutory designated sites (significant adverse). The PEI Report does not demonstrate that there would be any mitigation or compensation for these impacts, let alone enhancement (cf NPS EN-1 and NPPF). The ES will need to clearly demonstrate that significant impacts are unavoidable and that adequate mitigation and compensation will be delivered to fully offset losses and ensure as a minimum no net loss of biodiversity value.
- 10.20.5 Volume 4.1 Draft Development Consent Order appears incomplete: schedules are not attached, and the list of schedules does not appear to make any provision for biodiversity mitigation, compensation or enhancement. There is a draft requirement to submit landscape drawings, but no specification/scope for what these should include as a minimum. There appears to be no requirement for, *e.g.* undertaking works in accordance with an approved Code of Construction Practice; or submission of a Biodiversity Mitigation Strategy (mitigation during site clearance and construction; measures for the maintenance of biodiversity value; or provision for restoration of land used for temporary construction purposes; or provision for protected species, etc.
- 10.20.6 At this stage, gaps requiring further consideration/ assessment therefore appear to include (but may not be limited to): surveys for protected and priority species and habitats; impact assessment based on adequate information; proposals that demonstrate avoidance, mitigation and compensation (biodiversity impacts); Code of Construction Practice; Draft Development Consent Order.



ⁱ CIEEM (2016). *Guidelines for Assessing and Using Biodiversity Data*. Chartered Institute of Ecology and Environmental Management (CIEEM).

ⁱⁱ Natural England (2014). *Climate Change Adaptation Manual*. 22. *Coastal floodplain and grazing marsh*.

ⁱⁱⁱ Lancashire County Council (1998). *Biological Heritage Sites. Guidelines for Site Selection*. Lancashire Wildlife Trust, Lancashire County Council, English Nature.

11.0 Traffic and Transport

11.1.0 This chapter summarises the key issues identified in the review of the Traffic and Transport data and assessments presented in the PEI Report. These key issues have been identified following a review of the relevant reports. These issues relate to the project design, methodology, presentation, and are considered to result in inaccurate and unreliable assessments of the effects of the NWCC on Traffic and Transport. Key issues are summarised below in Table 11.1, with detailed comments set out in the following sections.

11.1 Traffic and Transport Key Issues

Table 11.1: Traffic and Transport Key Issues

Key Headline	Comment
Traffic and Transport	
1. There is insufficient information to assess the impacts of the two transport strategy options.	<p>At this key consultation stage National Grid has not provided sufficient information to enable the PPA Group to understand the impacts and the required mitigation. The provision of two options, multi-modal and road based are not underpinned by the detail of the impacts and therefore it does not give sufficient comfort that the significant transport and connectivity issues have been properly considered as a basis for the development of the project.</p> <p>The PPA Group consider that further consultation is required, including engagement on the transport modelling, Transport Assessment (TA) and mitigation.</p> <p>National Grid analysis makes no recommendation on whether road based or multi modal options are appropriate for the strategic routes. In addition, there is no mechanism proposed to determine which option should be adopted. Whilst there are a number of clear benefits with the multi modal option, the PEI only commits to carrying out further analysis.</p> <p>The analysis carried out to date only considers the changes in traffic flows, highlighting links that are sensitive to traffic volumes. There are a range of other factors that should be included when determining the preferred option, e.g. safety, vehicle delay, total vehicle kilometres, noise, air quality, greenhouse gas emissions, vulnerable users, wider economic impacts.</p> <p>Notwithstanding the absence of an accepted methodology, the PPA Group consider that there are clear benefits to adopting the multi modal approach. The PPA Group consider that National Grid should in consultation with relevant stakeholders carry out an 'incremental analysis' of the benefits of rail/port options to determine the optimal multi modal</p>

Key Headline	Comment
	solution for each of sections of the NWCC project. See section 11.11 for more detail.
2. A multi modal approach is recommended.	<p>Subject to a full assessment of the impacts, the PPA Group strongly advocates the multi modal option as compared to a road based option as it has the potential to reduce impacts and PPA Group concerns outlined later in this chapter. See section 11.11.</p> <p>The PPA Group strongly advocates the use of the railway and ports to mitigate the impact on the highway network from the additional traffic created by the project. Along with other developers, there will be a requirement for National Grid to contribute towards rail infrastructure improvements working with the Coastal Railway Programme Board. However, it is also noted that there will still be a need for additional highway improvements to mitigate the impact of the residual traffic movement from railway and ports to the construction sites. See paragraphs 11.14.7 and 11.14.8 for more detail.</p>
3. Detailed transport modelling is required to understand the impacts of NWCC and the appropriate mitigation	<p>The traffic movement for the importing (and decommissioning) of materials for access and haul roads, construction materials, cables and waste needs to be properly modelled. In addition, this modelling needs to include a cumulative assessment, including the impact of other major development proposals including; Moorside, ongoing Sellafield activities, West Cumbria Mining's proposals at Whitehaven, BAE at Barrow and the United Utilities West Cumbria Water Supplies Project, all within similar implementation periods on an already constrained infrastructure. More detailed assessments of the impacts should be carried out Barrow, West Cumbria and Heysham, in the cases of Barrow and West Cumbria, using the available SATURN models. The model and inputs must be agreed with the PPA Group in advance.</p> <p>There will be a significant number of construction workers to deliver the project. The analysis of construction workers' trips assumes that they will be located in local accommodation, which is not supported by clear evidence and indeed contradicts evidence presented elsewhere (see PEI 17.3.17).</p> <p>National Grid must consider the modelled impact of the project and necessary mitigation required to provide an informed TA of the project. This should include appropriate travel plans to identify how construction workers will travel to construction sites. See section 11.9.7 to 11.9.10.</p>
4. Need to identify the traffic and transport impacts and appropriate mitigation.	The PPA Group is very concerned that the PEI assessment has not identified detailed transport impacts and consequentially there is a failure to identify mitigation measures. The consultation material is considered to be inadequate given the importance of transport and infrastructure to facilitating delivery of this project. The lack of a draft TA is a serious omission in the consultation material.

Key Headline	Comment
	<p>Without detailed analysis it is not possible to determine where the impacts of increased traffic are likely to be significant. National Grid confirm that a detailed TA will be prepared for the Project as part of the application for development consent. The scope of the TA should be agreed with the relevant Highway Authorities. Whilst it is noted that a draft scope has been prepared, this requires further consultation and is not currently accepted by the PPA Group.</p> <p>The PPA Group consider that a multi modal strategy is a key form of mitigation that will be required for the NWCC project. See section 11.14.</p> <p>The impacts of traffic generated by the project should not be confined solely to capacity assessments. It is important to consider other issues, including resilience, the impacts on pedestrian and cycle movement, severance, safety and accidents, pollution, residential amenity, economic impact. All these aspects impact adversely on host communities and should be minimised. It is also anticipated that there will be impacts on the condition of the highway as a result of the NWCC project, particularly local roads not designed for HGV use, and appropriate mitigation will need to be provided for repair and maintenance of the highway.</p>
5. National Grid need to develop a strategy for mitigating impacts at key 'pinch points'.	<p>Whilst it is acknowledged that National Grid has not completed a full technical assessment on both the road only and multi model options, the information provided does identify that there will be significant impact on the highway network. There are known capacity constraints and safety issues along a number of roads affected by the proposal, including the A590, A595 and A5092 – confirmed within the Cumbria LEP's West of M6 Strategic Connectivity Study, prepared in conjunction with Highways England.</p> <p>A strategy for mitigating impacts at key pinch points along the proposed routes needs to be developed and agreed, through liaison with the PPA Group and Highways England. The results of this will require further consultation in advance of the DCO submission, particularly as there may be a need for acquisition of third party land to achieve the mitigation. See paragraphs 11.14.14 to 11.14.16 for more detail.</p>
6. Need to carry out an assessment of highway network locations to identify where mitigation may be required.	<p>Although the PPA Group and Highways England have identified a number of locations where congestion and safety is known to be an issue, this list is not definitive. See section 11.14 for more detail. Additional, detailed assessment work is therefore needed to identify further locations where mitigation may be required.</p>
7. PRoW and cycle routes.	<p>There are extensive Public Rights of Way (PRoW) and cycle routes along the route of the project which are of national significance. The PPA Group is concerned that the route alignment of the proposals suggests</p>

Key Headline	Comment
	<p>that there is likely to be extensive disruption to cycle route and PRowS. See paragraph 11.13.1 to 11.13.4.</p> <p>These impacts need to be appropriately addressed and appropriate mitigation put in place in consultation with local communities to avoid the disruption and severance of key routes to allow their continued use and enjoyment as a tourist asset during construction and operation of the project. This is particularly important to limit any adverse impact on the visitor economy, and also provides the opportunity for National Grid to mitigate any impacts by delivering a longer term legacy of an enhanced cycle route and PRow network. See section 11.14 for more detail of mitigation measures.</p>
8. A comprehensive assessment of the site accesses is required, including full details regarding the mitigation measures.	<p>The PPA Group has concerns regarding individual access routes and site accesses which need to be addressed. These relate to numerous locations where there are concerns of, amongst others: inadequate visibility; blind spots; road crests and risk of grounding; narrow carriageways and impacts on pedestrians and cyclists. Further details are provided in section 11.12 and detailed observations included in Appendix 11.1.</p>
9. The PEI Report does not adequately consider potential safety issues	<p>The PEI has not assessed the potential for additional traffic resulting in increased accidents. Whilst 5-year accident data has been collated and presented, it is presented for (generally) long sections of road. The data has not been disaggregated to allow accident clusters (on links or junctions) to be identified. As a result, it is not possible to identify whether the proposal is likely to result in increased accidents.</p> <p>The proposal results, inevitably, in significant volumes of HGVs using roads that are not designed to be used by HGVs – primarily to access the proposed locations of pylons. There is no evidence presented in the PEI that the routes chosen are appropriate, feasible, and are unlikely to result in accidents. See 11.11.6.</p> <p>The analysis has identified large increases in HGV flows on the strategic and primary route networks. This could potentially have a significant impact on highway safety. Many of the roads that will see an increase in HGVs are single carriageway and with the volume of HGVs predicted (particularly for the road based option), significant 'bunching' of traffic will occur. This will significantly reduce overtaking opportunities and lead to driver frustration, increasing the potential for accidents and delays with the associated impact on the Cumbria economy, including the tourism and accommodation sector.</p> <p>More detailed analysis is required to fully identify the potential risks and also to develop measures to ensure that the proposed routes are appropriate and safe.</p>

11.2 Overall Context Description

11.2.1 This chapter assesses the work carried out by National Grid in determining the potential environmental impact with regard to traffic and transport of the NWCC Project. The chapter has been prepared using data and analysis supplied by National Grid in preparing their PEI Report.

11.2.2 The report considers the following issues:

- Baseline data and conditions;
- PEI data;
- Assessment methodology and conclusions;
- Proposed mitigation;
- Other effects; and
- Gaps requiring further assessment.

11.3 Adequacy of Baseline and Data Sources

11.4 Commentary on Study Area

11.4.1 In general, the study area for highways is considered to be appropriate, comprising all roads west of the M6 where increases in traffic are forecast. The only exception to this is the urban area of Barrow-in-Furness. The work carried out for National Grid has assumed that all traffic will use identified 'strategic routes' – through Barrow this comprises the A590 Park Road/Hindpool Road and the A5087 Hindpool Road/Roose Road. Whilst this is appropriate for HGV trips, light vehicles trips, particularly those made by construction/support workers, will potentially use a variety of roads in Barrow. The study area in Barrow should therefore be extended to include roads where a significant increase in traffic would be expected.

11.4.2 The study areas for bus services, rail lines and facilities, and ports are considered to be appropriate.

11.4.3 The study area for PRow and Cycle Routes is considered to be appropriate; however some significant impacts, highlighted later in this report, have been omitted from National Grid analysis.

11.5 Commentary on Existing Environment

11.5.1 **Data Sources:** There are significant gaps in the traffic data supplied and National Grid has indicated that additional surveys have been carried out. This is required before the PPA Group can be confident in progressing modelling and carry out other assessments.

11.5.2 Although 5-year personal injury collision data has been collected, it has been presented

aggregated over significant sections of road. The data should be presented on a map base so that any clusters can be readily identified – particularly at junctions that may see increased use due to the proposals. Where the data is presented in a tabular format, the estimated personal injury accident rate should also be presented in order to identify where the number of observed accidents are greater than average.

- 11.5.3 For all sections the fieldwork condition surveys were not supplied and in their absence it was not possible to comment on all of the classifications adopted. From a desktop review of the routes impacted the classification adopted by National Grid appears to be appropriate, although more detailed analysis is required.
- 11.5.4 **Northern Strategic Route.** The northern strategic route extends from the M6 junction 44 via the A689, A595 and A596. The assessment of the environmental sensitivity of sections of the route to changes in traffic (applying IEMA guidelines) is considered to be appropriate.
- 11.5.5 The assessment identifies PRoW that will be impacted by the proposals and classifies each in terms of sensitivity based on fieldwork condition surveys, with all long distance routes classified as medium or high.
- 11.5.6 The sensitivity of rail receptors has been assessed for the Cumbrian Coast Line, the West Coast Main Line and Kingmoor Depot, based on their importance and ability to cater for greater usage. The assessments have been carried out using data from a number of capacity assessments carried out independently of the NWCC project; the assessments carried out are considered to be appropriate, based on the assumption that the capacity assessments referred to are technically sound.
- 11.5.7 **Central Strategic Route.** The central strategic route extends from the M6 Junction 40 via the A66 to Cockermouth, then the A594 to serve the Maryport area, A66/A596 to serve the Workington area and A595 serving areas south to Gosforth. The assessment of the environmental sensitivity of sections of the route to changes in traffic is considered to be appropriate for the most part.
- 11.5.8 The exception to this is the A66 – A66 Stainburn roundabout to Workington Port via A596, which is classified as major sensitivity. The A596 from just south of the river Derwent to Workington Port is clearly of low sensitivity. The remaining section comprising the A596 to Ramsay Brow and the A66 between Ramsay Brow and Stainburn roundabout is clearly of higher sensitivity. There is congestion at Ramsay Brow and there are lay-bys, footways and various property frontages. It is our view however that this section should more reasonably be classified as moderate sensitivity.
- 11.5.9 The sensitivity of rail receptors has been assessed for the Cumbrian Coast Line and at Workington Port based on their importance and ability to cater for greater usage. The assessments have been carried out using data from a number of capacity assessments carried out independently of the NWCC project; the assessments carried out are considered to be appropriate, based on the assumption that the capacity assessments referred to are

technically sound.

- 11.5.10 The sensitivity of Workington Port has been assessed as minor based on its ability to cater for higher volumes. This is considered to be appropriate.
- 11.5.11 **Southern Strategic Route.** The southern strategic route extends from the M6 junction 36 via the A590 to Barrow-in-Furness and A595 northwards to Kirkby-in-Furness and the A5092 and A595 westwards and northwards from Gawthwaite to Gosforth. The assessment of the environmental sensitivity of sections of the route to changes in traffic is considered to be appropriate for the most part, particularly with regard to the poor quality of large sections of the A595.
- 11.5.12 The sensitivity of rail receptors has been assessed for the Cumbrian Coast Line, the Furness Line and the Roosecote and Barrow Port sidings. The assessments have been carried out using data from a number of capacity assessments carried out independently of the NWCC project; the assessments carried out are considered to be appropriate, based on the assumption that the capacity assessments referred to are technically sound.
- 11.5.13 The assessment considered the Port facilities at Millom and at Barrow. Millom was rejected by National Grid as it would result in large volumes of HGV's using sensitive traffic routes – through Millom/ Haverigg. This conclusion is noted, however, it is considered that there may be potential for resolving the transport issues through discussion with local stakeholders, subject to the consideration of impact on local highway network and other environmental effects. Therefore, the use of Millom Port in some form should not be fully dismissed at this stage. The sensitivity of the Port of Barrow has been assessed as minor due to available capacity; this is considered appropriate.
- 11.5.14 **Heysham strategic route.** The Heysham Strategic Route extends from the M6 Junction 34 via the recently opened Bay Gateway Link and the A683 and A589 to Heysham Port. The assessment of the environmental sensitivity of sections of the route to changes in traffic is considered to be appropriate.
- 11.5.15 All of the PRoW in this section impacted by the proposal are classified as low sensitivity. In the absence of fieldwork conditioning survey the PPA Group are unable to provide further comment (See Section 11.13 Public Rights of Way below and paragraph 17.13.31 in the Socio Economic Chapter 17 in this response).
- 11.5.16 The sensitivity of rail receptors has been assessed as minor for the Morecambe Branch Line as it has capacity to cater for additional freight services. This is based on a Network Rail study carried out in 2008. Subject to the findings of this analysis still being accurate, the classification is considered to be appropriate.

11.6 Commentary on Factors influencing Future Baseline

- 11.6.1 Traffic forecasts have been developed for the peak year for the traffic generated by the proposal – 2019 for the Northern and Central Strategic Access Routes and 2021 for the Southern and Heysham Strategic Access Routes.
- 11.6.2 For the Cumbria sections of the highway, background traffic growth has been determined using the DfT Temproware software, with growth factors determined for each District, disaggregated by road type. The factors were derived using Temproware Version 6.2 which has recently been superseded by Version 7 and should be recalculated – although any differences will be minor and within tolerance.
- 11.6.3 The use of Temproware growth factors is generally appropriate at a District level but will not take into account the impacts of any significant developments located in the vicinity of the study area. A review of significant development proposals, such as Moorside, ongoing Sellafield activities, West Cumbria Mining's proposals at Whitehaven, BAE at Barrow and the United Utilities West Cumbria Water Supplies Project that are likely to be implemented by the assessment year in each area should therefore be carried out. The derivation of future year flows should take into account the trips generated by these developments together with background growth determined using Temproware – with adjustments to housing/employment growth to avoid double counting of growth.
- 11.6.4 In the case of the Heysham section, forecasts have been determined from the traffic forecasting work carried out for the Bay Gateway Link. These forecasts will include development traffic and background growth, although development assumptions may be out of date as the forecasts were developed in 2011. In the absence of data on traffic flows after scheme opening the approach adopted is considered to be appropriate. As the scheme has only recently opened there is no reliable traffic data available. When traffic surveys of the network are carried out to determine the impact of the Bay Gateway Link the derivation of future year flows should be re-assessed applying a combination of Temproware growth and significant development proposals.
- 11.6.5 No forecasts of the use of port facilities in future years has been carried out by National Grid. Should it be determined that a multi modal option for delivery of this project be pursued then an assessment of the capacity of any ports that are proposed to be utilised should be carried out to determine what, if any, measures are required to ensure that the ports have sufficient capacity for the forecast increases in usage. In addition, the PPA Group also consider that National Grid should carry out assessment of roads and access around the ports to ensure the appropriate infrastructure is available to support increased use.
- 11.6.6 A number of factors specific to the various sections have been considered by National Grid and these are discussed below.
- 11.6.7 **Northern Strategic Route.** Forecasts for the spare capacity of the Cumbria Coast Line in the Northern Strategic Route have been provided in the PEI and demonstrate that it will be

at, or overcapacity from 2020 to 2024 – due to a number of factors such as the proposed Moorside Nuclear Power Station and West Cumbria Mining, and increased patronage following award of a new rail franchise. No forecasts have been derived for either the West Coast Mainline or the Kingmoor rail depot. The PPA Group strongly advocate a multi modal option for delivery of this project, therefore, an assessment of the capacity of all affected rail facilities should be carried out to determine what measures are required to ensure that the rail lines have sufficient capacity for the forecast increases in usage. This should be carried out in consultation with the Coastal Railway Programme Board to ensure coordination regarding identifying and coordinating the delivery of a package of rail infrastructure improvements.

- 11.6.8 A number of proposed transport schemes have been identified by National Grid but not included in the assessment work as it is assumed they will be delivered after the appraisal year for this project. This is considered to be appropriate with the exception of Cumbria Coast Line upgrades. The data presented indicates that this line will be at or over capacity from 2020 to 2024 for the Northern Strategic Route. Although the appraisal year for this project is 2019 (when its impact will be greatest), should a multi modal option be pursued involving rail then the project will impact on the Cumbria Coast Line beyond 2019. It will contribute to the forecast over capacity on the line, and it is anticipated that the Cumbria LEP and the Coastal Railway Programme Board will look to secure an improvement to the line capacity for 2021 at the latest. The impact of improvements to the line should therefore be included in the assessment.
- 11.6.9 Furthermore, National Grid need to fully consider emerging local plan allocations and associated transport modelling that could be developed by 2021. For the Northern Strategic Route this includes the emerging Allerdale Development Plan, together with development in the Carlisle area. It is considered that these impacts should be included.
- 11.6.10 Potential increased use of the Port of Workington has not been considered, however, the PPA Group consider that National Grid should include other local developments such as West Cumbria Mining and Moorside that intend to make use of the port. Should a multi modal option including the use of the Port of Workington be considered then additional work should be carried out to demonstrate that the Port has sufficient capacity.
- 11.6.11 The development of Moorside Nuclear Power Station has been identified as having a significant impact on transport in the northern strategic route. At this stage no detailed analysis has been carried out; however, National Grid have identified the potential for a significant combined impact on the road and rail networks that will need to be addressed. From the information presented in the PEI, National Grid suggest that it appears unlikely that there will be a significant impact on the roads affected by the Northern Strategic Route. In addition, there are proposals for rail improvements linked to the Moorside Nuclear Power Station which will improve capacity on the Cumbria Coast Line. These measures may reduce the sensitivity of the Cumbria Coast Line and improve the attractiveness of a rail based option in comparison to a road based option. It should therefore be included in the National Grid assessment.

- 11.6.12 **Central Strategic Route.** Forecasts for the spare capacity of the Cumbria Coast Line are available and demonstrate that the section between Workington and Whitehaven will be overcapacity from 2021 to 2024. For sections between Whitehaven and Sellafield the line will be over capacity from 2019 to 2024. As discussed above it is anticipated that the Cumbria LEP and the Coastal Railway Programme Board will look to secure an improvement to the line to provide the required capacity. The impact of improvements to the line should therefore be included in the assessment. A number of proposed transport schemes have been identified the majority of which are not included in the assessment work as it is assumed they will be delivered after the appraisal year for this project. This is considered to be appropriate with the exception of the Cumbria Coast Line upgrades – for the reasons set out above.
- 11.6.13 The development of Moorside Nuclear Power Station will have a significant impact on the roads affected by the Central Strategic Route. This is acknowledged by National Grid and they have made a commitment to future assessment. Any future assessment should include traffic from the Moorside Nuclear Power Station together with other significant developments and background growth. This should include the proposed West Cumbria Mining and the Drigg Low Level Waste Repository. This should be carried out utilising Cumbria County Council's West Cumbria SATURN model, applying a methodology that is consistent with that applied to the assessment of the Moorside Nuclear Power Station development.
- 11.6.14 As stated above National Grid need to fully consider emerging local plan allocations and associated transport modelling that could be developed by 2021. As such both the emerging Allerdale and Copeland development plans are relevant. It is considered that these impacts should be included.
- 11.6.15 **Southern Strategic Route.** A number of proposed transport schemes have been identified by National Grid, but the majority of these are not included in the assessment work as it is assumed they will be delivered after the appraisal year for this project. The two proposals that have been included in the assessment are cycle improvements on the A590 and improvements to access junctions on the A590 in Ulverston. Given the likelihood of future housing development coming forward during the assessment period consideration will need to be given to the cumulative impact of all developments on the highway network to the agreement of the highway and planning authorities. It is therefore recommended that the National Grid analysis be carried out for the current network without the proposed schemes in order to ensure the most robust assessment.
- 11.6.16 In addition to the Ulverston schemes Cumbria County Council have identified a number of potential capacity improvement schemes in Barrow. These also have no identified opening date and no guaranteed funding and should not be included in the National Grid assessment. They are however a source of information with regard to where congestion might be expected.
- 11.6.17 The potential for the Moorside development to impact on the roads affected by the southern strategic route is acknowledged by National Grid. Whilst it is unlikely that HGV traffic will impact on this section it is possible that employee trips could. The current proposals for

Moorside include for the provision of worker accommodation at Corkickle, Mirehouse and Egremont. It seems likely that the vast majority of workers will originate from these locations and consequently the Moorside development is likely to have minimal impact on the southern strategic route.

11.6.18 **Heysham Strategic Route.** The assessment has assumed that baseline volumes transported through the Port of Heysham remain static at 2015 levels. Whilst this approach identifies a maximum percentage impact it does not demonstrate that the Port will have sufficient capacity; this should be demonstrated if a multi modal option is pursued.

11.6.19 No information has been provided on the future use and capacity of the Morecambe Branch Line.

11.7 Commentary on Consultation Activity and Data

11.7.1 A large amount of consultation data has been provided that is out with the scope of the PEI Consultation. Additionally, Arcadis (acting on behalf of National Grid) have held workshops and meetings to assist in understanding and interpreting the available data.

11.7.2 The PPA Group have identified the following information that is required to fully understand the impacts of the proposal and has not currently been supplied, including;

- Further details on the transport modelling carried out, particularly the gravity models used to distribute worker trips;
- Sensitivity testing of different assumptions in the model – via a workshop with Arcadis;
- Further justification for the development of assessment flows – i.e. the use of Average Daily Flow in Peak Four week Period; and
- Further details on the development of sensitivity classifications for the Public Rights of Way and Cycle Routes.

11.8 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

11.9 Assessment Methodology

11.9.1 This section provides a critique of National Grid's assessment methodology as set out in the PEI. Although the methodology applied to assess the impact of the proposals on the road network is broadly considered to be appropriate there are a significant number of exceptions set out below. It should be noted however that the methodology set out is specifically to identify potential environmental impacts, and determine where further assessment will be required. It does not identify locations where further assessment will be required to identify and address potential transport issues such as congestion and safety issues. A TA is required to enable assessment and understanding of these impacts. The PPA Group consider that the lack of a draft TA is a serious omission in the consultation material.

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- 11.9.2 Additionally, as discussed previously, the assessment has not included the impacts of major developments such as Moorside Nuclear Power Station and West Cumbria Mining. All of these will have significant impacts on traffic flows on the network impacted by the Central Strategic Route and should be taken into account in the assessment.
- 11.9.3 The impact of traffic generated by the site has been assessed based on the average daily flow in the busiest peak four-week period – based on engineering judgement by National Grid. Whilst the principle that any impact should be reasonably prolonged to require mitigation (i.e. not just for a day or so) is generally accepted it is not clear why four weeks is appropriate. In some cases, there is a marked difference between the 4-week average flow and the peak flow. For example, from the north and central routes:
- A689 Kingmoor Road to the A595; 4-week average flow = 263 vehicles, peak daily flow = 443 vehicles;
 - A596 Aspatria to Prospect; 4-week average flow = 79 vehicles, peak daily flow = 192 vehicles;
 - A594 Papcastle to Dearham; 4-week average flow = 141 vehicles, peak daily flow = 355 vehicles; and
 - A595 Bridgefoot to Lillyhall; 4-week average flow = 275 vehicles, peak daily flow = 488 vehicles.
- 11.9.4 There is no such marked variation between the 4-week average daily flow and the peak daily flows in the southern and Heysham routes and typical examples are presented below.
- A590 Ulverston to Crossamoor; 4-week average flow = 422 vehicles, peak daily flow = 460 vehicles;
 - A595 Whicham to Bootle; 4-week average flow = 355 vehicles, peak daily flow = 369 vehicles; and
 - A683 Mellishaw Lane to A589; 4-week average flow = 403 vehicles, peak daily flow = 403 vehicles.
- 11.9.5 The reasons for the marked differences in the 4-week average and peak daily flows are not clear. However, there may be some cases where using the 4-week average flow is not appropriate and additional sensitivity testing around different assumptions should be carried out to determine whether a 4-week period is appropriate.
- 11.9.6 The traffic flow projections have been derived using a bespoke spreadsheet model applying Visual Basic to assign project trips onto the network. The basic features of the model have been presented in a workshop, however we have not had the opportunity to interrogate the model and verify its appropriateness. Following this we cannot comment on the appropriateness of the model as part of this consultation response. Further assessment is needed to ensure that the model used by National Grid is appropriate.
- 11.9.7 A gravity model has been used by National Grid to determine the origin of worker trips in Barrow and Heysham, and for the undergrounding within the National Park. The model has been developed incorporating the assumption that the maximum drive time will be 45 minutes. Whilst this is an appropriate methodology, details of the model have not been supplied. It is not possible therefore to verify that the model and its outputs are acceptable.

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- 11.9.8 The model assumes that the majority of workers will not be local and will live in a combination of local hotels, guest houses and caravan parks. Whilst this assumption is logical it has not been demonstrated that there is sufficient spare accommodation in Barrow to cater for the forecast number of workers for the Morecambe Bay Tunnel. The same issue applies with regard to housing of staff in Heysham/Morecambe and those required to construct the tunnel under the Lake District National Park. The PPA Group consider that a realistic strategy for housing the workforce should be developed that maximises the opportunity for sustainable travel. These issues are also set out in chapter 17 which details the Socio-Economic response.
- 11.9.9 By far the greatest volume of commute trips during the construction stage will take place in Barrow. The roads considered by National Grid in Barrow are too simplistic, comprising the A590 Park Road/Hindpool Road, the A5087 from the A590 to Leece Lane roundabout, and the A5087 Rampside Road. All commute trips have been loaded onto this network at an appropriate junction depending on which part of Barrow the trips originate from. This approach ignores the impacts on internal roads which will be used to access the A590 and A5087 – such as Abbey Road, Greengate and Rawlinson Street. A more detailed assessment of the impacts of commuter trips on Barrow should be carried out using Cumbria County Council's Barrow SATURN model. This should include the impact of traffic growth and any significant development proposals that are likely to be implemented by the appraisal year – 2021 for the southern strategic sector.
- 11.9.10 The same applies to the assessment of impacts due to commute trips in Heysham. The use of a gravity model indicates that the vast majority of trips will originate in Heysham or Morecambe. The analysis has loaded trips onto one of three routes – A683 from Lancaster, A683 via various junctions between the M6 and Heysham and the A589 from Morecambe. In reality trips could originate from a variety of locations in Heysham and Morecambe and could impact on a number of junctions that currently experience congestion such as A589/B5327, Regent Road/Balmoral Road, A589/B5273 and A589/B5274. The modelling should be capable of assessing the impact at these (and potentially other) locations.
- 11.9.11 For the construction of the pylons the information provided in the assessment assumes that staff arrive and depart daily from M6 Junction 44 for the Northern Route, M6 Junction 40 for the Central Route and M6 Junction 36 for the Southern Route. This is not considered to be a reasonable approach given the long travel distances involved, and is not consistent with the assumptions in PEI Volume 2.2. It is more likely that construction workers will seek weekday accommodation locally which could lead to higher flows on some roads, although there would be a reduction in the traffic flows to and from, and along, the M6.
- 11.9.12 Assignment of trips has been carried out on an all-or-nothing basis using journey times. Although this is generally an appropriate methodology the use of too simplistic a network in Barrow results in unrealistic assignments for light vehicles. For instance, trips between Roosecote and Dalton-in-Furness are assigned along Hindpool Road/Park Road. In reality the quickest and shortest route would take traffic along Yarlside Road/Parkhouse Road.
- 11.9.13 The assessment does not appear to have taken into account the personal injury collision

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data and has not demonstrated the extent to which additional trips have the potential to exacerbate existing accident issues. As discussed earlier, the data is aggregated over long sections of road and it is not possible to identify accident locations.

- 11.9.14 The analysis has identified large increases in HGV flows on the strategic and primary route networks which could potentially have a significant impact on highway safety. Many of the roads that will see an increase in HGVs are single carriageway and with the volume of HGVs predicted (particularly for the road based option), significant 'bunching' of traffic will occur. This will significantly reduce overtaking opportunities and lead to driver frustration, increasing the potential for accidents.
- 11.9.15 Although it is stated that access points and routes have been chosen taking into account safety, width, alignment. no evidence of this is presented in the documentation. The PPA Group have carried out a preliminary assessment including site visits and have identified a number of issues – these are set out below in section 11.12, and presented in more detail in Appendix 11.1.
- 11.9.16 The capacity of access routes to accommodate the development generated traffic has been assessed using the road capacities given in DMRB TA 79/99 – Traffic Capacity of Urban Roads. The vast majority of access routes are rural roads and the use of TA 79/99 is not appropriate. For rural roads TA 46/97 could be used to determine capacity – either 24-hour Congestion Reference Flows, or hourly capacity flows.
- 11.9.17 As previously stated the PPA Group consider that the absence of a TA is serious omission for the consultation. The majority of the issues identified above would generally be addressed through the preparation of a TA. The scope of the TA should be agreed with the relevant Highway Authorities. Whilst it is noted that a draft scope has been prepared by National Grid, this document is not currently accepted by the PPA Group.

11.10 Application of Methodology

- 11.10.1 The traffic generation, distribution and assignment has been applied to derive daily flows generated by the proposal disaggregated into light and HGV flows. Separate flows have been developed for two scenarios, a road only option and a multi modal option.

Northern Strategic Route

- 11.10.2 Although existing data is not currently available for some links it is noted that additional surveys have recently been carried out during appropriate neutral months. There are also six links where forecast construction flows are not available.

Road Based

- 11.10.3 For the road based option the greatest increases are forecast to occur on the A689 Carlisle

Northern Development Route (CNDR) – a maximum of 320 vehicles and 165 HGVs per day. For the vast majority of the roads affected by the northern strategic route the forecast increases are likely to have no significant impact on congestion. The exception to this is the northern section of the CNDR where there is already significant congestion at the junctions with Parkhouse Road and the M6.

- 11.10.4 In terms of environmental impact the increase in HGV flows combined with the sensitivity of the roads are by far the most important factors. The assessment by National Grid identifies 29 sections with a major impact. The majority being non-strategic roads experiencing significant increases in HGV flows.

Multi Modal

- 11.10.5 The multi modal option reduces the volume of HGVs on the strategic network – by 130 vehicles per day on the A689 CNDR south of the M6. For the remainder of the strategic network decreased flows range from insignificant to 50-60 per day. There are significant increased HGV flows on a number local access routes – primarily those serving the proposed rail facilities. The number of sections with a major impact increases to 30.
- 11.10.6 The multi modal option is forecast to result in an increase of one train per day on the West Coast Mainline. The impacts on the West Coast Mainline and Kingmoor Depot are low as both can accommodate this level of increase. For the Cumbrian Coast Line 'significant' effects are anticipated as the line will be overcapacity from 2021 onwards.

Northern Strategic Route Conclusion

- 11.10.7 The National Grid analysis concludes that there is no overall traffic and transport benefit in implementing the **multi modal option**. National Grid consider that there are two main reasons for this conclusion.
- 11.10.8 Firstly, there would be an increase in HGV flows on the major sensitivity road through Aspatria and on the moderate sensitivity road through Prospect. However, the PPA Group note that the increase in HGV flows in both cases is three per day. Also, the multi modal option reduces the duration over which there are impacts on these roads by eight weeks for Aspatria and 19 weeks for Prospect. Therefore, the PPA Group consider that the impacts of the multi modal option on Aspatria and Prospect are likely to be positive and are not an argument for rejecting the multi modal option.
- 11.10.9 The second reason is the impact on the Cumbrian Coast Line. Although it is forecast to be overcapacity from 2021, improvements are proposed as part of the Moorside Nuclear Power Station development. Additionally, the PPA Group consider that if required, mitigation could be brought forward to allow a multi modal solution for NWCC.
- 11.10.10 It is also considered that National Grid should in consultation with relevant stakeholders carry out an 'incremental analysis' of the benefits of rail/port options to determine the

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optimal multi modal solution for the North Strategic Route. The development of a 'refined' multi modal strategy is key to minimising the significant transport impacts of the NWCC Project.

Central Strategic Route

11.10.11 Although existing data is not currently available for some links it is noted that additional surveys have recently been carried out during appropriate neutral months.

Road Based

11.10.12 For the **road based option** the greatest increases are forecast to occur on the trunk road network – 335 total vehicles and 204 HGVs per day on the A66. For the vast majority of roads the forecast increases are unlikely to have a significant impact on congestion as the flows during peak periods will be too low. This may not be the case however for sections of the A595 from Whitehaven to Sellafield which currently experience congestion. In particular, the large number of HGVs forecast will impact on congestion.

11.10.13 In terms of environmental impact the increase in HGV flows combined with the sensitivity of the roads are by far the most important factors. The assessment by National Grid identifies 24 sections with a major impact. The majority of these are non-strategic roads experiencing significant increases in HGV flows. There are however some strategic routes such as the A594 between Maryport and Dearham, and the A595 from Whitehaven to Sellafield.

Multi Modal

11.10.14 The **multi modal option** reduces the volume of HGVs on the strategic network – for example by over 100 per day on the A66 east of Cockermouth. Reductions on the A595 south of the A66 through to Sellafield are about 50 per day. There are slight increases on the A595/A594 from the A66 to Dearham. There are also significant increases in HGV flows on the A66/A596 from the A595 Bridgefoot junction to the Port of Workington – 163 per day. The number of sections with a major impact reduces to 19. There are significantly increased HGV flows on a number local access routes – primarily those serving the proposed rail facilities.

11.10.15 The effects on the Cumbria Coast Line are assessed as significant even though only one additional train per day in each direction are forecast, due to capacity constraints. Although a much larger impact is forecast for the Port of Workington there is sufficient capacity to cater for the increase. The impact on the Workington Rail Depot is assessed as major as there are constraints on the access to the depot from the rail network.

Central Strategic Route Conclusion

11.10.16 The National Grid analysis concludes that there is no overall traffic and transport benefit in

implementing the multi modal option. There are two main reasons for this conclusion.

11.10.17 Firstly, there would be significant effects on the route to Workington Port/Rail depot through Workington, which is of major sensitivity. Secondly, there would be potentially significant impacts on the capacity of the Cumbria Coast Line, the use of Workington Port and the use of Workington Port rail depot. Whilst National Grid acknowledge that there would be benefits from overall reductions in HGV trips it is concluded these are outweighed by the dis-benefits.

11.10.18 The PPA Group consider that although it is clear that the multi modal option would result in increased traffic and particularly HGVs from the A595 Bridgefoot junction to the Port it is not accepted that this route is of major sensitivity. A significant element of the route is of low sensitivity with the remainder being of moderate sensitivity. Whilst the impacts of increased HGV movements would be significant it is considered that they are overstated in the National Grid assessment. Additionally, the PPA Group consider that there will still be a need for additional highway improvements to mitigate the impact of the residual traffic movement from railway and ports to the construction sites, however, this should not be a reason for rejecting the multi modal use.

11.10.19 The Cumbrian Coast Line is forecast to be over capacity between Whitehaven to Sellafield from 2019 onwards, however, there is a compelling case for improvements to the line given the impacts of this development and other major schemes, including the Moorside Nuclear Power Station and West Cumbria Mining developments. The National Grid analysis concludes that the Port could cater for the forecast increases through the multi modal option. With regard to the Port rail depot, no analysis is presented as to what improvements to the connections from the rail network are required. The PPA Group strongly advocate the use of a multi modal strategy and conclude that additional work is required to determine the impacts.

11.10.20 It is also considered that National Grid should in consultation with relevant stakeholders carry out an 'incremental analysis' of the benefits of rail/port options to determine the optimal multi modal solution for the Central Strategic Route. The development of a 'refined' multi modal strategy is key to minimising the significant transport impacts of the NWCC Project.

Southern Strategic Route

11.10.21 Although existing data is not currently available for some links it is noted that additional surveys have recently been carried out during appropriate neutral months.

Road Based

11.10.22 For the road based option there are significant increases in traffic flows at a number of locations, some of which are summarised below.

- 561 HGVs per day on the A590 through Newby Bridge/Backbarrow;

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- 365 HGVs per day on the A590 through Ulverston;
- 241 HGVs per day on the A590 through Barrow;
- 469 vehicles per day on Roose Road, Barrow;
- 817 vehicles per day south of Roose Road/Leece Lane roundabout, Barrow;
- Approx. 230 HGVs per day on the A595 from Ravenglass to Whicham Valley;
- 300 HGVs per day on the A5092; and
- 240 HGVs per day on the A595 between Grizebeck and the A5093.

11.10.23 For a majority of the roads where there will be a significant increase in traffic, congestion is unlikely to be an issue as the increases in peak periods will be relatively low. The exceptions to this are Barrow and Ulverston where additional work is required to assess the capacity of key junctions and, for Barrow, a more detailed assignment of traffic is required.

11.10.24 In terms of environmental impact, the increase in HGV flows combined with the sensitivity of the roads are by far the most important factors. The assessment by National Grid identifies 33 sections with a major impact. Whilst a significant number are on access roads many are on strategic routes with low flows and poor alignment such as the A595 between Gosforth and Dalton in Furness, and the A5092.

Multi Modal

11.10.25 The multi modal option assessed results in significant reductions in HGVs on many of the links assessed, some of which are presented below.

- 372 HGVs per day on the A590 through Newby Bridge/Backbarrow;
- 238 HGVs per day on the A590 through Ulverston;
- 131 HGVs per day on the A590 through Barrow;
- Approx. 200 HGVs per day on the A595 north of Whicham Valley;
- 139 HGVs per day on the A595 through Whicham Valley;
- 185 HGVs per day on the A5092; and
- 155 HGVs per day on the A595 between Grizebeck and the A5093.

11.10.26 The only significant increase in HGVs for the multi modal option would be on Lots Road in Askam-in-Furness.

11.10.27 In terms of environmental impact, the number of routes identified as having a major impact reduces to 28.

11.10.28 The impact of the multi modal option is assessed as minor for the Furness Line as there is sufficient spare capacity. The Cumbria Coast Line also has sufficient capacity on the sections south of Sellafield to cater for forecast increases as do Barrow Port Sidings and Barrow Port.

Southern Strategic Route Conclusion

11.10.29 The National Grid analysis acknowledges that the multi modal option would bring significant benefits in terms of reduced HGV traffic. It suggests that an incremental analysis of the benefits of various rail/port options included in the multi modal option assessed (eight separate sites are included) is required to determine which elements should be included in the final proposal.

11.10.30 The PPA Group strongly advocate a multi modal strategy, and consider that from the analysis carried out it is clear that a multi modal option would significantly reduce the impact of the scheme and is therefore justified. The proposal to carry out more detailed analysis, including an incremental assessment is accepted; however, the final scheme should be such that the vast majority of the benefits identified in the National Grid assessment are realised. The development of a 'refined' multi modal strategy is key to minimising the significant transport impacts of the NWCC Project.

Heysham Strategic Route

Road Based

11.10.31 For the road based option there are significant increases forecast for HGV flows between the M6 at Junction 34 and the A683/A589 roundabout – over 330 per day. There are also large increases in non HGV traffic on the A589 between Heysham and Morecambe and the A683 to Port Way.

11.10.32 In terms of environmental impact, it is assessed that there will be little impact on these roads as all are suitable for carrying the forecast volume of traffic.

11.10.33 Whilst it is accepted that the impact on the roads considered is likely to be acceptable in environmental terms, the analysis has not fully considered the impact of worker trips in Heysham and Morecambe – more detailed modelling of the impact of these trips is required.

Multi Modal

11.10.34 Both a rail and a port based multi modal option has been considered. The multi modal option results in significant decreases in HGV flows for the M6 to the A683/A589 roundabout – between 164 and 208 per day. There would however be a large increase in HGVs from the A683/A589 roundabout to Port Way junction – 310 per day.

11.10.35 The impact of the multi modal option on both the Morecambe Branch Line and Port of Heysham is assumed to be minor as both have ample spare capacity. Whilst this may be the case, additional work should be carried out to demonstrate this, should a multi modal option be pursued.

Heysham Strategic Route Conclusion

11.10.36 National Grid conclude that a port based option would provide no significant benefit as the road links are designed for use by HGVs. The rail option would provide benefits as trips westwards to and from the port would also be reduced. However, the PPA Group consider that a multi modal strategy should be considered given the wide range of benefits that have been set out in this response. National Grid should in consultation with relevant stakeholders carry out an 'incremental analysis' of the benefits of rail/port options to determine the optimal multi modal solution for the Heysham Strategic Route. The development of a 'refined' multi modal strategy is key to minimising the significant transport impacts of the NWCC Project.

11.11 Additional Analysis Required

11.11.1 This section sets out a number of areas where additional analysis is required to support the PPA Group's understanding of the PEI and subsequent assessment of the impacts and mitigation.

Multi modal versus road based.

11.11.2 The analysis carried out for National Grid has compared the road based against multi modal options based on their environmental impacts on the local road network and on rail and port facilities. This has been done in a relatively simplistic way, determining increased flow levels and the severity of impact based on how sensitive the road is to changes in flow. The analysis does not reach a conclusion on whether a multi modal approach should be adopted for any of the strategic routes and states that additional analysis will be carried out before reaching a conclusion.

11.11.3 It is also considered that National Grid should in consultation with relevant stakeholders carry out an 'incremental analysis' of the benefits of rail/port options to determine the optimal multi modal solution. The development of a 'refined' multi modal strategy is key to minimising the significant transport impacts of the NWCC Project.

11.11.4 The analysis presented does not set out a methodology for determining whether the multi modal option or road based option should be adopted. This decision should take into account a number of additional factors not currently addressed, such as safety, vehicle delay, total vehicle kilometres, noise, air quality, greenhouse gas emissions, vulnerable users, wider economic impacts. The multi modal option is likely to have significant benefits over a much wider area than has currently been considered.

Identification of Impacts.

11.11.5 The analysis carried out by National Grid is not sufficiently detailed to allow determination of where the impacts of increased traffic are likely to be significant. Although flow increases

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have been determined, together with the sensitivity of roads to flow increases, no detailed analysis has been carried out to quantify the severity of impacts.

11.11.6 The PPA Group consider that the work carried out to date has not identified the traffic and transport impacts of the NWCC project. The assessment work carried out has identified potential flow increases (both light and heavy vehicles) on both strategic and local roads. All roads have then been classified according to their sensitivity to increased volumes of traffic (using the IEMA guidelines). This has identified a variety of roads where the environmental impact of traffic increases on affected roads should be further assessed. This assessment has not been carried out to date. As a result, it is not possible to identify what the impacts of increased traffic, particularly HGVs are likely to be. The following should be assessed in greater detail for all roads where there may be a significant environmental impact:

- Severance;
- Driver delay;
- Public transport passenger delay;
- Pedestrian/cyclist/equestrian delay;
- Pedestrian amenity;
- Fear and intimidation;
- Noise, vibration and air pollution;
- Accidents and safety;
- Hazardous loads; and
- Road damage/additional maintenance burden.

11.11.7 Given the potential increases in flow (particularly HGV) it is our initial view, based on local knowledge and output from the West of M6 Strategic Connectivity Study (WSP, August 2016) that there may be significant issues at the following locations:

- A596 through Aspatria – potential for increased severance, pedestrian amenity, fear and intimidation, and potentially accidents;
- A594 through Dovenby – potential for increased severance, pedestrian amenity, fear and intimidation, and potentially accidents;
- A595 from Low Moresby to Sellafield – this road is congested and there is potential for increased delays and accidents;
- A590 Ulverston/Swarthmoor – increases of over 350 HGVs per day are forecast; potential for increased delay, severance, pedestrian amenity, fear and intimidation, and accidents;
- A5087 Roose Road/Rampside Road, Barrow in Furness – increases of over 240 HGVs per day are forecast; potential for increased delay, severance, pedestrian amenity, fear and intimidation, and potentially accidents; and
- There are a number of routes with narrow road widths and adjacent small settlements that are forecast to experience significant increases in HGVs. These have the potential for increased severance, pedestrian amenity, fear and intimidation, and potentially accidents. Routes identified include:
 - A5092 – over 300 HGVs/day.
 - A595 south of Kirkby in Furness – nearly 180 HGVs/day.
 - A595 Grizebeck to A5093 – nearly 100 HGVs/day.

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- A595 Whicham Valley – nearly 250 HGVs/day.
- A5093 west of Millom – 230 HGVs/day.
- A595, between A5093 and Ravenglass – nearly 230 HGVs/day.

11.11.8 The lack of a detailed analysis has also meant that the identification of appropriate mitigation, or whether mitigation is required, has not been carried out. As a result, it is not possible to identify the full impact of the proposals on the transport network.

11.11.9 The PPA Group Consider that the analysis carried out has not adequately considered the potential for additional traffic resulting in increased accidents. Whilst 5-year accident data has been collated and presented, it is presented for (generally) long sections of road. The data has not been disaggregated to allow accident clusters (on links or junctions) to be identified. As a result, it is not possible to identify whether the proposal is likely to result in increased accidents.

11.11.10 The proposal results, inevitably, in significant volumes of HGVs using roads that are not designed to be used by HGVs – primarily to access the proposed locations of pylons. There is no evidence presented in the PEI that the routes chosen are appropriate, feasible, and are unlikely to result in accidents. The PPA Group have carried out a number of site visits and have identified numerous locations where there is increased potential for accidents due to HGVs; the primary issues include:

- Inadequate visibility – at junctions and forward visibility;
- bends in the road creating blind spots;
- crests in the road reducing visibility and potentially causing HGVs to ground;
- narrow carriageway inadequate for a car and HGV to pass;
- impacts on pedestrians and cyclists; and
- lack of safe overtaking opportunities.

11.11.11 National Grid need to carry out more a detailed analysis of traffic impacts to fully identify the potential risks and also to develop measures to ensure that the proposed routes are appropriate and safe.

11.12 Access Routes and Points

11.12.1 National Grid assessment has identified a variety of routes that will be used to carry out construction works, many using minor roads and some involving the provision of temporary haul roads.

11.12.2 The PPA Group have undertaken a review of the construction site accesses between August and November 2016 in order to consider potential issues on the local road network associated with increased construction traffic. The issues identified can generally be split into three types, described below:

- Poor/Restricted Visibility: often an issue when visibility fails to meet the requirements for the

design speed of the road. This can be mitigated if the actual speeds are lower but speed surveys would be required. Potential to be mitigated via hedge/ tree removal or reducing vehicle approach speeds. Speed surveys will be necessary where the visibility standards are not met;

- Narrow Road Widths and Steep Gradients: in many locations the carriageway widths are too narrow or steep to accommodate construction traffic, width being a particular issue if a car and an HGV cannot pass each other simultaneously and a steep vertical alignment increases grounding risks for low-loaders. Potential mitigation includes investigating re-routing, addition of passing places or installation of temporary traffic signals. Swept path analysis in horizontal and vertical planes will be needed to ensure that there is sufficient physical space for construction traffic and, where possible, temporary widening, passing places can be identified, or temporary traffic restriction introduced; and
- High Network Sensitivity and Traffic Flows: particularly an issue when the construction route carries a significant increase in traffic flows and passes sensitive land uses such as schools and hospitals but also areas with a high numbers of residential properties, especially where these have a direct frontage. Construction Management Plans limiting or restricting operating hours may assist with reducing any potential impacts, e.g. near a school where there should be restrictions on the operating hours for the construction route, or a factory where certain hours will be more sensitive. This includes cycle routes and PRowS affected by routes. Extra mitigation or safety measures may be needed.

11.12.3 In addition to the reoccurring issues identified above it became apparent during the site visits that a number of more localised issues may also impact construction traffic routes. These issues varied but were predominately associated with existing infrastructure such as appropriate management associated with railway crossings and as a result careful consideration is needed.

11.12.4 Appendix 11.1 provides a detailed assessment of each of the access points, and identifies key issues. It should be noted that access to the trunk road were not assessed in our review.

11.13 Public Rights of Way

11.13.1 Public Rights of Way (PRowS) have been categorised into high, low and medium sensitivity by National Grid. These will be reviewed and assessed section by section in Appendix 11.2.

11.13.2 The analysis by National Grid identified a package of mitigation measures (reproduced below) that would be applied as appropriate.

Package PMP1

- Pre-Commencement condition surveys would be agreed with the PRow officers and undertaken prior to the commencement of the relevant construction stage. The surveys would include photographic records and written descriptions; and
- Each directly affected PRow would be reinstated as a minimum to the same condition as was recorded prior to the commencement of construction.

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Package PMP2

- All points where PRoWs and long distance routes cross construction works would have appropriate signage that would advise of dates and hours of working.

Package PMP3

- Suitable fencing would be erected where appropriate to form a safe corridor for users of the PRoW or long distance route; and
- Fencing details would be agreed in advance with the PRoW officers.

Package PMP4

- Where a PRoW is identified for temporary closure, the need for a temporary diversion would be established in consultation with the PRoW officer;
- Where a temporary diversion is required, details would be agreed with the local PRoW officer and the landowners involved; and
- The location of signs providing information about temporary diversions and closures would be discussed with the PRoW officers and confirmed as part of the PRoW closure process.

Package PMP5

- Site management would provide banksmen to assist users at those crossing points where construction works affect a PRoW or long distance route for the duration of specific activities.

Package PMP6

- Scaffolding would be used to bridge receptors that are considered to be of particularly high sensitivity due to their socio-economic value and where it is considered that the route should stay open throughout construction works.

11.13.3 Whilst the package of mitigation measures are generally considered to be appropriate for the importance of the footpaths and cycle routes, the measures are generic, therefore is not possible to assess the extent they will be appropriate for each location that will require mitigation. A detailed review of the impact on PRoW and cycle route is set out in Appendix 11.2. The PPA Group need to be engaged in developing appropriate mitigation measures as more detailed proposals are available.

11.13.4 Full and effective reinstatement of PRoW and cycle routes is essential and should be central to the proposed Access Management Plans. Restoration should seek to both restore and where possible improve access provision, with enhancement being part of the legacy of the project. To ensure effective delivery of the mitigation measures, there will be a need for a team to manage and co-ordinate the substantial number of highway and PRoW closures and changes that will be required. This team will need to be appropriately resourced by National

Grid.

- 11.13.5 Consideration of the impacts on the PRoW Management Plan PMP 1-6 are also discussed in the Socio Economic, Recreation and Land-Use Chapter 17 of this response (see paragraph 17.13.30). The requirements within PMP1 should be totally separate from any hierarchy and must be applied to all affected PRoW and all PRoW forming part of the access routes. With regard to PMP2 – as with PMP1, this should apply to all affected paths. The sentence is meaningless on its own, is it saying that the signage advises of dates and hours of interference with the PRoW, or general hours, or what? The relationship between the hours, signage, and PRoW needs to be made. It is noted that with regard to PMP3 – the LDNPA does not approve of corridor fencing of PRoWs. In terms of PMP4 – the emphasis here is wrong. The need for a temporary diversion will not be established in consultation – a closure of a right of way will not be considered in the National Park without a suitable alternative being provided. For PMP4 (1) – the decision on whether to close a PRoW lies with the highway authority, not with National Grid; this needs to be emphasised. For PMP4 (2) – any temporary closure/diversion (TRO) requires 10-15 weeks notice. A TRO can only last for six months. With reference to PMP5 – the specific activities mentioned need to be listed. National Grid should confirm whether the provision of banksmen negate the need for closure. Finally with regard to PMP6 – this only applies to line work. Something similar is required for the undergrounding areas.

11.14 Commentary on Proposed Mitigation

- 11.14.1 This section provides the PPA Group's review of mitigation measures set out in the PEI Report and sets out the mitigation measures that the PPA Group consider will be required as part of the full transport mitigation. As previously stated the PPA Group is very concerned that the PEI assessment has not identified detailed transport impacts and consequentially there is a failure to identify appropriate mitigation measures. The consultation material is considered to be inadequate given the importance of transport and infrastructure to facilitating delivery of this project.
- 11.14.2 The information provided by National Grid does not include any design mitigation for the impacts on the transport network. The following sections set out the PPA Group's key issues that will require mitigation and will need further work to develop.

Transport Strategy

- 11.14.3 One potential part mitigation measure would be to adopt the multi modal option, in preference to the road based option. The PEI however only presents the traffic flow forecasts for the two alternative options without proposing which will be adopted. The PPA Group consider that there are clear benefits to adopting the multi modal approach.
- 11.14.4 The PPA Group is concerned that at this key consultation stage National Grid has not provided sufficient information to enable the PPA Group to understand the impacts and the required mitigation. The provision of two options, multi modal and road based are not

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underpinned by the detail of the impacts and therefore it does not give sufficient comfort that the significant transport and connectivity issues have been properly considered as a basis for the development of the project.

- 11.14.5 The PPA Group strongly disagrees with National Grid’s assumptions of the impacts relating to the multi modal and road based options and assertions for not favouring the multi modal. It is acknowledged that the multi modal option will require investment, but this should not be used as the main reason to dismiss the option, particularly as the cost of mitigating a road based strategy has not yet been determined. The assessments have not been done and the mitigation is unknown, but it is the view of the PPA Group that there will inevitably be a requirement for highway mitigation to be provided for such a complex project that will generate substantial HGV movements.
- 11.14.6 Subject to a full assessment of the impacts, the PPA Group strongly advocates the multi modal option as compared to a road based option as it is considered to:
- reduce additional traffic on the road (notably HGVs);
 - reduce potential congestion, disruption, amenity and severance impacts upon local communities;
 - reduce damage to highways, particularly local roads which are not designed to carry HGVs;
 - minimise economic disruption associated with congestion and delays (especially to visitor economy);
 - reduce accident risk and minimise safety concerns;
 - reduce potential adverse impacts upon pedestrians, cyclists and PRoW;
 - minimise pollution (noise, air, dust);
 - be more sustainable (lower energy use, reduced carbon emissions); and
 - deliver greater legacy benefit (e.g., improved facilities and capacity of rail and port).
- 11.14.7 The PPA Group strongly advocates the use of the railway and ports to mitigate the impact on the highway network from the additional traffic created by the project. Although the PEI does not identify whether the multi modal or road options are preferred, in the case of the northern and central routes, it is stated that adopting a rail option would have a significant impact on the Cumbrian Coast Line – which will be overcapacity by 2019. Whilst this is correct, it is not a reason to reject the multi modal option. There are a number of proposals that will result in increased usage of the line – including the Moorside Nuclear Power Station and West Cumbria Mining proposal. Whilst NWCC would contribute to the increased usage, a case could be made that all proposals should contribute to the provision of additional capacity on the line.
- 11.14.8 The PPA Group welcomes National Grid’s engagement in the recently established Coastal Railway Programme Board. This Programme Board is seeking to find a collective solution to mitigate the cumulative impact of several major developments in Cumbria through utilisation of the railway as the most sustainable mode for construction traffic. The Board will work towards identifying and coordinating the delivery of a package of rail infrastructure improvements. Along with other developers, there would be a requirement for National Grid to fund rail infrastructure improvements. However, it is also noted that there will still be a

need for additional highway improvements to mitigate the impact of the residual traffic movement from railway and ports to the construction sites. The use of Workington Port as part of a multi-modal strategy is supported, however, it is considered there would be a need for improvement to the infrastructure linking the Port to the wider transport network.

Transport Assessment

- 11.14.9 As stated above the assessment has not, for the most part, identified any mitigation measures. This is primarily a result of not identifying the detailed impacts of the proposals. The analysis has not identified detailed impacts on environmental factors and has also been weakened by the absence of a TA. The TA would carry out a detailed analysis of trip generation and assignment, identifying where there are any capacity issues, and developing suitable mitigation measures. The absence of this level of detailed analysis has meant that the need for mitigation cannot yet be definitively determined.
- 11.14.10 The lack of a draft TA is a serious omission in the consultation material, and the PPA Group consider that further consultation will be required to address this issue.
- 11.14.11 The traffic movement for the importing (and decommissioning) of materials for access and haul roads, construction materials, cables and waste needs to be properly modelled together with a cumulative assessment, including the impact of other major development proposals including; Moorside, ongoing Sellafield activities, West Cumbria Mining's proposals at Whitehaven, BAE at Barrow and the United Utilities West Cumbria Water Supplies Project, on an already constrained infrastructure and within similar implementation periods. More detailed assessments of the impacts should be carried out using the available SATURN models for Barrow and West Cumbria.
- 11.14.12 National Grid must agree the scope of the TA with the relevant authorities and the transport modelling work to be undertaken to then be able to fully assess the mitigation improvements that will be required.

Impact Mitigation

- 11.14.13 Whilst it is acknowledged that National Grid has not completed a full technical assessment of the road based and multi modal options, the information provided does identify that there will be significant impacts on the highway network. There are known capacity constraints and safety issues along a number of roads, including the A590, A595 and A5092 – confirmed in the Cumbria LEP's West of M6 Strategic Connectivity Study, prepared in conjunction with Highways England.
- 11.14.14 A strategy for mitigating impacts at key 'pinch points' along the proposed routes needs to be identified by National Grid through liaison with the PPA Group and Highways England. The strategy will require further consultation in advance of the DCO submission, particularly as there may be a need for acquisition of third party land to achieve the mitigation. There will also need to be detailed consultation on the timing and phasing of mitigation improvements

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to ensure works are completed in advance of the main NWCC construction work commencing.

11.14.15 Infrastructure and capacity constraints are already a key barrier for economic growth within the County, affecting the manufacturing sector as well as the visitor economy. The local economy across Cumbria is constrained by an already stretched local and strategic road and rail network, as highlighted in the LEP's Cumbria Infrastructure Plan, and evidenced by the impacts of the December 2015 flood event. In consultation with Highways England, and in the absence of transport modelling and assessment, the following 'pinch-points' have been identified for the strategic and local road network, as examples where it is known that the highway network will not be able to accommodate the additional traffic arising from a road based strategy without appropriate mitigation:

- M6 Junction 44 and M6 Junction 40;
- A66 / A595 (Fitz roundabout); A66 / A595 (Chapel Brow roundabout);
- A595 / A597 (Toll Bar roundabout);
- A595 / B5036 / Low Moresby (Howgate roundabout);
- A595 between Pelican Garage and Blackbeck roundabout;
- A590 / A596 Askham Road (Elliscales roundabout);
- A590 through Lindal-in-Furness;
- A590 through Swarthmoor;
- A590 through Ulverston;
- A590 Park Road / Bank Lane;
- A590 Park Road / Ormsgill;
- A590 Walney Road – numerous junctions;
- A590 Ironworks Road / Phoenix Road;
- A5087 Hindpool Road / Bae Link Road;
- A5087 Strand / Duke Street / Ramsden Street; and
- A5087 Roose Road / Risedale Road.

11.14.16 The above is not an exhaustive list and the PPA Group considers that an assessment of the highway network will need to be carried out by National Grid across the study area to identify locations where mitigation will be required. There are also locations within the NWCC study area where there are existing safety concerns which could be exacerbated. These include a number of locations along the A66, A595 and A590. There are also locations on the local road network that contain very narrow sections, severe gradient changes and bends, making the routes unsuitable for a high volume of HGVs. These include the A595 at Bootle, Whicham, and Duddon Bridge.

11.14.17 The congestion 'pinch points' set out in paragraph 11.14.16 are not definitive and additional, detailed assessment work is required to identify further junctions where mitigation may be required.

11.14.18 It is important to consider all issues, including resilience, the impacts on pedestrian and cycle movement, severance, safety and accidents, pollution, residential amenity, economic impact. All these aspects impact adversely on host communities and should be minimised. It is also

anticipated that there will be impacts on the condition of the highway as a result of the NWCC project, particularly local roads not designed for HGV use, and appropriate mitigation will need to be provided for repair and maintenance of the highway. It is considered that the mitigation measures should be developed by National Grid working with the PPA Group. These should include conditions surveys of the highway network prior to the start of construction (and use), monitoring during the construction period and on completion of works.

Public Rights of Way

11.14.19 For PRoW and cycle routes the information provided lists a number of interventions that will be implemented depending upon the exact details of the impact. The documentation provided by National Grid states that a PRoW Management Plan will be developed setting out measures that would be applied to reduce the potential disruption. The analysis carried out identifies which package of measures will be implemented for each PRoW/cycle route.

11.14.20 Whilst this approach is considered to be appropriate, there is no detail at this stage provided of how the measures would be implemented – e.g. diversions, fencing, scaffolding. Without this level of detail, it is not yet possible to determine whether the proposals will successfully mitigate the developments impacts.

11.14.21 There is also no information presented on how conflict will be managed where proposed haul roads cross the public highway or PRoW's. Cumbria County Council would require sufficient information to be confident that any proposals are safely designed.

11.14.22 As stated above mitigation measures should seek to both restore and where possible enhance access provision. In order to secure effective delivery of the mitigation measures local authority resources will be required to manage and co-ordinate the substantial number of highway and PRoW closures and changes that will be required. There needs to be a condition that the management plan is approved by the PRoW Officers before implementation. It needs to set out in detail what will happen for every path. This team will need to be appropriately resourced by National Grid (see also Section 17.13.29 in the Socio Economic, Recreation and Land-Use Chapter of this response).

11.14.23 For a number of the proposed access routes and points the PPA Group have identified operational issues that will need to be addressed by the applicant (See Appendix 11.2).

Travel Plans

11.14.24 National Grid are proposing to produce a Travel Plan for workers involved in the construction of the Tunnel Heads – both in Barrow and Heysham. The PPA Group considered that these are required in order to minimise the impact of trips in both towns. However, Travel Plans should also be prepared for all construction related activities and sites to ensure that that all opportunities for sustainable travel are identified, including the area of undergrounding in

the LDNP where the concentration of workers and the potential impact on the visitor economy is a key concern.

11.14.25 It is also our view that the analysis carried out has not adequately considered the potential impacts of employee traffic on the road network. There will be significant numbers of employees working on the project for a prolonged period of time. For example, during construction of the Morecambe Bay Tunnel there will be a substantial workforce on site at each end of the tunnel at peak times of construction activity. The analysis carried out in the PEI has assumed that each person will drive to the site (which is overly robust) and has used a gravity model to determine where they will travel from. The trips however have been loaded onto the strategic network at appropriate loading points, without any consideration of how they will reach the strategic route network. In Barrow for instance, all trips are loaded onto the A5087 or A590 at various significant junctions. In reality traffic will use a variety of routes that are not part of the strategic network defined in the PEI analysis, a number of which may already be at or over capacity. The same approach has been adopted in Heysham.

11.14.26 The analysis of construction workers' trips assumes that they will be located in local accommodation, which is not supported by clear evidence and indeed contradicts evidence presented elsewhere (see PEI Section 17.3.17). A more detailed analysis is therefore required to fully understand the impacts of the movement of construction worker trips on local centres and the highway network, their accommodation needs and the capacity of local accommodation particularly Barrow and for the National Park underground section. This should take into account an accommodation strategy for employees, forecast employee numbers and likely shift patterns. Employee trips, together with HGV trips, should then be assessed using Cumbria County Council's Barrow SATURN model to identify changes in traffic flows and locations where additional capacity analysis, and potential mitigation is required.

11.14.27 The analysis of employee trips has assumed that they will all be located in local accommodation (hotels, B&B, rented housing). It is not clear, in the case of Barrow in particular, that there will be sufficient accommodation for the number of employees forecast. This also applies to Heysham and West Cumbria when constructing the underground section through the Lake District National Park. A realistic accommodation strategy for employees will be required to fully understand the impacts on Barrow and other local centres.

Additional Measures

11.14.28 Furthermore, the PPA Group consider that the following measures should also be adopted:

- Production of a Construction Management Plan setting out a strategy to minimise the impact of HGV traffic;
- Production of an abnormal load route strategy;
- Restriction of hours for HGVs where routes pass schools;
- Establishment of a transport steering group to consider transport related issues such as travel plans, development of mitigation plans for PRoW and cycle routes, and street works; and

- Condition surveys for all routes/PRoWs with a commitment to restore all to their previous condition as a minimum.

11.15 Bespoke Mitigation

- 11.15.1 The issue of severance should be considered in greater detail particularly where there are significant increases in HGV flows. Where appropriate, additional pedestrian or/and alternative facilities should be provided to reduce severance.
- 11.15.2 The information presented does not include any analysis of safety issues – although 5-year accident data has been gathered. Individual accident clusters should be identified and the extent to which additional traffic could contribute to accidents identified. Where appropriate, measures to address accident issues should be implemented.
- 11.15.3 Where PRoW/cycle routes are impacted by the proposals there may be opportunities to improve existing facilities when reinstating routes. These should be taken where appropriate.

11.16 Other Effects

11.17 Commentary on Residual Effects

- 11.17.1 The information provided by National Grid does not contain mitigation measures for the traffic impacts and those for the PRoW are insufficiently detailed to determine what the likely residual effects will be.

11.18 Commentary on Approach to Inter-Relationship Effects

- 11.18.1 The information provided by National Grid refers to Appendix 5B, Volume 2.7 with regard to scoping inter related effects. This document was not included in the data package supplied.
- 11.18.2 There are however, a number of potential inter related effects with regard to transport that should be considered. The impact of increased traffic, particularly HGVs, on the local and visitor economy will be of particular importance.

11.19 Commentary on Cumulative effects

- 11.19.1 As noted in previous sections, a cumulative assessment of the traffic impacts of this development together with other major developments in the study area should be carried out. This will include, the impacts of the Moorside Nuclear Power Station and the West Cumbria Mining development. Any additional developments with significant transport impacts should be agreed with the relevant Highway Authorities during the scoping of the TA.
- 11.19.2 The assessment should identify any mitigation required for the combined impacts of

significant proposals.

11.20 Gaps Requiring Further Assessment

11.20.1 In order to address the key issues/gaps identified in this chapter, the following additional work is required:

- Production of a TA that fully identifies all of the transport impacts together with appropriate mitigation measures;
- Capacity assessments wherever significant traffic increases are forecast; for the central strategic route this should take into account all likely developments including Moorside Nuclear Power Station and West Cumbria Mining;
- A detailed analysis of the likely traffic impacts in Barrow using the available Cumbria County Council SATURN model, including capacity analysis and identification of junction improvements if required;
- A detailed analysis of the likely traffic impacts in Ulverston including capacity analysis of impacts junctions on the A590;
- A detailed analysis of the likely traffic impacts in Heysham, including capacity analysis and identification of junction improvements if required;
- Clarification on the justification for the use of average daily flow in the busiest four-week period;
- A review of accident data and analysis of the potential impacts of the proposal on existing accident issues;
- Incremental analysis of multi modal options for the southern strategic route and development of a preferred multi modal option;
- More detailed analysis of multi modal options for the northern, central and Heysham strategic routes;
- Agreement of a basis for determining whether the multi model options are appropriate/justified;
- Production of Travel Plans for all construction related activities and sites;
- Production of Construction Management Plan;
- Production of Abnormal Load Route Strategy; and
- Production of PRoW Management Plan.

12.0 Construction and Operational Noise and Vibration

12.1.1 This following document focuses on the information provided with regard to the noise and vibration chapters of the PEI. Related information detailing the assessment methodology, initial findings and determination of likely effects is presented in subject specific chapters. In addition, a review of other relevant documents including the following has been undertaken:

- Volume 2.7, Appendix 4.B Use of Helicopters. This includes a standalone assessment of noise from temporary helicopter movements to assist construction in areas that are difficult to access;
- Volume 2.3, Chapter 8: Historic Environment;
- Volume 2.3, Chapter 22: Cumulative Assessment; and,
- Volume 5.2, Code of Construction Practice.

12.1 Construction and Operational Noise and Vibration Key Issues

Table 12.1: Construction and Operational Noise and Vibration Key Issues

Key Issue	Comment
Noise and Vibration	
1. Lack of commitment to clear mitigation.	No meaningful mitigation is proposed to address noise, vibration, air quality, light, ecology or residential amenity impacts. The PEI does not provide the reassurance that the development can be constructed and then operate without a significant impact on nearby communities, including a number of residential areas close to the Roosecote and Middleton substation. This concern regarding the lack of adequate information is equally applicable to the temporary tunnel shafts at Roosebeck and Heysham (Penrod Way), as well as the design of the Islet in Morecambe Bay. Further information must be provided to properly consider the impact of the proposed development and to advise on the acceptability of the proposal. Further comment with specific regard to noise mitigation is discussed below in paragraphs 12.9.11 onwards, 12.9.31 and 12.11 onwards.
2. Impact from lack of 'multi-modal' study.	As stated elsewhere, the PPA Group strongly advocates the 'multi modal' option as compared to a 'road based' option for a variety of reasons; in this instance it is relevant to being able to properly considered options to minimise pollution (noise, air and dust).

12.2 Construction and Operational Noise and Vibration Issues in PEI

12.2.1 This section summarises the additional issues identified in the review of the noise data and assessments presented in the PEI Report. These key issues have been identified following a review of all the relevant reports.

Table 12.2: Construction and Operational Noise and Vibration Issues in PEI

Key Issue	Comment
Noise and Vibration	
1. Reference to the temporal criteria should be made clearer.	This is in particular regard to how the temporal criteria relates to determining whether or not an effect is significant, as should the calculation methodology and assumptions to allow cross checking. Specifically, there should also be further quantification over the terminology used in terms of the description of the duration of the construction works (see paragraph 12.9.2 for more detail).
2. Longer term works may not have been given full and appropriate assessment or consideration against relevant standards.	For longer term works (see paragraph 12.9.3) consideration should be given to guidance within documents such as British Standards BS 4142 or BS 8233 to determine whether a more stringent criterion is applicable for works that are not temporary.
3. Inconsistent application of reference and definition of sensitivity.	References to descriptors in terms of the sensitivity of the receptor and then the determination of whether an effect is significant should be consistent across all sections, or where there is a departure from this method, this should be clearly stated and reasons given. More detail is provided in paragraph 12.9.7 below.
4. Inconsistent between PEI documents.	Inconsistencies between PEI Noise and Vibration documents need to be regularised (please refer to paragraphs 12.9.6 and 12.9.7)
5. Unclear how the study area chose is justified.	Greater clarification to ensure the study area is commensurate to the source of noise or vibration should be considered. See section 12.5 for a fuller discussion.

12.3 Commentary on Policy and Legislative Context

12.3.1 Appropriate national legislation, planning policy and guidance documents are referenced in the construction noise and vibration sections. No specific consideration of local planning policy has been provided within Volume 2.2, however, a list of local planning policies is presented in Appendix 2A, Volume 2.7. A summary of the applicable local planning policy

should be presented and discussed in terms of design and decision making for the current proposals in Volume 2.2.

- 12.3.2 PEI Paragraph 12.2.11 of Volume 2.2 Chapter 12 “Operational Noise and Vibration” details the National Grid internal report document “TR(T)94, 1993, - A Method for Assessing the Community Response to Overhead Line Noise”. However, this document is not one that is publically available and no detail with respect to the methodology of assessment is given, only reference to the assessment criteria as below:

“...TR(T)94 does not set specific noise assessment criteria; instead it refers to BS4142 and the subjective response of communities and individuals to changes in noise levels”

- 12.3.3 Therefore to determine if it has been applied correctly, more detail regarding this document should be provided if not the document itself.
- 12.3.4 No reference to tranquillity has been made which is required to be assessed under the National Planning Policy Framework (NPPF). Reference to tranquillity has not been included within Table 11.1 of Volume 2.2 where the requirements of Section 123 of the NPPF are stated, and should therefore be added.

12.4 Adequacy of Baseline and Data Sources

12.5 Commentary on Study Area

- 12.5.1 For the construction phase, we agree with the proposed study area within which noise from general activities is considered extending to 300m from any location of an identified construction activity or road link, where an increase of more than 1dB(A) due to construction works traffic is predicted. This is considered to be sufficient for weekday and weekend daytime operations. However, commensurate to the activity being assessed, a wider study area should be considered for any night-time working.
- 12.5.2 With regard to vibration, a study area of receptors within 300m from any piling, drilling or tunnelling works is stated. This is considered acceptable.
- 12.5.3 No reference is given to the study area for the assessment of railway noise or vibration and this should be clarified in the ES.
- 12.5.4 A study area for the assessment of helicopter movements has been set at 600m. In Table 12.1 of Volume 2.7, Appendix 4.B, noise levels of up to 61 dB $L_{Aeq,16hour}$ [SIC] at 600m are presented which, based on the assessment method, would result in a major adverse level of effect. Therefore, the study area should be extended to ensure that effects are appropriately assessed.

- 12.5.5 For the Operational Phase, the study area is set at 300m from the centre line of the 400kV overhead power line and 1km from the substations and tunnel head houses. Considering the surrounding area, these are considered appropriate distances for assessment.
- 12.5.6 No assessment of the proposed 132kV overhead lines or the underground cables is presented with the justification given as “the 132kV overhead lines operate quietly and underground cables produce no noise”. This is considered acceptable with regard to the underground cables as noise will only be produced during the installation of the cables. However, we would like to see quantitative information relating to the 132kV overhead lines confirming the levels are low enough to not have an effect on nearby receptors.

12.6 Commentary on Existing Environment

- 12.6.1 Baseline noise surveys are yet to be undertaken. Currently, the baseline environment has been considered qualitatively with the assessment based on there being existing low levels of noise. This is a reasonable approach at this stage, however to ensure accurate determination of the significance of effects at sensitive locations this should be revisited as soon as the baseline surveys have been undertaken and appropriate levels determined for the different periods of the day.
- 12.6.2 No reference is made within the document to attended baseline measurements. Attended measurements should be undertaken during the baseline monitoring period to ensure that the levels are representative of ‘normal’ ambient levels. This is held as good practice in BS 4142, section 4 a) to “*indentify and understand all the sounds that can be heard and identify their sources*” and section 6 which requires meteorological conditions to be recorded to ensure a proper understanding of the recording parameters the assessment is then based on.
- 12.6.3 There is no reference to existing vibration levels or that surveys are due to be undertaken to establish them and this should be addressed.

12.7 Commentary on Factors influencing Future Baseline

- 12.7.1 Reference is made to the future noise baseline being primarily influenced by traffic growth and there being a negligible difference to the existing baseline. This is considered to be a reasonable assumption. It has also been assumed that the future vibration baseline would not change significantly from the existing baseline.

12.8 Commentary on Consultation Activity and Data

- 12.8.1 Consultation to date is briefly referenced with confirmation provided that further consultation will continue with the relevant Environmental Health Departments in terms of agreeing sensitive receptor locations.

- 12.8.2 A description of the proposed type of construction activities and methods is provided. However, there should be further detail provided with regard to operating periods and durations. For instance in Volume 2.3 there is reference to the duration of the works with regard to the installation of a pylon, tunnel head and substation works but no reference to the anticipated duration of works with regard to any Distribution Network Operator (DNO) works.
- 12.8.3 Details of construction receptor locations and assumed plant have been provided with the data sources provided. The approach is generally considered to be reasonable. However, for ease of reference it would be helpful for a plan showing the receptor locations to be included or reference provided to where this is included. In addition, the calculation method is stated in various parts of the text, however, it would be helpful to include details of the calculation method and assumptions as an Appendix. This would then allow for cross checks of the predicted noise levels to be adequately made.
- 12.8.4 An assessment has been presented with regard to the construction of the helicopter operating bases (HOB). It is stated that the calculations are presented in Volume 2.7, Appendix 11D. However, this is not clearly presented. Given the proposed stand-off from sensitive receptors of 300m, with the construction works following best practice measures, effects which are significant would not be anticipated for daytime working.
- 12.8.5 It is assumed that further details and subsequent assessment will be provided within the ES with regard to source noise levels associated with the proposed helicopter movements / activities. The initial assessment does highlight that there could be significant effects for some properties close to the pylon delivery locations and that specific consideration of mitigation will be undertaken and reported within the ES.

12.9 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

Construction

- 12.9.1 For the assessment of both noise and vibration, the significance of effect has been established by considering the relationship between the sensitivity of the receptor and the magnitude of impact. This matrix method has been used to establish whether effects which are significant are likely within the context of the duration and periods of the assessment.
- 12.9.2 With regard to noise, a series of limits has been established to determine the impact magnitude. Reference is also given to temporal criteria when determining whether an effect will be significant with the specific justification presented where appropriate within the assessment. This should be more prescriptive in the methodology section presented in Volume 2.2 in order to clearly define where the temporal criteria (such as temporary or medium term working) has been used to define whether an effect is significant or not. There should also be further quantification over the terminology used in terms of the description of the duration of the construction works.

- 12.9.3 Our view is that construction works occurring over a 5 or 6 year period such as those at the proposed substation locations would be 'long term'. For such works, a more detailed assessment should be undertaken to detail the level of noise that could be experienced at the identified receptors over the course of the works or whether the predicted levels are likely over the full duration. Consideration should then be given to guidance within other documents such as BS 8233 to determine whether a more stringent criterion is applicable for works that are not temporary.
- 12.9.4 Whilst BS 4142 is considered applicable to the installation of overhead power cables and it is agreed as the overriding methodology, the assessment will need to be supplemented with other guidance to provide the appropriate context. This specifically relates to the type of noise source and the effect of the noise on nearby sensitive receptors. Whilst BS 4142 provides methods for rating and assessing sound of an industrial or commercial nature, Section 1 – Scope says: "*The standard is not intended to be applied to the derivation of indoor sound levels arising from sound levels outside, or the assessment of indoor sound levels.*"
- 12.9.5 Supporting info on the quietness of 132kV overhead cables is requested noting that no mention is given to an operational noise modelling assessment using appropriate software for the Stainburn 400kV and 132kV developments.
- 12.9.6 Within the standalone Chapter (Volume 2.7, Appendix 4.B) the methodology for assessment of effects of temporary helicopter movements during construction works, unless justified otherwise or clearly explained, should be consistent with that within Volume 2.2. For example in this volume, only passing reference is given to the use of helicopters with landing sites at Stainburn and Branthwaite (amongst others) during construction and maintenance operations. Background levels, landing site locations and forecast noise from such operations and hours of operation, will need to be made available and agreed.
- 12.9.7 Within Volume 2.7, there is limited reference to the sensitivity of the receptor other than residential receptors being of high sensitivity yet they are of medium sensitivity in Volume 2.2. Whilst it is noted in Section 3 that further details will be provided with respect to likely effects and mitigation measures within the ES, the method used in determining whether an effect is significant should be clear and consistent across sections. Where there is a departure from an overarching method, this should be clearly stated and justified. Furthermore, there should be consistency between Chapters as there are no 'high' sensitive receptors identified within Chapter 11, whilst there are three 'high' sensitivity receptors identified within Chapter 12. Referencing needs to be consistent, as does ensuring that all receptors are actually assessed.
- 12.9.8 Further to the above, reference should be made to effects being adverse. Comment to effects being adverse is only stated with regard to human response to vibration.
- 12.9.9 With regard to construction traffic noise, Volume 2.4 states that impacts will be negligible on all road links. This does not correspond with the calculations presented within Volume 2.7, Appendix 11E, where the magnitude of impact ranges from low to medium. An assessment

to determine effects at receptors located within proximity to roads which have not been scoped out (i.e. roads where a change in noise level is greater than 1 dB(A)) should therefore be undertaken.

12.9.10 The following specific comments on methodology should be noted with regard to the Foxfield and Roosebeck areas:

- Further work is required to protect residents of dwellings from the proposed compounds.
- The proposed Foxfield compound will need a detailed noise management plan.
- It is unclear if floodlights / generators will operate at night.
- It is unclear if deliveries will take place using the railway at night.
- Further details should be submitted to and agreed with local authority Environmental Health Officers over suitable background noise monitoring at receptors to establish the correct noise mitigation required for the site.
- There is not any detailed consideration of the potential impact that the use of the railway may have on neighbours. Noise and disturbance from the unloading of goods from the railway may involve large HGVs with reversing alarms during the day and at night.
- A Noise Management Plan must be agreed with Environmental Health Officers prior to any operational work taking place.
- The opening up of land at Roosebeck may be required to check on the progress of the tunnel boring machine prior to boring under Morecambe Bay. The proposed compound is close to the boundary between Barrow Borough Council and South Lakeland District Council. Impacts on White Hall Caravan Park must be considered. In order to protect the residents of South Lakeland a detailed noise study should be provided and the format agreed with Environmental Health Officers. It is unclear if night time works will be required at this location. Specific details of any piling and monitoring locations should be submitted to and agreed prior to the start of works with Environmental Health Officers.

12.9.11 The following specific comments on methodology should be noted with regard to areas with section H3:

- PEI Table 11.3/paragraph 11.6.16 – (see also comment to paragraphs 11.7.4 – 11.7.16 below). The averaging times specified in Table 11.6 (and those applied to the predicted values shown for piling in Table 11D 108 in Vol 2.7 – clarification required) are unlikely to capture impact type issues and also are considered too long to capture/deal with potentially shorter term noise events which can be particularly intrusive and the subject of complaint. This assessment method has previously been shown to not properly account for such activities (recent Dong Energy Piling works in adjacent development site where BS 5228 criteria based assessment indicated compliance but the activity resulted in multiple complaints). Separate assessment/design selection processes should be undertaken for these activities e.g. piling works. They are also unclear from Table 11D 108 whether tonal impacts (e.g. from slurry treatment plant) have been fully accounted for in any of the assessed activities.

- PEI (Vol2.5) paragraphs 11.7.2 – states ‘no high sensitivity receptors have been identified within 300m of the tunnel-head site and substation’. Residential properties are considered to be high sensitivity and are located within 300m of the site. It is also noted that in fact three ‘high’ sensitivity receptors have been included in the operational noise section (see Chapter 12 Vol2.5). These receptors are identified as Moss View Care Unit, Primrose house care Unit and Fairway Residential Home. These receptors appear absent from assessed receptors contained in Table 11D 108 in Vol 2.7 for construction based impacts. This would therefore indicate that significance conclusions (also noting comments immediately below) require revision. Further clarification on this issue is required.
 - (Vol2.5) paragraphs 11.7.4 – 11.7.16 - The duration of works at the Middleton tunnel head site is up to seven years. It is therefore suggested that the application of standard construction noise criteria (BS5228) for assessment purposes is inadequate and does not offer the level of protection from noise impacts required for a project of this scale and duration. It is also suggested that standard ‘operational’ development assessment criteria (WHO/BS4142) should be adopted for receptors affected by works at the Heysham tunnel head site. The duration of works at the Penrod Way intermediate shaft site is unclear. If the duration of impacts is similar then the application of similar criteria at this location would also be recommended.
 - The process of selection, siting and design of the Middleton Tunnel head site needs to be driven by consideration of the potential impact on receptors in the locality and the need to minimise this impact. Submitted plans (fig 4.14.1) showing the tunnelling operation with on-site slurry treatment operations, do not suggest this is the case. As assessments with mitigation have not been submitted in this submission it is not possible to consider the degree of impacts over the 6 year period (bearing in mind the proximity of receptors at elevated position (Mossgate Park). Further assessment of mitigated impacts is required to determine general acceptability of the proposal.
 - PEI Vol2.5 paragraphs 11.7.24 and 11.7.25 - Considering worst case scenarios, National Grid state that impacts on a number of receptors at the upper end of the temporary tunnel boring machine is assessed to fall in the region of ‘low’ to ‘medium’ (magnitude for ground borne noise and vibration). The assessment indicates this impact to be not significant. It is unclear whether this impact assessment is acceptable and what, if any, measures can be taken to mitigate the impact. Further clarification is therefore needed (as medium impacts are likely to cause concern and complaint – see Table 11.10 Vol 2.2 Chapter 11). Further detail is also required on the likely duration of the impacts at receptor locations; this may have a bearing on acceptability/need for further mitigation consideration.
 - PEI Vol2.5 paragraph 11.7.28 – As construction works are anticipated to last up to 6 years, it is felt that the description of construction impacts as ‘short term’ and ‘transient in nature’ is misleading. The assessment process should account and respond to this prolonged impact.
- 12.9.12 In general, it is noted that Vol 2.2 chapter 11 makes reference to the fact that construction works are to be limited to the daytime hours (7 days a week) and that final noise and vibration mitigation measures will be in line with BS 5288. The Code of Construction Practice (CoCP) and Noise and Vibration Management Plan (NVMP) will need to be agreed well in advance of works. Saturday and Sunday working needs to be clarified.

12.9.13 Regarding noise sensitive receptors, both residential and school receptors should be classed as high sensitivity.

12.9.14 The assessment methodology stated in Volume 2.2 has been generally applied. However, it would be clearer if a short summary is provided at the start of Chapter 11, Volume 2.4 to set out what is to be considered and what is not being assessed with appropriate justification given. This should also include reference to the proposed typical working periods and confirm whether night working is proposed. In addition, as noted in Section 3 above, in order to cross reference calculations and, therefore, likely effects, details of the calculation method and assumptions should be included as an Appendix.

12.9.15 There is limited reference in Volume 2.4 to the assessment of railway noise or vibration. It is occasionally stated that noise from rail movements would be within weekday and weekend construction noise limits but this is not quantified. Additionally, consideration should also be given to effects associated with activities occurring within the construction compound rather than just during the construction of the compounds.

Operation

12.9.16 The assessment of both operational noise and vibration takes into account project elements such as overhead lines, substations and the tunnel head house all of which have the capacity to generate noise and affect nearby sensitive receptors.

12.9.17 Three main sources of operational noise have been identified:

- Substations, in particular transformers and reactive plant (which are in continuous or semi-continuous operation).
- Tunnel head houses, in particular ventilation and cooling fans.
- 400kV overhead lines, which can make noise during certain weather conditions (described as wet and dry noise).

12.9.18 Reference is made to the meteorological conditions taken into account in the model, however no information is given with respect to the prevailing weather conditions at the site and whether the conditions modelled are representative.

12.9.19 The predominant methodology of assessment of the substations and the tunnel head houses is by BS4142:2014 where the effects of some of the different noise sources have been calculated using a CADNA-A noise model. This model incorporates the sources and propagates them in accordance with the methodology set out in ISO 9613:1993. The 6dB correction is applied to the assumed tonal sources (listed as transformers, shunt reactors and where appropriate coolers). No detail regarding the target noise level is proposed, and to minimise the effect the new sound sources would have on the nearest receptors, we would look for the aspects of the development that are assessed under BS4142:2014 to achieve 10dB below current background noise levels at the nearest receptors.

- 12.9.20 The modelling does not include noise contribution from the switchgear or auxiliary plant at the substation due to its impulsive nature. No other explanation is given to detail how these noise effects have been assessed. Although it is accepted they are infrequent; the source should have been modelled and the levels assessed according to BS4142:2014 or alternatively as it is impulsive noise, against the levels at the receivers in accordance with the L_{Max} levels in the WHO guidance document published in 1999 "Guidelines for Community Noise".
- 12.9.21 The assessment of the 400kV overhead line noise is considered reasonable, however as stated above there is only limited detail provided regarding the methodology. Assessment of the lines under wet weather conditions states that a correction is applied for average rates of rainfall greater than 1mm/hr. It should be clarified which time period this is relevant i.e. monthly or yearly.
- 12.9.22 As stated previously no detail is given in regard to the 132kV overhead lines, although it is not necessarily disputed that the levels are "below the thresholds for noise inception". For clarity a brief reference detailing typical levels from these lines should be shown.
- 12.9.23 Additional operational sources from maintenance activities have been outlined and are not expected to have an effect greater than that occurring during the construction phase of the works. This is considered acceptable, however, at the properties where construction activities have been shown to exceed threshold levels, additional measures should be taken to ensure effects are minimised.
- 12.9.24 Operational vibration occurring from the overhead lines, cables, tunnel head houses and substations has been scoped out. This is considered acceptable.
- 12.9.25 Assessment of significance as set out in Volume 2.2 Chapter 12 section 12.6.34 details residential receptors as having 'medium' sensitivity. This issue was previously commented on as part of the Position Paper responses as being unacceptable and is a view shared by the Planning Inspectorate and Lancaster City Council.
- 12.9.26 The comments previously made are given below,

"The comments from the Planning Inspectorate state that residential receptors for both the construction and operational assessments should be considered as high, however the comments from Arcadis in the position paper "Significance of Noise Impacts" disagree.

The justification given by Arcadis is based on the lack of set guidance in England and the perception that the occupants of a hospital will be more sensitive to noise than the occupants of a residential property. However this justification has flaws as the sensitivity of a receptor should be based on their occupancy with consideration given to internal ambient noise levels.

It is considered that the internal noise levels within a hospital (not walk-in centres or

outpatient departments) or a hospice will be greater than that of a residential dwelling and as such if this is considered as having a "high" sensitivity, then in residential properties where noise levels could be considered to be lower making them more sensitive to increases in external noise. This is also borne out by standard industry practice also considering residential properties as being of "high" sensitivity. This is also similar for schools where although noise levels can be variable, there are many situations where the internal noise levels within the school building would be low as there are situations where teaching could go on outside.

It is our consideration that the justification given for the residential receivers being of medium sensitivity is insufficient and therefore they should be reclassified to high as should the schools be reclassified from low to medium in the assessment."

12.9.27 The following comments are made with regard to the operational assessment methodology:

- PEI Tables 12.2 and 12.4 and paragraphs 12.6.49 - Recommendations have previously been provided stating that residential/school receptors should be classed as 'high' sensitivity. This recommendation has not been adopted in the submission. In the submitted assessment the classification of residential receptors as 'medium' sensitivity has resulted in impacts classed as 'moderate' which the assessment advises are not considered to be significant. Neither the sensitivity classification nor the classification of 'moderate' impacts (between 0-5dBA above background levels – noting also comments below in relation to prediction in Vol. 2.5) are considered acceptable.
- PEI paragraphs 12.5.5 – The assessment indicates that noise data used in the ES will arise from unattended noise monitoring. This advice seems to ignore previously submitted advice that indicates that some of the monitoring should be attended due particularly to the potential for impacts from ongoing construction work in the locality. The potential exists for gathered noise monitoring data not to be indicative of 'normal' ambient levels.
- PEI Tables 12.11 and 12.12/ paragraphs 12.7.8 to 12.7.13 in Volume 2.5 Chapter 12 – The suitability of use of the adopted 30dBA background level used in the assessment at locations affected by tunnel head operational noise impacts needs to be confirmed by noise monitoring at the assessment locations. Although we understand that this is ongoing, we have already noted our concerns that monitoring is reported to be 'unattended'.
- Noting concerns in this regard and in relation to receptor sensitivity classification and impact significance, results predict a large number of receptors with 'moderate' to 'major' impacts.
- No assessment has been undertaken of suggested mitigation measures and therefore it is not possible to assess the adequacy of these measures. PEI paragraphs 12.7.13 also states that criteria of BS 4142 rating levels below 35dB for nearest properties and below 30dB for properties further away would be sufficient. In the absence of suitable monitored background level data and with the indicated possibility of acoustic feature components to noise levels, we remain concerned that this prediction will be inadequate to protect receptors.
- The classification of 'moderate' impacts as acceptable during the operational phase is not considered appropriate, particularly during night-time hours when background levels are likely to be the lowest and tonal/impulse type noise more discernible. Ideally, we would expect the development to operate to achieve noise rating levels 10dB below current 'normal' background levels assessed at the nearest receptors and not rating levels above

background levels.

- 12.9.28 The assessment methodology detailed above has been applied, with little additional detail provided in the individual assessments.
- 12.9.29 Our comment with regard to the significance levels of residential receptors still applies and as such, the tables of effects should be updated to reflect this and where necessary, mitigation measures proposed.
- 12.9.30 Subsection B1 has reference to impulsive switchgear noise levels, which have not been assessed. This should be interpreted as a maximum noise level and assessed using additional guidance from the WHO to determine the level of impact, if any. It is not sufficient to dismiss this as infrequent and numerical evidence and/or assessment should be provided
- 12.9.31 Currently subsection H3 identifies a number of receptors that are assessed as having a Major effect in terms of noise. Mitigation measures are proposed which can be incorporated into the design which will reduce the significance of effect to Moderate. Once it is determined that mitigation is needed then calculations should be presented showing the exact effect of the mitigation.

12.10 Commentary on Proposed Mitigation

12.11 Design Mitigation

Construction

- 12.11.1 The design principle of locating structures (pylons, permanent infrastructure etc) as far away from residential premises as possible to maximise the separation distance between sensitive receptors and the noise source has been stated.
- 12.11.2 Inherent mitigation within the design has been included in the form of the assumption of acoustic screening to be positioned around static plant. It is acknowledged within the assessment that this may not be practicable for all locations and other forms of mitigation should then be adopted to mitigate adverse effects.
- 12.11.3 This is considered reasonable. However, further information should be provided with regard to the assessment of alternatives, such as different routes and their relationship with respect to the separation distances from receptors. An explanation should be provided to outline why a particular route has been chosen and where this has included consideration of noise and vibration effects.

Operational

- 12.11.4 It is noted that the sound power levels of all operational equipment assessed within the PEI documents will be specified as part of the design in order to minimise the effect of Operational Noise on residential receptors. Although this is considered acceptable, this should be expanded to receptors considered more sensitive than residential receivers, which, as defined in Table 12.2 will include nearby hospitals or hospices.
- 12.11.5 Inherent mitigation within the design for the overhead lines will be restricted to the alignment of the pylons and interconnecting lines. It is accepted that there is no additional mitigation, however positioning the lines away from properties where it is practicable should be considered a priority.
- 12.11.1 Mitigation measures are proposed for subsections that, by assessment, are shown to have receptors where a significant effect will occur. Additional mitigation measures to address noise effects should the baseline noise levels be found to be lower than the assumed baseline are not detailed within the report and should be.
- 12.11.2 Whilst the Civil Aviation Authority is the regulator of aviation and helicopter movements, the South Lakeland Environmental Health Department would like to be notified of the flight proposals, flight numbers and confirmation of the permanent helicopter compound seen on the GIS mapping.

12.12 Good Practice Mitigation

- 12.12.1 Reference to the use of Best Practicable Means with reference given to the guidance presented within BS 5228 being adopted within the Code of Construction is welcomed.
- 12.12.2 In addition to this, quality assurances through the manufacturing and transportation stages, plus care during the installation of the conductors will help to avoid damage and the build up of surface contaminants that could increase the risk of excessive dry noise when the overhead line is energised.

12.13 Bespoke Mitigation

- 12.13.1 It is noted that the final selection of mitigation measures will be agreed once a contractor has been appointed. The mitigation measures will be included within a Code of Construction Practice (CoCP) and Noise and Vibration Management Plant (NVMP). The suitability of the measures outlined within the CoCP and NVMP can be enforced through planning condition.
- 12.13.2 Example noise control measures are outlined within Volume 2.2 and within the draft CoCP in Volume 5.2. It is agreed that these measures should reduce effects although we would recommend that there should be a commitment included within CoCP / NVMP to include for community consultation to properly outline the works, duration and what measures are

being implemented to mitigate the noise. It is stated that noise limits will be presented within the final CoCP and NVMP, however, it should be made clearer and demonstrated within the ES that these limits will be achievable.

- 12.13.3 In addition to noise, whilst it is not considered that significant vibration effects are likely, the CoCP and NVMP should set out the vibration limits that should be complied with along with associated actions.

12.14 Other Effects

12.15 Commentary on Residual Effects

- 12.15.1 Residual effects are stated. With mitigation no effects which are significant have been predicted, however, further detail should be provided as to how this has been established. Where it has been established that noise limits would be exceeded, the proposed mitigation and residual noise levels should be stated / tabulated to demonstrate how the residual significance of effect has been determined. There should also be sufficient detail in the ES to draw attention to the geographical locations where bespoke mitigation will be required.

12.16 Commentary on Approach to Inter-Relationship Effects

- 12.16.1 Cross references to the Historic Environment Chapter and the Planning Statement with regard to the consideration of effects at non-residential premises have been provided. There is no reference in Chapters 11 in Volume 2.2 – 2.4 to the consideration of effects on terrestrial and avian ecology and this should be addressed.
- 12.16.2 Within the Historic Environment Chapter, noise has been briefly considered, however an assessment of likely effects has not been presented. This should be clarified and presented within the chapter.

12.17 Commentary on Cumulative effects

- 12.17.1 A brief assessment has been provided in Volume 2.3, Chapter 22 which indicates that with the adoption of Best Practicable Means, cumulative noise and vibration effects would not be significant. This is considered likely to be the case subject to the outcome of more detailed assessment.
- 12.17.2 Comments are made with regard to the new Moorside Power Plant, however little to no comment or actual assessment is made with regard to the cumulative impact and only a reference to the Associated Developments Assessment document is presented. A clear summary detailing the cumulative impacts should be provided along with detail of any additional assessment or mitigation measures taken into account.



12.18 Key issues /Gaps requiring Further Assessment

12.18.1 There are a number of areas which should be considered further within the ES. These include:

- Assessment of tranquillity is required;
- a receptor location plan should be provided;
- an assessment of rail noise and vibration should be included;
- ensuring that summaries presented in Volume 2.4 are in line with the calculations presented in Volume 2.7 and appropriate assessments are undertaken (e.g. road traffic assessment);
- it should be made clearer and demonstrated within the ES how the residual effect has been established;
- discussion of mitigation measures;
- assessment of impulsive noise sources in terms of operational noise; and,
- traffic noise assessment with regard to operational and construction phases of works.

12.19 Concluding Remarks

Construction

12.19.1 In general the approach taken with regard to construction noise and vibration is considered acceptable. It is concluded that with mitigation where appropriate, significant adverse effects are not likely to occur. The suitability of the mitigation measures outlined within the CoCP and NVMP can be enforced through planning condition. Given the currently assumed daytime operations within the northern route corridor, this is considered to be a reasonable outcome. However, there are a number of information gaps listed in the document above which should be addressed as part of the ES.

12.19.2 There is the potential that effects which are significant could result from temporary helicopter activities. This will be considered in greater detail within the ES following further investigatory work and mitigation measures established to minimise adverse effects.

Operation

12.19.3 The approach taken in the operational assessment with regard to noise and vibration is considered generally acceptable, however there are a number of issues, detailed through earlier sections of this document, that still need addressing to make this a robust assessment.

12.19.4 Establishment of the baseline noise conditions should be considered a priority. The assessments and mitigation measures presented are based on assumed noise levels. There is therefore a risk that actual noise levels could be higher or lower than assumed.

12.19.5 The classification of residential receivers as being of 'medium' sensitivity is not acceptable. This has led to the outcome of the assessments showing a potentially more positive outcome for the project than would otherwise be predicted. Mitigation should be considered for effects that are predicted to be significant.



Conclusion

- 12.19.6 It is considered that the approach to noise and vibration within certain parts of the PEI documentation is incomplete and inconsistent. Further work to provide additional information and justification to clarify both operational and construction noise effects should be undertaken.

13.0 Air Quality

13.1 Summary Comments

13.1.1 This section summarises the key issues identified in the review of the Air Quality assessments presented in the PEI. These issues have been identified following a review of the PEI.

13.1.2 The review of relevant documents has including the following:

- Volume 2.2 Introduction and Methodology, Chapter 13 Air Quality;
- Volume 2.3 Project Wide Information, Chapter 13 Air Quality; and,
- Volume 2.7 Appendix Dust Risk Assessment and Fugitive Dust Environmental Measures.

13.2 Air Quality Key Issues

13.2.1 The same issues from noise apply also as Air Quality key issues:

Table 13.1 Air Quality Key Issues

Key Issue	Comment
Air Quality	
1. Lack of commitment to clear mitigation.	No meaningful mitigation is proposed to address noise, vibration, air quality, light, ecology or residential amenity impacts (see paragraph 13.14.1 below). The PEI does not provide the reassurance that the development can be constructed and then operate without a significant impact on nearby communities, including a number of residential areas close to the Roosecote and Middleton substation. This concern regarding the lack of inadequate information is equally applicable to the temporary tunnel shafts at Roosebeck and Heysham (Penrod Way), as well as the design of the Islet in Morecambe Bay. Further information must be provided to properly consider the impact of the proposed development and to advise on the acceptability of the proposal.
2. Impact from lack of 'multi-modal' study.	As stated elsewhere, the PPA Group strongly advocates the 'multi modal' option as compared to a 'road based' option for a variety of reasons; in this instance it is relevant to being able to properly considered options to minimise pollution (noise, air and dust). This is noted in paragraph 13.11.2 below.

13.3 Air Quality Issues in Issues

13.3.1 This section summarises the key issues identified in the review of the noise data and assessments presented in the PEI Report. These key issues have been identified following a review of all the relevant reports.

Table 13.2 Air Quality Issues in PEI

Key Issue	Comment
Air Quality	
1. Emissions from construction traffic need to be included.	An assessment of emissions from construction traffic should be undertaken as the IAQM/EPUK limit on HDVs is triggered. This is discussed further in the review of the Assessment Methodology in section 13.11 below.
2. The PEI does not demonstrate where consultation has fed into or verified the assessment methodology.	Clarification is required regarding any consultation that has taken place to establish an adequate approach, see section 13.9 below.
3. Cross referencing / cumulative information is required.	Additional work required to inform chapters for, or assessments of receptors not dealt with in the Air Quality Chapter e.g. ecology species impacts, this is currently confused, see section 13.19 below.
4. Missing base information.	Currently, in order to understand a fuller analysis of the significance of impacts, there needs to be an inclusion of core information: <ul style="list-style-type: none"> • Local Policy references; • assessment of construction vehicles; and, • a Dust Management Plan.

13.4 Commentary on Policy and Legislative Context

13.4.1 The commentary contained within Volume 2.2 Section 13 is considered generally suitable and covers the latest relevant policies and legislation, both international and national. However, local policies do not appear to have been considered and should be included along with discussion of their relevance and how the assessment has sought to adhere to them.



13.5 Adequacy of Baseline and Data Sources

13.6 Commentary on Study Area

13.6.1 Areas within 350m of construction phase activities along the length of the works have been considered. This is in accordance with recommended guidance from IAQM and EPUK and is considered to be representative of best practice measures.

13.6.2 Trackout has been considered within 20m of roads. This is in accordance with recommended guidance from IAQM and EPUK and is considered to be representative of best practice measures.

13.7 Commentary on Existing Environment

Statutory and non-designated sites (North)

13.7.1 The sensitive SACs and SSSIs at Low Church Moss, River Derwent and Tributaries, Siddick Pond and Bassenthwaite Lake have been identified and included within the relevant subsections of the assessment. These receptors have the potential to be affected by construction dust.

Section by section description (North)

Subsection A1

13.7.2 Based on the maximum background NO₂ concentration within the study area for this subsection being identified as 7.9µg/m³, it is not expected that vehicle emissions will be significant.

Subsection A2

13.7.3 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 24.2µg/m³, it is not expected that vehicle emissions will be significant.

Subsection B1

13.7.4 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 21.0µg/m³, it is not expected that vehicle emissions will be significant.

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Subsection B2

- 13.7.5 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 10.4µg/m³, it is not expected that vehicle emissions will be significant.
- 13.7.6 Sources of odour within this study area have been identified. It is not expected that the development will generate any significant odour or result in the introduction of receptors which will be sensitive to odour.

Subsection B3

- 13.7.7 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 23.0µg/m³, it is not expected that vehicle emissions will be significant.
- 13.7.8 Sources of odour within this study area have been identified. It is not expected that the development will generate any significant odour or result in the introduction of receptors which will be sensitive to odour.

Subsection C1

- 13.7.9 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 21.0µg/m³, it is not expected that vehicle emissions will be significant.

Subsection C2

- 13.7.10 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 20.8µg/m³, it is not expected that vehicle emissions will be significant.

Statutory and non-designated sites (south)

- 13.7.11 The sensitive RAMSAR, SACs and SSSIs at Hallsenna Moor, Drigg Holme, Drigg Coast, Morecambe Bay, Duddon Estuary, Duddon Mosses, South Walney, Pier Channel and Heysham Moss have been identified and included within the relevant subsections of the assessment. These receptors have the potential to be affected by construction dust.

Section by section description (south)

Subsection D1

13.7.12 Based on the maximum background NO₂ concentration within the study area for this subsection being identified as 7.9µg/m³, it is not expected that vehicle emissions will be significant.

Subsection D2

13.7.13 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 11.7µg/m³, it is not expected that vehicle emissions will be significant.

Subsection E1

13.7.14 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 9.6µg/m³, it is not expected that vehicle emissions will be significant.

Subsection E2

13.7.15 Based on the maximum background NO₂ concentration within the study area for this subsection being identified as 20.9 µg/m³, it is not expected that vehicle emissions will be significant.

Subsection H1

13.7.16 Based on the maximum monitored NO₂ concentration within the study area for this subsection being identified as 33.6µg/m³, it is not expected that vehicle emissions will be significant.

Subsection H2

13.7.17 There is no background or monitored NO₂ levels within this study area.

Subsection H3

13.7.18 Based on the maximum monitored NO₂ concentration within the extents of this subsection being identified as 47.0µg/m³, although this exceeds the AQO of 40.0µg/m³, it is not representative of the study area and therefore it is not expected that vehicle emissions will be significant.

- 13.7.19 Sources of odour within this study area have been identified. It is not expected that the development will generate any significant odour or result in the introduction of receptors which will be sensitive to odour.

13.8 Commentary on Factors influencing Future Baseline

- 13.8.1 The assessment of factors influencing future baseline considers potential sources of pollutants such as generators, site traffic and construction activities. All relevant sources are considered within the assessment.
- 13.8.2 Although it is considered the future emission standards are uncertain, it is agreed however that due to the low levels of monitored background pollutants, emissions from vehicles are unlikely to be an issue.

13.9 Commentary on Consultation Activity and Data

- 13.9.1 No references to any consultation being undertaken have been made. Clarity is requested on this point as to whether the local environmental health officers have been contacted and the scope of works agreed.

13.10 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

13.11 Assessment Methodology

- 13.11.1 The EPUK and IAQM document 'Land Use Planning and Development Control: Planning for Air Quality' has been referenced in the PEI. The guidelines within this document give indicative criteria to proceed to an air quality assessment, specifically stating that if over 100 daily HDV flows are generated by a development an assessment is required. As indicated in Table 13.7, this trigger level is exceeded with flows numbering 118 for Subsection B1 and 104 for subsection C2. The PEI states that an assessment of construction vehicle emissions will be undertaken and included within the Air Quality ES Chapter. It should be noted that the detailed assessment should also include proposals for mitigating the impact of traffic on air quality if an increase in pollutant levels is predicted at relevant receptors.
- 13.11.2 Rail transport assessment methodology has been discussed within Volume 2.2 Chapter 13 but has not been mentioned within the air quality assessment. Rail transport options should be covered in the assessment as the choice of transport has the potential to impact on road related emissions. For instance, positively, it has the potential to minimise cumulative road related transport emissions.

13.11.3 It is also recommended that the air quality assessment proposed in the ES to cover emissions from traffic should also assess any potential dust/odour impacts associated with the tunnel head or intermediate tunnel access construction activities.

13.11.4 The Air Quality assessment should also ensure it considers the cumulative impact of other existing sites which may add to the air quality impact and sites which have gained planning approval but have yet to be constructed/operational/add receptors (particularly impacts of two power generating sites in Middleton).

13.11.5 Impact on ecological receptors should also be considered.

13.12 Application of Methodology

13.12.1 The dust emissions of demolition, construction and earthworks have all been assessed in accordance with the appropriate guidance and the findings are agreed.

13.12.2 Despite stating that an assessment of construction vehicle emissions would be undertaken, this does not appear to have happened and should be included in the ES.

13.12.3 Receptor locations have been identified that may experience odour from construction emissions. If a small quantity of odorous material was found during construction then the measures put into place in Volume 2.2 Chapter 13 Table 13.5 would be sufficient. However, if a large quantity of odorous material was excavated during the construction phase then the measures proposed would not be sufficient for the receptor locations and as such a more robust odour management plan should be included.

13.13 Commentary on Proposed Mitigation

13.14 Design Mitigation

13.14.1 No mitigation is specified within Volume 2.4 Chapter 13 to reduce the potential effects of the scheme on air quality.

13.14.2 Mitigation should be implemented through a construction and dust management plan for the construction phases.

13.14.3 Section 13.6.20 of Volume 2.2 identified the requirement for dust mitigation measures to be put in place but none are proposed within this Chapter and should be.

13.15 Good Practice Mitigation

13.15.1 No good practice mitigation has been recommended.



13.16 Bespoke Mitigation

13.16.1 No bespoke mitigation has been recommended.

13.17 Other Effects

13.18 Commentary on Residual Effects

13.18.1 While Section 13.1.4 of Volume 2.2 states that residual effects will be considered in Volumes 2.4 and 2.5 respectively, this does not appear to have been done and therefore should be.

13.18.2 Due to the worst case effects on air quality being during the construction phase and that operational air quality effects will be negligible, it is not expected that there will be any significant residual effects.

13.19 Commentary on Approach to Inter-Relationship Effects

13.19.1 Section 13.6.34 states that dispersion modelling will be completed within the ES to assess ecological receptors impact and that this would appear in the Ecology ES Chapter. Section 9.1.8 of Volume 2.2. of the Ecology ES Chapter states that this would be assessed in the Air Quality ES chapter.

13.19.2 It is recommended that modelling is undertaken and an assessment carried out in accordance with UK Air Pollution Information System (APIS) guidance.

13.20 Commentary on Cumulative effects

13.20.1 The Moorside Power Station project has been identified as having potentially significant cumulative effects. This is considered appropriate.

13.21 Key issues/Gaps Requiring Further Assessment

13.21.1 Dispersion modelling of the construction traffic should be undertaken in accordance with EPUK/ IAQM guidance and used to inform the Ecology chapter for nitrogen deposition.

13.21.2 Dust mitigation measures in the form of a Dust Management Plan should be created. Commentary on local policy would be useful.

13.22 Commentary on Potential Effects Not Requiring Further Assessment

13.22.1 Due to the low background levels of NO₂ and minimal proposed operational traffic, a full dispersion model of the operational development is not considered necessary.



13.23 Summary Comments

- 13.23.1 The PEI for Air Quality has considered the effects of the construction phase in accordance with the relevant guidance.
- 13.23.2 An assessment of emissions from construction traffic should be undertaken as the IAQM/EPUK limit on HDVs is triggered.
- 13.23.3 Additional clarification is required regarding any consultation that has taken place.

14.0 Hydrology and Flood Risk

14.1 Hydrology and Flood Risk Overview

- 14.1.1 This section considers the hydrology and flood risk baseline data, methodology and assessment of likely effects set out in National Grid's PEI report for the NWCC Project. The review has focused, in particular, on Chapter 14 (Hydrology and Flood Risk) of the PEI report, along with supporting information. Chapter 14 covers the potential effects of the Project in terms of the construction, operation and decommissioning-related Project activities. The PEI presents the potential effects of the Project on the surface freshwater environment (i.e. above the Mean High Water Spring tide level) in terms of water quantity, quality and water body morphology. It also assesses the consequent potential effects of the Project on the water resources that are supported by the surface freshwater environment. In addition, potential flood risk effects on people, property and infrastructure as a result of the Project are assessed, including flood risk from coastal sources. The assessment takes into account the potential effects of environmental change through the lifetime of the development, including changes in climate, land use and water quality.
- 14.1.2 This section summarises the headline issues identified in the review of the Hydrology and Flood Risk data and assessments presented in the PEI. Key issues are those elements of the PEI which are considered to result in inaccurate and unreliable assessments of the effects of the NWCC on hydrology and flood risk. These are summarised in Table 14.1, with examples from the detailed comments identified in the following Sections.

14.2 Hydrology and Flood Risk Key Issues

Table 14.1: Hydrology and Flood Risk Key Issues

Key Issue	Comment
1. Climate Change Adaptation	The 'Overarching National Policy Statement for Energy' (EN 1) paragraphs 4.8.4 to 4.8.8 in particular requires climate change adaptation to be taken into account by the Infrastructure Planning Commission (IPC) and successor organisations. Climate change scenarios include where appropriate 'more radical changes to the climate beyond that projected in the latest set of UK climate projections'. Any adaptation measures required dealing with the impacts of the applied climate change on river, Ordinary Watercourse flows and sea levels should be agreed in consultation with the Environment Agency (EA) and Cumbria County Council (CCC). The absence of an agreed approach to climate change adaptation means that the PEI has not adequately addressed climate change impacts on hydrology and flood risk. Therefore an assessment must be conducted, using the best available data, on what climate change is likely to entail for waterbodies and ultimately how this will effect hydrology and flood risk for this particular project. This will crossover with work undertaken by NuGen and therefore it is recommended that

Key Issue	Comment
	<p>contact should be sought with NuGen to share environmental and climate change information. Critical elements of the proposed infrastructure are identified in the table below; however, without an agreed climate change adaptation strategy, the extent to which this matter affects the proposals has not been established (e.g. clarity is required on whether the effect is restricted to the tunnel portals and sub-stations or does it also impact on cable sealing end compounds and pylon positioning as well) (See Section 14.4 of this Chapter on Commentary on Policy & Legislation Context 14.4 and Section 14.5 Commentary on Study Area 14.5.</p> <ul style="list-style-type: none"> • Obvious concerns on this point are at the following locations: <ul style="list-style-type: none"> (i) Proposed Middleton 400Kv Substation Extension and Tunnel Head House; (ii) The Morecambe Bay Tunnel Island; (iii) Proposed Roosecote 400Kv Substation and Tunnel Head House; (iv) Proposed Stainburn 132Kv Substation Extension; (v) Works to existing Siddick 132Kv Substation; and (vi) Proposed Harker 400Kv Substation extension. • Pylon locations as identified taking into account item 2 (surface water flood routes) and 3 (geomorphological processes) below.
2. Failure to consider surface water flood routes as identified on the EA Surface Water Flood Maps	<p>The EA Surface Water Flood Maps have not been used in the assessment methodology and therefore the impact arising from the interface of the proposals with surface water flows has not been adequately taken into account throughout the project (with the exception of the section under Morecambe Bay). The distinction between the fluvial flood risks identified on the EA Flood Map for planning and surface water flood risk identified on the EA Surface Water Flood map can be arbitrary on many medium sized watercourses. As a result, a failure to consider surface water flood risks in the assessment means that over 50% of the water body crossings by number are omitted from the assessment (See Section 14.6 of this Chapter on Commentary on Study Area 14.6, Section 14.7 on Commentary on Existing Environment 14.7 and Section 14.14 on Design Mitigation 14.13.</p> <p>This impacts all parts of the project with the exception of the locations under Morecambe Bay.</p>
3. The impact of geomorphological processes (e.g. lateral migration of channels) on the location of key items of infrastructure at sensitive locations has not been assessed.	<p>The impact of geomorphological processes (e.g. lateral migration of channels) on the location of key items of infrastructure at sensitive locations has not been assessed. If such an assessment is undertaken it will provide evidence to demonstrate that either mitigation measures are not required, or if required, are available. Additionally, this will provide the detail to ensure that the proposed infrastructure is resilient or that any future interventions to maintain that standard of resilience can be undertaken without adverse environmental impacts. However, it should be borne in mind that artificially controlling watercourses is, in principle, contrary to the basic principles of the Water Framework</p>

Key Issue	Comment
	<p>Directive (WFD) and should be avoided by design. The review of the geomorphological processes associated with water should take due account of the required climate change adaption strategy (see item 1 above) and the presence of surface water flood routes (see item 2 above) (see section 14.11 of this Chapter on Assessment Methodology 14.10).</p> <ul style="list-style-type: none"> • The following locations (based on assessment restricted to use of the EA Flood Map for Planning) for this have been identified: <ul style="list-style-type: none"> (i) Sub Section A1: 2 pylons (HM-01-229 and HM-01-228) within the Flood Zone 3 area associated with the River Ehen. (ii) Sub Section B1: Whitehaven to Stainburn/Seaton: 1 pylon (HM-01-186) in close proximity to the River Keekle. 1 pylon (HM-01-152) within the Flood Zone 3 area associated with the River Derwent. (iii) Sub Section C1: Aspatria to Wigton: Pylons (HM-01-85) and (HM-01-80) are within the Flood Zone 3 areas associated with Langrigg Beck and Crummock Beck. Similarly, pylon (HM-01-73) is in the Flood Zone 3 area associated with the River Waver and in close proximity to the channel. It is noted that (HM-01-72) and (HM-01-71), whilst within the Flood Zone 3 area of the River Waver are a substantial distance from the present river channel unless as a result of climate change adaptation and geomorphological processes this situation is compromised. (iv) Sub Section C2: Wigton to Harker Sub Station, Carlisle: It is proposed to locate pylons (HM-01-54) and (HM-01-51) within or adjacent to the Flood Zone 3 areas associated with the River Wampool and Pow Beck. Similarly, pylon (HM-01-17) is in the Flood Zone 3 area associated with the River Eden and in close proximity to the channel. It is noted that (HM-01-18), (HM-01-15), (HM-01-13) and (HM-01-12), whilst within the Flood Zone 3 area of the River Eden are a substantial distance from the present river channel. However, no information has been provided about the hydro-geomorphological status of the watercourses; there is therefore an (unassessed) risk that future lateral migration of the channels will result in a need to intervene and artificially constrain movement of the watercourse channel to protect the pylon foundations thereby impacting on WFD objectives for the river. • In addition the above listing needs to take account of risks arising from surface water flood routes as identified on the EA surface water flood maps; • Further addition to the above listing may arise if the required climate change adaptation strategy identifies that fluvial, and surface water flood events in excess of the present day 1 in 1000 year (0.1% AEP) is a relevant consideration.
4. Uncertainty over the deliverability of the proposed design due to the absence of	<p>At sensitive locations (that should take account of items 1 – 3 above) there is uncertainty over the deliverability of the proposed design due to the absence of supporting intrusive geotechnical data.</p>

Key Issue	Comment
supporting intrusive geotechnical data;	This concern has potential impacts throughout the project. However in particular this matter is a concern in relation to the crossing of rivers and watercourses by HDD and where pylons are potentially at risk due to geomorphological processes where taking account of the required climate adaptation strategy (See Section 14.3 of this Chapter on Project Context - 14.3, Section 14.4 Commentary on Policy & Legislative Context -14.4, Section 14.6 Commentary on Study Area - 14.6, Section 14.7 Commentary on Existing Environment - 14.7 and Section 14.21 Key Issues/ Gaps Requiring Further Assessment 14.20 .

14.3 Project Context

- 14.3.1 This section of the report covers Chapter 14 'Hydrology and Flood Risk' of the provided by the National Grid; it does not directly cover Hydrogeology (Ch 15) or Marine Physical Processes (Ch 19), although there are clear interfaces. For instance coastal flood risks are considered in this review, whereas the impacts on marine physical processes of the proposed works in Morecambe Bay are not. In addition, given the significant dependence of the proposed 'undergrounded' sections and those structures in proximity to watercourses on the actual local ground conditions there are specific interfaces with Ch 16 'Geology and Soils'.
- 14.3.2 The National Grid North NWCC project, in common with most Nationally Significant Infrastructure Projects is of a linear nature and therefore will involve numerous crossings of rivers, watercourses and overland flow, or surface water, routes. For all Ordinary Watercourses which are to be affected, either temporarily or permanently by the works, Ordinary Watercourse Flood Defence will be required. In addition it includes crossings of tidal waters and Morecambe Bay itself. However, in the case of the NWCC the vast majority of the crossings involve overhead cables mounted on pylons either side of the water bodies to be crossed. In a number of locations to avoid the visual intrusion associated with pylons it is proposed by National Grid in their PEI to cross under water bodies in conjunction with lengths of cabling to be 'undergrounded'. One aspect of this to take forward will be to assess the hydrological impacts in terms of groundwater movements and flood risk that undergrounding will have.
- 14.3.3 Given the above, considering the nature of the project in its entirety, hydrological issues (impacts on water quantity and water quality) are likely to be the most significant overall environmental impact. There is a high chance that the works, if not designed and managed properly, will have a significant impact on water quality and quantity. This can be through sediment runoff from works sites, the water crossings themselves and machinery fuel spillages etc. This needs to be assessed fully.
- 14.3.4 However, the proximity of pylons to rivers, the complexities of tunnelling beneath water bodies and the impacts of supporting vehicular access arrangements both during construction and as permanent infrastructure to permit maintenance, all have the potential to adversely impact on hydrology. Furthermore, nationally important infrastructure and in particular power distribution systems, must be highly resilient to flood risks. This is so that

any key vulnerabilities (such as sub-stations, tunnel entries and other intrinsic weaknesses) can be robustly positioned and designed to ensure that the project as a whole delivers the resilience that justifies the wider environmental impacts associated with its implementation.

- 14.3.5 This Technical Response considers all of the above headline issues with specific comments following the sectional division of the project as set out in the NWCC PEI.

14.4 Commentary on Policy and Legislative Context

- 14.4.1 EN -1 (Overarching National Policy Statement for Energy) sets out how hydrological issues in respect of flood risk should be dealt with in Section 5.7 and matters of water quality in section 5.15. EN-1 Section 5.7 requires preparation of a Flood risk Assessment (FRA) the details of which are specified in sections 5.7.4 to 5.7.8. Water Quality issues should be dealt with within the Environmental Statement. Section 4.8 of EN-1 covers Climate Change Adaptation and in particular paragraph 4.8.5 requires that *'new energy infrastructure will typically be a long term investment and will need to remain operational over many decades, in the face of a changing climate. Consequently, applicants must consider the impacts of climate change when planning the location, design , build, operation and, where appropriate, decommissioning of new energy infrastructure'*. Such assessment should take account of UK Climate Projections. However the Infrastructure Planning Commission (IPC) will need to be satisfied that features critical to the operation of the infrastructure which may be 'seriously affected' by more radical changes to the climate beyond that projected in the latest set of UK climate projections are designed to ensure the operation of the infrastructure over its estimated lifetime (paragraph 4.8.8).
- 14.4.2 Additional guidance is provided in EN-5 (National Policy Statement for Electricity Networks) and in particular in Section 2.4 which covers climate change adaptation as applied to networks.
- 14.4.3 Ensuring the resilience of the infrastructure in the face of climate change threats is a necessary part of the PEI and is of particular relevance to Hydrology and Flood Risk as:
- Any failure of the infrastructure may result in environmental harm that should the scheme fail to deliver its intended level of resilience; and,
 - secondly, the consequences of a failure, or an identified emerging threat of failure, are likely to result in new actions. Despite being necessary under the threat of a major loss of infrastructure these may have a wide range of adverse environmental impacts themselves, including damage to the water environment. , which could have been avoided by better design at the outset.
- 14.4.4 The policies set out in EN-1 and EN-5 are designed to ensure any project approved by the IPC does not unreasonably compromise compliance with the Water Framework Directive (WFD). Generally speaking, if the proposals do not compromise compliance with WFD

objectives, in most cases, other environmental objectives will also be achieved. However, in some specific circumstances associated with sensitive locations, further evidence to demonstrate this may be required.

- 14.4.5 In addition, national legislation contained in the Water Resources Act 1991 is relevant in respect of any proposed new structures 'in, over or under' 'a watercourse which is a main river' and requires submission of a consent to the EA (S109,110). The concern of sections 109 and 110 is to prevent works taking place which are 'likely to affect the flow of water in a watercourse or to impede any drainage work'. A similar restriction and consenting arrangement applies in relation to other watercourses by means of S23 of the Land Drainage Act (LDA) 1991. In respect of an ordinary watercourse, approval is required from the relevant Lead Local Flood Risk Authority. For the northern connection, this is Cumbria County Council (CCC), whereas for the southern connection, both CCC and Lancashire County Council (LCC) are affected. The LDA defines a watercourse as follows in S72: 'All rivers and streams and all ditches, drains, cuts, culverts, dikes, sluices, sewers (other than public sewers..) and passages through which water flows'.

14.5 Adequacy of Baseline and Data Sources

14.6 Commentary on Study Area

North Route

- 14.6.1 The proposed route broadly follows the path of existing pylon lines around the west coast of Cumbria. As the route runs between the Cumbrian Mountains and the coastline, it crosses a series of rivers emanating from the mountains. To the north, there is a significant coastal plain between the Solway Firth and the foothills of the Cumbrian Mountains.
- 14.6.2 The proposed route is generally sufficiently elevated for coastal flooding issues not to be a concern, the only exception being the crossings of the Rivers Eden (Carlisle) and Derwent (Workington). However, the route does cross numerous main rivers, ordinary watercourses and overland flow routes. Therefore, fluvial flooding and surface water flooding need due consideration as do the potential impacts of geomorphological changes to the watercourses over the lifetime of the proposed infrastructure. This will be assessed within the consenting processes for main rivers and Ordinary Watercourses.
- 14.6.3 In assessing flood risk, reliance has been placed on the Environment Agency Flood Map for Planning. The EA Flood Map for Planning does not take into account climate change as required by EN 1 sections 4.8.4 to 4.8.8. Information on the impacts of climate change on fluvial flows and coastal flooding as required by sections 4.8.4 to 4.8.8 therefore, may well not be properly available. This is an important consideration for the critical elements of the infrastructure such as sub stations, tunnel portals and any other items of similar criticality.
- 14.6.4 The Environment Agency Flood Map for Planning which forms the basis for the assessment

of Hydrology and Flood Risk also does not include flood risk data in respect of smaller watercourses and surface water flows. However, information on such flows is available on the EA Surface Water Flood Maps. The linear nature of the project means that consideration of the impacts of the much greater number of crossings through surface water flood routes has been omitted in the assessment, although awareness of this matter is shown in the PEI.

- 14.6.5 It is highly likely that water quality impacts of the proposals will propagate upstream without careful planning and management. As a result, potential areas of concern from a water quality perspective lie between the watercourse crossings and the coastline.
- 14.6.6 The following additional documents are relevant considerations as these will contain information in respect of local flooding problems:
- Local Planning Authority Strategic Flood Risk Assessments (SFRA);
 - The Cumbria County Council Local Flood Risk Strategy; and,
 - Any reports prepared under S19 of the Flood and Water Management Act 2010 by the Risk Management Authorities along the route of the works.

South Route

- 14.6.7 From a hydrological perspective the southern connection runs a total of 83 kilometres (km) from Moorside near Sellafield to Heysham. The proposed route broadly follows the path of existing pylon lines around the west coast of Cumbria. The route runs between the Cumbrian Mountains and the coastline and it crosses a series of rivers emanating from the mountains. The section from Drigg to Whicham Beck (23km) is to be 'undergrounded'. The route continues around the Duddon Estuary and southwards to Barrow running down the centre of the Furness Peninsula. It then passes in a tunnel (22 km) under Morecambe Bay emerging at Heysham. Other than the access points, and proposals to deal with the tunnel spoil, the tunnel itself is not considered in this report.
- 14.6.8 The proposed route falls within the zone where coastal flooding issues need to be considered around the Esk and Duddon Estuaries and at the tunnel portals at either side of Morecambe Bay. However, the route does cross numerous main rivers, ordinary watercourses and overland flow routes emanating from the Cumbrian Mountains. At the estuaries and Heysham, flood risks are a combination of coastal and fluvial issues. At the crossing of water bodies due consideration is required as to the potential impacts of geomorphological changes to the watercourses over the lifetime of the proposed infrastructure. This will be assessed within the consenting processes for main rivers and Ordinary Watercourses.
- 14.6.9 In assessing flood risk, reliance has been placed on the Environment Agency Flood Map for Planning. The EA Flood Map for Planning does not take into account climate change as required by EN 1 sections 4.8.4 to 4.8.8. Information on the impacts of climate change on fluvial flows and coastal flooding as required by sections 4.8.4 to 4.8.8 may well not be available. This is an important consideration for the critical elements of the infrastructure such as sub stations, tunnel portals and any other items of similar criticality.

- 14.6.10 The Environment Agency Flood Map for Planning, which forms the basis for the assessment of Hydrology and Flood Risk, also does not include flood risk data in respect of smaller watercourses and surface water flows. However, information on such flows is available on the EA Surface Water Flood Maps. The linear nature of the project means that consideration of the impacts of the much greater number of crossings through surface water flood routes has been omitted in the assessment, although awareness of this matter is shown in the PEI.
- 14.6.11 It is highly unlikely that water quality impacts of the proposals will propagate upstream. As a result, potential areas of concern from a water quality perspective lie between the watercourse crossings and the coastline.
- 14.6.12 The following additional documents are relevant considerations as these will contain information in respect of local flooding problems:
- Local Planning Authority Strategic Flood Risk Assessments (SFRA);
 - The Cumbria County Council Local Flood Risk Strategy;
 - The Lancashire County Council Local Flood Risk Strategy; and
 - Any reports prepared under S19 of the Flood and Water Management Act 2010 by the Risk Management Authorities along the route of the works.

14.7 Commentary on Existing Environment

Statutory and non-designated sites

- 14.7.1 The plans provided in the PEI Volume 2.6 Figures include a lot of useful detail in respect of flood zones, River Basin Management Plan sub-catchments, water quality designations, abstractions, and sites dependent on fresh surface water.
- 14.7.2 However, whilst appreciating there maybe technical problems in reproducing the data from the EA surface water flood maps, the absence of this data is a shortfall, as a significant risk that will arise from the project is the impact of the proposed infrastructure (especially access roads) on surface water flows.

Section by section description (North Route)

Sub Section A1: Moorside to Thornhill:

- 14.7.3 From a flood risk perspective it is noted that it is proposed to locate 2 pylons (HM-01-229 and HM-01-228) within the Flood Zone 3 area associated with the River Ehen. No information is provided about the hydro-geomorphological status of this watercourse; there is an unassessed risk that future lateral migration of the channel will result in a need to intervene and artificially constrain movement of the watercourse channel to protect the pylons thereby impacting on WFD objectives for the river.
- 14.7.4 The absence of a review of overland surface water flood routes results in the assessment not

giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.

Sub Section A2: Thornhill to Whitehaven

- 14.7.5 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.

Sub Section B1: Whitehaven to Stainburn/Seaton

- 14.7.6 It is noted that it is proposed to locate 1 pylon (HM-01-186) in close proximity to the River Keekle. A review of the EA Surface Water Flood map identifies that this location is in a zone at risk of flooding.
- 14.7.7 There needs to be a review of overland surface water flood routes as otherwise the assessment does not give suitable consideration to potential impacts of interfaces for all works.
- 14.7.8 From a flood risk perspective it is noted that it is proposed to locate 1 pylon (HM-01-152) within the Flood Zone 3 area associated with the River Derwent. No information is provided about the hydro-geomorphological status of this watercourse; there is an un-assessed risk that future lateral migration of the channel will result in a need to intervene and artificially constrain movement of the watercourse channel to protect the pylon thereby impacting on WFD objectives for the river.

Sub Section B2: Seaton to Tallentire

- 14.7.9 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.
- 14.7.10 Works are proposed to the existing Siddick 132 kV sub-station which is alongside an ordinary watercourse and the flood risk to this facility is not assessed. Given the assumed criticality of the installation, the assessment should consider the climate change scenarios as required by EN 1 sections 4.8.4 to 4.8.8.

Sub Section B3: Tallentire to Aspatria

- 14.7.11 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.

Sub Section C1: Aspatria to Wigton

14.7.12 From a flood risk perspective it is noted that it is proposed to locate pylons (HM-01-85) and (HM-01-80) within the Flood Zone 3 areas associated with Langrigg Beck and Crummock Beck. Similarly, pylon (HM-01-73) is in the Flood Zone 3 area associated with the River Waver and in close proximity to the channel. It is noted that pylons (HM-01-72) and (HM-01-71), whilst within the Flood Zone 3 area of the River Waver are a substantial distance from the present river channel. However, no information has been provided about the hydro-geomorphological status of the watercourses. There is therefore an un-assessed risk that future lateral migration of the channels will result in a need to intervene and artificially constrain movement of the watercourse channel to protect the pylon thereby impacting on WFD objectives for the river.

14.7.13 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.

Sub Section C2: Wigton to Harker Sub Station, Carlisle

14.7.14 From a flood risk perspective it is noted that it is proposed to locate pylons (HM-01-54) and (HM-01-51) within or adjacent to the Flood Zone 3 areas associated with the River Wampool and Pow Beck. Similarly, pylon (HM-01-17) is in the Flood Zone 3 area associated with the River Eden and in close proximity to the channel. It is noted that (HM-01-18), (HM-01-15), (HM-01-13) and (HM-01-12), whilst within the Flood Zone 3 area of the River Eden are a substantial distance from the present river channel. However, no information has been provided about the hydro-geomorphological status of the watercourses; there is therefore an unassessed risk that future lateral migration of the channels will result in a need to intervene and artificially constrain movement of the watercourse channel to protect the pylon foundations thereby impacting on WFD objectives for the river.

14.7.15 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works. The proposed helicopter compound near Cargo is located on land liable to flooding, and this will impact on its use and availability affecting the time scale for construction works should this method be employed.

14.7.16 Works are proposed for the proposed Harker 400kV sub-station which is in proximity to an area of flood zone 2 and 3. Given the criticality of the installation the assessment should consider the climate change scenarios as required by EN 1 sections 4.8.4 to 4.8.8.

Section by section description (South Route)

Sub Section D1: Moorside to Waberthwaite:

14.7.17 From a flood risk perspective, it is noted that it is proposed to locate pylon (MR-01-7) within

the Flood Zone 3 area associated with the River Calder. No information is provided about the hydro-geomorphological status of this watercourse; there is an un-assessed risk that future lateral migration of the channel will result in a need to intervene and artificially constrain movement of the watercourse channel to protect the pylons thereby impacting on WFD objectives for the river.

- 14.7.18 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.
- 14.7.19 It is proposed to 'underground' the route from a point just to the north of Drigg. It will therefore be necessary to cross under the Rivers Irt, Mite and Esk and their associated flood plains which are of significant width. Currently, exact locations for drive pits to undertake horizontal directional drilling (HDD) have not been established nor the depth at which the cables are to be installed. However, to establish the feasibility of the proposals it is necessary to understand the geomorphology of the flood plains and how the river might change over the lifetime of the infrastructure as this will inform the required vertical and horizontal line of the crossings.
- 14.7.20 In addition, without detailed geotechnical data from the crossing location the practicality of the proposals is not demonstrated. Challenging geotechnical conditions could result in compromises to the design or significant re-location thereby invalidating the PEI information.

Sub Section D2: Waberthwaite to Silecroft

- 14.7.21 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.
- 14.7.22 Throughout this section the cables would be laid 'underground' and it will therefore be necessary to cross under Eskmeals Pool, the River Annas and Whicham Beck. Currently exact locations for drive pits to undertake horizontal directional drilling (HDD) have not been established nor the depth at which the cables are to be installed. However, to establish the feasibility of the proposals it is necessary to understand the geomorphology of the flood plains and how the river might change over the lifetime of the infrastructure as this will inform the required vertical and horizontal line of the crossings.
- 14.7.23 In addition, without detailed geotechnical data from the crossing location the practicality of the proposals is not demonstrated. Challenging geotechnical conditions could result in compromises to the design or significant re-location thereby invalidating the PEI information.

Sub Section E1: Silecroft to Arnaby

- 14.7.24 It is noted that it is proposed to locate a cable sealing end compound in close proximity to Flood Zone 3. Given the assumed criticality of the installation the assessment should

consider the climate change scenarios as required by EN 1 sections 4.8.4 to 4.8.8.

- 14.7.25 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.
- 14.7.26 From a flood risk perspective it is noted that it is proposed to locate pylons alongside Whicham Beck. No information is provided about the hydro-geomorphological status of the watercourse and there is therefore an unassessed risk that future morphological changes will result in a need to intervene to protect the pylons thereby impacting on WFD objectives.

Sub Section E2: Arnaby to Lindal in Furness

- 14.7.27 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.
- 14.7.28 From a flood risk perspective, it is noted that it is proposed to locate pylons around the Duddon Estuary within the Flood Zone 3 area. No information is provided about the hydro-geomorphology of the estuary and there is therefore an un-assessed risk that future morphological changes will result in a need to intervene to protect the pylons thereby impacting on WFD objectives for the water bodies concerned.

Sub Section H1: Lindall in Furness to MHWM at Morecambe Bay

- 14.7.29 The absence of a review of overland surface water flood routes results in the assessment not giving due consideration to potential impacts of interfaces in respect of construction works and all permanent works.
- 14.7.30 The MHWM at Morecambe Bay is in proximity to an area of flood zone 2 and 3. Given the criticality of the installation the assessment should consider the climate change scenarios as required by EN 1 sections 4.8.4 to 4.8.8.

Sub Section H2: Morecambe Bay

- 14.7.31 The tunnel access point is at risk of coastal flooding. Given the criticality of the installation, the assessment should consider the climate change scenarios as required by EN 1 sections 4.8.4 to 4.8.8.

MHWM at Morecambe Bay to Middleton Sub Station

- 14.7.32 The proposed sub-station extension and tunnel head house are in proximity to an area of flood zone 2 and 3. Given the criticality of the installation, the assessment should consider the climate change scenarios as required by EN 1 sections 4.8.4 to 4.8.8.

14.7.33 Commentary on Factors influencing Future Baseline

14.7.34 Matters of flood risk and water quality arising from the construction, operation and de-commissioning of the proposals are generally adequately covered.

14.7.35 However, significant oversights are noted in the following three areas:

- The EA Surface Water Flood Maps have not been used in the assessment methodology and therefore the impact arising from the interface of the proposals with surface water flows has not been adequately taken into account. It should be noted, that in many cases the distinction between the fluvial flood risk identified on the EA flood map for planning (which has been taken into account) and surface water flood risk (as identified on the EA Surface Water Flood Map) is not well defined and in terms of impact on receptors, arbitrary. Whilst mitigation measures are identified that are considered to represent a generally satisfactory approach, the lack of location specific identification could presents a risk to the wider positioning of the infrastructure which could have knock on effects.
- EN 1 (and paragraphs 4.8.4 to 4.8.8 in particular) requires climate change adaptation to be considered. As climate change will significantly impact on hydrology and flood risk, this is a matter that should be covered in the PEI and in particular in relation to the most critical elements of the infrastructure such as sub stations and tunnel entries. The climate change scenarios which should be considered involve fluvial and coastal model scenarios that may not be currently available but should be considered.
- The vulnerability of a significant number of pylon locations to the impact of geomorphological change in the rivers adjacent to the proposed structures has not been adequately assessed. Section 14.6.1 of the PEI identifies three broad receptor types, these being (a) aquatic environment receptors (b) water resources receptors and (c) people, property and infrastructure at risk of flooding. Whilst it is unlikely that rapid erosional effects will result in the collapse of a pylon (which would have dramatic significant impacts for receptors (a), (b) and (c)), more likely, emergency interventions will be necessary to protect the pylons which of itself will nonetheless have the potential to impact negatively on receptors (a) and (b).

14.8 Commentary on Consultation Activity and Data

14.8.1 No comment at this stage

14.9 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

14.10 Assessment Methodology

14.10.1 A standardised methodology has been used for each section, which is the correct approach.

However, this does mean that if there is a high level omission, then this omission is systemic. In view of the above, this report does not review the application of the methodology to each individual section of the route.

14.10.2 The methodological approach utilises existing data in respect of coastal, fluvial and surface water flood risks held by the Environment Agency and shown on the published EA Flood Map for Planning.

14.10.3 However, the assessment should also consider the following:

- (i) Modelling to examine the resilience of the proposals in the light of climate change adaptation as required by EN 1 4.8.4 to 4.8.8. The climate change scenarios to be considered should be agreed with the EA. This is limited to items of critical infrastructure such as sub-stations and tunnel entries and similar;
- (ii) The EA Surface Water Flood Maps should be considered in the PEI assessment and at the detailed design stage of the project specific modelling of ordinary watercourses and overland flood routes is likely to be required where watercourse and flood routes are impacted either by the construction works or the permanent works.
- (iii) Any re-assessment of Flood Zones following the December 2015 floods arising from the current EA modelling programme;
- (iv) If it is proposed to stockpile materials or undertake re-shaping of land (either permanent or temporary) within Flood Zones 2 and 3 or in areas of identified surface water flood risk then this should be modelled to assess the impacts and identify if mitigation is possible.

14.10.4 Attention is required to the impacts of geomorphological processes (such as lateral migration of river channels) which needs to consider the design life of the infrastructure;

14.10.5 The design and route selection appears to be based on 'desk top' studies. At critical locations, (e.g. HDD crossing locations and pylons positions close to river crossings) intrusive geotechnical data is required.

14.10.6 Lancashire County Council's Flood Risk Management requirements are met by the adopted assessment methodology.

14.11 Application of Methodology

14.11.1 The methodological approach adopted is generally applied consistently. However, as noted above, it is concluded that the methodology has omitted a number of important matters as set out above.



14.12 Commentary on Proposed Mitigation

14.13 Design Mitigation

- 14.13.1 The design has been driven largely by the proximity of the proposals to existing infrastructure and the need for connections to this.
- 14.13.2 However, it is considered that within the overall route corridor, the positioning of pylons at a number of key locations requires review in respect of future limits of river and watercourse lateral migrations. This review should not be restricted to watercourses identified by areas of Flood Zone 3 and 2, but also all surface water flood routes as identified on the EA Surface Water Flood Maps.
- 14.13.3 As the climate change scenarios as required by EN 1 paragraphs 4.8.4 to 4.8.8 have not been examined in respect of critical elements of the proposals, the need for, and the development of, design mitigations has not taken place.
- 14.13.4 Lancashire County Council's Flood Risk Management requirements at this stage of the development are met by the proposed design mitigation proposals.

14.14 Good Practice Mitigation

- 14.14.1 Sections in the PEI setting out good practice mitigation are generally comprehensive and cover how the work can be constructed to minimise impacts on hydrology and flood risk.
- 14.14.2 A lack of information in respect of ground conditions, however, results in doubt as to wherever the mitigations proposed will necessarily be appropriate to the ground conditions that will actually be encountered.

14.15 Bespoke Mitigation

- 14.15.1 It is likely, that bespoke mitigation will be possible to cover matters that will arise from consideration of the items identified at section 14.11.2/14.11.3 above 14.10.2. However, until the assessment is undertaken, this cannot be demonstrated.
- 14.15.2 Lancashire County Council and Cumbria County Council will require site-specific Flood Risk Appraisals in due course for all ground level and above-ground construction within Lancaster including temporary installations. These will identify the required Land Drainage / Ordinary Watercourse Flood Defence Consents sufficiently early in the process in order that they can be pursued without delay to the construction programme.



14.16 Other Effects

14.17 Commentary on Residual Effects

14.17.1 No comment at this stage.

14.18 Commentary on Approach to Inter-Relationship Effects

14.18.1 The absence of intrusive geotechnical data on critical pylon positions adjacent to river crossings means that locations may prove unviable (especially if lateral migration is taken into account). Any movement of pylons or routing will have complex interfaces with other discipline areas.

14.19 Commentary on Cumulative effects

14.19.1 No Comment at this stage.

14.20 Key issues/Gaps Requiring Further Assessment

14.20.1 Significant oversights are noted in the following three areas:

- The EA Surface Water Flood Maps have not been used in the assessment methodology and therefore the impact arising from the interface of the proposals with surface water flows has not been adequately taken into account.
- EN 1 (and paragraphs 4.8.4 to 4.8.8 in particular) requires climate change adaptation to be considered. As climate change will significantly impact on hydrology and flood risk, this is a matter that should be covered in the PEI and in particular in relation to the most critical elements of the infrastructure such as sub stations and tunnel entries. The climate change scenarios which should be considered involve fluvial and coastal model scenarios that may not be currently available but should be considered. The climate change scenarios to be considered should be agreed with the EA. It is expected that this assessment is only required for items that are highly critical infrastructure elements such as sub-stations and tunnel entries.
- The vulnerability of a significant number of pylon locations and HDD crossings to the impact of geomorphological change in the rivers adjacent to the proposed structures has not been adequately assessed. Section 14.6.1 of the PEI identifies three broad receptor types, these being (a) aquatic environment receptors (b) water resources receptors and (c) people, property and infrastructure at risk of flooding. Whilst it is unlikely that rapid erosional effects will result in the collapse of a pylon [which would have dramatic significant impacts for receptors (a), (b) and (c)], more likely, emergency interventions will be necessary to protect



the pylons which of itself will nonetheless have the potential to impact on negatively on receptors (a) and (b). To address this matter, a geomorphological assessment at the key locations identified is required to allow the above matter to be addressed.

- 14.20.2 In addition intrusive geotechnical data seems likely to be required to demonstrate the viability of HDD crossing locations and key pylon positions, especially in the vicinity of the larger river crossings.
- 14.20.3 It must also be acknowledged at an appropriate juncture that various other consents will be required in due course before works in the public highway can take place, including street works permits and structures approval.
- 14.20.4 It is not clear whether a search for private water supplies has been undertaken for the Natland Substation area.

15.0 Hydrogeology

15.0.1 This section summarises the key issues identified in the review of the Hydrogeology data (groundwater quantity and quality) and assessments presented as part of the PEI. These key issues have been identified following a review of the following reports:

- Volume 2.2 Introduction and Methodology; and,
- Volume 2.4 and 2.5, Chapter 15 Hydrogeology.

15.1 Hydrogeology Key Issues

15.1.1 Key issues are those elements of the PEI which are considered to result in inaccurate and unreliable assessments of the effects of the NWCC on the hydrogeological environment. These are summarised below and detailed further in Table 15.1.

Table 15:1 Hydrogeology Key Issues

Key Issue	Supporting Evidence
1. Groundwater Abstractions	Failure to consider the risk to all groundwater abstractions. Further evaluation of the risk to groundwater abstractions is considered necessary as the information provided within the PEI does not always appear consistent with the information presented on accompanying figures / drawings. Missing areas are highlighted in the section by section discussion for both the north and south routes below.
2. Environmental Measures (mitigation)	Absence of detail on environmental measures (mitigation) being relied on to mitigate the risks to the hydrogeological environment. It is necessary that full details on what environmental measures (mitigation) is being relied on will be presented clearly as part of the ES on Hydrogeology.

15.2 Overall Context Description

15.2.1 This report covers Chapter 15 'Hydrogeology' of the Preliminary Environmental Information (PEI) provided by the National Grid; it does not directly cover Hydrology (Ch 14) or Marine Physical Processes (Ch 19), although there are clear interfaces. For example impacts on groundwater interactions are considered, but the Chapter does not consider the effects of crossing beneath water bodies or consider the impacts on marine physical processes of the proposed works in Morecambe Bay. In addition, given the significant dependence of the proposed 'undergrounded' sections and the likely interaction with groundwater and the local ground conditions there are strong interfaces with Ch 16 'Geology and Soils'.

Chapter 15 – Hydrogeology

- 15.2.2 The NWCC project is of a linear nature and therefore will involve some excavation works, disturbance of soils / sub-soils, rock, interaction with shallow (superficial deposits) or deep (bedrock) groundwater, which has the potential to impact groundwater levels and or quality. The project also includes works in or beneath Morecambe Bay. It is noted that the vast majority of the NWCC works will involve the installation of overhead cables mounted on pylons and will not require significant earthworks or groundwater control measures. In a number of locations to avoid the visual intrusion associated with pylons it is proposed by National Grid in their PEI to trench some cables underground and beneath (cross under) water bodies in conjunction with lengths of cabling to be 'undergrounded'.
- 15.2.3 Given the above, and considering the nature of the project in its entirety, hydrogeological issues are unlikely to be the most significant overall environmental impacts.
- 15.2.4 Overall the assessments on hydrogeology are clear and concise and the reports offer direction to where relevant information is provided within the PEI. The reader is signposted to Chapter 4, Proposed Development and Chapter 3, Project Need and Alternatives, Volume 2.2 to gain a full understanding of the proposed development.
- 13.23.4 Sufficient detail has been provided as part of the PEI on Hydrogeology at this stage and adequate consultation completed to permit an evaluation of the likely significant impacts on the hydrogeological environment associated with the proposed development.
- 13.23.5 The mitigation measures put forward are reasonable and proportionate to the predicted impact.

15.3 Commentary on Policy and Legislative Context

- 15.3.1 We agree with the findings of National Grid's PEI on Policy and legislation.
- 15.3.2 We would highlight that guidance document reference 5, detailed at Section 15.2.8 was withdrawn by the Environment Agency 14 December 2015. This comment carries over to references 15.10 – 15.13 (Section 15.8 of Volume 2.2 Introduction and Methodology, Chapter 15 Hydrogeology).

15.4 Adequacy of Baseline and Data Sources

15.5 Commentary on Study Area

North and South Route

- 15.5.1 The study area has been presented on appropriate Figures as part of the Hydrogeological Assessment.

Chapter 15 – Hydrogeology

- 15.5.2 The extent of the study area used is in line with the methodology proposed in Volume 2.2 Introduction and Methodology, Chapter 15 Hydrogeology and is considered appropriate.
- 15.5.3 In reference to 'Data Sources', Table 15.2 states that data in respect of Private groundwater abstractions has been provided by: "*White Young Green on behalf of Local Authorities in Cumbria*". However, the data was provided by the local authorities and collated by WYG.
- 15.5.4 It is not clear where the PPA Group can access the shaft design drawings which form the basis for the design parameters used in the shaft dewatering / inflow calculations and clarity is required on this (an example of the reference provided for the shaft design drawings is: "UNPS, 2016a. Middleton shaft general arrangement, Drawing Number PDD-21637-TUN-707").

15.6 Commentary on Existing Environment

Statutory and non-designated sites (North and South Routes)

- 15.6.1 There are no groundwater statutory designated sites affected by the proposed development.
- 15.6.2 Non-statutory designations such as aquifer classification, source protection zones etc are adequately described and considered as part of National Grid's PEI.
- 13.23.6 Non-statutory designations such Groundwater Dependent Terrestrial Ecosystems (GWDTEs) have been assessed as part of the PEI. It is expected that these will be assessed further as part of the Environmental Statement, as suggested in Section 15.8.17, Volume 2.4 Chapter 15. A summary of the baseline condition of GWDTEs across each sub-section (D1, D2, E1, E2, H1, H2 and H3) is summarised in Table 15A.15 Appendix 15A, Chapter 15 Hydrogeology, Volume 2.7.
- 15.6.3 The baseline assessment provides a discussion on the aquifers present, baseline groundwater and quantity and flow, groundwater quality, groundwater abstractions, groundwater discharges, groundwater interactions, land affected by contamination and factors affecting future baseline across each sub-section A1, A2, B1, B2, B3, C1, C2 (Northern Area), D1, D2, E1, E2, H1, H2 and H3 (Southern Area).
- 15.6.4 Overall the PPA Group agree with the description of the baseline hydrogeology of National Grid's PEI, described in each Volumes 2.4 and 2.5, with respective Chapters 15 on Hydrogeology. It is not clear however, whether a search for private water supplies has been undertaken.



15.7 Commentary on Factors influencing Future Baseline

15.8 Commentary on Consultation Activity and Data

15.8.1 Consultations have been completed with prescribed and non-prescribed consultees. The prescribed consultees (as listed in Schedule 1 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (APFP Regulations) include all relevant statutory bodies. Non-prescribed consultees include stakeholders, local groups, expert institutions or other government agencies that have been invited to engage with the Project via the Stakeholder Reference Group (SRG).

15.8.2 A summary of the approach taken is detailed in Volume 2.2 Introduction and Methodology, Chapter 15 Hydrogeology.

15.8.3 Details of the consultee comments which have been raised through discussion and subsequent written correspondence is provided in Table 14.1 of the Scoping Report. The table details how comments are being addressed as part of the Environmental Statement.

15.9 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

15.10 Assessment Methodology

15.10.1 There is no EIA specific methodology for completing an assessment of the risk to the hydrogeological environment. The methodology applied is robust and in line with best practice.

15.11 Application of Methodology (*potential effects*)

15.11.1 The potential significant effects associated with the proposed development fall into two general categories –

- Potential effects on groundwater levels and flows; and
- potential effects on groundwater quality.

15.11.2 Superficial deposits which have been classified as “*Unproductive Strata*” or “*Secondary Undifferentiated Aquifers*” are considered to be at low risk from the proposed construction activities and have subsequently been scoped out of the risk assessment.

15.11.3 All bedrock aquifers have been included in the risk assessment.

15.11.4 Chapter 4 Proposed Development Volume 2.2 has been referenced in order to consider the potential risks posed on the groundwater environment during the construction works.



Section by section description (North Route)

- 15.11.5 A potential significant effect that could affect the United Utilities Ltd. groundwater abstractions would be due to the use and storage of fuels during construction, refurbishment or decommissioning works, which would have the potential to affect groundwater quality if leaks or spills were to occur within the SPZ.
- 15.11.6 Under Sub-section C1, Figure 15.1.12, entitled Bedrock Geology Sub-sections B3-Tallentire to Aspatria, C1-Aspatria to Wigton and C2-Wigton to Harker Sub-station, Carlisle a licensed groundwater abstraction labelled "*Borehole @ Greenrigg Farm, Waverton*" is shown within the DOL boundary. No assessment of the risk to this abstraction appears to have been completed for the supply, over and above the risk assessment presented in Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects Table 15B.2, Potential Effects Assessment for Subsections A1 to C2. This concludes that the risk to all groundwater abstractions is expected to be minor to negligible; with the exception of Public Water Supplies which are located to areas which will involve the storage of fuel. In such cases the effects are considered moderate (significant).
- 15.11.7 Under Sub-section C2, Figure 15.1.15, entitled Bedrock Geology Sub-sections C2- Wigton to Harker Sub-station, Carlisle 1No. Private Water Supply and 1No. licensed groundwater abstraction labelled "*Cargo Farm*" and "*Borehole @ Hespin Wood, Todhills, Carlisle*", are both shown within the DOL boundary. Despite this, no assessment of the risk to these two abstractions appears to have been completed, over and above the risk assessment presented in Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects Table 15B.2, Potential Effects Assessment for Subsections A1 to C2. Again this also concludes that the risk to all groundwater abstractions is expected to be minor to negligible; with the exception of Public Water Supplies which are located near to areas which will involve the storage of fuel. In such cases the effects are considered moderate (significant).
- 15.11.8 Therefore, the terms used to describe groundwater abstractions (licensed abstractions and Private Water Supplies) on the accompanying bedrock and hydrogeology figures appear inconsistent with those descriptions used in Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects. Clarification required as to whether all boreholes within the DOL have been assessed on their own merits rather than the generic approach adopted in Volume 2.7 Appendix 15B.

Section by section description (South Route)

- 15.11.9 Under Sub-section D1, Figure 15.1.17, entitled Bedrock Geology Sub-sections D1-Moorside to Waberthwaite and D2 – Waberthwaite to Silecroft, a de-regulated private water supply labelled "*PW/000000407*" is presented within the study area. This abstraction appears to be absent from Table 15B.3 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects). Therefore, no assessment of the risk to this abstraction appears to have been completed over and above the risk assessment presented on Table 15B.4 - Potential Effects Assessment for Subsections D1 to E2 (Appendix Volume 2.7 Appendix 15B,

Hydrogeology Assessment of Potential Effects). Given that the additional abstraction identified is close to the boundary of the study area and subsequently set back from the works, it is considered that the risks posed by the works to this abstraction are no greater than the risks posed to the abstractions which have been identified. However consideration of the risks to all abstractions should be considered as part of the full Environmental Statement.

- 15.11.10 Under Sub-section D2, Figure 15.1.19, entitled Bedrock Geology Sub-sections D2-Waberthwaite to Silecroft and E1 – Silecroft to Arnaby, a number of de-regulated private water supplies labelled "PW/000000076, PW/000000181, PW/000000182, and PW/000000072" are presented within the study area, but have not been included on Table 15B.3 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects). Therefore, no assessment of the risk to this abstraction appears to have been completed over and above the risk assessment presented on Table 15B.4 - Potential Effects Assessment for Subsections D1 to E2 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects). Given that the additional abstractions identified are close to the boundary of the study area and subsequently set back from the works, it is considered that the risks posed by the works to the additional abstractions identified are no greater than the risks posed to the abstractions identified. Consideration of the risks to all abstractions should be considered as part of the full Environmental Statement.
- 15.11.11 Under Sub-section E1, Figure 15.1.20, entitled Bedrock Geology Sub-sections D2-Waberthwaite to Silecroft and E1 – Silecroft to Arnaby, a single de-regulated private water supply labelled "PW/000000080" is presented within the study area, and has also been included on Table 15B.3 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects). Therefore, the risk to this abstraction appears to have been completed and is presented on Table 15B.4 - Potential Effects Assessment for Subsections D1 to E2 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects).
- 15.11.12 Under Sub-section E2, Figure 15.1.21, entitled Bedrock Geology Sub-sections E1-Silecroft to Arnaby and E2 –Arnaby to Lindall in Furness, and Figure 15.1.22, entitled Bedrock Geology Sub-sections E2- Arnaby to Lindall in Furness and H1 – Lindall in Furness to Mean High Water Mark at Morecambe Bay presents identified licensed abstractions and private water supplies within the study area. Upon review, the abstractions presented on the bedrock geology maps are not consistent with information presented in text on Table 15.9, entitled Groundwater Abstractions in the Study Area". A breakdown of issues/inconsistencies identified is provided below.
- 15.11.13 Five abstractions do not have an Abstraction License Number, and as a result, they are not clearly identifiable on Figures 15.1.21 and 15.1.22. In order to identify the abstractions, the reader is required to cross reference the location text on Table 15.9 in the report text. These abstractions have been included on Table 15B.3 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects). Therefore, the risk to these abstractions has been assessed. It is noted that the abstraction identified at Longlands Caravan Park is located outside the study area, and can subsequently be removed from the assessment.

15.11.14 The following 10 abstractions have been identified in text on Table 15.9, but not included on Figure 15.1.22 – *SL/AFW000476*, *SL/AFW000477*, *SL/AFW000478*, *SL/AFW000479*, *SL/AFW000480*, *SL/AFW000481*, *SL/AFW000482*, *SL/AFW000483*, *SL/AFW000575*, *SL/AFW000576*. These abstractions have been included on Table 15B.3 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects) therefore, the risk to these abstractions has been assessed.

15.11.15 The following 3No. abstractions have been identified on Figure 15.1.21, but not presented in text on Table 15.9:

- *PW/000000071 (Private Water Supply)* – located 1.12km north of pylon MR-01-113;
- *Unnamed Private Water Supply* – located 0.42km north east of pylon MR-01-133; and,
- *Licensed Abstraction* – located 0.18km south west of pylon MR-01-133.

15.11.16 These additional abstractions have not been included on Table 15B.3 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects). Therefore, no assessment of the risk to these abstractions appears to have been completed over and above the risk assessment presented on Table 15B.4- Potential Effects Assessment for Subsections D1 to E2 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects).

15.11.17 It is accepted that the risks posed to the additional private water supplies identified are unlikely to be greater than the risks posed to the abstractions already identified. However, the risks posed to the mapped licensed abstraction must be assessed given it is located 0.18km south west of pylon MR-01-133.

15.11.18 Under Subsection H1, Figure 15.1.23, entitled Bedrock Geology Subsection H1 - Lindall in Furness to Mean High Water Mark at Morecambe Bay, presents no private water supplies or licensed abstraction, which is inconsistent with the text in Table 15.12 which presents two licensed abstractions (Abstraction License Nos. 2673720006 and 2674815003). These abstractions appear to have been included in text on Table 15B.5 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects). Therefore, an assessment of the risks to these abstractions appears to have been completed on the assessment presented on Table 15B.6 - Potential Effects Assessment for Subsections H1 to H3 (Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects).

15.11.19 Under Subsection H2, Figure 15.1.25, entitled Bedrock Geology Subsection H2 - Morecambe Bay presents no private water supplies or licensed abstraction. This is consistent with paragraph 15.6.12 of the PEI report (Volume 2.5, Chapter 15).

15.11.20 Under Subsection H3, Figure 15.1.26, entitled Bedrock Geology Subsection H2 - Morecambe Bay and H3 - MHW at Morecambe Bay to Middleton Substation, presents no private water supplies or licensed abstraction. This is consistent with paragraph 15.7.24 of the PEI report (Volume 2.5, Chapter 15).

15.11.21 The terms used to describe groundwater abstractions (licensed abstractions and Private Water Supplies) on the accompanying bedrock and hydrogeology figures appear inconsistent

with those descriptions used in Appendix Volume 2.7 Appendix 15B, Hydrogeology Assessment of Potential Effects. Clarification is required as to whether all boreholes within the DOL have been assessed on their own merits rather than the generic approach adopted in Volume 2.7 Appendix 15B.

15.11.22 It is assumed that risks to licensed and un-licensed groundwater abstractions will be considered further as part of the full Environmental Statement Chapter on Hydrogeology.

15.12 Commentary on Proposed Mitigation

15.13 Design Mitigation

15.13.1 The Potential Effects Assessment for Subsections A1 to C2 conclude that the magnitude of effects during the construction, operation, and decommissioning phases have been assessed as negligible to low, and the probability of those effects have been assessed as very low to low. As a result, no design mitigation has been proposed.

15.13.2 The Potential Effects Assessment for Subsections D1 to E2 is presented on Table 15B.4 (Appendix Volume 2.7 Appendix 15B). The magnitude of effects during the construction, operation, and decommissioning phases have been assessed as negligible to low, and the probability of those effects have been assessed as very low to low. As a result, no design mitigation has been proposed.

15.13.3 The Potential Effects Assessment for Subsections H1 to H3 is presented on Table 15B.6 (Appendix Volume 2.7 Appendix 15B). The magnitude of some effects during the construction, operational, and decommissioning phases have been assessed and are generally negligible to low, and the probability of those effects have been assessed as very low to low. As a result, no design mitigation has been proposed for these effects. However, a number of effects have been assessed as being significant and these are presented on Table 15B.6 and discussed in text in section 15.10.2. A summary of mitigation measures proposed for the significant effects is presented below:

- Where there is a risk that prolonged dewatering of shafts could lower local groundwater levels, groundwater level and pumping rates will be monitored to ensure that the range presented in the environmental permit is adhered to; and,
- where there is a risk that prolonged dewatering of shafts could cause the saline water/fresh water interface to move inland; this potential effect will require the monitoring of pumped water quality during the dewatering with particular reference to electrical conductivity. This risk should be assessed further and consideration should be given to installing groundwater monitoring points.

15.14 Good Practice Mitigation

15.14.1 To prevent the entry of hydrocarbons into the United Utilities Ltd. water supplies in subsection C1, it is proposed that activities associated with the use of fuel such as fuel storage

and refuelling of construction machinery should not take place within the catchment of the potable groundwater supply (SPZs 1-3).

15.14.2 Further to this, groundwater monitoring would be proposed at either the United Utilities boreholes, or a newly drilled borehole between the DOL and the United Utilities boreholes, or a combination thereof. Monitoring would be undertaken during construction and decommissioning phases to detect any hydrocarbons from plant activities at working areas, bellmouths and access tracks.

15.14.3 It is considered that continuous monitoring during the operation of the Project would not be required, except during periods of repair or refurbishment activities.

15.14.4 Reference to the implementation of the environmental measures is made when discussing how potential effects will be managed. There appears to be no detail on what these environmental measures might include.

15.14.5 No good practice mitigation is proposed for the Southern Area D1-H3.

15.15 Bespoke Mitigation

15.15.1 No bespoke mitigation is proposed as part of the proposed development.

15.15.2 It is likely, that bespoke mitigation will be possible to cover any significant effects that are identified as part of the Environmental Statement. However, until the assessment is undertaken, this cannot be demonstrated.

15.16 Other Effects

15.17 Commentary on Residual Effects

15.17.1 The assessment shows that there are no residual significant effects anticipated to affect the superficial or bedrock aquifers within the Northern Area (A1-C2).

15.17.2 The assessment has identified a potential significant effect in sub-section C1 that could affect the United Utilities Ltd. groundwater abstractions which is used for potable water supply; however following the implementation of proposed mitigation measures the residual effects on the SPZ would be a negligible (not significant) level of effect (adjusted for probability).

15.17.3 The PEI states that there is uncertainty at this preliminary stage about the potential effects and the need for mitigation. Numerical modelling will be undertaken and reported in the ES in order to more fully represent the hydrogeological complexity of the Morecombe Bay area and will result in a better evaluation the potential effects of dewatering upon water resources and hydrochemistry of the aquifers. The ground investigations will provide data for

model construction and combined with the numerical modelling will further inform groundwater control options and verify mitigation options.

- 15.17.4 The assessment shows that there are no residual significant effects anticipated in Subsections D1-E2 and at the 132kV Natland Substation extension; however there appears to be some reliance on the implementation of the environmental measures, details of which appear to be absent.
- 15.17.5 Following the mitigation of the significant and potential but non-significant effects in Subsections H1, H2 and H3 there is the potential that minor (not significant) residual baseline groundwater quality effects remain following prolonged dewatering (e.g. the potential for slight saline intrusion resulting in the aquifer containing higher salinity groundwater than prior to dewatering).
- 15.17.6 The long-term operation of the shafts and tunnels would result in a potential minor (not significant) residual effect on groundwater levels and flows. This effect is likely to be localised and be reversed within a relatively short distance of the shaft/tunnel structures.

15.18 Commentary on Approach to Inter-Relationship Effects

- 15.18.1 No consideration of the inter-relationship effects appears to have been completed at this stage. It is assumed that this will be covered as part of the ES Chapter.

15.19 Commentary on Cumulative effects

- 15.19.1 No consideration of the cumulative effects appears to have been completed at this stage.

15.20 Key issues/Gaps Requiring Further Assessment

- 15.20.1 The PEI on hydrogeology has been presented in a robust and clear manner and is in line with what would be expected as part of a PEI on Hydrogeology.
- 15.20.2 Further evaluation of the risk to groundwater abstractions is considered necessary as the information provided within the PEI does not always appear consistent with the information presented on accompanying figures / drawings.
- 15.20.3 It is necessary that full details on environmental measures (mitigation) being relied on are presented clearly as part of the ES on Hydrogeology.

15.21 Commentary on Potential Effects Not Requiring Further Assessment (*Screened out*)

- 15.21.1 The following summarises the four main potential effects during the construction phase that the assessment have deemed as not requiring further assessment: 1) dewatering, 2) reduced infiltration, 3) groundwater damming / alteration of groundwater flow and 4) groundwater quality impacts.
- 15.21.2 Dewatering associated with the installation of pylon foundations, infrastructure foundations or undergrounding of 132kV cables is expected to be required and the effects are expected to be localised, temporary and the volume of groundwater required to be removed is likely to be inconsequentially small in comparison to the volume of groundwater in the aquifer. A calculation of the likely radius of influence (ROI) for pylon dewatering (see section 15.6.5, Volume 2.2) was undertaken as part of this Potential Effects assessment, which estimated an ROI of approximately 100m (see section 15.6.7, Volume 2.2). Based on this ROI for pylons, there is only one location in the Study Area (in Subsection A1) where the ROIs of proposed 400kV pylons overlap (an overlap of 14m for the ROIs of pylons HM-01-232 and HM-01-233).
- 15.21.3 Therefore, with the exception of this overlap instance, dewatering of pylons is assessed to comprise a discrete effect around each pylon. Effects from dewatering would also be naturally reversed in the short-term by surface recharge such as rainfall and artificial recharge from abstracted groundwater (following treatment) on the down-gradient side. Furthermore, the assessment carried out for each subsection has identified that in most cases the water table will be deeper than the lowest construction depth, rendering dewatering unnecessary.
- 15.21.4 The effect of reduced infiltration where there are low permeability ground surfaces such as access tracks, bellmouths, compounds and substations would be negligible as recharge to the underlying aquifers would still occur at the outer edges of low permeability ground surfaces, supporting flow down-gradient to the coast and surrounding rivers. The aquifers would also receive groundwater flow from surrounding permeable aquifers, thereby further mitigating the effect.
- 15.21.5 If foundations do intercept groundwater (e.g. if deeper foundations are used), then the cross sectional area of these structures relative to the regionally extensive aquifer would be inconsequentially small. Any shallow groundwater flows that are impeded by the presence of foundations would become naturally diverted around such obstacles only to be re-established on the down-gradient side.
- 15.21.6 If in the unlikely event that contaminants do reach the groundwater this would be a localised 'one-off' incident (point source) and it is unlikely to have a measurable effect on the groundwater chemical quality within the groundwater body. Environmental measures would be in place to prevent contaminants entering the groundwater. Further consideration has also been given to the presence of receptors such as boreholes / water wells etc being used

for water supply in proximity to the development. With the exception of the United Utilities groundwater abstractions in sub-section C1, no other receptors have been identified as part of the baseline assessment.

- 15.21.7 The assessment shows that the majority of activities undertaken over the lifetime of the Project would have a negligible level of effect (unadjusted for probability) and negligible (not significant) level of effect (adjusted for probability) on the superficial aquifers, bedrock aquifers and the groundwater abstractions. Table 15B.4 in Appendix 15B, Volume 2.7 contains the full hydrogeological assessment and is further supported by details in relation to the construction, operation and demolition of the Project in Chapter 15 Hydrogeology.
- 15.21.8 The PPA Group are satisfied with the author's conclusion that the activities listed do not require further assessment based on the rationale presented in the PEI as a reasonable approach. Equally, the potential effects during the operation phase are unlikely to result in any interaction between proposed project infrastructure and groundwater. Potential effects during the decommissioning phase are expected to be similar to that of the construction phase.

15.22 Summary Comments

- 15.22.1 The need to adopt groundwater control measures during the construction of the tunnel and particularly dewatering to facilitate tunnel shaft construction represents the most significant activity with respect to the groundwater environment.
- 15.22.2 The PEI assessment shows that there are no significant effects anticipated to the superficial or bedrock aquifers in sub-section A1, A2, B1, B2, B3, C1, C2, D1-E2 or the Natland Substation extension.
- 15.22.3 Without mitigation the assessment has identified a potential significant effect on groundwater quality that could affect the United Utilities Ltd. groundwater abstractions which is used for potable water supply (Table 15B.2 in Appendix 15B, Volume 2.7).
- 15.22.4 With mitigation and environmental measures in place, the probability of occurrence is reduced to low resulting in a negligible (not significant) level of effect.
- 15.22.5 Mitigation is expected to include groundwater monitoring at either the United Utilities boreholes, or a newly drilled borehole between the DOL and the United Utilities boreholes, or a combination thereof. It is suggested that *"monitoring would be undertaken during construction and decommissioning phases to detect any hydrocarbons from plant activities at working areas, bellmouths and access tracks. Continuous monitoring during the operation of the Project would not be required, except during periods of repair or refurbishment activities"*. The mitigation proposed is considered reasonable based on the information available at this stage.



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- 15.22.6 Significant and potential but non-significant effects have been predicted in Subsections H1, H2 and H3 associated with the potential for slight saline intrusion resulting in the aquifer containing higher salinity groundwater prior to dewatering and those effects remaining following prolonged dewatering. However following mitigation the effects reduce to minor (not significant).
- 15.22.7 The PEI concludes that long-term operation of the shafts and tunnels would result in a potential minor (not significant) residual effect on groundwater levels and flows. This effect is likely to be localised and be reversed within a relatively short distance of the shaft/tunnel structures.

16 Geology and Soils

16.0.1 This section summarises the key issues identified in the Geology and Soils data and assessments presented as part of the PEI. These key issues have been identified following a review of the following reports:

- Volume 2.2 Introduction and Methodology; and,
- Volume 2.4 and 2.5, Chapter 16 Geology and Soils.

16.1 Geology and Soils Key issues

16.1.1 Key issues are those elements of the PEI which are considered to result in inaccurate and unreliable assessments of the effects of the NWCC on the geological and soil environment. These are summarised below and detailed further in Table 16.1.

Table 16:1 Geology and Soil Key issues

Key Issue	Supporting Evidence
1. Historic contamination needs identifying on plans.	It would be useful and clearer to reference the specific figure on which these can be identified and presented.
2. Extent of study area.	The assessment needs to be clarified to its spatial extent and confirming what features are present and should subsequently be considered, see paragraph 16.6.4 below.

16.2 Overall Context Description

16.2.1 This report covers Chapter 16 'Geology and Soils' of the Preliminary Environmental Information (PEI) provided by the National Grid; it does not directly cover Hydrogeology' (Ch15), Hydrology (Ch 14) or Marine Physical Processes (Ch 19), although there are clear interfaces. For example impacts on the geological and soil environment are assessed in the context of land contamination, ground stability, geo-conservation, agricultural land quality and mineral protection. This chapter considers the potential for impacts to the ground but does not address how impacts (such as contamination) will be addressed when in the ground. In addition, given the significant inter-dependence of the proposed 'undergrounded' sections and the likely interaction with groundwater and the local ground conditions there are strong interfaces with Ch 15 'Hydrogeology'.

16.2.2 The introduction is clear and concise and offers direction to where relevant information is provided within the PEI. The reader is signposted to Chapter 4 Proposed Development and Chapter 3 Project Need and Alternatives, Volume 2.2 to gain an understanding of the proposed development.

Chapter 16 – Geology and Soils

- 16.2.3 The NWCC project is of a linear nature and therefore will involve some excavation works, disturbance of soils / sub-soils, rock, interaction with shallow superficial deposits or deep bedrock. It therefore has the potential to impact groundwater land quality, the stability of the ground and overlying structures, and sterilise mineral reserves. It is noted that the vast majority of the NWCC works will involve the installation of overhead cables mounted on pylons and will not require significant earthworks or the use of contaminative substances. In a number of locations to avoid the visual intrusion associated with pylons it is proposed by National Grid in their PEI to trench some cables underground and beneath (cross under) water bodies in conjunction with lengths of cabling to be 'undergrounded'.
- 16.2.4 Given the above and considering the nature of the project in its entirety, geological and soil issues (impacts on soil and or rock quantity and quality) are unlikely to be the most significant overall environmental impacts.
- 16.2.5 Overall, the assessments on geology and soils are clear and concise and the reports offer direction to where relevant information is provided within the PEI. The reader is signposted to Chapter 4 Proposed Development and Chapter 3 Project Need and Alternatives, Volume 2.2 to gain a full understanding of the proposed development.
- 16.2.6 Sufficient detail has been provided as part of the PEI on geology and soils at this stage and adequate consultation completed to permit an evaluation of the likely significant impacts on the geological environment associated with the proposed development.
- 16.2.7 The mitigation measures put forward are reasonable and proportionate to the predicted impact.

16.3 Commentary on Policy and Legislative Context

- 16.3.1 The PEI on Geology and Soils does not appear to have a dedicated Section on Policy and legislation. There is expected to be some overlap with the Policy and Legislation listed in the hydrogeology chapter (Ch15). The methodology EIA Chapter provided (Volume 2.4 and 2.5 Chapter 5) only contains the cover sheet only therefore it has not been possible to comment on the Policy and Legislative Context of the PEI.

16.4 Adequacy of Baseline and Data Sources

16.5 Commentary on Study Area

North and South Route

- 16.5.1 Baseline data for the Geology and Soils PEI has been drawn from a wide variety of sources and has been further informed by field surveys. A full list of the data sources used was reviewed (Appendix 16C, Volume 2.7) and is considered suitable to inform the

baseline assessment. Most of the information has also been imported into GIS to assist in the assessment.

- 13.23.7 The study area has been presented on appropriate Figures presented as part of Chapter 16.

16.6 Commentary on Existing Environment

Statutory and non-designated sites (North and South Routes)

- 16.6.1 Identification of statutory and non-statutory designations has been achieved through a review of the citation records and original designation data. This has been obtained from Natural England's website (for Sites of Special Scientific Interest) and by consultation with Cumbria Biodiversity Data Centre and Lancashire County Council (for Regionally Important Geological and geomorphological Sites). This approach is considered reasonable.
- 16.6.2 Overall the PPA Group agree with the description of the baseline Geology and Soils of National Grid's PEI, described in Volume 2.4 and 2.5, Chapter 16 Geology and Soils.
- 16.6.3 Where specific historical potentially contaminative land uses are identified, it would be useful and clearer to reference the specific figure on which it is identified and presented.
- 16.6.4 The assessment would benefit from displaying the extent of the study area considered on the accompanying figures. This would assist with confirming what features are present within the study area and should subsequently be considered in the risk assessment.

16.7 Commentary on Factors influencing Future Baseline

- 16.7.1 Section 16.7, Chapter 16, Volume 2.2 provides a general assessment of how those conditions observed and recorded at the time of baseline environment data collection, could change during the construction and operation phases of the Project.
- 16.7.2 For Subsection A1, Section 16.2.24, Chapter 16 Geology and Soils, Volume 2.6, describes how the commencement of activities at the inactive, but permitted, Bankend Quarry could affect the future baseline in relation to minerals protection. However the precautionary approach taken is that the assessment assumes that any inactive sites could be re-opened, assigning them the same sensitivity as active sites and the PPA Group agree with this approach.

16.8 Commentary on Consultation Activity and Data

16.8.1 Consultations have been completed with prescribed and non-prescribed consultees. The prescribed consultees (as listed in Schedule 1 of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (APFP Regulations)) include all relevant statutory bodies. Non-prescribed consultees include stakeholders, local groups, expert institutions or other government agencies that have been invited to engage with the Project via the Stakeholder Reference Group (SRG).

13.23.8 A summary of the approach taken is detailed in Volume 2.2 Introduction and Methodology, Chapter 16 Geology and Soils.

16.8.2 Details of the consultee comments which have been raised through discussion and subsequent written correspondence are provided in Appendix 15A of the NWCC Scoping Report. The table details how comments are being addressed as part of the Environmental Statement.

16.9 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

16.9.1 This section considers the assessment methodology and the application of the methodology section by section of the route corridor – Sections A, B, C, D, E and H.

16.10 Assessment Methodology

16.10.1 There is no EIA specific methodology for completing an assessment of the risk to the geological environment. The methodology applied is robust and in line with best practice.

16.11 Application of Methodology (*potential effects*)

16.11.1 The potential significant effects associated with the proposed development fall into five general categories:

1. Potential effects on ground due to land contamination.
2. Potential effects on ground stability.
3. Potential effects on geo-conservation.
4. Potential effects on agricultural land quality.
5. Potential effects on mineral deposits.

Section by section description (Northern Route)

16.11.2 The only significant effect identified by the assessment in Subsections A1, A2 and B1, would be the potential damage to soil resources during the construction, operation and decommissioning phases of the Project.

Subsection A1, A2 and B1

- 16.11.3 Damage to buildings and harm to human health from the mobilisation of mine gas and subsequent ingress into existing buildings during all construction work that may intersect abandoned coal mine workings and mine entries.
- 16.11.4 Harm to human health, and damage to undeveloped land and the project infrastructure associated with the potential risk of peat slides during the construction, operation maintenance and decommissioning phase.
- 16.11.5 Potential damage to soil resources, during the construction, operation and decommissioning phases of the Project.
- 16.11.6 The only significant effect identified by the assessment in Subsections B2, would be the potential damage to buildings and harm to human health from the mobilisation of mine gas and subsequent ingress into existing buildings during all construction work that may intersect abandoned coal mine workings and mine entries.

Subsection B3

- 16.11.7 Adverse health effects on construction workers and adjacent site users caused by exposure to contaminants in soil, dust or vapours arising from the access tracks crossing Whinbarrow Lane landfill. This effect would also have the potential to occur during the operational and decommissioning phases.
- 16.11.8 Damage to buildings and harm to human health from the mobilisation of mine gas and subsequent ingress into existing buildings during all construction work that may intersect abandoned coal mine workings, historical shallow mine workings, mine entries, or within opencast backfill.
- 16.11.9 Potential damage to soil resources, during the construction, operation and decommissioning phases of the Project.

Subsection C1

- 16.11.10 Harm to human health (including site workers), and damage to undeveloped land and the project infrastructure associated with the potential risk of peat slides during the construction, operation maintenance and decommissioning phase.
- 16.11.11 Potential damage to soil resources, during the construction, operation and decommissioning phases of the Project.

Subsection C2

16.11.12 Potential damage to soil resources, during the construction, operational and decommissioning phases of the Project.

16.11.13 Potential human health effects from land contamination in proximity to pylon HM-O1-21 and permanent 132kV underground cable works c.650m south west of Grinsdale (former tar distillery and bone manure works) and pylon HM-O1-16 (former sewage works) have been identified. These effects would also have the potential to occur during the operation and decommissioning phases.

16.11.14 The former RAF Carlisle 14 Maintenance Unit (MU) site partially overlaps the DOL, in the location of the proposed Kingsmoor Business Park and Kingsmoor Park Heathlands Estate compound sites (to the north west of Carlisle). Potential human health effects from land contamination would also be potentially significant at the proposed Kingsmoor Business Park and KPHE compound sites (construction phase only, as these compounds would only be present during that phase).

Section by section description (Southern Route)

Subsection D1

16.11.15 Harm to human health, and/or damage to Project infrastructure or adjoining property, associated with the potential risk of peat slope failure at Brownbank Moss during the construction, operation, or decommissioning of the project.

16.11.16 Damage to soil resources, in particular BMV agricultural land, the erosion-prone Newport 1 soils and peat (Brownbank Moss), during the construction, operation, or decommissioning of the project.

16.11.17 The potentially significant effects to Subsection D1 include damage to soil resources, in particular BMV agricultural land, the erosion-prone Newport 1 soils and peat (Silecroft Beck), during the construction, operation, or decommissioning of the project.

Subsection E1

16.11.18 Harm to human health from the mobilisation of radon and mine gas and subsequent ingress into existing buildings during construction work that could intersect abandoned workings associated with the former Whicham Iron Ore Mine.

16.11.19 Harm to human health and damage to undeveloped land and the Project infrastructure (MR-01-104) associated with the potential risk of peat slides and peat deposits at Blea Moss during the construction phase.

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16.11.20 Harm to human health or damage to adjoining property of Project infrastructure resulting from the collapse of shallow mine workings or mine entries during construction work that could intersect abandoned workings associated with the former Whicham Iron Ore Mine.

16.11.21 Damage to soil resources, in particular BMV agricultural land, the erosion-prone Newport 1 soils and peat (Blea Moss), during the construction, operation, or decommissioning of the project.

Subsection E2

16.11.22 Harm to human health from the mobilisation of radon and mine gas and subsequent ingress into existing buildings during construction work that could intersect abandoned iron ore workings and mine entries.

16.11.23 Harm to human health and damage to undeveloped land and the Project infrastructure (MR-01-109, MR-01-110, MR-01-111, MR-01-112) associated with the potential risk of peat slides and peat deposits at Arnaby Moss and Shaw Moss during the construction, operational, and decommissioning phase.

16.11.24 Harm to human health or damage to adjoining property of Project infrastructure resulting from the collapse of shallow mine workings or mine entries during construction phase.

16.11.25 Damage to soil resources, in particular BMV agricultural land, the erosion-prone Newport 1 soils and peat (Arnaby Moss/Shaw Moss), during the construction, operation, or decommissioning of the project.

Subsection H1

16.11.26 Harm to the health of construction workers or adjacent site users associated with the construction and use (during the construction phase) of the proposed compound at the 400kV Roosecote tunnel head/substation site, with particular reference to the mobilisation of asbestos.

16.11.27 Damage to buildings and harm to human health as a result of unexploded ordnance (UXO) strikes during the construction of the Project.

16.11.28 Harm to human health from the mobilisation of radon and mine gas and subsequent ingress into existing buildings during all construction work that may intersect abandoned iron ore workings and mine entries.

16.11.29 Harm to health, or damage to adjoining property, undeveloped land or Project infrastructure resulting from the collapse of abandoned iron ore workings or mine entries during the construction of the Project.

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16.11.30 Damage to soil resources during the construction, operational maintenance and decommissioning of the Project.

Subsection H2

16.11.31 Harm to human health as a result of unexploded ordnance (UXO) strikes during the construction of the Project.

Subsection H3

16.11.32 Damage to land quality resulting from the mobilisation of pre-existing contamination during the construction phase at the proposed Heysham (Penrod Way) temporary tunnel inspection shaft site.

16.11.33 Harm to the health of construction workers and adjacent land users (construction phase) as a result of exposure to contaminants in soil, dust and vapours during the construction phase at the proposed Heysham temporary shaft site.

16.11.34 Damage to soil resources (Effect AS2), particularly BMV agricultural land, during the construction, operational and decommissioning phases of the Project. Damage to peat at Heysham Moss (Effect AS2) during the construction of the Project.

16.12 Commentary on Proposed Mitigation

16.13 Design Mitigation

North and South Areas

13.23.9 Mitigation measures presented for each sub-section are satisfactory, noting:

- DNO works will take place in the former sewage works area which will involve minor ground disturbance. It is expected that the risk of exposing pre-existing contamination risks will be assessed further by completing a pre-construction ground investigation and environmental and occupational health and safety controls; and,
- mitigation in relation to the potential for effect LC1 to occur during the construction phase at Kingsmoor Business Park of KPHE compound sites will be subject to the detailed design of these compound sites. Suggested mitigation measures include, surface radiological surveys, ground investigations, risk assessments.

16.14 Good Practice Mitigation

16.14.1 Following the implementation of best practice mitigation, the Project is predicted to have



no significant effects on Geology and Soils in Subsections along the Southern Route.

16.15 Bespoke Mitigation

16.15.1 No bespoke mitigation is proposed.

16.15.2 It is likely, that bespoke mitigation will be possible to cover any significant effects that are identified as part of the Environmental Statement. However, until the assessment is undertaken, this is not adequately demonstrated.

16.16 Other Effects

16.17 Commentary on Residual Effects

16.17.1 The Project is predicted to have no significant residual effects on Geology and Soils in Sections A, B, C, D, E and H provided mitigation measures proposed are adopted.

16.18 Commentary on Approach to Inter-Relationship Effects

16.18.1 No consideration of the inter-relationship effects appears to have been completed at this stage.

16.19 Commentary on Cumulative effects

16.19.1 No consideration of the cumulative effects appears to have been completed at this stage.

16.20 Key issues/Gaps Requiring Further Assessment

16.20.1 The PEI for the Southern Area has been presented in a robust and clear manner and is in line with what would be expected as part of the ES Chapter on Geology and Soils.

16.20.2 The PPA Group have not identified any significant issues or concerns with the documentation presented.

16.21 Summary Comments

16.21.1 The PEI assessment shows that there are no significant residual effects anticipated to the geological or soil environment in sub-section A1, A2, B1, B2, B3, C1, C2, D1, D2, E1, E2 or in the area of the Natland Substation extension.

16.21.2 Where specific historical potentially contaminative land uses are identified, it would be



useful to reference the specific figure on which it is identified and presented.

- 16.21.3 The assessment would benefit from displaying the extent of the study area considered on the accompanying figures. This would assist with confirming what features are present within the study area and should subsequently be considered in the risk assessment.



17.0 Socio Economics, Recreation and Land Use

17.1 Overview

- 17.1.1 This chapter considers the socio-economic, recreation and tourism baseline data, methodology and assessment of likely effects set out within the National Grid's PEI Report for the NWCC.
- 17.1.2 The review has focused, in particular, on Chapter 17 (Socio-economics, Recreation and Land use) of the PEI Report, along with supporting information. Chapter 17 covers the potential effects of the Project in terms of the business supply chain, the labour market, the visitor economy, tourism and recreation assets, local facilities and services, land uses (such as farming and forestry) and future development land.
- 17.1.3 This section summarises the key issues identified in the review of the socio-economic, recreation and tourism data and assessments contained in the PEI, focusing on the local supply chain and labour market, visitor economy effects together with land-use/planning. The key issues presented below in Table 17.1, together with further additional detailed comments related to the PEI provided in Table 17.2, drawing on examples from the detailed commentary in Sections 2 to 3 below.

17.2 Socio-economics, Recreation and Land use Key Issues

Table 17.1: Socio Economics Recreation and Land Use Key Issues

Key Issue	Comment
Skills and Supply Chain	
1. There is an imbalance between the national benefits and the benefits to local communities.	Currently there is more harm than benefits to local communities. There will inevitably be impacts on the local economy and on local communities, both negative and positive, and National Grid has a duty to ensure the adverse impacts are properly identified in the PEI and appropriately mitigated (see section on Project Context 17.4.4 and Commentary on Existing Baseline 17.8.3 in this Chapter below).
2. The PPA Group does not consider that the current PEI Report provides sufficient detail to be able to assess the impacts and the associated mitigation measures. There is insufficient project specific detail	<p>The PPA Group is broadly supportive of the initial Employment and Skills Framework that has been included within the consultation material. However, the lack of detail around skills and supply chain initiatives and the specific interventions that will be delivered to meet the objectives in the initial Employment and Skills Framework means that the PPA Group is not satisfied that the impacts will be appropriately mitigated (see Section 17.15 on Commentary on Proposed Mitigation in this Chapter and 17.16.9).</p> <p>The baseline analysis of the business supply chain and labour</p>



Key Issue	Comment
provided to undertake an accurate assessment of local supply chain and labour market effects.	<p>market is not of sufficient detail to understand the scale of likely benefits and impacts to the local economy and to local residents. Key factors that will influence the socio-economic effects of the Project include demographic trends (such as working age population) and, particularly future labour market capacity and skills supply. Changes in these factors will affect the scale of benefits generated by the Project, as well as the ability to minimise the Project's adverse effects. It is considered that there is an over reliance in the PEI on evidence from past National Grid projects, particularly with regard to the visitor economy. It is essential that National Grid undertake further project specific analysis, including an integrated labour market and skills model. Robust and adequate information on the impact on the local economic activities, and especially the visitor economy (tourism) is needed. The information and evidence needed to understand the key risks and impacts on the visitor economy has not been provided in the PEI. Also, concern that the survey results of the intercept surveys undertaken during the summer of 2016, to test the response of users of long distance routes, are not included in the PEI.</p> <p>The failure to provide a sufficiently detailed analysis of local supply chain and labour market effects has also undermined the validity of National Grid's assessment of other effects, such as visitor accommodation supply and traffic and transport.</p> <p>Where possible mitigation should be such that it delivers a lasting legacy benefit.</p>
3. National Grid's commitment to secure 20% as a minimum of the workforce from the local labour supply is welcomed and there are aspirations for this to be higher.	In achieving this target, it will be important that National Grid does not cause disruption to local economic activity through displacement of employment and ensures that existing businesses are not put at a disadvantage in terms of recruiting and retaining staff. See sections 17.15.9 and 17.16.9 for more detail.
4. There will need to be a commitment from National Grid to invest in local skills development and supply chain capability development.	Additionally, as part of the package of measures, National Grid and their contractors should commit to target unemployed and economically inactive people in the area and the recruitment of apprentices to support local skills training and development in order to increase the size of the available labour force. These measures will help mitigate displacement impacts; however, they will require a funded programme of early, pre-construction intervention and support and a commitment from National Grid (and their contractors) to recruit from the pool of people that are supported. See sections 17.4.5, 17.15.9 and 17.16.9 for more detail.
5. The PPA Group is concerned that there is very limited detail on mitigation measures that will be required to address the impacts of	It is important that the Employment and Skills Framework and individual contracts negotiated with Tier 1 contractors are developed such that the appropriate mechanisms are in place to monitor and ensure compliance with targets relating to the employment of local people, development of local people's skills and appointment of local businesses.



Key Issue	Comment
the NWCC project, and therefore, few details of how the mitigation will be secured and monitored.	<p>Further development of supply-side measures is required, including how National Grid will work with local stakeholders to ensure that individuals/businesses are matched to suitable opportunities. It is important that National Grid make early intervention and investment in advance of the construction, commencing with the provision of:</p> <ul style="list-style-type: none"> • clear and early commitments to providing funding to support supply chain capability development programmes to enable local businesses to access procurement opportunities, working with the Local Enterprise Partnerships and other local partners, through the development and implementation of a supply chain strategy; • a detailed skills action plan to ensure that there is investment in skills training and development in advance of construction in order to facilitate employment and training of local people; • training programmes/facilities targeted at those that are currently locally unemployed or economically inactive; • early commitments to capital investment in training facilities to respond to gaps in provision; and, • a clear procurement strategy with specific, measurable and enforceable targets that capture the local benefit for Cumbrian businesses. <p>Further detailed comments are provided in paragraphs 17.15.5 to 17.15.8.</p>
Visitor Economy and Recreation	
6. The PPA Group challenges National Grid's baseline assessment that impacts of the proposals on the visitor economy of Cumbria will not be significant.	<p>The project poses a significant risk to the visitor economy, which is particularly significant to Cumbria's economy. The 42.9m visitors that come to Cumbria each year generate £2.6bn of visitor and tourism spend and 35,000 jobs (2015). In North Lancashire (Lancaster City Council area) the tourism economy is worth £416m alone (2014).</p> <p>National Grid do not distinguish between the visitor economies of Cumbria and those parts of North Lancashire in proximity to the route, despite these two areas not being part of the same tourism offer. This is indicative of a failure to recognise the unique nature of the county's visitor economy and the importance of visitor perception, as evidenced by the effects of the recent floods.</p> <p>The validity of National Grid's approach to assessing the effects on the visitor economy is fundamentally undermined by not sufficiently considering the impact of the Project on visitor experience and the principal reasons visitors come to Cumbria.</p> <p>See below, including paragraph 17.8.7 and 17.8.12.</p>



Key Issue	Comment
	<p>The PPA Group is concerned that the image/brand of Cumbria's landscape-based tourism offer may be damaged by the project, both during the substantial construction period and once completed focused on the west coast of Cumbria. As set out in section 17.7.4 the a key strategic aim for economic growth is to attract more visitors in places outside the main tourism areas, and especially along the coastal areas of south and west Cumbria as well as the north of the County.</p> <p>The lack of project-specific evidence to support this and the reliance on evidence from other projects and areas of the UK is also considered to be flawed. The PEI only considers physical impacts during construction and dismisses the long-term impact on visitors and the visitor economy once the project is in operation. This is a serious omission.</p> <p>Furthermore, traffic problems are already an important issue for the visitor economy, as evidenced by Cumbria Tourism's latest Tourism Business Performance Survey. National Grid's own research also highlights traffic disruption as one of the most commonly stated negative effects associated with its major infrastructure projects.</p>
7. The potential impact of the NWCC project on perceptions of Cumbria being a construction site, or an area dominated by electricity infrastructure, should not be underestimated.	<p>The potential for adverse effects arising from the NWCC impact on the local visitor economy will therefore have to be managed and mitigated. The impact of the closure of the Grasmere/Keswick A591 road in the Lake District following the December 2015 floods provides a stark demonstration of how a geographically specific impact can affect the whole of Cumbria's visitor image and visitor economy. The impacts were experienced across the County and were not restricted to businesses near to the closed road. The experience of the 2015 floods demonstrated that it was perceptions of Cumbria being closed for business that had the greatest impact (see paragraph 17.4.3, section Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusions 17.12, Section on Assessment Methodology 17.13, Application of Methodology 17.14 and Commentary on Proposed Mitigation 17.15).</p> <p>Sufficient project specific evidence has not been produced to support National Grid's assertion that the deterrence effect on visitors to the area will be negligible. Recognising the significant deficiencies in National Grid's approach, further consideration needs to be given to the use of undergrounding and other non-pylon technology, particularly where major visual and landscape effects have been identified.</p>
8. The PPA Group is concerned about National Grid's initial conclusions on the significance of the effect on visitor accommodation	<p>The Group suggests that these are not valid as there is a failure to consider the full range of impacts NWCC could place on the future potential of the visitor economy, particularly in key areas identified as drivers of tourism growth. Where there will likely be concentrations of workers, e.g. undergrounding in the LDNP.</p> <p>See 17.13.13 to 17.13.15 for further details.</p>



Key Issue	Comment
generated by the project workforce.	
9. The PPA Group considers it imperative to avoid landscape impacts that may jeopardise a favourable designation of the candidate English Lake District WHS.	<p>The continued attraction of the Frontiers of the Roman Empire World Heritage Site (WHS), the candidate English Lake District WHS and planned England Coast Path project are likely to increase visitor numbers, for whom the culture, landscape and access within it are key drivers for choosing Cumbria. The Government's nomination for WHS status (candidate English Lake District) is currently being assessed by UNESCO, who have expressed concern at the proposals and raised it as a significant risk to progressing the WHS proposals.</p> <p>See 17.5.5 below, and sections 8.12 (Landscape and Visual Impact) and 9.4 (Historic Environment).</p>
10. The PPA Group considers there is a significant risk that transport disruption (or the perception of) deters visitors during the construction period for the NWCC project.	<p>Congestion and poor connectivity between key visitor locations is as already having a negative impact on visitor experience and businesses. The sector is reliant on an already stretched road and rail network in the County, with the key visitor access roads to the west coast being particularly constrained. A recent survey identified traffic congestion as a concern for 1 in 5 tourism businesses. This is a key concern as road congestion, closures, and disruption to rail and the Public Rights of Way (PRoW) and cycle way network during construction has the potential to cause reputational damage. These impacts may be greatest within the LDNP, which combines the highest visitor numbers with constrained transport networks and NWCC proposals for cable undergrounding operations (see paragraph 17.4.3, section Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusions 17.12, Section on Assessment Methodology 17.13, Application of Methodology 17.14 and Commentary on Proposed Mitigation 17.15).</p>
11. The PPA Group considers that the multi-modal transport strategy would reduce the potential congestion and disturbance impacts on visitors using the transport networks and PRoWs, including cycle ways, compared to the road-based strategy.	<p>The PPA Group considers that the multi-modal transport strategy would reduce impacts on the visitor economy from direct impacts, although not necessarily impacts on the visitor image/brand of the County (see paragraph 17.22.43).</p> <p>The transport and visitor economy impact assessments within the PEI do not identify potential congestion and disturbance impacts on visitors from the transport strategy, or consider the differing level of impact on the visitor economy between the different transport strategies. The assessment in the Environmental Statement must address such impacts.</p>
12. The PEI fails to adequately address the risks and impacts to visitors' experiences and enjoyment of the	<p>The PEI fails to adequately consider and assess the risks and impacts to visitors' experiences and enjoyment of the varied landscapes of Cumbria from use of the PRoW network. This is of concern across the route in particular the Solway Coast AONB, National Park and Duddon Estuary.</p>



Key Issue	Comment
varied landscapes of Cumbria from use of the PRoW network.	<p>In addition, the statutory purpose for National Parks, set out in the Environment Act 1995, includes promoting opportunities for the understanding and enjoyment of the special qualities of national parks by the public. The PPA Group are concerned that the PEI fails to address the risks and impacts of visitors being able to experience the special qualities of the National Park.</p> <p>The focus of the PEI assessment is on physical impacts from the construction stage of the NWCC project on the PRoW network. While this is generally welcomed, it fails to consider the long-term visitor experience impacts and the knock-on effects this may have on the visitor economy. In particular within the Lake District National Park, the construction impact of the underground technology and the longer term impacts of pylons and other related electricity infrastructure within its setting need to be properly considered (see Section in this Chapter on PRoWs - 17.13.30 and Section 11.13 in the Traffic and Transport Chapter 10).</p>
13. The PEI fails to adequately assess the negative sequential and cumulative visual impacts on visitors travelling along the road network close to the NWCC proposals viewing the proposed pylons and infrastructure.	<p>There are extensive PRoWs and cycle routes along the route of the project which are of national significance. A large proportion of visitors and residents are drawn to these areas to enjoy recreational activities following these long distance routes. They are a key element of Cumbria's visitor offer. The alignment of the proposals suggests that there is likely to be extensive cumulative disruption to cycle route and PRoWs, particularly during the construction period. These impacts will need to be appropriately addressed and appropriate mitigation put in place in consultation with local communities to avoid the disruption and severance of key routes to allow their continued use and enjoyment as a tourist asset during construction and operation of the project. This is particularly important to limit any adverse impact on the visitor economy, and also provides the opportunity for National Grid to mitigate any impacts by delivering a longer term legacy of an enhanced cycle route and PRoW network see Section in this Chapter on PRoWs - 17.13.30 and Section 11.13 in the Traffic and Transport Chapter 10).</p>
14. The PEI fails to consider the long-term visitor experience impacts and the knock-on effects this may have on the visitor economy.	<p>The focus of the PEI assessment has been on physical impacts from the construction stage of the NWCC project on the PRoW network. Whilst this is welcomed, in particular within the Lake District National Park and Solway Coast AONB the construction impact of the underground technology and the longer term impacts of pylons and other related electricity infrastructure within its setting need to be properly considered (See paragraphs 17.8.13, Section 17.15 and paragraph 17.15.10).</p>
15. There is a lack of appropriate mitigation for impacts to the visitor economy.	<p>The PPA Group considers that mitigation of impacts affecting visitors and the visitor economy are essential. Key impacts that require mitigation include:</p> <ul style="list-style-type: none"> • impacts on Cumbria's visitor image/brand;



Key Issue	Comment
	<ul style="list-style-type: none"> • possible adverse impacts on the accommodation resulting from the concentration of construction workers; • disruption to road and rail transport networks; and, • disruption to public access. <p>Full and effective reinstatement of PRow and cycle ways is essential and should be central to the proposed Access Management Plans. Restoration should seek to both restore and where possible improve access provision, with enhancement being part of the legacy of the project. Opportunities to achieve this should be considered as part of the Access Management Plan, for example, consideration of re-use of haul road material for access improvement as part of post construction reinstatement works.</p> <p>The visitor economy in Cumbria includes a large proportion of small businesses, many of which are still recovering from the effects of the floods and are susceptible to further economic pressures. There is also no appropriate mitigation, such as support for small and medium sized businesses in the visitor economy and marketing and promotional activities.</p> <p>The PPA Group considers that appropriate mitigation, such as support for small and medium sized businesses in the visitor economy and marketing and promotional activities are required to counter the disruption caused during the construction period and the negative perception driven by the adverse impact of NWCC on the landscape which attracts visitors.</p> <p>Recognising this context, the provision of a resilience fund is required to support those businesses adversely affected by the Project.</p> <p>It is essential that a multi-modal transport strategy is developed to minimise the effects of the proposals on the visitor economy.</p> <p>Mitigation should also address impacts affecting visitors' experience and access in North Lancashire and Cumbria's landscapes, such as the safe management of traffic on minor roads, and the impact of worker accommodation demand on holiday accommodation supply.</p> <p>The Local Liaison Plans proposed by National Grid are not wide enough in scope to counter the potentially significant adverse impact the Project could have on perceptions of Cumbria and North Lancashire as a visitor destination. A broader Communications Plan is required, targeted at ensuring people know the county is still 'open for business'.</p> <p>See Sections 17.11, 17.13, 17.15, and 17.16.</p>



Key Issue	Comment
Employment Land and Local Plan Allocations	
16. The proposals so far fail to support the development potential of a number of key strategic employment sites along the route, and there is concern over potential adverse effects on a number of land allocations identified in adopted and emerging Local Plans	<p>Further clarification is necessary over a number of key employment and housing land allocation/sites across the length of the route to determine the likely effects of the proposed pylons and lines on the future development and deliverability of these sites. The PPA Group requires more detail to understand the programmes for construction, to be able to assess the impacts on the sites. These include in particular:</p> <ul style="list-style-type: none"> • Kingmoor Business Park (LEP Enterprise Zone); • Lillyhall Industrial Estate; • Hensingham Common; • Whitehaven Commercial Park; and, • the future long term growth opportunities for Whitehaven along the route of the Eastern Relief Road. <ul style="list-style-type: none"> • Derwent Forest Site; • Port of Workington and adjacent employment land; • West Lakes Science Park; • Barrow Waterfront and Port of Barrow-in-Furness; and, • Foxfield Business Park. <p>There are opportunities for National Grid to use these strategic sites for construction hubs to support the logistics of delivering the NWCC project and the PPA Group wishes to see National Grid using these sites to help stimulate other economic activity. Where sites are in or adjoining, proposed and existing employment areas the PPA Group expect National Grid to justify the impacts of the land take and the acceptability of the development to the local plans and strategies for economic development, such as the construction compound proposed at Kingmoor Park [i.e. Kingmoor Park Enterprise Zone (Business Park), Kingmoor Park Industrial Estate, Hensingham Common, Whitehaven, Kingmoor Park Rockcliffe, Kingmoor Park Heathlands Estate, and land at Station Road Wigton.</p> <p>National Grid needs to take account of land allocations in Local Plans and it is clear that based on the current proposals line/pylon realignments will be required, in particular:</p> <ul style="list-style-type: none"> • Emerging land allocations at Stainburn (1/WOR/050A/R and 1/WOR/053/R); • emerging land allocations land at Homewood, Whitehaven (WE10); • the NuGen Temporary Accommodation area at Mirehouse south of Whitehaven and West Lakes Science Park; • housing allocation site adjacent to Burlington Primary School, Kirkby-in-Furness; • land allocations around the Port of Barrow-in-Furness [i.e. Barrow Port Action Plan (Salthouse Housing, Marina Village, and Barrow Watersports) as well as land around the former Roosecote Power Station in Cumbria; and, • land in Middleton in Lancashire.



Key Issue	Comment
	<p>See paragraphs 17.14.14 to 17.1.1 and for site specific comments see section 17.22.</p> <p>The LEP's Cumbria Infrastructure Plan has identified the need for new highway infrastructure to the east of Whitehaven in order to provide an alternative route to the A595 and thereby relieve congestion in Whitehaven. The proposed route is to be safeguarded and the NWCC project should not inhibit future delivery of the Whitehaven Eastern Relief Road and the long term growth corridor it will create. See 17.22.7, 17.22.8 and 17.22.10.</p>
17. The PPA Group is concerned that the current proposals do not adequately address issues of security of supply for specific communities and the provision of additional capacity to meet the needs of new users and producers, in particular around Millom and Bootle.	<p>The PPA Group is concerned that the current proposals for the new 400kV network and the associated changes to local ENW infrastructure do not adequately address issues of security of supply for specific communities and the provision of additional capacity to meet the needs of new users and producers. This is a significant issue in many areas along the route and especially around Millom and Bootle. The situation has been further exacerbated by the recent decision by the developers of Haverigg Wind Farm to withdraw from their connection agreement with ENW.</p> <p>The PPA Group expects the final design of the NWCC to be revised when changes occur in other inter-related projects. In addressing these specific changes related to the Millom substation the PPA Group consider that the final design should include proposals which resolve these issues for specific communities along the route. See section 17.22.30.</p>
18. The PPA Group is concerned that currently there is incomplete workforce planning and accommodation proposals at the tunnel-heads	<p>During the construction of the project there is likely to be a concentration of workers at each of the tunnel heads sites in Barrow and Heysham. This is also a key concern in other areas where there will be a concentration of workers, such as the undergrounding in the LDNP. Given the number of directly employed workers required for the construction of the tunnel, and the other major projects in local areas, accommodation for workers is a significant concern.</p> <p>There are currently no details on the content of the proposed Accommodation Plan and there does not appear to be any indication of collaboration with accommodation providers to overcome existing shortfalls and /or raise standards of suitable worker accommodation. See paragraphs 17.16.2 to 17.16.4.</p>
19. Insufficient information is available to determine the exact effects on land allocations and existing sites and the degree to which these may be short- or long-term	<p>National Grid will need to demonstrate more clearly the likely effects of the proposal on land allocations and existing sites, and whether or not they would be permanent. National Grid will also need to demonstrate what efforts they will take to secure mitigation to help enable those sites to come forward for development. See paragraphs 17.14.14 to 17.1.1 and for site specific comments see section 17.22.</p>



17.3 Socio-economic, Recreation and Land Use PEI Issues

Table 17.2 – Key Socio-economic, Recreation and Land Use Issues in PEI

Key Issue	Comment
Skills and Supply Chain	
1. Failure to adequately assess the risks to maximising local benefits (through the supply chain and labour market)	There are clear risks to maximising the local benefits of the Project that National Grid has not adequately assessed. In particular, as recognised by the LEP, Cumbria is not currently well placed to meet the significant demand for workers that is set to emerge over the next 15 years, specifically in relation to the construction and civil engineering sectors. See chapter including paragraphs 17.8.6, 17.10.3 and 17.14.2.
2. Insufficient analysis of the cumulative impacts on the local supply chain and labour market	National Grid need to recognise the skills challenge facing the local economy and that current provision is not sufficient to meet the cumulative demand of planned major infrastructure projects, including NWCC and Moorside Power Station. If a significant proportion of the jobs forecast to be created by these projects are to be taken up by local people, considerable requirements will need to be placed on the Cumbria skills system. See paragraph 17.20.5.
Visitor Economy and Recreation	
3. Inadequate analysis of the Project's potential impact on the delivery of key socio-economic policy objectives, particularly in relation to the visitor economy	It is a major concern that the PEI Report does not provide a comprehensive review of the local socio-economic policy context. No assessment has been made of the Project's strategic alignment with key policy documents and, in particular, National Grid need to consider how the Project will affect the delivery of policy objectives for the visitor economy, such as tourism growth in the West part of the Lake District National Park (LDNP). See comments in section 17.5 including 17.5.9.
4. Unreliable assessment of effects on the visitor economy due to an overreliance on non-project specific evidence	<p>A major flaw in National Grid's current approach is its reliance on evidence from past projects. This follows on from comments in key issue 6 above. It is not appropriate to use survey-based evidence derived from different locations, with differences in the nature of the visitor economy, to make judgements about the potential impacts in Cumbria and North Lancashire. This undermines the validity of National Grid's findings in terms of the significance of effect and need for mitigation.</p> <p>In relation to National Grid's assessment of the effects on individual tourism and visitor receptors, further quantified analysis is required to support a more robust and less subjective approach. In relation to a number of receptors, most notably the LDNP, National Grid currently lacks sufficient project specific information to make a credible judgement about the significance of effects. See section 17.5.9, 17.8.13, 17.15 and 17.15.10.</p>



<p>5. Failure to assess the aggregate impact on the Local Study Area, along with the potential indirect effects on businesses across the county</p>	<p>The LSA itself covers a substantial area and contains several important visitor economy receptors. It is therefore recommended that National Grid assess the potential significance of effect on the visitor economy of the LSA as a whole.</p> <p>National Grid also needs to recognise the potential scale of effect on the visitor economy across the county, and the indirect effects on the wider economy. The recent floods demonstrated that negative perceptions can have a sustained adverse effect on businesses beyond just the direct area of impact.</p> <p>See section 17.5.9, 17.8.13, 17.15 and 17.15.10.</p>
<p>6. Unreliable assessment of the effect on visitor accommodation supply</p>	<p>National Grid's initial conclusions on the significance of the effect on visitor accommodation supply from the Project workforce are not valid as there is a failure to consider the constraints the Project could place on the future growth potential of the visitor economy, particularly in key areas identified as drivers of tourism growth.</p> <p>Due to National Grid's flawed approach to assessing the significance of the effect on visitor accommodation supply, it is unlikely that the mitigation currently proposed will be sufficient. Further support is needed, particularly in areas targeted for tourism growth, to increase the supply of temporary worker accommodation and then to enable the re-use of these facilities after the construction phase. See paragraphs 17.14.5 and 17.14.6.</p> <p>The PPA Group question why/how in terms of tourism/visitor economy sensitivity, Broughton-in-Furness is categorised as medium sensitivity, along with Haverigg and Millom. See 17.1.1.</p>
<p>7. Insufficient analysis of the cumulative impacts on the visitor economy</p>	<p>National Grid recognises the potential for adverse cumulative effects on tourism and the visitor economy inside the LSA. However, these effects have not yet been assessed in detail and appropriate mitigation measures have not yet been identified.</p> <p>Further data/assessment is needed to understand inter-relationship effects e.g. the effect on driver delay on the visitor economy and businesses. Also, the need for ongoing assessment to understand the effect of the Project with other major cumulative development and the assessment /status of some receptors</p> <p>National Grid also needs to consider the cumulative impact during the construction phase on visitor perceptions of Cumbria as a whole, as well as North Lancashire. In particular, the PPA Group is greatly concerned that consideration of the cumulative impacts during construction and operation, together with the proposed Moorside project have not been adequately progressed as the potential for cumulative impacts is significant.</p> <p>See paragraphs 17.5.9, 17.20.3 and 17.20.6 for more detail.</p>



17.4 Project Context

- 17.4.1 The NWCC Project is likely to lead to a number of positive and negative socio-economic effects. While delivering substantial investment to the UK electrical transmission system and creating new employment locally, a key area of concern is the impact the Project could have on existing local economic activities, especially the visitor economy, both for the construction period and operational phase of the project. The area's visitor economy is unique and therefore requires careful consideration and appropriate mitigation.
- 17.4.2 In 2015, Cumbria received approximately 43 million visitors that cumulatively supported over 35,482 full-time equivalent (FTE) jobs across thousands of local businesses. The Lake District National Park (LDNP) alone welcomed in excess of 17 million visitors in 2015, generating over £1.2 billion in tourism revenue, while the local authority areas affected by the route had a total of approximately 38 million visitors. In the peak summer months, the number of people employed in tourism is estimated to be over 61,000, representing around 20% of Cumbria's total employment. A large proportion of visitors are drawn to the scenery, the unspoilt nature of the area and outdoor activities available – research by Cumbria Tourism found that the top two reasons given for visiting Cumbria was due to the scenery and landscape, and the peaceful, relaxing and beautiful characteristics of the area.ⁱ Similarly, visitors to Lancashire are vital to local businesses, supporting more than 56,000 FTE jobs and generating £3.68 billion in the local economy through visitor and tourism business expenditure. Around 11% of visitors to Lancashire are to the local authority area of Lancaster, with approximately 6,000 FTE jobs supported in the visitor economy.ⁱⁱ The visitor economy is seen as a key business sector in both Lancashire and Cumbria, with each Local Enterprise Partnership (LEP) identifying it as a future driver of jobs and economic growth.ⁱⁱⁱ
- 17.4.3 Along with the potential disruption to the visitor economy during the construction phase of the Project, electricity transmission infrastructure can have an adverse effect on the visual perceptions of an area, which is highly likely to affect tourism, particularly within an area that attracts visitors as a result of the views and scenery it offers. Indeed, the socio-economic effects, particularly the effects on tourism, were highlighted as a key concern in the NWCC EIA Scoping Opinion from the Secretary of State (SoS). This identified the need to adequately address visitor economy impacts: *"the Applicant should discuss these concerns [impact on socio-economics and recreation (including tourism)] with the Authority and a description and assessment of the evidence for such impacts should be included in the ES"*.^{iv}
- 17.4.4 A further key issue that needs to be considered is the extent to which local workers and businesses are able to benefit from the NWCC Project, particularly during its construction phase. It will be important to ensure that procurement and employment from within Cumbria and the areas of Lancashire in proximity to the route are maximised, bringing direct benefits to the local economy and communities while also helping to reduce the adverse socio-economic and transport impacts associated with the project.

- 17.4.5 In terms of potential employment opportunities, National Grid will need to compete for skilled workers with other major projects such as Moorside Nuclear Power Project, which alone requires 6,500 direct workers during peak construction. While there have been recent major investments in the skills infrastructure in Cumbria, such as the Construction Skills Centre at Lakes College, demand for construction skills is forecast to rise exponentially and it is identified as a sector with immediate and critical skills shortages.^v This is also identified as a significant issue in Lancashire, where *"increasing demand for construction is likely to lead to more severe skills shortages in skilled trades, with the potential for the displacement of skilled workers from other sectors"* (see paragraph 1.4.2 below).^{vi}

17.5 Policy & Legislative Context

- 17.5.1 The key national planning policy relevant to the Project comprises of the 'Overarching National Policy Statement for Energy EN-1' and 'National Policy Statement for Electricity Networks Infrastructure EN-5'. Appendix 2A Planning Policy Context, Volume 2.7 of the PEI sets out the local planning policy context by signposting the relevant Local Plans and associated planning policies which are being considered when assessing each environmental topic in respect of the Project. Relevant local planning policy regarding socio-economic effects is presented in Table 2A.12 (Relevant Policies – Socio-Economics, Recreation and Land Use) and in Table 2A.16 (Relevant Policies – Marine Socio-Economic). As discussed in section 17.10, the PEI report does not though include a sufficiently detailed review of the wider socio-economic policy context, particularly in terms of the visitor economy and skills and infrastructure issues.
- 17.5.2 With regard to the wider socio-economic policy context, Cumbria's 10-year Strategic Economic Plan (SEP), under the advanced manufacturing growth and Nuclear and energy excellence strategic priorities, identifies the NWCC Project as a nationally-strategic investment project supporting the new nuclear power station at Moorside.^{vii} The Moorside nuclear power station is highlighted as a key element of the overall package of strategic investments required to deliver the SEP's strategic priorities. The NWCC Project and Moorside are also specifically mentioned in the Cumbria Skills Investment Plan 2016-20 as providing *"a foundation for Cumbria to develop its role as a hub for national and international supply chains, stimulate growth in local companies and attract and retain skills"*.^{viii} The Skills Investment Plan recognises though that Cumbria is currently not well placed to meet the significant demand for workers that is set to emerge over the next 15 years, particularly in relation to major infrastructure projects such as Moorside and the NWCC Project.
- 17.5.3 The Cumbria SEP identifies a 'Vibrant rural and visitor economy' as a key priority and outlines the LDNP as an international brand capable of attracting the growing overseas market. The SEP notes that *"a lack of sustainable transport connectivity between key gateways into the county and to key visitor destinations hinders the growth in the international and domestic visitor markets. As many visitor journeys to/from and within Cumbria are currently being undertaken by car the view is that this leads to significant congestion at honeypot locations across Cumbria, in particular within the central and southern Lake District, and therefore a detrimental experience for visitors"*.^{ix} Other

important local policy documents further reflect the constraints of existing transport capacity, the value of the LDNP, the need to develop the coastal communities and the fragility of the tourism economy, in particular post the December 2015 floods.

- 17.5.4 Making the Dream A Reality: The Tourism Strategy For Cumbria 2008-2018 presents a vision that: *"in 2018 Cumbria, as well as being known for world-class landscapes, will have an unrivalled reputation for outdoor adventure, heritage and culture with a year-round programme of events..... reinforce our reputation as the number one rural destination in the UK"*. To make this a reality, the Strategy notes that it is vitally important *"that people are able to get to, and around the county easily"*. It also recognises that it needs to *"attract more visitors in places outside the main tourism centres – especially along the coastal areas of south and west Cumbria and in the north of the county"*.^x
- 17.5.5 The Partnership's Plan: The Management Plan for The English Lake District 2015-2020 is aimed at significantly influencing Cumbria as a visitor destination. The fact that the LDNP is the UK's only nomination for WHS in 2016, being nominated for its cultural landscapes, further emphasises the importance of the quality of the landscape and its setting. Importantly, the Plan notes that, unlike other WHS, the LDNP supports many businesses and livelihoods, many of which are tourism based.^{xi}
- 17.5.6 The PPA Group also consider that National Grid must take account of tourism policies in local plan documents across the area, including tourism related land allocations. These are set out in chapter 3.
- 17.5.7 The importance of the visitor economy is also reflected in the policy context for Lancashire. The Lancashire SEP identifies the visitor economy as critical to the employment and productivity levels of the county and this is reinforced in the Visitor Economy Strategy for Lancashire. This strategy highlights the contribution tourism can make in driving economic growth as well as, importantly, the complexity and diversity of the sector.^{xii} The visitor economy involves hundreds of businesses from sectors that would not automatically associate themselves with tourists. The majority of these services and facilities (though not all) are provided by the private sector. Therefore, the success of Lancashire as a visitor destination will have a direct impact on the economy as a whole
- 17.5.8 Current legislation relevant to access within the Lake District National Park includes the following which the PEI fails to identify as key policy drivers for public access and enjoyment:
- The Environment Act 1995 legislation setting out the two statutory purposes for national parks in England and Wales;
 - conserve and enhance the natural beauty, wildlife and cultural heritage;
 - promote opportunities for the understanding and enjoyment of the special qualities of national parks by the public;

- the Partnership's Plan (2015-2020) for the Lake District National Park, defining National Parks as, 'areas of exceptional natural beauty which benefit from special protection and management, with great opportunities for everyone to enjoy';
- the Outstanding Universal Value and Special Qualities of the Lake District, informed by World Heritage Site and National Park purposes, are translated into the 2030 Vision for the English Lake District. Of particular relevance to this report are the following strategies within World Class Visitor Experience and Vibrant Communities;
- VE1 - Opportunities for experiences in a unique landscape;
- VE4 - Distinctive settlement character, quality public realm and amenities;
- VE6 - Easy access to and within the Lake District. Clear, easy orientation and choice of attractive travel option; and,
- VC7 – Access to high quality amenity and recreation green spaces, public rights of way and facilities.

17.5.9 Other points to note are that the National Grid consultation report (Volume 2.5, Chapter 17) does not address the long-term visitor impact – Visitor Experience – or take into consideration the enduring impacts upon its current resident population – Vibrant Communities. The Vision, which guides management approaches and decisions concerning the Lake District National Park, and applies specifically to both World Class Visitor Experience and Vibrant Communities, does so until 2030. The assessment report relates only to short term physical impacts, perhaps lasting up to two years at most; however the impact upon both visitor and the resident enjoyment and experiences will be permanent. Undeniably, the long-term impact of physical works on the ground will not ostensibly be on the specific rights of way only. Indeed, assessment has only been piecemeal thus far in this area. Moreover, assessment should be about *experience*. Long-term impacts cannot be quantified in either monetary terms or on the numbers of visitors affected but, their experience and enjoyment levels within the whole landscape, as set out in legislation and policy. These cumulative impacts are not adequately discussed or addressed within the report and cannot be ignored.

17.6 Adequacy of Baseline and Data Sources

Section Summary:

- (i) the baseline analysis within the PEI Report of the business supply chain and the labour market is not of sufficient detail to understand the scale of likely benefits to the local economy and to local residents, which is a significant issue that needs to be addressed by National Grid in the Environmental Statement;

- (ii) the baseline analysis of the tourism and visitor economy does not adequately recognise the unique nature of Cumbria’s visitor economy, as well as the importance of visitor perception in understanding the effect of perceived reductions in the quality of the visitor experience, as evidenced by the recent floods;
- (iii) the PEI report fails to provide a comprehensive review of the local socio-economic policy context. In particular, the Environmental Statement needs to consider the Project’s potential impact on the delivery of key policy objectives and strategies for Cumbria and Lancashire;
- (iv) the Wider Study Area adopted within the PEI report does not distinguish between Cumbria and those parts of North Lancashire in proximity to the route. This shows a failure to recognise that the two areas do not fit together as part of the same tourism offer;
- (v) the study area should also encompass the economy of the Local Study Area as a whole, not just individual receptors along the route; and,
- (vi) the assessment of factors influencing future baseline contains some significant gaps that undermine the validity of National Grid’s assessment of impact. Most notably, consideration needs to be given to the sensitivity of local businesses to future disruption and also the effect of demographic and economic trends.

17.7 Commentary on Study Area

17.7.1 A three tier approach has been adopted by National Grid in relation to assessing the spatial extent of any socio-economic effects:

- The first tier study area is land within the Draft Order Limits (DOL) that is potentially subject to land take effects and other direct effects upon receptors;
- the second tier study area, referred to as the Local Study Area (LSA), extends beyond the DOL to include an offset of at least 5km, seeking to encompass those receptors that may experience direct or indirect effects from the construction, operational or decommissioning phases of the Project; and,

- the third tier study area, referred to as the Wider Study Area (WSA), is defined as the whole of Cumbria and Lancaster City Council as well as, in relation specifically to effects on business supply chain and the local labour market, a 30km offset from the northern most point of the Project (as a surrogate for a 30-60 minute drive time). On the specific point raised by National Grid that a similar 30-60 minute drive time offset has not been applied to the South of the Project (see Appendix 1c, Volume 2.7, p.159), this is deemed to be broadly reasonable, although National Grid should consider how its assessment of significance would be affected by including a smaller offset from the southernmost point of the Project.
- 17.7.2 For each potential socio-economic effect, National Grid has identified the spatial extent of the study area (in other words, at which of the three spatial tiers the significance of the effect has been assessed) (see Chapter 17, Volume 2.2, pp.11-12). The approach adopted by National Grid is broadly appropriate, but with the exception of the effects on tourism and the visitor economy. Rather than for the WSA as a whole, the visitor economy needs to be assessed for Cumbria and North Lancashire separately. This is essential in order to reflect the bespoke nature of the tourism offer, and its role in the wider economy, within each area. The PPA Group are concerned that National Grid's current approach underplays the importance of the visitor economy within Cumbria.
- 17.7.3 Furthermore, the LSA itself covers a substantial area and contains a number of visitor economy receptors. While the potential effects on specific assets within the LSA is considered by National Grid, the effect on the visitor economy (and wider economy) within the LSA as a whole is not. This effect has the potential to be significant and should be addressed by National Grid. Double-counting can be avoided through clearly defined separate analyses of the LSA, Cumbria and North Lancashire.
- 17.7.4 With regard to data Sources, suggest that data from Cumbria Tourism could be used to cross check/verify the tourist accommodation business data sourced from Dun and Bradstreet. In quantitative terms, there does not appear to be much tourist accommodation within the LSA. (PEI paragraph 17.2.53, Chapter 17, Volume 2.5 refers).
- 17.7.5 With regard to Volume 3.2 - the maps need closer examination and better explanation. As mentioned above – the road network has not been identified. A number of rights of way appear to be missing. For example:
- BW 418029 south of Ravenglass;
 - FP 428027 at Middleton Place. It is not clear what 'PRoW to be affected' means. Clarification is required whether FP 428027 been left off because National Grid have plans in place so that it is 'not affected'; and,
 - FP402009 / 402029 west of Middleton Place is shown as partly affected, yet is the main access route identified.

- 17.7.6 Each PRow needs to be shown on the maps, together with the PRow number, and its place in any hierarchy. Ideally with a list of the PMP proposals from the suite suggested (see section 17.13.30 below and Section 11.13 in Chapter 10 Traffic & Transport).
- 17.7.7 All the PRows that are used as access routes need to be stated as 'PRow to be affected' on the maps. They also need to be within the management plan.

17.8 Commentary on Existing Baseline

- 17.8.1 Baselines of the existing socio-economic characteristics of both the WSA and the LSA are set out by National Grid in Chapter 17, Volumes 2.3, 2.4 and 2.5. The baselines are relatively comprehensive, particularly in terms of the North route and South route assessments, and cover the relevant potential socio-economic effects, drawing on recognised secondary data sources and primary data where required. There are though, areas of concern where it is essential that further information is provided in order to understand the effects of the Project. In particular, as described below, additional analysis is required in relation to the business supply chain, local labour market and visitor economy.
- 17.8.2 The PPA Group welcome the survey work, (a combination of both field and telephone surveys), currently being undertaken (August - October 2016), to obtain detailed Project-specific data regarding the response to businesses and visitors to the construction and operation of the Project. However, there is concern that the survey results and any associated assessment are not in the PEI report, but will only be available for and be reported in the ES, leaving no opportunity to comment on its validity or value to affect early scheme decisions from National Grid. The survey work will be used to confirm the validity of findings from other National Grid projects regarding the effects of linear infrastructure projects on businesses and visitors. PEI paragraph 17.5.5 to 17.5.18, Chapter 17, Volume 2.2 refers.
- 17.8.3 In terms of the local business supply chain, National Grid has reviewed the size of the sectors in the WSA that are most likely to be affected by the NWCC Project. This analysis, however, is at a high level, focusing on for example, the manufacturing and construction sectors as a whole rather than relevant sub-sectors. Consequently, from the analysis it is not possible to gain an adequate enough understanding of the extent to which the business base in the WSA will be able to meet the demand for goods and services generated by the Project. If the economic benefits of the project are to be realised within the local economy this is a significant failing at this stage. It is recognised that this will, at least partly, be addressed in the Environmental Statement (ES), where National Grid intend to utilise an economic model to measure the potential effects on supply chain businesses. The existing baseline information should also include an analysis of the size of the relevant supply chain sectors at the appropriate Standard Industrial Classification (SIC) level.

- 17.8.4 A further issue not currently addressed in the existing baseline is the potential spare capacity of businesses within the WSA. Telephone and field surveys have been undertaken on behalf of National Grid during the summer, which it is understood are now complete. The findings of these will be reported in the ES. National Grid state that the business surveys will help to inform judgements about the spare capacity of potential suppliers located within the WSA. Additional details are required in terms of the Project's supply chain expenditure and type of businesses surveyed to enable an informed consideration of the appropriateness of the survey methodology. However, the PPA Group are concerned that National Grid is relying on the responses of individual businesses to inform its assessment of market capacity. While providing useful information, individual businesses may not be fully aware of the overall market context or appreciate the cumulative effect of future major projects. The appropriateness of National Grid's survey methodology is reviewed further in Section 17.11.
- 17.8.5 In relation to the local labour market, National Grid's existing baseline analysis covers characteristics of the resident workforce, occupational structure, qualifications, commuting patterns, and skills and training. The analysis rightly identifies potential labour shortages and skills gaps as emerging issues within the local economy. However, as with the business supply chain, the analysis is not sufficiently tailored to the labour and skills needs of the NWCC Project. The baseline currently provided by National Grid is not at the appropriate level of detail to form a judgement about the significance of effect in terms of the local labour market. The baseline would benefit from a comparison of the likely qualification/skills requirements associated with the employment opportunities that will be generated by the Project and the qualification/skills profile of the resident workforce, including those not currently in employment or economically active. The latter issue is of particular importance and should be directly addressed by National Grid. Given the constraints on the labour market, National Grid should give consideration as to how it can, in partnership with other stakeholders, extend employment opportunities to those who are currently economically inactive or long-term unemployed.
- 17.8.6 The construction sector in particular is identified as facing skills shortages, with demand for manufacturing and engineering skills also forecast to rise significantly, and this should be reflected in the baseline analysis. A large proportion of the jobs that will be created by the NWCC Project are within these sectors and therefore it is essential that the ability of local residents to access such employment opportunities is understood. This is a recognised issue in Cumbria and North Lancashire. For example, the Local Plan for Lancaster District highlights that *"there is a mismatch between the skill levels of local adults and the skill levels required by major contractors and sub-contractors. This is a major reason for a high level of 'commuting in' by lead contractors' suppliers and sub-contractors on major construction jobs"*.^{xiii}

- 17.8.7 National Grid's baseline assessment of the tourism and visitor economy is relatively comprehensive and begins to reflect, at least in part, the specific appeal of the area, highlighting for example the importance of outdoor activities in attracting people to the region. However, a fundamental weakness of the baseline assessment is that it does not fully demonstrate the unique nature of Cumbria's visitor economy and the importance of scenery and landscape in terms of the area's tourism offer. This is an important distinguishing factor to recognise. National Grid's own research into the effect of National Grid major infrastructure projects on socio-economic factors highlights landscape and visual impacts, along with traffic disruption, as the most commonly stated negative effects (the appropriateness of using National Grid's UK level research as a basis for assessing the scale of impact on the Cumbria and North Lancashire visitor economies is discussed in section 17.11 below).^{xiv}
- 17.8.8 The PPA Group are also strongly concerned that the baseline assessment does not recognise the importance of visitor perception and that perceived reductions in the quality of the tourism offer can have a significant impact on the visitor economy. The Tourism Business Performance Survey (September 2016), conducted by Cumbria Tourism, outlined a number of issues related to visitor perception:
- Repeat business in the form of returning customers is a critical factor in the success of many tourism businesses, and two thirds cited this as a positive factor affecting their business – which has key implications for maintaining positive visitor perceptions;
 - press/PR coverage was a key factor affecting business performance, highlighting the risk of negative press around disruptions to visitors and local residents from the NWCC Project;
 - traffic problems for visitors getting to Cumbria, and traffic and parking problems once in Cumbria, are already a concern to one in five tourism businesses – before any construction activity has started; and,
 - related to the above findings, comments by business respondents further highlighted issues of flood disruption and perceptions, for example: "confusion of visitors still as to what roads and bridges are closed", "some of the problems are due to perceptions, rather than actual facts, often initiated by the national media", "being closed for virtually a year we have probably lost forever our once regular customers".

- 17.8.9 Current legislation relevant to access within the Lake District National Park includes the following which the PEI fails to identify as key policy drivers for public access and enjoyment.
- 17.8.10 The area around the Duddon Estuary (within the setting of the Lake District National Park) and the settlement of Broughton-in-Furness (which is in part within the National Park), in economic terms benefits from tourism visitors. The other parts of Furness, also, increasingly, benefit from tourism/visitors. Robust and adequate information on the impact on the visitor economy (tourism) is needed. Also, as a general comment – it is considered that there is an over reliance in the PEI report on evidence from past National Grid projects, particularly with regard to the visitor economy. The information and evidence needed to understand the key risks and impacts on the visitor economy has not been provided in the PEI.
- 17.8.11 The scale and importance of the visitor economy within, in particular, Cumbria is also not demonstrated sufficiently by National Grid's baseline assessment. Firstly, as argued in Section 1.8, the assessment should be undertaken separately for Cumbria and North Lancashire and, secondly, the comparative figures for the country as a whole should be included to provide context in terms of the relative size of the visitor economy. Table 17.3 demonstrates the type of analysis that is required. The figures highlight the importance of tourism, and in particular the accommodation sector, to the economy of Cumbria. Cumbria is a relatively remote and sparsely populated area where tourism is a very significant employer particularly in certain sub areas, however, it should be recognised that there are also other major employers within the County including manufacturing (which employs 16.4% of the workforce and contributes 25.3% of GVA) and agriculture, which ought to be also recognised in the ES.

Table 17.3 - Employment in the Tourism Sector^{xv}

	Cumbria	Lancaster	Great Britain
Accommodation (including student halls, worker accommodation, and business visitor accommodation)	5.3%	2.7%	1.5%
Food and beverage serving activities	6.8%	6.4%	5.6%
Transport	0.7%	0.9%	0.9%
Travel agencies	0.3%	0.4%	0.3%
Cultural activities	1.0%	0.2%	0.5%
Sporting and recreational activities	0.9%	1.1%	1.2%
Tourism Total	14.9%	11.5%	10.2%
Note: Figures show employment in each sector as a proportion of total employment in that area (Cumbria, Lancaster or Great Britain). The sectors relate to those identified within the World Tourism Organisation's (UNWTO's) tourism industries definition. ^{xvi}			



- 17.8.12 In addition to an overview of the visitor economy within the WSA, National Grid has also undertaken an analysis of tourism employment, specifically within the accommodation sector, in the LSA. The analysis shows a lower proportion of accommodation employment in the LSA than the average for the WSA, with the suggestion made that this indicates other parts of the districts outside the LSA are more dependent on tourism. The conclusions that can be drawn from this analysis are limited. As argued in above, an assessment is required of the aggregate visitor economy in the LSA, building on the comprehensive data collated in Chapter 17, Volumes 2.4 and 2.5 of the PEI report, and reflecting the widespread informal use of the area.
- 17.8.13 The PPA Group has reviewed the scale of tourism employment in the LSA (as a percentage of total employment), defined for the purposes of this analysis by Lower Super Output Area (LSOA) geography. Tourism employment has been assessed in line with the UN World Tourism Organisation's tourism industries definition. As Figure 17.1 overleaf shows, despite the rural nature of the area, tourism is still an important contributor to the local economy, accounting for 6% of total employment across the LSA LSOAs.

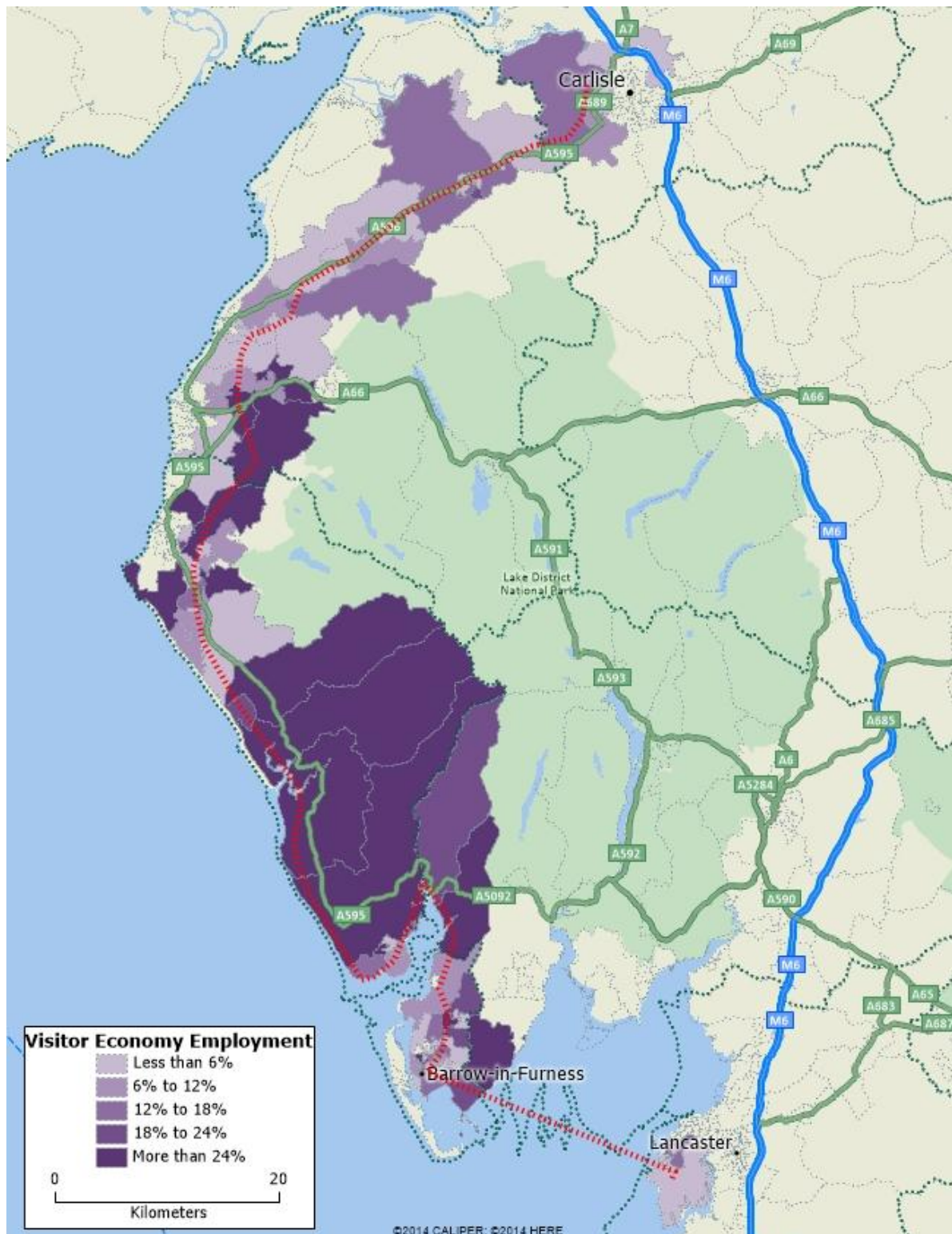


Figure 17.1 - Tourism Employment within the LSA (2015)^{xvii}

17.8.14 Related to the above points, it may be that there are a lower proportion of socio-economic receptors in the LSA, but the area still plays an important role in the wider visitor economy due to the scenery and landscape it offers. It is such attributes that research suggests are most likely to be negatively affected by electricity transmission infrastructure. A number of additional questions relating to the NWCC Project were added to the latest Tourism Business Performance Survey, on behalf of the PPA Group. This included business views on the potential impact of the NWCC project with regard to a range of issues, both during and after the construction period (see Table 17.4). The survey showed that a significant proportion of businesses expected that the Project would have a negative impact on visitor perceptions and on the area's landscape. The PPA Group are very concerned that National Grid does not currently recognise within its baseline assessment the contribution of the LSA (particularly its landscape and scenery) to the wider visitor experience.

Table 17.4 - % businesses expecting negative impact as a result of NWCC Project^{xviii}

	During construction	After construction
Visitor perceptions of the area along the route	66%	57%
Landscape and visual impact	63%	62%
Visitor perceptions of Cumbria	61%	51%
Visitor perceptions of the LDNP	60%	51%
Wildlife	54%	44%
Transport infrastructure	44%	20%

17.8.15 Chapter 17, Volume 2.3 provides some detail of the existing baseline for traffic and transport (further information is provided in Chapter 10 Traffic and Transport). For example, National Grid report on the results of the Cumbria Tourism Business Survey 2015 in relation to business concern about traffic problems. The results of Cumbria Tourism's Tourism Business Performance Survey have since been published. These show "*traffic problems for visitors once in Cumbria*" as the highest factor reported by tourism businesses that negatively impacts on performance. In addition, a Cumbria LEP workshop was held in November 2016 to gather views on the potential impact that the NWCC Project may have on the local economy. This also identified a number of issues relating to traffic and transport, including:

- The sheer scale and duration of the overall construction programme, leading to impacts on

the transport network and access that would, in turn, effect the 'Cumbria Brand';

- concern over increased construction traffic leading to disruption on the road, rail and Public Rights of Way (PRoW) network for both residents and visitors, causing reputational damage at a time when Cumbria is trying to improve its image;
- the risk that visitors affected by access issues will have an impact on perceptions and a long term significant impact due to the reliance on regular repeat markets; and,
- a need to ensure that the capacity of the existing transport infrastructure is able to cope with the additional demand that will be generated by the Project.

17.8.16 In the PEI report, National Grid do not currently adequately recognise the sensitivity of the visitor economy, particularly in terms of visitor experience, to disruptions to the transport network. The baseline will need to be updated to reflect the evidence gathered on behalf of the PPA Group. In addition, the PPA Group are concerned that Chapter 10 Traffic and Transport has very limited analysis of the linkages between the risks to the visitor economy and traffic and transport effects. The inter-relationship between these issues needs to be more clearly shown in the baseline assessment.

17.8.17 The socio-economic baseline data on the accommodation sector, visitor and tourism assets, land use (including long distance cycleways, footpaths and PRoW), and community facilities and services is appropriate and up to date. For the individual sections of the route, the PEI report has set out a detailed review of the existing baseline for each of these elements that is considered to be broadly reasonable at this stage of the process. However, particularly in relation to visitor and tourism assets, a more quantitative baseline assessment will be required in developing the ES, building on, for example, the list of outdoor events data for Cumbria in Appendix 17C, Volume 2.7 of the PEI report. This will be essential in forming the basis for a more robust and less subjective assessment of impact.

17.8.18 There exist multiple definition inconsistencies surrounding what constitutes low, medium and high sensitivity of PRoW. The minutes of the pre-consultation LDNPA/SLR meeting of 18/04/2016 denote that, 'the majority of PRoW in the LDNP fell into a higher sensitivity category'. However, Volume 2.5, Chapter 17.1.33 of the PEI states that of the 65 PRoW crossed by the DOL, 'they are all considered to be of moderate recreational value and medium sensitivity'. This is not helpful, particularly in light of 17.1.59 of the PEI which states that, 'The LDNP is considered as a receptor in its own right and is assigned high sensitivity in the tourism and visitor economy, owing to its national importance' (see Section 17.13.20 below and Section 11.13 Public Rights of Way in Chapter 10 Traffic & Transport of this response).

17.8.19 The PPA Group consider the PRoW network in the National Park to all be of high sensitivity given the purposes of National Parks and the policy context for encouraging and enabling access (see policy comments above).

- 17.8.20 Similarly, 17.1.57 of the PEI draws attention to people visiting Cumbria and the National Park, 'simply to enjoy the landscape and seascape of the LDNPA itself'. Under the heading *The Landscape and General Ambience of the LDNP*, the importance of 'visibility to and from the landscapes of the Lakeland Fells to the east and to the coastline to the west', from the, 'surrounding fells', and 'Major roads – the A595', highlights the significance of setting, 'overall visitor experience' (17.1.58) and the south western transport corridor gateway into the National Park in terms of sightlines.
- 17.8.21 Likewise, 17.2.42 of the PEI – relates to landscape and general ambience at the National Park boundary (Duddon Mosses and Whicham Valley) stating, 'much of the surrounding area is considered to be located inside the landscape setting of the LDNP'.
- 17.8.22 Moreover (17.2.43 of the PEI), and in repetition, 'part of the attraction of this part of the LDNP is the enjoyment of the local landscape... from major roads – the A595... and the A5903... the slopes of Blackcombe... and other Open Access Land located there'. How, therefore, can there be any differentiation made between inside and outside the National Park boundary in terms of, 'enjoyment of the LDNP and its setting from these locations ... considered to be components of the overall visitor experience in this part of the LDNP and its setting.'

17.9 Commentary on Existing Environment

- 17.9.1 The PPA Group generally do not have comments on the existing environment across the route, however, there are some detailed comments related to the South Lakeland area below.

Detailed additional Comments on South Lakeland

- 17.9.2 South Route Corridor - Geographic Section E, Subsection E1 - This section is not within South Lakeland District, but, within Copeland District. PEI paragraph 17.2.3 refers to "... *East of The Green, the village of Lady Hall...*". On a point of detail Lady Hall would not normally be described as a village, and more accurately as a hamlet. (PEI paragraph 17.2.3, Volume 2.5, Chapter 17 refers).
- 17.9.3 South Route Corridor - Geographic Section E, Subsection E2 - General description of Section E (which contains Subsection E2 within South Lakeland District. Reference is made to the settlement of Kirby throughout the PEI, it should be spelt Kirkby, e.g. Kirkby-in-Furness (paragraphs 17.2.1 to 17.2.4, Chapter 17, Volume 2.5).
- 17.9.4 South Route Corridor - Geographic Section E, Subsection E2 - South Lakeland Authority consider adding to PEI paragraph 17.2.3, Section 17.2, Chapter 17, Volume 2.5, that part of the village of Broughton-in-Furness is within the Lake District National Park Authority Boundary (LDNPA). It is recognised that this point is made elsewhere in the PEI, (paragraph 17.2.51, Chapter 17, Volume 2.5), but it is felt that the point should also be made in Section 17.2 – a General Description of Section E.

- 17.9.5 South Route Corridor - Geographic Section E, Subsection E2 - It is considered that this baseline description should include text which makes reference to the proximity of the LDNPA boundary to parts of this section; the more northerly parts of the Project section E2, especially. PEI paragraph 17.2.3, Section 17.2, Chapter 17, Volume 2.5 refers.
- 17.9.6 South Route Corridor - Geographic Section E, Subsection E2 - The recreational facilities referred to in PEI paragraph 17.2.11 also should include the Community Centre building which is next to the play area, bowling green, tennis courts, cricket pitch, play area and open space. The Community Centre (inside recreational space) is not mentioned. PEI paragraph 17.2.11, Chapter 17, Volume 2.5 refers. The existing 132kV line does not over sail the community centre building itself, but external areas such as the tennis courts.
- 17.9.7 South Route Corridor – Geographic Section H, Subsection H1 - For clarity, it is suggested that text needs to be added to PEI paragraph 17.3.1, Chapter 17, Volume 2.5, referring to the fact that, although most of Section H is within 'Barrow in Furness district' (for correctness this should be Barrow in Furness Borough), parts (Subsection H1), are within South Lakeland District Council's administrative area. The PPA Group also note the 2.9Ha area of ground to the south of the village of Natland, near Kendal, is also within South Lakeland District.

17.10 Commentary on Factors influencing Future Baseline

- 17.10.1 Discussion of the broad factors affecting future baseline information is contained within Chapter 17, Volume 2.2 of the PEI. This highlights possible changes to baseline socio-economic, recreation and land use conditions. The changes identified by National Grid are considered to be correct and cover most of the main factors. It is also agreed that a number of the potential changes are incapable of accurate prediction and therefore it is appropriate to not take them into account in the assessment of effects. However, there are areas in which the analysis needs to be strengthened, as outlined below.
- 17.10.2 The PPA Group are concerned that National Grid do not recognise the potential effect of future flooding on tourism businesses and their sensitivity to future economic shocks. Survey data from Cumbria Tourism shows that 40% of tourism businesses are still reporting a negative ongoing impact after the flood events of almost a year ago.^{xix} The route of the NWCC is closely aligned to areas that were considerably and directly affected by the flooding, therefore, the PPA Group are concerned that many of the businesses are particularly will be already fragile. Although the extent of further flooding cannot be accurately predicted, if flooding were to occur, the effect of disruption to businesses from the NWCC Project could exacerbate an already fragile situation.
- 17.10.3 Chapter 17, Volume 2.2 of the PEI refers to a description of sub-national population projections and sub-national household projections being contained in Appendix 17A, Volume 2.7 of the PEI. This appendix though only lists the relevant reference material. No commentary is provided in terms of how the projections might affect the future baseline. Similarly, there is no analysis of labour market projections. Key factors that will influence

the socio-economic effects of the Project include the future labour market capacity and skills in the WSA. Demographic decline, especially in the working-age population and a continuation of the skills gap in sectors such as construction will limit the ability of the NWCC Project to provide appropriate employment opportunities for local people. This will also affect the extent to which the transport impacts from the Project can be minimised. These risks need to be recognised by National Grid if an appropriate assessment of the Project's effects is to be undertaken.

- 17.10.4 A further factor that forms an important component of understanding the future baseline, which has not been described in detail within the PEI report, is forecast sector performance. This includes the performance of key supply chain sectors, but also the tourism economy. Data from the Experian Cumbria Economic Impact Model projects that employment in the Cumbrian economy as a whole will grow by 6% over the next 15 years. The largest absolute growth is forecast to be within the Accommodation and Food Services sector. If employment in this sector was to remain stagnant, then the Cumbrian economy would only grow by 4%. This again highlights the significance of risks to the visitor economy. In particular, the NWCC Project could adversely affect the West coast of the LDNP, which has been identified as a future growth area by Cumbria LEP.
- 17.10.5 The local policy context and the strategic objectives and priorities set by sub-regional partners will also play a role in influencing the future baseline. Although the EIA regulations do not include a mandatory requirement to assess socio-economic effects as an environmental topic, and there is no formal guidance on the methodology for such an assessment, it is widely accepted that an analysis of the alignment of a project with key local socio-economic policy documents is a helpful inclusion for all parties involved, especially during public consultation. It is particularly helpful for the local economic development (non-planning) policy context to be presented. In the case of the Project, key local policy regarding tourism / visitor economy, supply chain development and skills would be most relevant.
- 17.10.6 It is considered that planning commitments; planning applications granted and land allocated for development in Local Plans need to be taken into account (ongoing) individually, as well as assessing any likely significant cumulative effect(s) the Project may have with development within the DOL.
- 17.10.7 Within the WSA (which includes the LSA), other major development could also potentially have economic implications for the local labour market (competition for workers from other infrastructure projects), changing the future economic and social baseline. In relation to the South Geographic Route Corridor, for example, any proposed significant future/emerging development of major local businesses/employers, such as GlaxoSmithKline (GSK) at Ulverston and BAE Systems at Barrow-in-Furness, and any likely significant effects with the Project, needs to be taken into account in the Environmental Statement (ES). Likewise for the North Geographic route Corridor, the PEI does not take into account potential development at Kingmoor Park Enterprise Zone, unless there was an increase in development rate. In terms of the North route and the assessment of future benefits, National Grid also need to take into account the potential scale of development at Lillyhall

Industrial Estate (especially in relation to the Stainburn Substation), Whitehaven Commercial Park and Derwent Forest. The PEI existing baseline does not take into account the permission granted for the 'Energy from Waste Plant', which is on the site of a proposed temporary compound which must indicate an increased interest for future development. The Economic Strategy and Action Plans of the Cumbria Local Enterprise Partnership also need to be taken into account as factors in assessing the current and future baseline. See also comments at section 17.20 of this document, concerning consideration of the cumulative impact with other major development.

- 17.10.8 The PPA Group are strongly concerned that a comprehensive review of the local socio-economic policy context has not been conducted within the PEI report. Specific reference is made to the Cumbria Skills Investment Plan 2016-2020 and the Lakes Culture: Cultural Tourism Strategy 2014-2020. Appendix 17A, Volume 2.7 of the PEI also makes reference to a number of other local socio-economic policy documents, including the Strategic Economic Plans for Cumbria and Lancashire. However, no assessment has been made of the Project's strategic alignment to these documents. A much more comprehensive and consolidated assessment of the Project's alignment with key local socio-economic policy documents is required. In particular, it is essential that National Grid consider the Project's impact on the delivery of key policy objectives for priority areas such as the West coast of the LDNP.
- 17.10.9 The proposed England Coastal Path (ECP) is likely to be affected, and includes both within the Baseline Wider Study Area (WSA) and the LSA (which includes the DOL); parts of geographic Route Corridor Section C2, where it emerges close to Rockcliffe given proximity of the pylons, plus parts of the geographic Route Corridor Section E Subsection E2 and Section H, Subsections H1 and H2. The baseline could be affected, given the likely designation, construction and subsequent opening of the emerging long distance National Trail - England Coastal Path (ECP), over the period between now and over the lifetime of the Project. It is agreed that the potentially significant effects of the Project; prior to commencement of construction, operation and decommissioning, needs to be taken into account. The baseline information, in terms of this proposed national recreation route, is likely to change and this should be factored into the ES, so that any potential significant effects are taken into account and effectively mitigated/managed (PEI paragraph 17.7.44, Section 17.7, Chapter 17, Volume 2.2 refers).
- 17.10.10 For the most part, the above factors are best discussed at the WSA level. Chapter 17, Volumes 2.4 and 2.5 contain a description of possible changes within each section of the LSA that may affect the future baseline, but in each case the PEI report concludes that there is uncertainty as to what the changes might be and are therefore not reflected in the baseline for the assessment of effects. This is a reasonable approach at this stage.



17.11 Commentary on Consultation Activity and Data

Section Summary:

- (i) a significant concern with much of the data used by National Grid to inform its assessment of effects is that it is overly reliant on evidence from past projects. The research is not specific to the context of the NWCC Project and is therefore of limited relevance; and,
- (ii) as part of addressing the lack of evidence bespoke to the project, National Grid has undertaken project specific business and tourist user surveys during the summer. However, these surveys suffer from a number of methodological flaws, including the low survey sample targets for tourism businesses.

17.11.1 It is recognised that consultation with the PPA Group, individual local authorities and other consultees is ongoing. The intention to consult with the PPA Group and relevant stakeholders regarding socio-economic, recreation and land use effects, such as the expected NWCC Project workforce and skills requirements, is welcomed. It is also welcomed that consultations have been held with the PPA Group regarding survey methodology for assessing potential impacts on socio-economic issues and that there is ongoing consultation with NuGen and other developers regarding potential cumulative effects and suitable mitigation.

17.11.2 National Grid's Outline Employment and Skills Framework (OESF) (Appendix 17F, Volume 2.7) is at the first draft stage and is being informed through consultation with Project stakeholders, including the local authorities and Cumbria and Lancashire LEs. National Grid's intention to engage with various partners in delivering the Framework is again welcomed, encompassing, for example:

- Marketing and promotion of opportunities available through the Project;
- working with local partners (such as Cumbria and Lancashire Growth Hubs) to fill skills gaps;
- working with Job Centre Plus to target areas where there may be unemployment;
- meet the buyer events; and,
- engaging with schools and Further Education and Higher Education establishments.

17.11.3 It will be important that the mechanisms to underpin this engagement process are further defined by National Grid as part of developing the OESF over the period up to the commencement of the construction phase of the Project.

17.11.4 Given that the consultation process is ongoing, part of the methodology and assessment of likely socio-economic effects set out within the PEI report, specifically in relation to tourism and the visitor economy, is overly reliant on evidence from past projects. This is a major flaw in National Grid's current approach and undermines the validity of its conclusions in

terms of the significance of effect (see section 17.12) and the need for mitigation (see section 17.17). For example, National Grid refers to its own research of previous linear infrastructure projects.^{xx} However, the small sample of case studies within this research are not directly analogous to the NWCC Project. The age of the projects, the small sample sizes, type of users surveyed (including residents) and the varying industrial and socio-economic contexts for each project mean that the results of the research cannot be applied to the NWCC Project. In particular, the importance of tourism, nature of visitors and reasons for visiting, and geographical characteristics unique to the WSA and LSA will influence the impact of the Project on the visitor economy. There is, as such, a need for primary research to inform the assessment of socio-economic effects.

17.11.5 As part of the consultation process, National Grid has developed a Survey Strategy, included within the PEI report (Appendix 17B, Volume 2.7). This recognises *"that the need for bespoke studies is becoming the norm"*. The Strategy sets out the methodology for undertaking project specific business and tourist and recreational user surveys. It is understood that the surveys have now been completed. The results of the survey will need careful consideration in consultation with the PPA Group and other stakeholders. However, in reviewing the Survey Strategy, it is apparent that there are a number of concerns with the methodology adopted:

- The Project Wide survey results and the associated assessment of the summer 2016 tourism business and visitor surveys is not available for the PEI report and for the S42 Consultation. It will still be required to inform the ES. PEI Volume 2.2 Chapter 17, paragraphs 17.5.5 to 17.5.19 Inc. refer to the surveys;
- the survey results of the intercept surveys undertaken during the summer of 2016, to test the response of users of long distance routes e.g. Cumbria Coastal Route (CCW) to the Project, is not available in the PEI. It will be reported in the ES. (PEI paragraph 17.2.120, Chapter 17. Volume 2.5 refers);
- it is important that an analysis should seek to take account of short, medium and longer term impacts. It is not currently clear how this will be done. It should be noted that asking individual businesses their views is not a reliable approach given many business owners have little information of wider local and regional economic and social factors that singly or collectively can affect their business. To sum and extrapolate answers from individual (narrow and often short term focused) businesses to an overall whole economy/sector effect is an invalid approach to assessing impacts;
- it is not clear on what basis the sector survey sample targets were chosen. For example it is not stated if it was based on the proportion of businesses in the various sectors in the survey population or if it was weighted by employment, turnover, or those affected by past external shocks such as the December 2015 floods or indeed those likely to be affected by the other major construction projects planned in Cumbria over the next few years. The basis for the sector stratification and allocated targets must be clearly set out;

- in terms of the sample sizes, the tourism businesses (accommodation and food and drink) had a combined minimum equal to that of supply chain businesses. In addition, the minimum sample size for accommodation businesses was equal to that for agriculture and other land use businesses. This would not have ensured that businesses in the tourism sector were well represented; the two receptor groups (business supply chain) and (visitor economy) are not similar in any meaningful way in terms of key characteristics. Combining them within a population from which to draw statistically reliable random samples is wrong. As they are different populations, it renders the statistical approach proposed to sampling as inadequate and makes the findings potentially misleading. Treating both groups as separate populations is likely to mean that a larger sample of businesses would be needed to obtain statistically reliable data. In addition, further stratification on other characteristics merely serves to exacerbate this error in approach;
- a further detrimental outcome of trying to deal with both groups (business supply chain and visitor economy) in one survey means the number of survey questions that can be asked of businesses is limited (to stop 'survey fatigue'). The limited number of questions means there is not sufficient opportunity for drilling into critical perceptions and behaviours. This reduces the usefulness of the surveys in providing baseline analysis or assessment of likely impact and mitigation measures needed. The approach also increases the likelihood of very small numbers to important questions ($n < 30$). The unreliability of findings due to small numbers of responses to some survey questions and in particular questions dealing with perceptions around negative impacts was a key finding of National Grid's national study into the effect of its major infrastructure projects;
- there is no discussion in the Survey Strategy of the need to stratify the sample by business size. Given the preponderance of very small businesses in the tourism related sector and the likelihood that smaller businesses are less able to withstand loss of business in even one season, the lack of consideration given to stratification by business size is an omission. Obtaining sufficiently high response rates to deliver reliable results is a widely recognised challenge in undertaking impact surveys. The greater the stratification the more difficult the task. Nonetheless, it is important to consider all factors that might influence the reliability of results and ignoring key factors in the stratification process in order to deliver target response rates and therefore reliable results does nothing to improve the interpretative quality of the findings;
- in terms of the tourism/recreational user surveys, a number of the points related to the business surveys also apply to the tourism/recreation user sampling and surveying approach, but of particular concern is that the information provided to 'users' did not tell them what precisely would be the build scale, timing or phasing in the area they were visiting and therefore completely negates answers to Q15a ('Would the construction of the National Grid infrastructure as described impact on your decision to come here in the future?') and all subsequent analysis using this data. Similarly, with no visual prompts, the answers to Q15c (Once built, would the presence of the National Grid infrastructure as described impact on your decision to come here today?) are unreliable and again subsequent analysis is called into question; and,

- the description of the project whilst accurate is also likely to mislead those unaware of the detail. For example, the statement that each pylon would only take a few weeks to construct does not adequately convey the need for potential longer term diversion of PRoWs, closure of roads, lack of accommodation, and disruption to other tourism products and services, as well as likely severe delays on the roads into/out of and within the region, all of which is likely to deter repeat visits. The survey could have usefully asked questions related to these known impacts, for example: if your journey took an extra two hours due to construction impacts (such as delay and diversion) would this affect your decision to return to this area.

17.12 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

Section Summary:

- (i) the approach adopted by National Grid fails to account for the potential scale of effect on the visitor economy, and wider economy, as a whole by not assessing the inter-relationship between the tourism sector and other parts of the economy and also underplaying the risk of long term adverse effects on visitor perceptions;
- (ii) the methodology relating to the assessment of the local supply chain effect is limited, reflecting the lack of detail in terms of the existing baseline. Further project specific information is required to understand the extent to which local businesses may be able to benefit from the supply chain opportunities generated by the project;
- (iii) National Grid's basis for assessing labour market impacts is also limited, relying on information from past projects. It is clear that there is a risk, due to identified skills shortages, to National Grid achieving its target of 20% of jobs being taken up by local residents. An integrated labour market and skills model is required to highlight the scale of the challenge and need for investment in skills provision;
- (iv) the approach adopted to assess the potential deterrence effect on visitors is not appropriate, as it relies on survey-based evidence from previous projects that do not reflect the specific characteristics of the Cumbria and North Lancashire visitor economies. Further project specific research is required before National Grid can assess the significance of the effect;
- (v) National Grid's initial conclusions on the significance of the effect on visitor accommodation supply from the Project workforce are not valid as it fails to consider the constraints the Project could place on the future growth potential of the visitor economy. It is essential that National Grid takes account of the need for capacity for growth in key areas such as the West coast part of the LDNP; and,
- (vi) the analysis of the impact of the Project on tourism and visitor economy assets within the



individual sections along the route needs to encompass a more quantitative assessment of the scale of the visitor economy within the LSA as a whole and a more robust and less subjective analysis of the level of potential impact on key tourism receptors.

17.13 Assessment Methodology

Overall Approach

- 17.13.1 The assessment of socio-economics, recreation and land use effects within the PEI report is broadly broken down into eight categories of effect, namely the business supply chain, the labour market, the visitor economy, tourism and recreational assets, local facilities and services, land uses (such as farming and forestry) and future development land. The assessment of effects has been undertaken in relation to the construction phase, operational stage and decommissioning. The assessment is also separated on a geographical basis, between project-wide effects and effects on specific local receptors. It is notable that there is no assessment of Health Impacts, which is considered a major weakness in the PEI, and will have to be addressed in the ES.
- 17.13.2 Overall, the potential type of effects identified by National Grid are considered to be correct and represent the likely main areas of impact in terms of socio-economics, recreation and land-use. However, in assessing the adverse effects on the economy, the focus has principally been on tourism. This is for good reason, given the nature of the Project and local area. There is though the potential that the construction and decommissioning phases of the Project could impact on other areas of the economy, due to, for example, issues associated with traffic congestion and the displacement of workers. Moreover, the strength of Cumbria's visitor economy also underpins other sectors in the economy, including professional and business services. Therefore, adverse effects on the visitor economy would have knock-on impacts in terms of the economic performance of other sectors. National Grid need to consider the effect of the Project on the economy as whole at the LSA level and, where appropriate (specifically in terms of displacement issues and linked sector performance) at the WSA level.
- 17.13.3 The separate assessment of effects between the three project phases (construction, operation and decommissioning) is appropriate and consistent with good practice. Recognition should though be given to the inter-relationship between the phases. Repeat business (returning customers) has been identified as a critical factor in the success of many tourism businesses in Cumbria.^{xxi} Visitors experiencing disruption during the construction phase may form negative perceptions of the area and be dissuaded from returning even after construction is complete. This could impact businesses across Cumbria. The recent floods demonstrated that businesses not directly impacted and away from the key flood areas were still affected by the negative perceptions of the county being 'closed for business'. The combination of the NWCC Project and the new Moorside Power Station has the potential to result in a comparable effect, which has not been adequately addressed by National Grid in its assessment methodology.

- 17.13.4 The appropriateness of the spatial extent of the study was discussed in Section 1.8 of this review report. To recap briefly, while the three tier approach adopted by National Grid is broadly appropriate, the effects on the visitor economy need to be assessed for Cumbria and North Lancashire separately. In addition, restricting the analysis of the effects on the visitor economy to the WSA risks underplaying the significance of impact at the local level.
- 17.13.5 The PEI report recognises that there are no published standards that define the sensitivity and magnitude of socio-economic effects and how these should be categorised. The overall approach adopted in the PEI report to define receptor sensitivity and magnitude of impact is reasonable and consistent with that used for other major projects. The significance of socio-economic effects is based on the inter-play between the sensitivity of the receptor and magnitude of impact.
- 17.13.6 The absence of any generally accepted criteria for defining receptor sensitivity and the magnitude of impact inevitably leads to a degree of subjectivity – for example, in terms of determining what scale of impact is considered to be high. In relation to National Grid's approach, specifically in terms of tourism and the visitor economy, it is believed that the criteria used to define whether an impact is high, medium, low or negligible is not appropriate. For an impact to be classified as high, National Grid's criteria require it to affect at least 3% of businesses operating in the visitor economy in the WSA for at least three years. A medium impact requires between 1% and 3% of businesses to be affected. Given the size of the WSA, these criteria risk pre-disposing that the effects on the visitor economy will have a low or negligible impact and therefore would be not significant, unless the effects on visitor perceptions are fully taken into account, as outlined above. To help address this concern, it is recommended that a separate receptor group is included, defined as the LSA tourism and visitor economy, distinct from the assessment of specific tourism and visitor assets in the LSA and reflecting the widespread informal use of the area.

Assessment of Effects

- 17.13.7 In terms of the assessment of effects, the methodology relating to the local supply chain is currently limited, reflecting the comments made in Section 17.8 of this review report on the existing baseline. More detailed information is required to understand the nature of the supply chain expenditure generated by the Project and how this matches to the business base within the local economy. It is expected that this will be addressed in the ES through the utilisation of a detailed economic model. The methodology underpinning this economic model, described in Chapter 17, Volume 2.3 (pp.33-34) is deemed to be appropriate and consistent with good practice.
- 17.13.8 At this stage, the assessment methodology used to determine the overall amount of labour input required during the construction stage is limited. The basis for predicting the percentage of the Project workforce that will be derived from local residents is based on past projects and will need to be tested through more detailed analysis in the ES. In particular, an integrated labour market and skills model is required that takes into account underlying labour market characteristics in the WSA, the skills profile of the local resident base and the skills requirements of the NWCC Project.

- 17.13.9 Some detail commentary is provided on workforce planning as follows with regard to PEI Volume 2.3, Chapter 17 paragraph 17.1.27: It is noted that the PEI text says there has been a *"...considerable labour market tightening occurring over the past three years"* (with illustration in Figure 17.1 showing reducing job seeker claimant percentages by district and in the region and across England. The PEI then asserts that *"employers may find it increasingly difficult to recruit labour from the resident working age population in the Wider Study Area"*.
- 17.13.10 This is a flawed assumption, because the figure shows labour market tightening over the whole country, which suggests it would be increasingly difficult to recruit labour anywhere. The correct conclusion from this observation is that the employment data strongly supports the need for skills training to attract workers from a competitive market.
- 17.13.11 The data used in the PEI Report in paragraph 17.1.26 is also invalid, as it does not take into account the introduction of Universal Credit. In fact the claimant count (JSA and UC) in the WSA had fallen by 325 over the year (not 2,600 as stated). The overall conclusion of a tightening labour market is reasonable over the longer term but this applies in all areas, not just the study area and has certainly slowed in the last 2 years.
- 17.13.12 With regard to Table 17.12 Touring Caravan Sites, it lacks information relating to Lancaster. It should be noted that there were 1,258 licensed touring caravan pitches in Lancaster when surveyed in 2014, which it is assumed could potentially provide temporary accommodation for workers during the construction phase within Lancashire.
- 17.13.13 The demand on housing in terms of the private rented sector is considered as part of the assessment of socio-economic effects. National Grid's approach to this assessment is deemed to be reasonable, with consideration given to the availability of private rented housing and rental prices. However, the extent of effect on housing will be largely dependent on the proportion of non-local workers recruited for the Project. This will therefore need to be reassessed following more detailed analysis of the labour market in the ES.
- 17.13.14 The issue relating to whether there might be sufficient accommodation for the expected workforce is demonstrated by the following example in Lancashire. The references in paragraphs 17.2.7, 17.2.21, 17.2.26 and 17.2.27 in the PEI referring to an aspiration to achieve at least 20% local businesses appointed as Tier 2 contractors, the tunnel-head workforce required for 6 year period; that National Grid expect 20% of the tunnel-head workforce to come from within the wider study area, and that they expect 10% of the non-local workforce to be in-commuters, or 25% at Heysham, would suggest another 20% overall, leaving 60% of the tunnel-head workforce at Heysham requiring local accommodation (see also paragraph 17.14.1 below referring to the 20% target).
- 17.13.15 It is noted that Table 17.28 in the PEI expects 255 employees will relocate to work on the tunnel at Heysham, plus another 125 to work on the Heysham sub-station (total 380). It is noted that National Grid expects 228 employees at Heysham will require local

accommodation ($380 \times 60\% = 228$), and that demand is likely to exceed the local supply for rented accommodation near Heysham. It is also noted that National Grid expects up to 50% of employees will use caravans or serviced accommodation, and that there to be no significant displacement of tourist businesses through contractor employee demand. In paragraph 17.3.31 of the PEI, it states: *"The effect in Heysham would be negligible and not significant, as the average bedspace availability in Lancaster district is over 10,000 bedspaces. Therefore, there is not expected to be any displacement in Lancaster district."* However, bedspaces information in Lancaster is derived from data supplied in Table 17.14, and 17.1.70 claims that occupancy is between 49% and 72% (based on regional data), but the table makes no assessment of the quality of the bedspaces.

17.13.16 Volume 2.5: Chapter 17 paragraph 17.3.27 of the PEI lists the properties in Heysham within the Draft Order Limits (DOL), which are considered to be of local socio-economic importance and low sensitivity. PEI Paragraph 17.3.61 is short of information on caravan site capacities in the vicinity of the tunnel-head. The PEI has identified: Greendales Caravan Park (42 pitches) and Hale Carr Caravan Park (40 pitches, Gypsy site), but it has not identified: Belle Aire (75 pitches, residential), Borrans Lane (9 pitches), Broadgate Foot (42 pitches, residential) and Old Trafford (30 pitches, residential). There are also several other caravan parks in the near vicinity of the tunnel-head, including Ocean Edge (799 pitches).

17.13.17 Paragraph 17.3.107 of the PEI states: *"Of the properties located inside the DOL, none would be directly affected by any surface construction works. The following properties may be affected indirectly: 4. Residential properties at Heysham – as these properties are located in an area of the DOL where works would be subsurface only, land use impacts would be negligible, resulting in an effect that is negligible also."* Chapter 11, volume 2.5 assesses the significance of the noise impacts on properties to the south and east of Mossgate Park, and it is noted that no mitigation is proposed because no significant effects are identified.

17.13.18 The method of assessment of effects set out within the PEI report identifies ways in which tourism and the visitor economy may be affected by the Project. It is welcomed that National Grid has identified key risks to the visitor economy. However, in a number of cases, National Grid has failed to assess these risks effectively (which has had consequences in terms of the adequacy of the mitigation proposed – see Section 6). The four ways in which the visitor economy may be affected are outlined by National Grid as follows:

- Increased expenditure on goods and services from businesses in the tourism sector (construction phase);
- general deterrence effect on visitors to the area due to negative perceptions/adverse visual effects (construction and operational phases);
- pressure on accommodation due to migrant workers using tourist accommodation

(construction phase); and,

- traffic disruption and other disturbances to visitor attractions and accommodation (construction phase).

17.13.19 The PEI report recognises that there are no published standards that define the sensitivity and magnitude of socio-economic effects and how these should be categorised. The overall approach adopted in the PEI report to define receptor sensitivity and magnitude of impact is reasonable and consistent with that used for other major projects. The significance of socio-economic effects is based on the inter-play between the sensitivity of the receptor and magnitude of impact.

17.13.20 Similar to the assessment of the effect on housing, the approach adopted by National Grid in terms of increased expenditure on goods and services is reasonable, but will be dependent on estimates of the size of the non-local workforce. Again, this will therefore need to be revisited in the ES and be informed by more detailed economic modelling.

17.13.21 Within the PEI report, the potential deterrence effect on visitors is assessed on the basis of previously commissioned work by National Grid analysing the impact of a number of other linear projects. As argued in section 17.11 of this review report, such an approach raises several significant issues. Most importantly, it is not appropriate to use survey-based evidence derived from different locations, with differences in the nature of the visitor economy, to make judgements about the potential impacts in Cumbria and Lancaster.

17.13.22 In reviewing other studies on the deterrence effects associated with electricity transmission infrastructure to inform this review report, it has been commonly found that previous research has been subject to objections on the grounds of perceived methodological flaws, use of inappropriate comparators, misleading assertions, lack of comprehensive surveys and inherent uncertainties with the measurement of the economic effects of electricity transmission infrastructure on tourism.

17.13.23 National Grid's commissioning of project specific business and user surveys during summer 2016 to supplement previous research is acknowledged and welcomed. However, as set out in section 17.11, there are a number of methodological flaws to the survey strategy that could undermine the validity of the results. There has also been substantial criticism of the use of survey-based approaches to evaluating impacts.^{xxii} Best practice would suggest that data derived through quasi-experimental designs is an important source of evidence.^{xxiii} This would involve assessing the impact of previous schemes on indicators such as employment, tourism numbers and house prices using econometric techniques.

17.13.24 The potential adverse effect of visitors being displaced due to the use of local accommodation by workers during the construction phase of the Project is acknowledged by National Grid. The significance of this effect has been assessed based on the level of likely accommodation demand generated by the Project and the availability of serviced and non-serviced accommodation within the WSA. The methodology applied by National Grid is not

appropriate as it fails to consider the future growth potential of the visitor economy and the constraints the NWCC Project could place on this, with occupancy rates already around 80% in peak season for both serviced and self-catering accommodation. In particular, in areas which are seen as drivers of tourism growth, such as the West coast part of the LDNP and around the Duddon Estuary, there is likely to be the largest concentration of demand for worker accommodation, associated with the construction of the tunnel head. The limitations associated with National Grid's labour market assessment also mean that its assumptions regarding the number of non-local workers required are not sufficiently robust to assess the potential pressure on accommodation.

17.13.25 In addition to the project-wide assessment of effects on the WSA tourism and the visitor economy described above, Chapter 17, Volumes 2.4 and 2.5 of the PEI report analyses the impact on tourism and visitor economy assets within the individual sections along the route. The approach to this assessment is comprehensive in terms of the visitor economy receptors it covers. However, it has involved a largely qualitative assessment of the level of effect, dependent on subjective judgements of impact. This is not sufficient to adequately and transparently assess the significance of effects. The ES should seek to quantify the scale of the visitor economy within the LSA and the contribution of key tourism receptors affected by the Project.

17.13.26 With regard to the effect of traffic disruption to tourism receptors, the PEI report states that this will be reported in the ES, informed by the results of the user surveys undertaken during the summer. However, the PPA Group are concerned that National Grid has failed to connect the risk of transport disruption on the visitor economy to the need for effective mitigation in the NWCC transport strategy. As identified in section 17.8, Cumbria Tourism's business survey highlighted traffic problems for visitors as a major negative factor affecting business performance. It is essential that National Grid recognises that the traffic disruption created by the Project will have a direct impact on the visitor economy and that this could have a significant effect on visitors' perception of Cumbria and North Lancashire in the absence of appropriate mitigation.

17.13.27 The methodology adopted in terms of the assessment of effects on land use and community facilities and services at the project-wide level is appropriate (Chapter 17, Volume 2.3). A further assessment of the effects on land use, as well as planning land allocations, is set out in Chapter 17, Volumes 2.4 and 2.5 for each of the individual sections of the route. The approach to this assessment is considered to be appropriate, although further quantitative details would be expected to underpin the assessment in the ES.

17.13.28 With regard to Volume 2.2, Chapter 17, paragraph 17.7.13 of the PEI refers to a PRoW Management Plan. The PPA Group will need to see this in detail before it can make too many detailed comments. There needs to be a condition that the management plan is approved by the PRoW Officers before implementation. It needs to set out in detail what will happen for every path (see also Section 11.14.19 – 11.14.23 in the Traffic and Transport Chapter 10 of this response).

17.13.29 With regard to paragraph 17.7.15 of the PEI and elsewhere – during the discussions with

National Grid's consultants it was agreed that the rights of way network within the National Park and particularly that to the south of the River Esk would all fall into the higher sensitivity categorisation. This is not reflected in Volume 2.5. An access hierarchy is not an effective way of assessing impacts within a National Park and the Setting. It is considered that this is equally applicable to the Solway Coast AONB.

17.13.30 In paragraph 17.7.16 of the PEI in relation to the Public Rights of Way Management Plan: PMP Packages 1-6 – it states that the specific measures will be developed in conjunction with PRoW officers during 2016. The PPA Group has not seen any detail or information to date. With regard to Package PMP1 – the preamble says that PRoW of low sensitivity would have some or all of measures PMP1-4 applied, whereas those of medium and high sensitivity would extend this to PMP6. The requirements within PMP1 should be totally separate from any hierarchy and must be applied to all affected PRoW and all PRoW forming part of the access routes. With regard to PMP2 – as with PMP1, this should apply to all affected paths. The sentence is meaningless on its own, it needs to clarify if the signage advises of dates and hours of interference with the PRoW, only general hours, or other information. The relationship between the hours, signage, and PRoW needs to be made clear. With regard to PMP3 – the LDNPA does not approve of corridor fencing of PRoW. If there is to be fencing of this nature the path needs to be wide enough, and with no additional obstructions such as gates. All fencing must be removed after the works are completed.

17.13.31 In terms of PMP4 – the emphasis here is wrong. The need for a temporary diversion will not be established in consultation – a closure of a right of way will not be considered in the National Park without a suitable alternative being provided. For PMP4 (1) – the decision on whether to close a PRoW lies with the highway authority, not with National Grid; this needs to be emphasised. For PMP4 (2) – any temporary closure/diversion (TRO) requires 10-15 weeks' notice. A TRO can only last for six months. With regard to PMP4 (3) – it will be the highway authority who will instruct on sign location, not National Grid 'in discussion' with them. With regard to PMP4 – the closure option should not be available to the highest priority routes. The most popular paths are the very ones that should not be closed. With reference to PMP5 – the specific activities mentioned need to be listed. National Grid should confirm whether the provision of banksmen negate the need for closure. Finally with regard to PMP6 – this only applies to line work. Something similar is required for the undergrounding areas (see section 11.13 - Public Rights of Way - in the Traffic and Transport Chapter 10 of this response).

17.13.32 As a general point, there is no mention of the impact on the local road network. Presumably undergrounding is going to cause a similar disruption to the road network as it is the PRoW network. Therefore, this needs to be addressed. If this has been omitted because steps will be taken to ensure that there is no impact on the users of the road network – then identical measures should be taken to remove any impact on PRoW users. Indeed, just looking at map 90 (Vol 3.2), the major road into Ravenglass appears to be being addressed through scaffolding. However, scaffolding will not be suitable for the undergrounding works. How this is going to be managed needs to be explained.



17.14 Application of Methodology

Project-wide Information

- 17.14.1 The limitations at this preliminary stage of the approach used to assess the effect on the local supply chain, as described in section 17.13, restricts the extent to which the significance of effect can be appropriately assessed. National Grid has assumed a **minor or negligible** beneficial effect in terms of the local supply chain at the WSA level. However, this is based on the assumption that 20% of civil engineering expenditure will be supplied locally, which relies on evidence from past projects. The ES will need to provide project specific information in order to more fully understand the nature of supply chain expenditure and the extent to which local businesses are able to benefit from the opportunities generated. It is agreed that, as stated by National Grid, the local supply chain effect during the operational phase will be **not significant**.
- 17.14.2 The preliminary conclusion that the overall effect of both the construction phase and operational phase on the WSA labour market will be **negligible** is only reasonable if the labour market is viewed as a whole. If the effect of the construction phase on the labour market is considered specifically in relation to civil engineering, then the impact could be considerable. As of 2015, there were approximately 2,000 people working within civil engineering in the WSA. The direct impact of the Project's construction phase would be to generate around 1,200 person years of local employment in the civil engineering sector, or an average of some 200 local people employed per annum over the six-year construction period. As identified in the Cumbria Skills Investment Plan, the construction phase of planned major infrastructure projects in the county, including the NWCC Project and Moorside Power Station, are set to *"generate a significant increase in demand for engineering construction trades, with current facilities in the county offering provision relevant to these trades largely full and only limited capacity would exist to expand delivery for local residents"*.^{xxiv} This represents a major risk to National Grid's goal of 20% of the jobs created during the construction phase being taken up by local residents, highlighting that investment in skills training and capital projects will be essential in order to maximise local benefits.
- 17.14.3 In terms of increased expenditure on goods and services from businesses in the tourism sector, the PEI report assesses the level of effect as **negligible** within the WSA. Given the size of the visitor economy, it is also considered that the level of effect on the tourism and visitor sector would not be significant, albeit the impact at the local level would be higher. These are both reasonable judgments.
- 17.14.4 The PEI report states that that the number of people deterred from visiting the WSA as a whole, due to the construction phase, is expected to be very low and not result in a significant effect. Likewise, the overall significance of the effect during the operational phase is judged by National Grid to be **negligible**. National Grid has not provided sufficient evidence to make these judgements as to the significance of the general deterrence effect on visitors. As set out in Section 17.11, evidence from past projects does not reflect the unique nature of Cumbria and the importance of the visitor economy. Similarly, the issues

associated with negative effects on visitor perceptions, as demonstrated by the recent floods, and the effect this can have on the image of Cumbria has not been adequately recognised by National Grid. On this basis, the conclusions of National Grid are invalid.

- 17.14.5 In addition, as previously noted, the PEI report does not adequately assess the significance of impact at the LSA level in terms of the overall tourism and visitor economy. Within the recent Cumbria Tourism business survey, respondents stated that they expected the most significant negative impacts would be on visitor perceptions of the area along the route (66% negative impact to some degree, 43% major negative impact).^{xxv} In particular, the impact on individual smaller businesses along the route could be considerable, especially for those still suffering from the effects of the recent floods. This is not to discount the potential indirect impacts on small businesses not on or near the route. As argued in Section 2.10, businesses across Cumbria were affected by the negative perceptions from the floods. Indeed, 61% of businesses surveyed by Cumbria Tourism were of the view that the NWCC Project would have a negative impact on visitor perceptions of Cumbria as a whole.
- 17.14.6 Taking into account private rented sector housing as well as tourist accommodation, the PEI report concludes that the Project will have a **negligible** effect on accommodation availability within the WSA. The PPA Group challenge the conclusion of this initial assessment and do not believe that sufficient evidence has been presented to determine that the effect will be negligible. The projected growth in the visitor economy over the next five years will lead to decreasing spare capacity in an already busy tourist accommodation market. The aim to grow tourism in the west of LDNP and adjacent areas could further reduce this limited capacity. In addition, there is a significant risk that National Grid will not be able to achieve their target of 20% of the workforce being local residents. This would put further strain on the accommodation market. It was recognised in the Cumbria LEP workshop on the visitor economy that a lack of accommodation availability would have a knock-on effect on perceptions, image and ultimately the loss of repeat business if visitors are displaced.
- 17.14.7 The PEI report assesses the level of effect of the Project on capacity within local schools as being **not significant**. The level of effect in terms of capacity of GP practices is also assessed to be **not significant**, although this analysis is not extended to include all health facilities. In both cases, this is deemed to be reasonable. The number of workers relocating to the WSA, particularly with families, is expected to be relatively low and over a temporary period.

North and South Route Assessments

- 17.14.8 In addition to the project-wide assessment, the appropriateness of National Grid's assessment of socio-economic effects within each section of the route has been considered in this review report, principally in terms of the effects on individual tourism and visitor receptors. National Grid has broken down its analysis into a North route assessment

(Chapter 17, Volume 2.4), covering Sections A, B and C, and a South route assessment (Chapter 17, Volume 2.5), covering Sections D, E and H.

- 17.14.9 On an individual receptor basis, National Grid in its assessment of effect along the North route, correctly acknowledges the potential for a **significant** effect on the Coast to Coast (C2C)/St Begas Way long distance footpaths near Scalegill (Section A) and on the Hadrian's Wall Path (Section C). With regard to the South route, National Grid is also right to recognise the potential **significant** effect, during the construction phase, on a number of tourism and visitor economy assets, including Ravenglass and Eskdale Railway, the proposed England Coast Path (ECP), Ravenglass (Section D) and South Lakes Safari Zoo (Section H).
- 17.14.10 National Grid acknowledges the unique appeal of the LDNP around the LSA, in terms of its scenic quality and tranquillity, particularly in Section D. The disturbance to Section D during the construction phase is also recognised. However, National Grid concludes that construction works would not have a significant effect, relying on evidence from previous National Grid projects. National Grid does not have sufficient project specific evidence to make this statement and, given the appeal of the area and prominence of construction works, there is a risk that the effect could be significant. The same conclusion applies to the LDNP in Section E, where National Grid identifies that the Project could cause a temporary reduction in visitors' enjoyment of the area but argues this would not result in a significant effect. The LDNP is a leading destination brand with international significance and even temporary disturbance to this area could have a significant impact on the visitor economy in terms of affecting longer term visitor perceptions. This is evidenced by Cumbria Tourism's business survey in terms of the ongoing negative perceptions associated with the floods. It was also a key issue raised in the Cumbria LEP visitor economy workshop, with the risk of long term significant impacts being seen as high due to the reliance on regular repeat markets.
- 17.14.11 In relation to the operational phase, National Grid's assessment of visual effects (Chapter 2.7 Visual, Volumes 2.4 and 2.5) predicts longer term major and major/moderate visual and landscape effects arising in Sections C, E and H, as well as moderate effects in Sections A and B, with regard to tourism and visitor economy assets. National Grid, however, argues that *"evidence of a significant effect at a tourism and visitor economy receptor does not necessarily mean there would be a significant socio-economic effect there"*. The existence of visual effects is a strong indicator of the potential for significant effects on the local visitor economy, particular in an area that trades in its visual appeal and landscape. Evidence from previous projects is not sufficient to conclude that the effects on tourism and visitor economy assets would reduce to negligible.
- 17.14.12 As discussed in section 17.13, the assessment of effect in relation to the LSA has principally involved a qualitative judgement of impact. In preparing the ES, a more robust and less subjective methodology is required and National Grid should seek to quantify, where possible, the level of potential impact on medium/high sensitivity receptors. This could, for example, involve exploring the level of dependency of towns within the LSA on tourism. It should also encompass an aggregate assessment of the impact on the LSA as a whole,

recognising the inter-relationship between key receptors. The motivation for visiting this part of Cumbria is often not linked to one particular attraction, but a range of different assets.

17.14.13 With regard to the South Route Corridor Section E, Subsection E2: Land Use - Planning Land Allocations within the DOL – PEI paragraph 17.2.38, Chapter 17, Volume 2.5 says that 'there are no planning allocations for future development sites which have the potential to be directly affected by the Project. All other planning land allocations are located a sufficient distance away from the DOL that the only likely effects are expected to arise in terms of the development of these sites, and thus planning are scoped out from further assessment'. (National Grid's Assessment approach; 'a qualitative assessment of the potential impact of the Project on delivery of the allocated site...', Table 17.7, Chapter 17, Volume 2.2 refers).

17.14.14 There are likely to be potential adverse effects on land allocated in Local Plans and existing employment sites. The details of these potential effects are presented in the subsequent sections below. There is a concern that the socio-economic cumulative effects e.g. on land use/local authority land allocations, are not picking up the cumulative effects of the proposed works taken as a whole, including both National Grid and Electricity North West proposed new infrastructure; e.g. the effect of the 400kV line/pylons, the new ENW 132 kV latticed Trident terminal pylon, and substations.

17.14.15 National Policy Statement for Energy (EN – 1), paragraph 5.10.5 states that the ES should include an assessment of 'any effects of precluding a new development or use proposed in the development plan'. Whilst the NWCC Project may not necessarily preclude development of some sites, the temporary nature of some of the works e.g. temporary site compounds could potentially affect viability.

17.14.16 PEI Volume 2.5, Chapter 17. paragraph 17.2.48 – The references to sensitivity of certain settlements appears inconsistent; e.g. Broughton-in-Furness has been given the same level of sensitivity, in terms of tourism and the visitor economy, as Haverigg and Millom. The aforementioned are categorised as medium sensitivity. In this case, the tourism and visitor economy is more prominent in and around Broughton, especially in terms of accommodation and recreational use (walking and cycling in particular), than in Millom and Haverigg. Hence it is suggested that the sensitivity of receptors ought to be re-visited having regard to their contribution to the visitor economy.

17.15 Commentary on Proposed Mitigation

Section Summary:

- (i) In terms of addressing landscape and visual impacts, particularly in relation to maintaining the quality of the visitor experience, National Grid's mitigation measures should be expanded to include a funded package of improvement works to receptors of high sensitivity, such as the C2C cycle route and Hadrian's Wall National Trail;

- (ii) linked to traffic and transport mitigation measures and minimising the disruption to the visitor economy, and recognising congestion as a major deterrent for visitors, it will be essential that a multi-modal transport strategy is developed to mitigate the Project's traffic impacts;
- (iii) lack of mitigation of impacts on the PRoW network. Need for effective mitigation through signage, info, reinstatement, and improvement to the condition of the areas PRoW network;
- (iv) the Employment and Skills Framework should continue to be developed, outlining in detail how National Grid will work with other local employment and recruitment agencies and existing training/infrastructure providers to maximise local benefits, including through the provision of revenue and capital support. This should encompass utilising existing initiatives and/or the setting up of a local employment partnership as necessary, targeted at the long term unemployed, and should be secured a S106 or through the DCO process;
- (v) recognising the significant deficiencies in assessing the effect on the visitor economy, National Grid needs to explore the use of undergrounding and other non-pylon technology in other areas, particularly where major visual and landscape effects have been identified (see chapter 8 for further detail). This should be based on a reassessment of the significance of the effect on the visitor economy;
- (vi) a resilience fund is required for small and medium sized businesses that will be affected by the Project, recognising that there are a number of businesses still recovering from the recent floods. This fund would provide direct revenue and, where appropriate, capital support to businesses in order to mitigate the effects of the Project;
- (vii) Local Liaison Plans are not wide enough in scope to counter the potentially significant adverse impact the Project could have on perceptions of Cumbria and North Lancashire as a visitor destination. A broader Communications Plan is required, targeted at ensuring people know the county is still 'open for business'; and,
- (viii) due to National Grid's flawed approach to assessing the significance of the effect on visitor accommodation supply, it is unlikely that the mitigation proposed will be sufficient, particularly in areas targeted for tourism growth. Further support is therefore needed to increase the supply of temporary worker accommodation in key areas where there is likely to be a capacity constraint. This will need to include funding following the construction phase to convert vacant worker accommodation to other uses.

17.15.1 The flawed methodology, which in turn has led to inadequate assessments and understatement of likely significant impacts on the visitor economy, has been explored in previous sections. The inevitable result of these failings is that the proposals for mitigation are inadequate. It is essential that once the methodologies are revised in line with our

earlier comments that the assessment of likely impacts is completely reviewed. Once this has been completed the need for mitigation will need to similarly be completely re-run.

- 17.15.2 Chapter 17, Volume 2.2 of the PEI report includes a summary of the environmental measures (formerly referred to as good practice mitigation) that would be adopted in relation to farming and other land use, PRoWs, events, the supply chain and the labour market. The suggested measures with regard to farming and other land uses are welcomed and it is important that, where possible, the continued operation of businesses is enabled, or disruption minimised, through early engagement and consultation.
- 17.15.3 Similarly, the proposed environmental measures to minimise the disruption to PRoWs is also welcomed. However, linked to landscape and visual impacts and recognising the importance of PRoWs to the tourism offer of the Cumbrian visitor economy, a funded package of improvement works to receptors of higher sensitivity, including the C2C cycle route and Hadrian's Wall National Trail, is required. This would need to align with Coastal Team Growth Plans and other wider sub-regional plans such as the West Cumbria Corridor Travel Plan.^{xxvi} National Grid should seek to engage with local partners to explore how it can contribute to the priority measures identified within these plans.
- 17.15.4 The proposed inclusion by National Grid of an Events Management Plan within the Construction Traffic Management Plan (CTMP) is welcomed. The suitability of proposed environmental measures to minimise the impact of construction traffic on events will need to be assessed once further details of the Plan are provided. More active mitigation in the form of marketing and promotional activities will though also be necessary to help offset potential negative visitor perceptions of the Project, as discussed further below in relation to tourism. In addition, linked to traffic and transport mitigation measures, a multi-modal transport strategy will be essential to minimising the impacts of the construction phase on the visitor economy, particular in terms of maintaining the quality of the visitor experience.
- 17.15.5 With regard to supply chain environmental measures, the development of the OESF is welcomed and provides an indication of National Grid's commitment to ensuring that both residents and local businesses will benefit from the NWCC Project, primarily through the inclusion of a Supply Chain Charter within the Tier 1 contracts, which sets out the contractor's commitment to:
- seeking to employ local people;
 - appoint local businesses; and,
 - develop local people's skills where possible.
- 17.15.6 Where specific clauses are introduced as part of the contractual process, it is vitally important that they are cascaded through the sub-contracting chain. It will be particularly important therefore that the Employment and Skills Framework and the individual contracts negotiated between National Grid and the Tier 1 contractors clearly specify that it will be the contractors' responsibility to ensure that their commitments to achieving specific targets (for example, 20% of jobs being taken up by local people during the construction phase)

are passed down and met by the Tier 2/3 local suppliers. The Tier 1 contractors will need to demonstrate that they have robust mechanisms in place for monitoring and reporting on compliance of their sub-contractors and effective sanctions in place for addressing non-compliance and under-performance – for example, removal from the Compete For procurement portal if targets are not achieved. Equally, the OESF will also need to outline how and when National Grid will report on the overall performance of their Tier 1 contractors.

17.15.7 The OESF provides a strong foundation upon which to develop measures to maximise the ability of local labour to access employment opportunities generated by the Project. However, the proposed supply-side measures need to reference how National Grid/Tier 1 contractors:

- Will work with other local employment and recruitment agencies to ensure that individuals are effectively matched to suitable opportunities (brokerage role);
- will develop pre-recruitment skills training and upskilling training support for existing employees/businesses that require investment in skills to be able to compete for contracts arising; and,
- will work with the existing training infrastructure/providers to ensure that they respond to the gaps in provision now, so that the pipeline of skills will be available once the project becomes operational in 2018. Many training/skills development courses require a significant lead in time. This will involve revenue and capital support, investing in existing educational institutions to increase capacity and making contributions towards new facilities where provision is not available.

17.15.8 It is difficult to comment on the extent to which National Grid's current targets in relation to the labour market are realistic at this stage. It is not possible to assess the targets in terms of how realistic (or otherwise) they are and their potential impact on other businesses without detailed information on the skills requirement for the direct workforce and the supply chain workforce. This will depend on further work to scope the skills of the existing labour market and the business base, as identified in section 17.6 and section 17.12, and how these align with the Skills Matrix and proposed programme of works – yet to be prepared by National Grid. Given the constraints on the labour market though, National Grid should seek to work with partners, such as Jobcentre Plus, to target employment opportunities to those who are long-term unemployed or currently economically inactive. This should be in the form of a local employment partnership incorporated within the OESF. As part of this approach, it will be important that National Grid provide support for pre-employment training to ensure that people are 'work ready'.

17.15.9 It is also questionable as to whether or not the 20% target is sufficiently far reaching. It is unclear as to whether sufficient consideration has been given to the displacement/increased competition/wage inflation effect of having a 20% target. Evidence should be provided to demonstrate that suitable mitigation measures have been considered for those businesses

affected. Labour market measures should be targeted not just at those who might obtain work on the contract but also at those who could back fill at those businesses where staff have left, together with appropriate recruitment and training assistance for those businesses.

17.15.10 The design principles incorporated into the Project, most significantly the undergrounding of cables passing through the LDNP and proposals to build a tunnel under Morecambe Bay, are welcomed and will help to reduce the impact on the visitor economy during the operational phase. The PPA Group are concerned though that there is a failure to apply this design mitigation approach to the rest of the route. In particular, undergrounding and use of other non-pylon technology should be explored to address the significant visitor experience impacts across the whole of the route, given that much of the landscapes in Cumbria and North Lancashire are of high quality, and include valued landscapes of national value (i.e. the LDNPA, Solway Coast AONB and their settings).

17.15.11 In terms of DOL Mitigation – Farming and other land uses and businesses, including residential properties. – welcome discussions being undertaken by National Grid with all affected landowners and occupiers to understand the specific requirements of each land use and to inform Project design and reduce the effect of the Project, (PEI paragraphs 17.7.10 to 17.7.12, Chapter 17, Volume 2.2 refers). There is a need to minimise effects on Best and Most Versatile land and farm businesses. Also, the PPA Group welcome the inclusion of design principles and environmental measures to minimise land use effects on agricultural productivity and businesses, including measures to ensure that access to premises and to individual fields is maintained and any land which is disturbed is reinstated to the condition it was prior to construction. (PEI paragraph 17.2.133, Chapter 17, Volume 2.5).

17.15.12 However, linked to the need to address identified landscape and visual effects through additional design mitigation, The PPA Group are strongly concerned that National Grid is not proposing any further mitigation in relation to the potential deterrence effect on visitors to the area due to negative perceptions about the construction phase or adverse visual effects during the operational stage. As argued in section 17.14, sufficient project specific evidence has not been produced to support the assertion that such effects will be negligible. Moreover, the importance of the visitor economy in Cumbria and North Lancashire, its unique nature and the characteristics of visitors and their reasons for visiting suggest that the area could be particularly susceptible to impacts to its landscape, visual amenity and general ambience. Therefore, in line with our comments at the start of this section, it is essential that National Grid re-visit the mitigation needs once the methodology has been revised.

17.15.13 Further mitigation is particularly important to support small and medium sized businesses (SMEs) in the visitor economy, and wider economy where appropriate. Cumbria has a large proportion of smaller businesses, many of which are still recovering from the recent floods, which could be severely impacted during the construction phase. The provision of a 'resilience' or 'crisis' fund that SMEs or facilities led by community groups could access if they could demonstrate they are adversely affected by the Project would help mitigate against this. It is considered that appropriate mitigation, such as support for small and

medium sized businesses in the visitor economy and marketing and promotional activities are required to counter the disruption caused during the construction period and the negative perception driven by the adverse impact of the Project on the landscape, which attracts visitors.

17.16 Project wide assessment WSA Mitigation - Information and Awareness –

- 17.16.1 National Grid sets out mitigation measures relating to information and awareness during the construction phase, including a Local Liaison Plan for each specified location where a potential significant effect has been identified. Subject to the findings of the visitor surveys taking in place in summer of 2016, welcome that consideration will be given to providing mitigation to improve awareness of the Project for visitors and businesses; in the form of a Local Liaison Plan for each specified location, where a potential significant effect has been identified. (PEI paragraphs 17.4.3 to 17.4.5, Section 17.4, Chapter 17, Volume 2.3 refers). Nonetheless, such an approach is not wide enough in scope. Information and awareness mitigation needs to extend beyond impact reduction related to specific locations, encompassing a broad Communications Plan, with appropriate funding, that is developed by National Grid in conjunction with the Cumbria and Lancashire LEPs and tourism bodies. The Strategy should include a PR campaign, sufficiently in advance of scheduled works to counter negative perceptions that visitors from outside of the local area may form. It should also include pro-active marketing and promotion of key visitor attractions, festivals and events to demonstrate that, in terms of the visitor economy, it is still 'business as usual'.
- 17.16.2 National Grid acknowledges that there is a potential adverse effect with regard to high demand for private rented housing and visitor accommodation around Barrow-in-Furness and also between Drigg and Silecroft, where undergrounding works are due to take place. An Accommodation Plan is proposed by National Grid which seeks to ensure that demand does not cause displacement of visitors. This mitigation is welcomed. However, the basis for National Grid's mitigation proposals, in relation visitor accommodation, is driven off a flawed approach to assessing the significance of effects, as described in section 17.12. This underestimates the future capacity requirements of key areas of tourism growth, such as the west part of the LDNP and, therefore, the mitigation proposed is unlikely to be sufficient. The assessment should again be rerun and the extent of mitigation proposed revisited. Additional mitigation could include support to increase the supply of temporary worker accommodation, including the provision of capital contributions. Funding would also be required, following the construction phase, to convert vacant worker accommodation for other uses.
- 17.16.3 It is noted that in PEI paragraph 17.4.1, reference is made to an Accommodation Plan proposed for Barrow and South Lakeland but not Lancaster. In this regard, PPA authorities require that National Grid and their contractors prepare and agree a contractors' workforce accommodation strategy. This need not include the direct investment in or provision of workforce accommodation, but must show engagement with suppliers to provide quality accommodation. Acceptable elements of the strategy should include:

- Arrangements with local hotels, guest houses and other accommodation providers for exclusive bookings linked to monitored investments by the providers into the quality of their offer; and,
- investments in priority housing areas, including the west end of Morecambe.

17.16.4 Unacceptable elements of any strategy would be:

- Market free-for-all with no planning or certainty;
- opportunities for landlords to exploit contract workers in sub-standard bed-sits, guest houses and apartments;
- long distance commuting;
- missed opportunities to work with land and property owners in areas such as the West End of Morecambe, which undermines the Council's regeneration priorities; and,
- failure to plan for increased demand for accommodation, and failure to provide quality accommodation for the contractor workforce.

17.16.5 It is note that the PEI currently identifies no significant effects in relation to Socio-economic, Recreation and Land Use mitigation proposed in relation to the parts of South Route Section E, subsection E2 (Chapter 17, Volume 2.5), and Section H, subsections H1 and H2 (Chapter 17, Volume 2.5).

17.16.6 In terms of Project wide assessment WSA Mitigation – Recreation PRoW – The PPA Group welcome measures proposed for the construction phase to minimise the deterrent effect on visitors. The group also welcome project wide measures such as the Public Rights of Way (PRoW) Management Plan (PMP) (to reduce disruption to walkers and users of bridleways and cycle routes) and the CTMP (to reduce the effects of construction traffic on public roads). At this time (PEI), more clarity is needed on the appropriate mitigation measures that are required and that will be included in the package of measures in the PMP. The PPA Group are however concerned that the PMP has yet to be developed (See section 17.13.30 above and Section 11.13 Public Rights of Way in the Traffic and Transport Chapter 10 of this response) as this leaves little opportunity to contribute before decisions are made for the final ES.

17.16.7 With regard to environmental measures proposed for the Construction Phase, the PPA Group welcome the Code of Construction Practice (CoCP), to minimise the effects of construction traffic on public roads, which could have a deterrent effect on visitors'. Paragraphs 17.7.6 to 17.7.9, Chapter 17, Volume 2.2 of the PEI refers.

17.16.8 Events Management Plan – The inclusion of an Events Management Plan within the

Construction Traffic Management Plan (CTMP) is welcomed. Paragraphs 17.7.17 to 17.7.23, Chapter 17, Volume 2.2 of the PEI.

- 17.16.9 Project wide - Business Supply Chain – The Outline Employment and Skills Framework (OESF) referred to in PEI paragraphs 17.7. 24 to 17.2.26, Chapter 17, Volume 2.2 is welcomed. It is disappointing that the content of the consultation proposals, on what measures will be put in place to achieve the targets and objectives, is at this stage inadequate to provide support for the proposals. Commitment to legacy benefits that would likely arise from the proposed environmental measures that offer a commitment to maximising opportunities for local businesses to form part of the supply chain and also commitments regarding skills, training and education is welcomed. Equally, there is support for the commitment to secure 20% as a minimum of the workforce from the local labour market. However, as stated above, it is questionable as to whether or not the 20% target is sufficiently far reaching and whether sufficient consideration has been given to the displacement/increased competition/wage inflation effect of having a 20% target. Also, National Grid must provide commitment to providing support to target those that are currently economically inactive to help ensure that they can secure work. It is noted that a further developed OESF will be included in the ES. Paragraph 17.2.7 Chapter 17, Volume 2.3 and Chapter 17, Volume 2.7 and Appendix 17F of the PEI also refer.
- 17.16.10 In terms of good practice mitigation the PPA Group consider that the whole route requires mitigation. Furthermore, it is considered in terms of the following, further detailed comments should be provided / addressed;
- South Route Corridor Subsection - E2 welcome mitigation measures to ensure the continued use of Kirkby –in-Furness/Wall End PRow - FP 539051, FP 539050 and a 100m section of FP 539051, during the construction phase; and,
 - mitigation measures based on Packages PMP 1 to 5 as part of the PRow Management Plan.
- 17.16.11 Overall, it is disappointing that the PEI did not provide more information on the specific mitigation proposed for inclusion in the PMP. Reference Paragraph 17.2.95, Chapter 17, Volume 2.5.



17.17 Other Effects

Section Summary:

- (i) The PPA Group challenge National Grid's conclusion that there would not be any significant residual effects. In particular, without further mitigation (see Section 6), there is a risk of significant effects associated with the deterrence effect on visitors and the impact of the Project workforce on visitor accommodation supply during the construction phase;
- (ii) within the ES, National Grid should explore further the inter-relationship between the construction phase and the operational phase and the potential for this to result in long term negative perceptions of the area; and,
- (iii) National Grid's preliminary cumulative effects assessment rightly identifies the potential for possible cumulative effects relating to the local labour market, tourism and the visitor economy, and demands on local facilities and services, including local accommodation. The ES will need to assess these effects in detail, outlining appropriate mitigation measures.

17.18 Commentary on Residual Effects

17.18.1 In relation to the project-wide assessment and North and South route assessments, National Grid conclude that across each of the three Project phases (construction, operation and decommissioning), subject to the adoption of the proposed mitigation measures, the residual effects are considered to be not significant. The appropriateness of this statement will need to be tested in the ES, as more detailed information and modelling is developed, particularly around the supply chain and labour market and consequential impacts on the accommodation sector and other business sectors. However, based on the analysis presented within the PEI and in the absence of the additional mitigation measures proposed in section 17.17, the PPA Group are strongly concerned that there would be significant residual effects.

17.18.2 A key area of concern is the impact on the visitor economy, both within Cumbria as a whole and in the LSA. The mitigation measures thus far proposed by National Grid are not sufficient to ensure that residual effects would be not significant in terms, particularly, of the deterrence effect on visitors and the demands on the accommodation sector. Furthermore, without active mitigation, there is a risk that the scale of the benefits of the Project, relating to the supply chain and labour market opportunities for local businesses and residents, would be constrained through a lack of sufficient capacity.



17.19 Commentary on Approach to Inter-Relationship Effects

- 17.19.1 The approach to inter-relationship effects adopted within the PEI report is reasonable and the potentially significant inter-related effects identified in terms of socio-economics, recreation and land use are appropriate. However, the inter-relationship effects should be more clearly sign-posted within the project-wide assessment (Chapter 17, Volume 2.3). In particular, the inter-relationship between the landscape, visual, traffic, transportation, construction, noise, air quality, geology and soils, and historic environment effects and socio-economic effects (specifically, the tourism and visitor economy) should be more explicitly defined.
- 17.19.2 National Grid should also give consideration to the inter-relationship between the construction phase and operational phase of the Project. As outlined in section 17.13, a key factor underpinning the success of many tourism businesses in the WSA is returning customers. The potential visual deterrence effect during the operational phase could exacerbate already negative perceptions formed by visitors during the construction phase, increasing the magnitude of impact. Similarly, the inter-relationship between key tourism and visitor assets in the LSA should also be considered.

17.20 Commentary on Cumulative effects

- 17.20.1 The approach described in the PEI report in terms of identifying the Long List and Short List of other major developments that will form the basis of the cumulative effects assessment (CES) is reasonable and consistent with good practice. This should include projects such as West Cumbria Mining Project, the United Utilities West Cumbria Pipeline Project, development at BAe in Barrow and GSK in Ulverston. The CES will form part of the ES and is not contained within the PEI report. A high-level assessment has though been provided of the possible cumulative effects with the Moorside Power Station, including in relation to socio-economic, recreation and land use effects.
- 17.20.2 The project wide chapter covering cumulative effects, only covers the Moorside project. The assessment of likely significant effects needs to take into account the baseline (which may change), in terms of any cumulative effect(s) with other major development, in order to inform the cumulative effects assessment (CEA).
- 17.20.3 The preliminary CEA identifies the potential for possible cumulative effects relating to the local labour market, the tourism and visitor economy, and demands on local facilities and services. It is agreed that these are likely to be the main areas of cumulative effect. The development of new railway infrastructure and accommodation sites, as part of the Moorside project, is highlighted in the preliminary CEA as potentially combining with the NWCC Project to give rise to significant effects in terms of demands on local accommodation and services. It is welcomed that National Grid are committed to setting out measures to mitigate against these potential adverse effects within the ES.

- 17.20.4 Major development is also proposed at GSK (Ulverston) and BAE Systems (Barrow-in-Furness) in the Furness Peninsula. There potentially could be effects, such as competition for worker accommodation during construction and local labour completion. This should be considered. It is welcomed the fact that a currently evolving preliminary 'short list' and a 'long list' of development is being compiled. Volume 2.2, Chapter 17, paragraphs 17.6.16 to 17.6.17 of the PEI. and the wider cumulative effects Volume 2.3, Chapter 22 – Cumulative Effects Assessment and Volume 2.7 (Technical Appendices), Appendix 22D (Long List Other Major Developments) and 22E (Additional Long List Projects), refers.
- 17.20.5 While National Grid are of the view that the residual cumulative effects on the local labour market would be minor beneficial, it is important to recognise the skills challenge facing the local economy. The Cumbria Skills Plan sets out early estimates of the employment potential of the nuclear sector in Cumbria, assembled by the Centre of Nuclear Excellence (CoNE). This shows, for example, a peak in demand for civil engineers in 2021/22 of 3,200 new jobs.^{xxvii} If a significant proportion of these jobs are to be taken up by local people, considerable requirements will need to be placed on the Cumbria skills system. In this context, it is essential that mitigation measures adopted by National Grid, including the OESF, seek to close the skills gap, minimising the need for non-local workers.
- 17.20.6 The preliminary CES acknowledges the possible adverse effects on tourism and the visitor economy inside the LSA, linked to the potential for people to be deterred from visiting the area as a result of the cumulative landscape and traffic impacts of Moorside and the NWCC Project. It is welcomed that National Grid intend to examine possible localised adverse cumulative effects on the visitor economy further in the ES. However, the ES will also need to consider the cumulative impact of the NWCC Project and Moorside on visitor perceptions of Cumbria as a whole, as well as North Lancashire, with the risk that the combined scale of the projects is such that there are could be significant adverse effects across the county.

17.21 Commentary on Assessment Limitations

Section Summary:

- (i) As outlined throughout this review report, the principal assessment limitation associated with much of National Grid's analysis is that it is based on evidence from previous projects, with some significant gaps in the information base in relation to project specific data. As part of developing the ES, National Grid will need to provide more evidence that relates directly to the visitor and wider economies of Cumbria and North Lancashire; and,
- (ii) there is also a more comprehensive LSA wide analysis of the visitor economy required to fully understand its importance and role within the county. This should be combined with an assessment of the wider economy in both the LSA and WSA, considering the effects of the Project on non-tourism related sectors.

- 17.21.1 The PEI report recognises that a current assessment limitation is the use of findings from earlier projects, relating to visitor and business responses to the development of National Grid infrastructure. This limitation will be partly addressed through the project specific surveys undertaken during summer 2016. As noted previously though, there has been recent criticism of survey-based approaches in evaluating impacts. It is recommended that National Grid explore the feasibility of using econometric techniques to assess the impact of previous schemes, albeit recognising the limitations of applying findings from earlier projects to the visitor economy of Cumbria and Lancaster.
- 17.21.2 Experience from other projects also largely forms the basis for National Grid's assessment of business supply chain and labour market effects. This limits the extent to which robust conclusions can be formed as to the significance of the supply chain and labour market impacts. As part of the ES, it is National Grid's intention to develop a more detailed economic model to measure the direct, indirect and induced effects on supply chain businesses. It is recommended that this should be accompanied by an integrated labour market and skills model, reflecting the 'match' between the skills requirements of the NWCC Project and the local skills base and labour market capacity.
- 17.21.3 A further assessment limitation recognised by National Grid is the need to confirm the status of certain receptors where there is no recent evidence of activity through a web search. While the confirmation of such details in the ES is welcomed, there is still a requirement for a more comprehensive LSA wide analysis of the visitor economy. This would include looking at levels of visitor use, including informal use, in the LSA, which it is hoped could be informed by the count survey data collected over the summer.
- 17.21.4 In terms of Socio-economics, Recreation and Land Use: Methodology – the assessment of effects on receptors should pick up the cumulative effect of the proposed works as a whole.
- 17.21.5 In terms of Furness (in South Lakeland District) specifically - Geographic Sub Sections E2, H1 and H2, this means including assessing the effects/impact of both the proposed National Grid 400kV OHL, plus the new proposed Electricity North West OHL; the 132 kV Wooden Pole Trident line.
- 17.21.6 For Project wide – Understanding extent of effects on traffic disruption to local economy/tourism - concerned that the extent of any traffic disruption to visitor attractions and accommodation and other tourist sector businesses will not be fully understood until all effects, including severance effects, are assessed. The PPA Group is concerned that these effects are not fully understood and considered in terms of any effects, in the PEI.
- 17.21.7 This is of relevance across the project area. The PPA Group also have some detailed comments with regard to the geographic sections within South Lakeland District, where tourism is a significant part of the local economy and there are few alternative main/strategic highway routes through the area, other than the A590 and the A595. Paragraph 17.2.115, Chapter 17, Volume 2.5 of the PEI refers. Effects will be included in the ES at Chapter 10 Traffic and Transport. Any mitigation will be set out in the Construction

Traffic Management Plan (CTMP). Paragraph 17.2.52, Chapter 17, Volume 2.3 of the PEI refers.

17.21.8 For the South Route Corridor E – including within the LDNP and its setting, additional traffic arising as a result of construction work has the potential to be disruptive to visitors, if it leads to driver delay on the road network. The PPA Group are concerned that the significance of driver delay effects arising as a result of the construction works (a Project specific assessment) it is noted is not available for the PEI, but will be presented in Chapter 10 Traffic and Transport of the ES. Whether delays that may arise have an adverse effect on the visitor economy will be examined in the ES. There is also potential for delays for people using the road network to travel to work and school. Concern that the cumulative effects (location, significance, mitigation) of development on the highway network in the area needs to be assessed and the effects are not fully considered in the PEI. Paragraph 17.2.115, Chapter 17, Volume 2.5 of the PEI refers.

17.21.9 During the discussions with National Grid's consultants it was agreed that the rights of way network within the National Park, and particularly that to the south of the River Esk would all fall into the higher sensitivity categorisation. This is not reflected in Volume 2.5. An access hierarchy is not an effective way of assessing impacts within a National Park. With regard to 17.1.17 onwards – it is quite difficult to work out easily which paths have been given what sensitivity. A map is the best way of doing this. The way it is has been set out is confusing.

17.21.10 A few of the issues that have been noted:

- It is considered that National Grid should pay appropriate regard to the Allerdale Way and Smugglers Way;
- in PEI paragraph 17.1.32 – reference is made to the 'Ravenber Way' and the 'Eastern Hadrianic Way' as being long distance footpaths. Neither of these are officially recognised long distance routes, and don't appear to be mapped by the Ordnance Survey. The Lake District National Park Authority were unaware of their existence until mentioned by this project. They appear to be routes about which leaflets and guides have been published – and therefore any other route locally promoted should carry equal significance;
- in PEI paragraph 17.1.34 – an example of the confusing descriptions is that this paragraph states that all the PRoW are considered to be of moderate recreational value and medium sensitivity. Yet;
 - at 17.1.22 the report states that the English Coastal Path will be of high sensitivity;
 - at 17.1.39 the report identifies some low sensitivity paths, as it does at 17.1.42;
 - 17.1.41 identifies a path with high sensitivity;
 - it is therefore difficult to properly judge precisely what is being said about which Rights of Way;
- further confusion is introduced by repetition, but in different terms. For instance, PEI paragraph 17.1.32 discusses the Ravenber Way, which is again discussed at 17.1.130. Everything relating to one path needs to be in the same place;
- in paragraph 17.1.130 the PEI identifies 12 PRoW with medium sensitivity;
- in paragraph 17.1.133, the PEI states that all others have low sensitivity;

- in paragraph 17.1.144 the PEI mentions a significant effect on Walls Drive (FP418001) – but only classes this route as medium sensitivity in the hierarchical assessment at 17.1.36; and,
- in paragraph 17.1.133 – this section refers to the temporary construction of access routes. There is no indication as to the management of these, many of which coincide with PRoW. These are as important as the PRoW being directly affected. Therefore, they must be included within the PRoW management plan.

17.21.11 In terms of Project Wide - Assessment of the summer 2016 tourism business and visitor surveys - concern that the Project specific survey results and associated analysis are not in the PEI. They are still required to inform the ES. The survey results and any associated analysis are required to test the response of visitors and businesses to the Project.

17.21.12 Concern that the Project specific survey results of the intercept surveys undertaken during the summer of 2016, to test the response of users of long distance routes e.g. Cumbria Coastal Route (CCW) to the Project, is not available in the PEI. It will be reported in the ES. (Paragraph 17.2.120, Chapter 17. Volume 2.5 of the PEI refers).

17.21.13 With regard to the potential impact of construction labour and the capacity and impact on the existing private rental accommodation sector - during the construction phase, workers are likely to need accommodation. Given the relatively high cost of buying properties, demand for rented houses is increasing in South Lakeland. Table 17.7 refers to 16.1% of the total housing stock in South Lakeland is private rented. There is a need to quantify the impact on the rented housing sector. Volume 2.2, Chapter 17, Table 17.7 in the summary of assessment approach says that a quantitative assessment will be used. Paragraphs 17.1.50 - 53, Chapter 17, Volume 2.3 of the PEI refer.

17.21.14 With regard to the cumulative effects of other major development, the PEI considers the significance of effects to the extent that information is currently available, (Paragraph 17.6.13, Chapter 17, Volume 2.2 refers). Chapter 22 Cumulative Developments, Volume 2.3 in the PEI, describes the methodologies used to identify major developments that could have a cumulative effect with the Project. There is concern that the detailed information relating to other major development shortlisted to inform the cumulative effects assessment (CEA), is not available/considered in the PEI. A full CEA has not been undertaken. Cumulative effects will be assessed in detail in the ES, including a short list of major projects including the Moorside Power Station project, and any other major emerging projects such as potential tidal lagoon projects in the area (paragraph 17.6.16 of the PEI).

17.21.15 With regard to the status of receptors there is a need for ongoing assessment. The status of some receptors still needs to be confirmed, for example, through site visits or by other means; e.g. permissive rights of way and accommodation businesses where evidence is needed of recent activity. (Paragraph 17.7.41, Chapter 17, Volume 2.2 of the PEI).

17.21.16 Finally, the issue was raised in section 17.13 that additional analysis is recommended of the Project, specifically the construction phase, in terms of its impact on other areas of the economy beyond tourism (or in terms of the supply chain). Specific land use receptors are

analysed, but the effect on sectors within the wider economy from, for example, traffic congestion and labour market displacement, is not currently assessed in detail. Further detailed assessment particularly in view of other planned developments will also be necessary to determine the effects on the labour market. It is suggested that a wider economy assessment is undertaken as part of the ES, at both the LSA level and WSA level, and that this would include consideration of the effects of the Project on land and property market prices.

17.22 Commentary on Land-Use/Planning Implications

- 17.22.1 The Chapter dealing with Socio Economics, Recreation and Land-Use considers the potential effects of the Project on future investment through consideration of planning land allocations and permissions for development along the route.
- 17.22.2 The Introduction and Methodology refers to National Policy EN-1, EN-5 and the NPPF to assess the existing and future land-use and to Best and Most Versatile (BMV) agricultural land. There is also reference to the Countryside and Rights of Way Act 2000 and S.11A of the National Parks and Access to the Countryside Act 1949. The Study Area includes the Draft Order Limit (DOL) plus 5km offset. District Local Plans, Economic Plans, LEP Economic Strategies and the Partnership Plan for the LDNP were used as sources.
- 17.22.3 The methodology looks at potential effects on development sites, sites with planning permission, and sites allocated in Local Plans that will delay development or physically affect development. The assessment includes a qualitative assessment of the Project on the delivery of allocated sites and sites with planning permission.
- 17.22.4 The methodology to assess effects acknowledges that there is no set standard to define receptor sensitivity for Socio-Economics, Recreational and Land Use. Nonetheless, the applicants have adopted the approach using EIA type measures to assess sensitivity/magnitude of effect and significance of effects. The applicants chose a measure to separately assess the effect on BMV agricultural land based on whether the area of the development exceeds 20ha of BMV land as a permanent loss.
- 17.22.5 The Project Wide Assessment found that due to the temporary nature of the construction works and the small amount of land take in the context of the extent of the agricultural land in the Wider Study Area, the effects were assessed as having a negligible effect that is considered not 'significant'. During the operational phase of the development, there would be 6ha of BMV land that would be permanently affected, which is much less than their suggested threshold of 20ha, and therefore in their view this would not be significant.
- 17.22.6 An assessment was then carried out for the North Route (Section A, B & C) and the South Route (Section D, E & H) respectively. The findings are summarised below.



Section A (Sub Sections A1 - Moorside to Thornhill; A2 - (Thornhill to Whitehaven),

- 17.22.7 The assessment for the North Route for Section A (Sub Sections A1 and A2) identifies potential effects of the Draft Order Limits on land on the western fringe of the Westlakes Science Park (restricting the scale and type of development) and the Moorside site – the location of the NuGen new nuclear power station, along with 2 allocations of land in the Copeland Local Plan Core Strategy (Ehen /Keekle Valleys Tourism Opportunity Site , land at Homewood, Whitehaven (WE10) and growth opportunities along the route of the Whitehaven Eastern Relief Road). Consideration should also be given to the opportunity to rationalise the existing wirescape around the site of the proposed Whitehaven Education Campus at Red Lonning, Hensingham to protect and maximise the development potential of this site. There is also a possible Opportunity Site at Hensingham Common comprising 16ha of employment land of which 1.8ha would be used as a site compound.
- 17.22.8 There is also an associated development site proposed on land at Low Hall Farm, Mirehouse, Whitehaven on the southern edge of the town, which is being promoted for nuclear worker accommodation with associated facilities and subsequent long-term legacy within the Draft Order Limit. It is intended that this development could initially be used for multiple occupation for the nuclear workforce, and then refurbished into a permanent quality housing scheme. The siting of the pylons and overhead lines is critical to the long-term viability of the proposed scheme.
- 17.22.9 The assessment suggests that the effect of the National Grid proposals during the construction phase on these allocations is not likely to be significant due to the temporary nature of the works. However, the potential for the proposed alignment to impact on the layout of any development proposals for the NuGen Temporary Accommodation area at Mirehouse, south of Whitehaven remains a significant concern. It is recommended that the route of the temporary 132 kV line could be straightened and one of the pylons removed. However, the siting of the 400kV pylons would directly impact upon the proposed main vehicular access and the residential layout to the site. Realignment of at least 3 of the proposed 400kV pylons and lines that would oversail the proposed associated development site would be necessary to avoid directly impacting upon the deliverability of this site. However, in addressing this issue the PPA Group consider that National Grid must also be mindful of the proposed Whitehaven Eastern Relief Road.
- 17.22.10 In addition, the NWCC project may in itself (excluding any revisions proposed above) lead to both construction and operational long-term effects on a proposed Whitehaven Eastern Relief Road. The exact route of the road is still at the conceptual design stage, however, there are clear overlap with works and therefore the construction programme and mitigation measures will be required to ensure the development is not affected.
- 17.22.11 During the operational phase, the PEI states that no permanent effects are anticipated on planning allocations aside from the impacts on the proposed accommodation site at Mirehouse, Whitehaven referred to above.



Section B (Sub-Sections B1 – Whitehaven to Seaton; B2 - Seaton to Tallentire; B3 –Tallentire to Aspatria)

17.22.12 The assessment for the Section B (Sub-Sections B1, B2, B3) has identified that the development would affect Ehen/Keekle Valleys Tourism Opportunity Site; Lillyhall Industrial Estate, Whitehaven Commercial Park and Derwent Forest Site. Whilst the assessment suggests that the degree of impact is not significant, the potential to cross the Ehen/Keekle Valley Tourism Site is a concern. In terms of Lillyhall Industrial Estate, Whitehaven Commercial Park and the Port of Workington (including adjacent land allocation), the PPA Group are concerned that the use of these areas for temporary compounds could sterilise development in the long-term, despite their temporary use, which would be likely to last no more than 5 years.

17.22.13 The PEI suggests that the effects on the Derwent Forest site are likely to be not significant. The PPA Group are concerned given that the OHL will run close to the site and it is allocated for a tourism use. It is considered that although Derwent Forest has been undeveloped for a length of time, recent planning consent for an associated residential site adjacent, and emerging proposals to develop the site suggest the NWCC may adversely impact on deliverability and may in fact delay or sterilise the site.

17.22.14 Additionally, the PPA Group are concerned about the impact on emerging site allocations in and around Workington from the proposed substation and infrastructure planned for the area.

17.22.15 In terms of the operational phase only the Ehen/Keekle Valleys Tourism site would have any long-term effects, as all the others would be used for temporary site compounds.

Section C – (Sub- Sections C1 – Aspatria to Wigton; C2 – Wigton to Harker Parts 1 and 2)

17.22.16 The assessment for Section C (Sub-Sections C1 and C2) shows that the Draft Order Limits would affect Kingmoor Park Industrial Estate, Kingmoor Park Rockcliffe, Kingmoor Park Heathlands Estate, and land at Station Road Wigton. There are no planning land allocations for future development sites that fall within the Draft Order Limit with potential to be affected by the development.

17.22.17 During the construction phase, proposed site compounds would be located on employment land on Kingmoor Park Heathlands Estate, Harker, Kingmoor Business Park, west of Kingsway, Carlisle, and land to the east of Station Road, Wigton. The assessment considers that given the temporary nature of the compounds the effects are not likely to be significant, especially where in the case of the Carlisle Local Plan support is given to business development.

17.22.18 Whilst this may be the case the amount of land to be taken up by the compounds compared to the available allocations seems large, and hence a concern is raised that this may stifle the long-term future development of these sites. In the case of Kingmoor Business Park, this is now also part of the Kingmoor Park Enterprise Zone, where key business investment for Cumbria will be directed as part of the LEP priority. Consideration needs to be given to the potential for temporary compounds to detract from attracting longer term investment by sterilising key sites. This will depend on how long the compound will be used for, but this is not known in the PEI information.

17.22.19 A planning permission which been granted for an 'Energy from Waste' plant on the Kingmoor Park Enterprise Zone will have to be taken into account in the ES.

17.22.20 In the case of the Wigton site, the amount of land to be developed would amount to only 0.8ha, and therefore it is unlikely that the use of this site as a temporary compound would be affected in the long-term.

17.22.21 During the operational phase, there would be no long term use of any allocated sites. There would be no adverse effects on any Mineral Safeguarded Area.

Section D – (Sub Section D1 – Moorside to Waberthwaite; D2 - Waberthwaite to Silecroft)

17.22.22 There are no planning allocations for future development sites located inside the DOL. The Wellbank Project is a mixed use scheme comprising 46 homes, Hotel Spa and business units located to the west of Bootle, which is part of a wider regeneration initiative for the local area. However, the site is located some 220m east of the DOL at Bootle. All other planning land allocations are located a sufficient distance away from the DOL that the only likely effects of the Project on these receptors would be from construction traffic.

17.22.23 During the operation of the Project, the quantum of land for which there would be a permanent change of use is significantly smaller than that required for the construction phase of the Project. Direct permanent land take in Section D would be limited to the footprint of the 19 newly erected pylons and the CSE compounds. The PEI suggests that there would not be any direct affects on land allocations.

Section E – (Sub Section E1 - Silecroft to Arnaby; E2 – Arnaby to Lindal-in-Furness)

17.22.24 Foxfield Business Park is located inside the DOL, to the north west of the village of Foxfield. The business park comprises of a number of workspace units, and is considered in Chapter 17 of the PEI Report to be of local importance/low sensitivity.

17.22.25 The PEI confirms that construction works associated with the new 400kV infrastructure and associated construction compound as well as the decommissioning works associated with

the existing DNO infrastructure taking place near to the Foxfield Business Park, all have the potential to adversely affect businesses there. The use of land to the west of the business park as a temporary construction compound would not directly affect operations inside the business park as the compound would be constructed and operated for the duration of the construction phase on adjoining land. However, it is possible that construction phase traffic would affect movements into and out of the park and traffic management measures may be necessary.

17.22.26 The PEI report at paragraph 17.2.38, Chapter 17, Volume 2.5, states that *"there are no planning allocations for future development sites which have the potential to be directly affected by the Project. All other land allocations are located a sufficient distance away from the DOL that the only likely effects would be from construction traffic. However the distance is sufficient that no significant effects are expected to arise in terms of the development of these sites, and thus planning allocations are scoped out from further assessment"*.

17.22.27 The proposed 400kV OHL may be located further away from a SLDC housing land allocation in Kirkby in Furness. However, a new proposed permanent ENW 132kV OHL will over sail the site. The Project includes the siting of a new permanent lattice trident terminal pylon (a sealing end platform) with laydown, which would be located immediately adjoining the allocation site boundary. It is located very close to the site frontage. A new permanent ENW 132kV wooden pole with backstays is also proposed to be sited within the allocation site. ENW also propose a new access to the new wooden 132 kV pole, (and it is assumed an associated easement). The allocation is within the DOL. The existing ENW 132kV OHL, which is located just out with the site, is to be removed. The Project (ENW proposed permanent works) will therefore directly affect the adopted allocation and would have a significant adverse affect on deliverability of any housing development in this location. PEI paragraph 17.2.38, Chapter 17, Volume 2.5 quoted above, is therefore incorrect and misleading. In addition, the new proposed 400kV OHL, although it will not directly over sail or directly bound the site, it would still be located relatively close to it.

17.22.28 In view of the above, there is also a concern that the socio-economic cumulative effects e.g. on land use/local authority land allocations, may not be adequately assessed.

17.22.29 Her Majesty's Prison (HMP) Haverigg is also located directly adjacent to the DOL west of Haverigg.

17.22.30 National Grid's proposals as they stand do not align with Copeland Borough Councils growth aspirations for Millom in the Council's Local Plan and Growth Strategy. The issues related to reliability of supply and capacity for future developments for communities in South Copeland (including Millom and Bootle) are reliant on a good connection into a robust local distribution network. This was originally to be provided by the future development of the Haverigg Wind Farm. However, the recent information is the wind farm development will not be proceeding. It is important that the National Grid proposals take into consideration this prevailing issue and include proposals to ensure that the necessary infrastructure to provide the links to the new 400kv supply are included in the NWCC.

17.22.31 The PPA Group expect the final design of the NWCC to be revised when changes occur in other inter-related projects. In addressing these specific changes related to the Millom substation the PPA Group consider that the final design should include proposals which resolve these issues for specific communities along the route.

Section H – (Sub Section H1- Lindal-in-Furness to Morecambe Bay; H2 – Morecambe Bay; Morecambe Bay to Middleton)

17.22.32 The major economic areas of the Port of Barrow-in-Furness, Waterfront Business Park and Rampside Gas Terminal are all located within the LSA, along the coastline of Barrow-in-Furness and the Walney Channel. On the Lancaster side, the LSA includes the Heysham Port and Heysham Power Station. There are several employment land sites, including currently vacant land, covering an area of 20ha within the DOL. Cumbrian side:

- Former Roosecote Power Station – 5.5ha of industrial land located at Roosecote. The site formerly housed the Roosecote Gas Fired Power Station which was operated by Centrica and demolished in 2015;
- Roosecote Substation – 1.15ha 132kV substation operated by Electricity North West located to the north of the former power station. These applications are described in the Planning Land Allocations and Planning Applications section (see also below);
- Land associated with the Port of Barrow - centred on the Cavendish Dock at the eastern side of the port area and comprising the Salthouse Mills Business Centre, which is located in the north east corner of the dock and several commercial premises including the Barrow Power Boat Racing club and Furness Diving Club located on the western side of the dock. British Nuclear Fuels use the south western corner of the docks area at Ramsden Dock; and
- The Rampside Gas Terminal abuts the DOL. Part of the entrance road and a helipad associated with the Gas Terminal are located within the DOL.

17.22.33 The land at the former Roosecote Power Station is currently subject of two planning applications for energy related development, comprising the following:

- Borough of Barrow-in-Furness Council Planning Application Reference B12/2016/0372 - Erection of a building containing a grid connected electricity storage facility with associated access and surfacing (approved 18/08/2016); and,
- Borough of Barrow-in-Furness Council Planning Application Reference B12/2016/0354 - Development of a gas-fired reserve electricity generating plant (approved 07/09/2016).

17.22.34 Both application sites are located inside the site of the former power station and area accessed via Rampside Road. If developed, it is considered that both developments would be of regional socio-economic importance/medium sensitivity, and the effects of the NWCC Project are suggested to be not significant.

17.22.35 It should be noted that the indicative layout for the Roosecote tunnel head now reflects the submitted planning application by Centrica for a gas fired power station and energy storage plant. National Grid has stated they are confident that there remains sufficient space to

accommodate the manufacture of all the concrete segments required for the tunnel.

17.22.36 Within the DOL, there are three future development sites allocated in the Barrow Port Area Action Plan Development Plan Document (BPAAP) The allocations are as follows:

- Salthouse Housing – planning land allocation on brownfield land on the site of the former Salthouse Paper Mill (Policy BP21) for around 250 homes;
- Marina Village Housing – planning land allocation on land to north of Cavendish Dock (Policy BP18) for a new sustainable waterfront neighbourhood including 650 homes, hotel and retail provision, recreation and leisure provision; and,
- Barrow Watersports Centre (Policy BP20) providing facilities for a range of watersports and ancillary restaurant/bar and retail.

17.22.37 On the Lancashire side:

- Middleton 400kV substation - located south of the A683 at Heysham;
- Land at Middleton Road, Heysham;
- The entrance to the Heysham Port including land associated with the port at Penrod Way, Field Road and Shore Road, which includes a helicopter landing area; and,
- Partially vacant land at Heysham Moss north and south of the A683. The land includes a telecommunications installation and electricity infrastructure

17.22.38 The majority of these employment land sites are considered to be medium sensitivity receptors due to their regional importance to the economy. The Middleton 400kV substation is considered to be of national importance/high sensitivity, and the PEI considers that during the construction phase the effects would not be significant.

17.22.39 Taken as a group, the PEI considers the sites to be of regional value/medium sensitivity and the effects during the construction phase to be not significant.

17.22.40 Land to the east of the former Roosecote Power Station and the site of the Rampside Gas Terminal is designated as an Energy Schemes Protection Area which safeguards land for energy-related development (Policy A12). The PEI considers the site to be of regional value/medium sensitivity and the effects during the construction phase to be not significant.

17.22.41 There are significant concerns about both proposed layouts given their proximity to existing and proposed residential and commercial development, and adverse impacts on the PRoW. Little information is available regarding the on-site processes, such as those relating to the 20m high slurry treatment plant or off site movements. Therefore, at this stage it is not clear whether the locality will be subject to an unacceptable adverse impact on amenity and health for a prolonged period of construction.

17.22.42 Delivery of materials for the tunnel construction and segment factory needs to be fully understood and also the delivery of the tunnel lining segments from Roosecote to Heysham, ideally by rail and not by road. Advanced feasibility studies are required into the suitability

of a number of local locations for the aggregate/arising from the tunnelling works and the confirmed tunnelling method.

- 17.22.43 Currently National Grid is consulting on both a road based, and multimodal transport strategy (see Transport section). However, until this is made available, there is inadequate information provided on the storage, movement and final destination of tunnel spoil. A proposed use at Cavendish Dock has been rejected, as the site is part of a SSSI, a SPA and Ramsar, primarily for its bird interest, and National Grid consider that initial investigations suggest there is no reason for its de-notification.
- 17.22.44 National Grid has proposed a materials movement corridor on the causeway forming the southern edge of Cavendish Dock. Movement options being considered include conveyors, narrow gauge rail or use of HGVs with traffic control. This route allows direct access to the Port of Barrow as means of importing and exporting materials and waste. However, some of these options may result in closure to the causeway, including a PRoW for the period of use, in addition to possible noise and amenity issues. There is inadequate information at this stage on the storage, movement and final destination of tunnel spoil.
- 17.22.45 With regard to the settlement lagoon adjacent to the nearby public footpath, there will be a need to maintain the public right of way when facilitating the muckaway conveyor, depending on which of the three tunnelling methods are employed. The access to the Salthouse Mills area also needs consideration. Discussion is required with Associated British Ports (ABP)/Natural England about reviewing the designation Cavendish Dock (currently a SSSI/SPA/RAMSAR area). Concern is raised as to the potential impacts on the protective species (slow worms and common lizards) impacts could be an issue in the vicinity of Salthouse Mills/Cavendish Dock/Roosecote areas for example.
- 17.22.46 Land within the DOL adjoining the existing Middleton Substation, together with land to the north of the A683, are allocated in the Lancaster Land Allocations Development Plan Document (DPD) Draft Preferred Options 2012 for energy technologies and energy infrastructure development as part of the Heysham Energy Coast (HEY1). Adjacent to the coastline in Heysham, there is further land allocated as part of the Heysham Energy Coast. The PEI considers that this allocation is of regional value/medium sensitivity and the effects during the construction phase would be not significant.
- 17.22.47 The former ICI Nitrates Plant to the east of the Middleton Substation within the DOL is allocated for employment use as part of the Lancaster West Business Park (EMP1.7). This site is also allocated for employment use in the adopted Lancaster City Council Local Plan Strike (Third Edition) 2008. The planning land allocation is considered to be of regional value/medium sensitivity and the effects during the construction phase are considered in the PEI to be not significant.
- 17.22.48 The DOL cross a number of MSAs as identified within the draft Cumbria Minerals and Waste Local Plan and adopted Joint Lancashire Minerals and Waste Core Strategy 2009. Within Cumbria, the allocations include areas of sand, gravel and limestone while in Lancaster the

areas are made up of Marine Alluvium and Boulder Clay/Glacial Till. The PEI considers these to be of local importance and low sensitivity in land use terms, and the effects during the construction phase to be not significant.

17.22.49 Permanent land take effects would occur in relation to the proposed Tunnel Head and substation areas at Roosecote and Middleton. As both of these areas of ground are currently vacant at present, the PEI states that their use is expected to lead to longer term beneficial effects. Similarly, their use is considered to be consistent with policy objectives as set out in the respective Development Plans. Notwithstanding these conclusions, given the issues raised above, further investigation is required to assess the actual impacts of the development on all these areas, especially during the construction phase linked to other assessments including the transport multi-modal study.

17.22.50 In terms of the draft Development Consent Order, no schedules have been prepared. This raises the prospect of unforeseen adverse impacts introducing changes/deviations. In relation to the compulsory acquisition of land, there is a need to understand the potential impacts on the Barrow Port Area Action Plan (BPAAP) and any implications for the proposed Waterfront scheme including Marina Village. The PPA Group will need to understand the implications relating to 'rights to be acquired' and temporary use/possession of land by National Grid, presuming compensation is a consideration and or payable. Further detailed analysis of the actual effects of the development upon all of these areas especially during the construction phase is therefore required.

ⁱ Cumbria Tourism (2015), Cumbria Visitor Survey 2015

ⁱⁱ Global Tourism Solutions (UK) Ltd (n.d.), Lancashire STEAM Tourism Economic Impacts, 2014 Year in Review Summary

ⁱⁱⁱ Lancashire Enterprise Partnership (2014), Lancashire Strategic Economic Plan

^{iv} The Planning Inspectorate (2015), Scoping Opinion, Proposed North West Coast Connections Project

^v Cumbria Local Enterprise Partnership (2015), Cumbria Skills Plan 2015

^{vi} Lancashire Enterprise Partnership (2016), The Lancashire Skills and Employment Strategic Framework 2016 - 2021

^{vii} Cumbria Local Enterprise Partnership (2014), Cumbria Strategic Economic Plan 2014-2024

^{viii} Cumbria Local Enterprise Partnership (2016), Skills Investment Plan 2016-2020

^{ix} Cumbria Local Enterprise Partnership (2014), Cumbria Strategic Economic Plan 2014-2024

^x Cumbria Tourism (2008), Making the Dream a Reality, The Tourism Strategy for Cumbria 2008-2018

^{xi} Lake District National Park (2015), The Partnership's Plan: The Management Plan for The English Lake District 2015-2020

^{xii} Marketing Lancashire (2015), Lancashire Visitor Economy Strategy 2015 - 2020

^{xiii} Lancaster City Council (2015), A Local Plan for Lancaster District 2011 – 2031, Employment and Skills Plans Supplementary Planning Document

^{xiv} National Grid (2014), A Study into the Effect of National Grid Major Infrastructure Projects on Socio-economic Factors

^{xv} ONS Business Register and Employment Survey

^{xvi}

<https://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/methodologies/economicvalueoftourismguidancenote1definitionsoftourismversion22012#definitions-of-tourism-version-2-appendix-3>

^{xvii} ONS Business Register and Employment Survey

^{xviii} Cumbria Tourism (2016), Tourism Business Performance Survey, September 2016



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- ^{xix} Cumbria Tourism (2016), Tourism Business Performance Survey, September 2016
- ^{xx} National Grid (2014), A Study into the Effect of National Grid Major Infrastructure Projects on Socio-economic Factors
- ^{xxi} Cumbria Tourism (2016), Tourism Business Performance Survey, September 2016
- ^{xxii} LSE (2013), Report of Government Evaluations: A Report for the NAO
- ^{xxiii} National Audit Office (2013), Evaluation in government
- ^{xxiv} Cumbria Local Enterprise Partnership (2016), Skills Investment Plan 2016-2020
- ^{xxv} Cumbria Tourism (2016), Tourism Business Performance Survey, September 2016
- ^{xxvi} Cumbria County Council, Lake District National Park (2016), West Cumbria Corridor Travel Plan
- ^{xxvii} Cumbria Local Enterprise Partnership (2015), Cumbria Skills Plan 2015

18.0 Waste and Materials Management

18.1.1 This section provides comments on the Preliminary Environmental Information (PEI) provided in respect of the effects of the Project's construction phase on waste management and materials supply activities. It considers the information provided within the following key documents, as well as supplementary and supporting documents and figures:

- Introduction and Methodology, Chapter 18 - Waste and Materials Management (Volume 2.2);
- Project Wide Information, Chapter 18 - Waste and Materials Management (Volume 2.3); and,
- Technical Appendices, Proposed Development, Appendix 4A – Draft Materials and Waste Management Strategy.

18.2 Waste and Materials Key Issues

Table 18.1: Waste and Materials Key Issues

Key Issue	Comment
Waste and Materials	
1. Adequacy of Information.	The PEI also has inadequate information provided on the storage, movement and final destination of tunnel spoil, and therefore no mitigation is proposed to address the substantial impact of the construction. This is discussed further in paragraph 0 below.
2. Provision of a Waste management Strategy.	A Waste Management Strategy is required to explain how the spoil will be removed and re-used. Where possible, National Grid should minimise the waste that can't be recycled from the tunnel construction with the preference being for spoil to be re-used locally to deliver other improvements, for example, in the delivery of improved flood defences (see text below in section 18.20).
3. Extent of detail required needs a reasonable opportunity to assess.	Given the lack of detail on waste management and how the environmental impacts from the spoil will be mitigated, further consultation is recommended in advance of submission of the DCO application. Further commentary is in paragraphs 18.14.1 and 0 below.

18.3 Waste and Materials Issues in PEI

18.3.1 This section summarises the issues identified in the review of the waste and materials data and assessments presented in the PEI Report. These issues have been identified following a review of all the relevant reports.

Table 18.2: Key Waste and Materials Issues in PEI

Key Issue	Supporting Evidence
Waste and Materials	
1. The ES must contain up-to-date data.	The baseline assessment is detailed and identifies the existing environment with respect to the key construction materials and predicted waste arisings. However during the preparation of the ES there will be a need to review the data to ensure that reference is made to the most up-to-date information and that the assessment of available capacity is as current as possible. This is particularly the case with waste data which in some cases is several years old. Further detailed discussion is in section 18.5 onwards below.
2. Further information is required regarding the viability of a multi-modal transport strategy.	There is an assumption that for the supply of most construction materials and for the management of waste, transport by road will be required within the Local Study Area with more sustainable modes of transport, such as rail or water, generally only being considered within the Wider Study Area. Further information is required regarding the viability of transport by rail or water in order to include these options within the Local Study Area assessment, where possible. More detail on this is provided below in paragraphs 18.7.4 and 18.14.5 as well as section 18.20.
3. Further detail is required to fully comment on the conclusions.	It is considered that the assessment methodology being used needs to be explained in further detail and that the approach taken to determine both the magnitude of effect and level of significance should be clarified. The methodology is not considered to be sufficiently transparent and it is not therefore possible to fully comment on the conclusions drawn (see paragraphs 18.18.2 and 18.20.1 for more details).
4. Further detail on mitigation measures is required.	Whilst reference is made within appendices to proposed mitigation measures, a fuller description is required of the measures envisaged to prevent, reduce and, where possible, offset any significant adverse effects on the environment. This is a fundamental part of assessment and should be fully addressed. Section 18.14 below discusses this further.

18.4 Overall Context Description

18.4.1 This section provides analysis and detailed comments on the Preliminary Environmental Information (PEI) provided in respect of the effects of the Project's construction phase on waste management and materials supply activities.

18.4.2 Introduction and Methodology – Chapter 18 'Waste and Materials Management' (Volume 2.2) sets out the national planning policy documents with respect to waste and materials management (ref Table 18.1 'National Policy'). Section 18.3 of this document identifies the relevant planning policy documents at a national level and provides an acceptable summary

of their key requirements.

- 18.4.3 Introduction and Methodology – Chapter 2 'Planning Policy Context' (Volume 2.2) provides a summary of the relevant national and local planning policy which has informed the PEI Report. The chapter identifies the development plan with respect to all environmental topics including waste. The relevant planning policies with respect to waste are listed within Table 2A.13 of Appendix 2A (Volume 2.7).
- 18.4.4 Whilst development plan documents are listed within Table 2A.13, local planning policies do not appear to have been referenced in full. Emerging policy will also need to be reviewed and included within the list, where relevant. Policies listed should include those relevant to waste management as well as the sustainable use of resources.
- 18.4.5 An example of a relevant planning policy which should be considered is Policy SC1 'Sustainable Development' of Lancaster City Council's Core Strategy (2001-2021) which was adopted in July 2008. Policy SC1 seeks to ensure that new development proposals use locally-sourced, environmentally friendly or recycled construction materials, use sustainable waste management practices and minimise construction waste.
- 18.4.6 A further relevant policy is Policy DM11 'Sustainable Development Standards' of Copeland Local Plan 2013-2028 'Adopted Core Strategy and Development Management Policies' (December 2013). The Policy states that the Council will ensure that development proposals reach high standards of sustainability by '*encouraging construction materials to be sourced, where possible, from local and sustainable sources of production*'.

18.5 Adequacy of Baseline and Data Sources

18.6 Commentary on Study Area

- 18.6.1 The study area is described within section 18.5 of Introduction and Methodology - Chapter 18 'Waste and Material Management' (Volume 2.2). It is considered that the defined 'Local Study Area' of Cumbria, including the Lake District National Park, and Lancashire is appropriate for the study. It is also considered that the defined 'Wider Study Area' i.e. the remainder of the UK (and for some materials such as geotextiles and steel, overseas including Europe and the rest of the world) is also appropriate in the context of the project.
- 18.6.2 It is considered that the description of the relevance of the study area for each material and waste type, the responsibilities of the local authorities within the Local Study Area and the reasons for considering a Wider Study Area are adequately covered within the baseline assessment.
- 18.6.3 The use and selection of a study area within the assessment itself is discussed later in this document (see Sections 4.2 and 7.0).

- 18.6.4 The PPA Group note that the baseline information presents figures on the locations of landfills, treatment plant, and aggregate sites. However, the report refers to an assessment of local ready mixed concrete batching plant; it would be useful for the applicant to present this information on a map, so that potential issues around the supply of ready mixed concrete to particular project locations could be identified.

18.7 Commentary on Existing Environment

- 18.7.1 The waste and materials management chapter does not address the North and South route separately but addresses the route as a whole (Project Wide Information). Given that the materials required for the construction works and the subsequent waste generated from the Project will be the same along the project corridor and will not, in general terms, be affected by location, it is considered that this approach is logical. The exceptions to this are the materials and waste associated with specific activities including the tunnelling beneath Morecambe Bay, the construction and removal of the associated tunnel heads and the sections of underground cabling within the Lake District National Park. The activities within these areas would require specific raw materials and would produce activity-specific waste streams.
- 18.7.2 The existing environment (baseline) is described in terms of a) the requirement for and supply of construction materials and b) construction waste management. These two issues are set out separately in clearly defined sections, with good use of headings and sub-headings to guide the reader.
- 18.7.3 A summary is provided in section 18.1.8 (Chapter 18 – Waste and Materials Management, Volume 2.3) of the key construction materials and the resultant waste streams which are predicted and considered within the assessment. The chapter addresses each of the construction materials in turn, where necessary providing an explanation or definition of the material (such as primary, secondary and recycled aggregates). The existing baseline is set out for each key material, for both the Local Study Area and Wider Study Area.
- 18.7.4 It is noted that further information is being gathered relating to the existence of rail-linked or coastal quarries in the UK, which could potentially supply primary aggregates to ports close to the project. It is also noted that further consideration is being given to the role that marine dredged aggregates can play in supplying the Project. It is considered that the scope for the use of such material would be valuable due to the volume of material that could potentially be supplied from nearby marine resources. Further investigation is therefore warranted.
- 18.7.5 Section 18.2.27 defines secondary aggregates. However the reference to 'old tyres' is not considered valid and should be removed.
- 18.7.6 With reference to the existing environment for secondary and recycled aggregates, Section 18.2.30 states "*Unprocessed feedstock for secondary and recycled aggregates is classified as 'waste'. Once processed, secondary and recycled aggregates are no longer classified as*

waste". It should be noted within the chapter that in order for the aggregates to no longer be classified as 'waste' it is necessary for the material to meet the criteria set out within the Waste and Resources Action Programme (WRAP) Quality Protocol (Factory Production Control) (WRAP, 'Aggregates from inert waste. End of waste criteria for the production of aggregates from inert waste'.) Otherwise the recycled materials remain a waste and the Environmental Permitting regime applies.

- 18.7.7 The section details, as far as possible, the latest figures for supply and production of the relevant construction materials. In some cases however, the latest data are up to 4 years old. The baseline with respect to waste arisings and waste management capacity also includes data which is up to 4 years old. However it is acknowledged that this reflects the difficulty in obtaining up to date figures, particularly for waste management, and this is noted within the chapter:

"Data on MSW are collected regularly in order to be able to report national progress to meeting EU Landfill Directive targets for diversion of biodegradable MSW from landfill. In contrast, data on C&IW are sparse and often conflict with each other such that obtaining an exact quantitative understanding of arisings, activity and capacity in this sector is not possible"(PEI paragraph 18.3.31).

"Data on C&IW are not collected as thoroughly as they are for MSW (due to lack of EU reporting requirements) but the latest available data, for 2012," (PEI paragraph 18.3.35)

- 18.7.8 Notwithstanding this, if more recent data becomes available during the preparation of the ES, this should be included and the baseline updated as necessary.
- 18.7.9 For the waste management capacity sections, it would be helpful to provide conversion factors at the start of the sections as this would assist with the discussion of capacity.
- 18.7.10 Within Chapter 18, Tables 18.4 to 18.9 inclusive provide summaries of the waste arisings, waste management activity and permitted capacity at waste facilities for both inert/construction/demolition waste and non-hazardous waste streams. For both of these waste streams it would be helpful to combine the tables illustrating waste management activity (Tables 18.5 and 18.8) with those illustrating permitted capacity (Tables 18.6 and 18.9) so as to provide a clearer picture of the 'remaining' capacity at recovery or disposal facilities within the Local Study Area and Wider Study Area.

18.8 Commentary on Factors influencing Future Baseline

- 18.8.1 Introduction and Methodology. Chapter 18 – Waste and Materials Management (Volume 2.2) describes the approach to establishing the future baseline. It is considered that the description of the future baseline and the list of factors which could influence the future baseline is comprehensive.
- 18.8.2 It is noted that the methodology states: *"In order to ensure that the factors listed above are*

addressed within this assessment if information becomes available, the baseline will be updated where circumstances change or where it can be predicted with confidence that they will change. This will continue during the preparation of the ES."

- 18.8.3 The PPA Group strongly recommends the baseline will need to be reviewed and updated at regular stages during the preparation of the ES in order to take account of the changing factors acknowledged in the future baseline section.

18.9 Commentary on Consultation Activity and Data

- 18.9.1 Comments have been received from Lancashire County Council (LCC) and are noted within this text. LCC have suggested that the EIA considers the tunnel head sites as section(s) within their own right, due to the significant levels of waste material and raw material associated with their operations. This could also apply to the noise/visual/ecology/workforce topic areas. Cumbria County Council have stated that they would prefer to see that in order to improve the national data set on Construction & Demolition waste in the future, they recommend that the project makes it a requirement for construction contractors to upload all the waste transfer data created during the construction phase into the national online database eDoc¹.

18.10 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

18.11 Assessment Methodology

- 18.11.1 The assessment methodology is set out within section 18.7 of Introduction and Methodology, Chapter 18 - Waste and Materials Management (Volume 2.2).
- 18.11.2 It is acknowledged that there is no formal methodology or guidance for EIA in relation to waste or materials management, including guidance on definitions for receptor sensitivity, magnitude or the significance of effects. However, The Planning Inspectorate 'Scoping Opinion. Proposed North West Coast Connections Project' (October 2015) stated:

"The Secretary of State recognises that the way in which each element of the environment may be affected by the proposed development can be approached in a number of ways. However it considers that it would be helpful, in terms of ease of understanding and in terms of clarity of presentation, to consider the impact assessment in a similar manner for each of the specialist topic areas. The Secretary of State recommends that a common format should be applied where possible"(page 7, Appendix 1).

- 18.11.3 Other specialist topics, such as hydrogeology and landscape, follow a more standard assessment methodology where the magnitude of change, the sensitivity of receptors and

¹ <http://www.edoconline.co.uk>

significance of effects is explained, typically with the use of tables and matrices. The Introduction and Methodology, Chapter 18 – Waste and Materials Management (Volume 2.2) (PEI paragraphs 18.7.4 to 18.7.5) sets out the methodology for assigning the magnitude of change for each receptor. PEI Paragraph 18.7.5 provides an explanation as to how the different levels of magnitude are assigned.

- 18.11.4 It is understood that the magnitude is based on the calculated materials demand (in tonnes) as a percentage of the total materials demand (i.e. materials usage) in the Local and Wider Study Areas. For waste, this is based on the estimated waste arising as a percentage of the total waste arising within the Local and Wider Study Area.
- 18.11.5 It is advised that the methodology set out within PEI paragraph 18.7.5 needs a clearer explanation to enable specialists and non-specialists to understand how the magnitude is assigned to each receptor group. Tables 18.3 and 18.6 ([SIC] - should these be referenced Tables 18.2 and 18.3?) set out the magnitude criteria for construction materials and waste types. However, whilst PEI paragraph 18.7.5 of the Introduction and Methodology Chapter 18 – Waste and Materials Management (Volume 2.2) and the assessment text within Chapter 18 – Waste and Materials Management (Volume 2.3) refers to the magnitude criteria in terms of percentages, the tables within the methodology refer to quantities of material or waste in tonnes per annum (tpa).
- 18.11.6 It is recommended that the approach to assigning magnitude of change is clarified and that the information presented within the tables is consistent with the explanatory text within the assessment.
- 18.11.7 The sensitivity of the receptors does not appear to have been clearly defined within the assessment methodology. This should form a key part of the assessment including the assignment of significance levels to each receptor group. The sensitivity of each receptor group should therefore be set out within the methodology and used within the assessment itself.
- 18.11.8 With regard to the assignment of significance levels, PEI paragraph 18.7.9 of the Introduction and Methodology, Chapter 18 – Waste and Materials Management (Volume 2.2) states that:

"in assessing the significance of effect for the purpose of the PEI, the magnitude of change is further considered with regard to a range of other factors....."

A judgement is then applied regarding the level of effect which may be major, moderate, minor or negligible. Major and moderate effects are generally considered significant in terms of the EIA Regulations".

- 18.11.9 PEI paragraph 18.7.1 of Chapter 18 – Waste and Materials Management (Volume 2.3) states that: *"the significance of effects associated with the demand for waste management capacity.....has been assessed having regard to the magnitude of change, and a range*

of other factors. The factors include:

1. *The duration over which the waste type being assessed would be required;*
2. *The baseline waste management sector capacity described in Section 18.3;*
3. *The total demand for capacity over the lifetime of the Project; and*
4. *The potential for additional capacity to be made available."*

18.11.10 It is considered that Point 1 above should be re-worded to read, '*the duration over which the waste type being assessed would be produced*' as the current wording is not relevant to the assessment.

18.11.11 The Planning Inspectorate Scoping Opinion (October 2015) states that the meaning of 'significant' should be clearly defined in the context of each specialist topic area. It is considered that the meaning of significant is not sufficiently explained within the text and that the methodology for assigning levels of significance is not sufficiently transparent. It is recommended that the method for assigning significance levels is set out within a matrix or is more fully explained in order to ensure that the assessment process is readily understood.

18.12 Application of Methodology

18.12.1 PEI paragraph 18.7.15 of Introduction and Methodology, Chapter 18 – Waste and Materials Management (volume 2.2) states: '*Major and moderate effects are generally considered significant in terms of the EIA Regulations*'. On this basis, within the assessment in Chapter 18, there are effects which have been classed as 'not significant' which should have been classed as 'significant' (e.g. PEI paragraphs 18.6.18 and 18.6.31) and assessments where the significance level is provided without the level of magnitude being stated. For each potential effect both the magnitude of change and the level of significance should be provided in order to ensure that the assessment process is transparent and fully understood.

18.12.2 Introduction and Methodology Chapter 18 – 'Waste and Material Management' (Volume 2.2) sets out general assumptions relating to the study areas for the different construction materials and waste arisings. For many of the materials and wastes the study area assumptions include both the Local Study Area option and the Wider Study Area option. It is considered that, at this stage in the process, the assessment should firstly consider sourcing materials or managing waste within the Local Study Area and that consideration should only be given to sourcing materials or managing waste within the Wider Study Area if the Local Study Area is demonstrably unviable or less sustainable. If the assessment concludes that the Local Study Area is unviable or less sustainable, the applicant should provide a clear explanation as to why this is the case. The Wider Study Area would then need to be included within the assessment, with justifications as to why this is necessary.



18.13 Commentary on Proposed Mitigation

18.14 Design Mitigation

- 18.14.1 Design mitigation is not widely discussed within the Waste and Materials Management chapter. However, Section 18.8 'Summary and Conclusions' of Chapter 18 'Waste and Materials Management' (Volume 2.3) states: "*There is potential to mitigate effects. A Waste Management Plan will be submitted with the application for development consent, which will set the framework for the preparation of Site Waste Management Plans (SWMPs). The SWMPs would identify opportunities to re-use aggregates from trackways and spoil from the tunnel and for recovery of inert waste in projects in the Local Study Area. The application of mitigation would be expected to have a reducing effect on the level of significance assessed at this stage and will be reported in the ES*".
- 18.14.2 PEI paragraphs 18.8.11 to 18.8.15 of Introduction and Methodology Chapter 18 - Waste and Materials Management (Volume 2.2) describes 'design principles and environmental measures'. This section describes a number of waste minimisation measures which would be employed to reduce the quantities of soils displaced. It makes reference to an aspiration to re-use some of the arisings from the tunnel under Morecambe Bay but acknowledges that 'at this stage there is no certainty that a beneficial use could be achieved.'
- 18.14.3 It is worth noting National Grid's intention to identify projects which could potentially be used for the reuse or recovery of surplus inert soil arisings (such as in quarry restoration schemes, or potentially in remediation schemes). At this stage in the assessment process, it is considered that sites could already be identified which are potentially able to accept the arisings. Further detail about the viability of this management route and the availability of potential sites should be provided within the ES.
- 18.14.4 PEI paragraph 18.8.14 of Introduction and Methodology, Chapter 18 – Waste and Materials Management (Volume 2.2) details a number of further design mitigation measures which, it states, are outlined within the PEI version of the CoCP (Code of Construction Practice). All inherent mitigation measures which are committed within the project design should be clearly set out within the assessment prior to the significance of effects being assigned.
- 18.14.5 It is also noted that the location of one segment factory at Roosecote, suggests significant number of lorry movements within the local area and so the decision (at table 4A.6.1 of the Materials and Waste Strategy) to rule out the rail option should be reconsidered.

18.15 Good Practice Mitigation

- 18.15.1 Many of the design mitigation measures described above are considered to be good practice mitigation. There is therefore likely to be significant overlap between these sections.
- 18.15.2 There is a need to provide a detailed description of the mitigation proposed and its likely

effectiveness.

It is suggested that whilst the potential licensed disposal and recycling/recovery facilities have been identified, no mention is made of local or wider than local recovery schemes that could accommodate such a large quantity of spoil for a beneficial end use, besides identifying some potential options in the Materials and Waste Strategy. The document makes reference to the uncertainties around identifying project at this stage in the process, but it would be beneficial nonetheless to identify some of the options considered as part of the proposal. Without this, and some commitment through the application to pursue these routes, it is very likely that the tunnel spoil arisings will end up deposited to landfill due to the large quantities arising during a limited timescale potentially overwhelming the listed licensed facilities operational capacity.

18.16 Other Effects

18.17 Commentary on Residual Effects

18.17.1 With respect to materials and waste management, residual effects are not set out within the PEI. All residual effects will need to be fully addressed within the ES, based on the additional mitigation measures proposed. In order to ensure that the results of the assessments are clear, the use of a table is recommended to summarise the assessment results, both before and after mitigation has been considered.

18.18 Commentary on Approach to Inter-Relationship Effects

18.18.1 These are summarised within Introduction and Methodology, Chapter 18 - Waste and Material Management (Volume 2.2) (PEI paragraphs 18.7.16 to 18.7.18). For each inter-relationship, a brief description of the potential effect is given, together with an outline of how the effects would be managed (mitigation).

18.18.2 It is considered that for the purpose of this PEI the summary of inter-relationship effects is acceptable. However further ongoing assessment is required to ensure that the conclusions drawn from the assessment remain valid. A more detailed description of the effects would also be required, particularly with regard to the effects on transport and the highway network once the predicted quantities of construction materials required and likely waste arisings have been finalised.

18.19 Commentary on Cumulative effects

18.19.1 It is considered that the approach to assessing cumulative effects is generally acceptable. The scope of the cumulative effects assessment is briefly outlined in Introduction and Methodology, Chapter 18 - Waste and Materials Management (Volume 2.2). Cumulative effects are not discussed within the Project Wide Information Chapter 18 – Waste and Materials Management (Volume 2.3).

- 18.19.2 The methodology states that the PEI includes developing long list of other major projects which could have cumulative effects with the NWCC Project. An initial appraisal has been undertaken to produce a short list of other major projects. It states that the short list will be assessed in detail within the ES.
- 18.19.3 The proposed Moorside Nuclear Power Station is specifically mentioned and the potential interaction between these projects is discussed in Chapter 22 (Volume 2.3), including the effects on the ability of local suppliers to supply materials in the volumes required and the effects on waste management facilities from the volumes of waste arisings during the construction phase of both projects. It is considered that the Moorside project will need to be carefully considered within the assessment of potential cumulative effects.
- 18.19.4 Work on the assessment of cumulative effects is ongoing. A shortlist is provided within Appendix 22.F (Volume 2.7) but the text is incomplete on some rows and headings should be provided on each page.

18.20 Key issues/Gaps Requiring Further Assessment

- 18.20.1 Within the Waste and Materials Management sections of the PEI, reference is made to areas where further information is required and PEI paragraphs 18.6.5 to 18.6.6 of the Introduction and Methodology, Chapter 18 – Waste and Materials Management (Volume 2.2) describe where further information is being sought to inform the baseline. Obtaining baseline data from individual sites within the Local Study Area is welcomed as it will provide more certainty on the capacity of local suppliers and waste management facilities enabling a more robust assessment. Additionally the following issues require further assessment and/or consideration within the final ES:
- The existing environment with respect to the capacity to supply construction materials and to manage waste arisings will need to be reviewed and updated to ensure that it is based on the latest available data and that gaps requiring further assessment are included within the baseline;
 - as a transport option, rail has not been included for the delivery of construction materials or for the management of waste arisings within the Local Study Area. However there are known rail linked sites within Cumbria and Lancashire which could potentially be used to supply materials. Further research needs to be carried out into the availability and capacity of rail-linked quarries to determine whether materials can be delivered to the Project sites by rail (e.g. primary aggregates) and/or wastes can be transported from the Project sites to quarries (for restoration);
 - the viability of using marine dredged aggregates for use in the construction works should be analysed and considered, using marine wharves or ports local to the Project sites. If considered viable, this option should be included within the assessment of the Local Study Area;
 - according to the waste hierarchy (included in The Waste (England and Wales) Regulations 2011 and the European Union's Waste Framework Directive (1975/442/EEC)), the reuse and recovery of wastes are to be considered before recycling and disposal. Whilst the scope for reuse and recovery of wastes is referred to within the assessment (e.g. PEI paragraph 18.8.2 of the Introduction and Methodology, Chapter 18 – Waste and Materials Management

(Volume 2.2)), with particular reference made to the reuse of waste arisings from the tunnelling on National Grid owned sites, no detail is provided regarding specific sites. It is not therefore possible to assess the likelihood of this management option or the potential effects of managing these wastes. Further information should be provided regarding the location and availability of potential sites as well as the viability of using them for reuse or recovery of waste arisings. This should be considered within the assessment of both the Local and (if relevant) Wider Study Areas for waste management;

- further information is required regarding the nature and composition of the waste arisings from the tunnelling works. The results of the analysis should assist in determining the options available for managing the wastes, including the potential for reuse within remediation or restoration projects;
- all proposed mitigation measures, which are either inherent within the design or are additional to the design, should be fully described and included within the assessment. A range of measures are currently described within the Introduction and Methodology, Chapter 18 – Waste and Materials Management (Volume 2.2) and the Technical Appendices, Appendix 4A - Draft Materials and Waste Management Strategy (Volume 2.7). However these should be fully described within the assessment chapter, identifying where mitigation measures are committed to and thus inherent within the design or, are additional to the design (i.e. those which may only be required where significant effects are likely);
- in order to fully understand the significance of effects, further work is required to determine the most likely management option for the bulk materials required and for the predicted waste arisings. In most cases, the PEI considers the potential effects from both the Local Study Area and Wider Study Area equally and does not indicate which option is likely. The use of the Local Study Area will typically represent the most sustainable option and a reasoned justification should be provided where the Local Study Area is not the most likely option;
- where significant impacts are identified, a description should be made as to the nature of the effects e.g. temporary, permanent, direct, indirect, cumulative, short term or medium term, long term;
- the future baseline will require ongoing assessment to ensure that the assessment and subsequent conclusions remain valid; and,
- with regard to cumulative impacts, the developing short list of major projects will require ongoing monitoring to ensure that the projects are up to date and the conclusions of the cumulative assessment remain valid.

18.21 Commentary on Potential Effects Not Requiring Further Assessment

- 18.21.1 Due to the need to review and update the baseline, and taking into consideration the comments made in Sections 4.1 and 4.2 regarding the assessment methodology, it is considered that all potential effects will require further assessment.



19.0 Marine Physical Processes, Ecology and Socio-economics

19.1 Introduction

19.1.1 Chapters 19, 20 and 21 set out the proposed approach to the assessment of potential effects in the marine environment. The area of the Scoping Corridor that has the potential to affect the marine environment directly is considered to be anything located below mean high water springs (MHWS) and as such fall outside the planning areas of the PPA Group Authorities. However, a number of the Group have an interest in the Marine topic of the EIA given the interaction with terrestrial matters such as the human environment and socio economic issues, and the impact of construction and operation (from a landscape point of view) of the tunnel islet. The PPA Group understand that other statutory consultees, such as Natural England, Environment Agency, Marine Management Organisation and Historic England are better placed to make detailed comments related to the Marine topic, however, there are a number of comments provided on elements of the Marine topic that have been of interest to the PPA Group that are considered valuable to the analysis of the PEI and should be taken into the proposal's design and options.

19.1.2 It is noted that seascape is considered within Chapter 6 (Landscape and Visual Impact Assessment) and ornithology is considered with Chapter 8 (Terrestrial and Avian Ecology).

19.2 Overall Context Description

19.2.1 Volume 2.2, Chapter 20, Marine Ecology, states the following in PEI paragraph 20.1.9: *"For Subsection D1, any effects due to the installation of the conductors would be limited to short term temporary effects during construction and decommissioning, specifically the use of a boat to guide the pilot wires across the estuary. The boat has potential to cause spillage (e.g. oil and lubricants) and disturb bed sediment adjacent to the banks. No effects are anticipated during operation. The destringing during decommissioning would have similar effects to that of the construction phase"*. A similar statement is made in PEI Volume 2.2 Chapter 21 Marine Socio-economics in paragraph 21.1.9. This appears to conflict with the project description which says that new wires will be installed below the estuary through drilling and these will presumably therefore not require use of a boat during stringing or destringing.

19.3 Assessment Methodology

19.3.1 PEI Volume 2.2, Chapter 20, Marine Ecology states in paragraph 20.6.1: *"This section outlines the approach to the assessment. There is no published standard to approach the marine assessment. Therefore, a standard methodology has been applied in line with the 2009 EIA Regulations (as discussed further within Chapter 5 EIA Approach and Methodology, Volume 2.2)"*. More explanation is required as to why CIEEM's Marine & Coastal guidelines have not been followed as they could be considered to be the standard methodology for Ecological Impact Assessment of coastal developments such as this.

- 19.3.2 Volume 2.1 Chapter 21 Marine Socio-economics includes Table 21.6 Definition of sensitivity and magnitude for Commercial and Fisheries, as well as the linked Tables 21.7 and 21.8. These present a method for determining magnitude of impact linked to the sensitivity of the receptor which is non standard (level of impact is not usually related to the sensitivity of the receptor, rather it is the level of effect which is linked to both the level of impact and the sensitivity of the receptor). The Applicant should therefore consider whether this methodology is appropriate.

19.4 Commentary on Residual Effects

- 19.4.1 PEI Volume 2.7, Marine Ecology, Appendix 20C Duddon Estuary states in paragraph 20C.1.26: *"the intertidal habitat types in the Near-Field Study Area generally comprise saltmarsh and reedbeds with some mud/clay. The Phase 1 habitat survey identified that pylon MR-O1-115 would be located within saltmarsh. The construction of the pylon, and associated working area and access track is likely to involve the disturbance and potential loss of designated saltmarsh. The total footprint is anticipated to be in the order of (approximately) tens of m². Loss on this scale is unlikely to change the functioning of the surrounding habitat."* Given the sensitivity of the saltmarsh environment, a more precise estimate of the footprint of the pylon and associated working area and access track is required, rather than just providing a rough order of magnitude.
- 19.4.2 Volume 2.5, South Route Assessment, Chapter 21 Marine Socio-economic states in paragraph 21.1.148: *"The only pathway identified as having a potentially significant effect is the complete loss or restricted access to some areas of traditional fishing grounds during construction. Mitigation will be developed where necessary within the ES based on the final islet design."* In addition PEI paragraph 19.1.2 notes: *"Following mitigation, it is anticipated that effects due to restricted access to traditional fishing grounds, would also not be significant"*. However, examples are not given of what this mitigation would involve to substantiate the conclusion that following mitigation the effects would not be significant. It is therefore important that full details are provided in the ES.

19.5 Key Issues/Gaps Requiring Further Assessment

- 19.5.1 In Volume 2.5, South Route Assessment, Chapter 19 Marine Physical Processes, it states the following in PEI paragraph 19.3.10: *"Sediment could potentially be incorporated into the water column during dredging of material, as well as during the release of material from a dredger at the disposal ground. This assessment only considers the former as it is not known at this stage which disposal grounds may be used during the construction process. Once known, these will be separately assessed"*. It is unfortunate that it is not yet known which disposal site(s) will be used for the purposes of clarity and adequate consultation and it will be important that this is known and clearly assessed in the ES.
- 19.5.2 In Volume 2.5, South Route Assessment, Chapter 19 Marine Physical Processes, it states the following in PEI paragraph 19.3.24: *"Changes to flow characteristics have the potential to alter patterns of sediment transport. Over longer time periods, these changes may result in*

morphological change at the seabed, in terms of bed level, the distribution of bedforms and/or the nature of the substrate. For instance, a reduction in flow may result in the deposition of finer grained material, leading to a fining of the bed. These potential changes will be investigated for the ES using numerical modelling coupled with consideration of threshold velocities for sediment transport. Potential changes to seabed morphology and substrate are difficult to discern at this stage although would be no greater in spatial extent than those anticipated for changes to the flow field. This will be investigated further in the ES with the aid of hydrodynamic and sediment modelling." It is unfortunate that this modelling has not yet been carried out for the purposes of clarity and adequate consultation and it will be important that it is completed and that the results are presented in the ES.

- 19.5.3 In Volume 2.5, South Route Assessment, Chapter 19 Marine Physical Processes, it states the following in PEI paragraph 20.7.9: "*Construction could be undertaken where possible to avoid sensitive ecological periods, for example, migratory periods for Atlantic salmon (*Salmo salar*) and other migratory fish if the results of the noise assessment indicate that this is needed to avoid significant effects. This will be clarified in the ES*". It is unfortunate that this work was not included in time to inform the PEI as the effects of noise and vibration, and wider construction activities, will need to be considered in relation to a range of receptors including migratory fish, sea mammals, birds and socio-economic activities (such as watersports). It is possible that this may leave only a narrow time window to carry out works such as piling. It is therefore important that full details are provided in the ES.
- 19.5.4 The PEI includes little or no information on the following important areas and full details should be provided in the ES: 1) Details of any Appropriate Assessment required in relation to European designated sites 2) Details of where the material to construct the islet will be sourced.

20.0 Cumulative Assessment

20.1 Overview

20.0.1 This section provides comments on the PEI provided in respect of the methodology and initial implementation of Cumulative Environmental Assessment (CEA) for the NWCC Project. It considers the information provided within the following key documents, as well as supplementary and supporting documents and figures:

- Introduction and Methodology, Chapter 22 – Cumulative Development (Volume 2.2); and,
- Introduction and Methodology, Chapter 23 – Cumulative Assessment (Volume 2.3).

20.1.1 The following section summarises the key issues identified in the review of the Cumulative Environmental Affects (CEA) presented in the PEI.

20.2 Cumulative Assessment Key Issues

20.2.1 The Key Issues are identified in the following Table:

Table 20.1: Cumulative Impact Key Issues

Key Issue	Comment
1. Limited resources employed for baseline and methodology and from Policy and Legislative Context.	There is a need to use a larger base of resource guidance as per other similar applications by National Grid. Specifically, the NG Hinkley connection project used a far larger suite of appropriate guidance than has currently been used for NWCC. Section 20.4 sets out details in this regard, below.
2. The PEI information is incomplete.	There is a need for clarity on where intra-topic cumulative impacts are set out and discussed. Currently there is no information provided. See paragraph 20.10.3 and section Error! Reference source not found. for more detail.
3. Significant impacts may be omitted.	The application of levels of EIA 'significance' and how this will apply to including or not including other developments should be clarified. This remains a significant matter to be dealt with for the suitability of the future EIA. If significant impacts or indeed, what are described as 'lesser' impacts are not included in the main chapters, this then filters out impacts that cumulatively should have amounted to a significant impact and required mitigation. See throughout this response and in this topic response, paragraph 20.10.2 for more detail below.
4. Improve the scope and value of the cumulative assessment.	Additionally, a more formal scope exercise to ensure the CEA scoping, which is a critical element of EIA, should have reasonably been undertaken. National Grid need to clarify why this omission has

Key Issue	Comment
	<p>been continued albeit through less formal correspondence. This is currently difficult to appreciate, as nothing in law or guidance from PINS or within Planning would preclude still undertaking now a revised request for EIA Scope.</p> <p>Such an exercise would be an important completion of the Scoping process and achieve a robust approach through consultation. This is particularly important given the scale of the NWCC project clearly increases the likelihood of cumulative impact at several points in its construction or operation. This is discussed further in section 20.3.1 below.</p>
5. There is a need to address the distances and detail of the ZoI.	The Zone of Influence (ZoI) has yet to be agreed. Not all distances are considered to be appropriate or in line with established practice or guidance. See section 20.6 and the table within for more detail per topic.

20.3 Overall Context Description

- 20.3.1 With very little exception (e.g. where for example an application has incorrectly been submitted without EIA) the context for all EIA chapters is agreed through a 'Scoping exercise'. This is so that determining or relevant bodies and their representatives or consultees may agree with the scheme's Proposer, a suitable methodology and this is upheld in several forms of well established guidance and in common practice. Examples include Town and Country Planning Application Guidance within the NPPF (published in 2012), the Government's online Planning Practice Guidance or other publications such as from the Natural Environmental Research Council or the Chartered Institute of Ecology and Environmental Management¹.
- 20.3.2 National Grid state that they were unable to formally undertake scoping since 2015 for this matter and that informal advice should suffice: "*Advice Note 17 also recommends that Stage 1 is provided with the request for a Scoping Opinion. As Advice Note 17 had not been published at the time a Scoping Opinion was sought for the Project (i.e., September 2015), this was not possible. However, National Grid did, seek comments on its approach to CEA following the publication of the Advice Note 17 in December 2015 through the Briefing Paper issued to the PPA and key consultees.*"
- 20.3.3 It is currently hard to see that why, within the following 12 months, a more formal exercise to ensure the Cumulative Environmental Assessment (CEA) scoping, which is such a critical element of the EIA, could not have reasonably been undertaken. Scoping for cumulative impact is not a new or exclusive practice for nationally significant projects and is a long established part of any EIA.

¹<http://www.nerc.ac.uk/innovation/activities/infrastructure/offshore/cumulative-impact-assessment-guidelines/> or <http://www.cieem.net/impact-assessment>.

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- 20.3.4 National Grid will need to clarify why this omission has been continued albeit through less formal correspondence. This is currently difficult to appreciate, as nothing in law or guidance from PINS or within Planning would preclude this. Such an exercise would be an important completion of the Scoping process, particularly given the scale of the NWCC project that clearly increases the likelihood of cumulative impact at some point in its construction or operation.
- 20.3.5 The Cumulative Development Introduction and Methodology Chapter 22 volume 2.2 of the PEI document focuses significantly on the interaction between the NWCC and other developments. There is largely no comment on cumulative development effects between or within each environmental chapter. Whilst each chapter has within its methodology at least commentary for cumulative assessment, the PPA Group would expect a fuller context in the CEA to explain and sign post where the full suite of the types cumulative assessment undertaken such as these can be found.

20.4 Commentary on Policy & Legislative Context

- 20.4.1 National Grid's application for the Hinkley connection appears to have a significantly larger base of resource guidance as it included:
- "Infrastructure Planning (EIA) Regulations 2009 (as amended);
 - Planning Inspectorate: Advice Note 9 – Rochdale Envelope (PINS Advice Note 9);
 - Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions' (European Commission 1999);
 - Guidelines for Environmental Impact Assessment (IEMA 2004);
 - Environmental Impact Assessment: A Guide to Good Practice and Procedures. A Consultation Paper (Department for Communities and Local Government 2006);
 - Special Report – The State of Environmental Impact Assessment Practice in the UK (IEMA, 2011);
 - Scoping Opinion representations; and
 - Statutory Stage 4 Consultation representations²."
- 20.4.2 The PPA Group would suggest that the methodology for any future CEA looks carefully to thoroughly use the similar broadest resources (including making reference to case law) for ensuring the NWCC CEA is as well founded on good guidance as possible, given the lack of formal Scoping undertaken thus far. This would ensure the methodology is as robust as possible and would give all parties involved including PINS and members of the PPA group the greatest confidence in its validity as an EIA exercise.

² Although the National Grid NWCC Project may not have benefitted from this amount of consultation to date, there has been some correspondence exchange between National Grid and the PPA Group with particular regard to related matters e.g. on National Grid's interpretation of 'significance' in EIA.

20.5 Adequacy of Baseline and Data Sources

- 20.5.1 Section 22.2 of the PEI sets out the need for undertaking CEA from national planning policy document 'The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009' (EIA Regulations 2009). This should be updated to the 2011 Regulations (as amended).
- 20.5.2 It is agreed that the CEA should focus on the interaction of the project with what are defined as 'major' development projects. However it is worth noting what good practice guidelines recommend; that EIA should assess the impacts of a development cumulatively with other developments when there are likely to be significant (noting not any other *type* of significant) impacts:
- Schedule 4, Part 1 of the 2011 Regulations (as amended) sets out that the ES must include: *"a description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term permanent and temporary, positive and negative effects of the development."*
 - Planning Inspectorate: Advice Note 9 – Rochdale Envelope (PINS Advice Note 9 - 2012) sets out advice on cumulative effects and states that: *"The potential cumulative impacts with other major developments will also need to be carefully identified such that the likely significant impacts can be shown to have been identified and assessed against the baseline position."*
 - The Planning Inspectorate Advice Note 17 – Cumulative Effects Assessments (PINS Advice Note 17 -2015) which repeats and underscores the above two points in its Section 1 *Legal Context and Obligations Placed on an Applicant*.
- 20.5.3 Therefore when evaluating the potential for significant impacts in the EIA as a whole but in particular to CEA, there is currently considerable uncertainty in the suitability of the National Grid assessment. When considering the above guidance, given that National Grid introduced a new tier of 'particularly significant' in its work, which is not consistent with EIA and other planning regulations and guidance, this has further exacerbating impact if cumulative impacts from development are not included by this higher bar.
- 20.5.4 For the avoidance of doubt, the issue as highlighted several times is that the use of 'particularly significant' in the National Grid methodology sets an artificially high bar for the establishment of 'Focus Areas' areas for mitigation. It is not in accordance with current guidance and is in conflict with National Grid's 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology' (February 2016), which states that mitigation will be considered for the entire length of the route. UK guidance does not differentiate between area or linear projects, affording some the opportunity to deviate from significant merely because of their size and thus the requirement of suitable environmental assessment that would require.

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- 20.5.5 In this regard, there is therefore concern that whilst 'significant' effects would be measured in the EIA, it is not clear as to how areas outside the identified 'Focus Areas' will be considered for CEA and therefore appropriate mitigation where there are significant effects, in a way that is both robust and accountable.
- 20.5.6 Therefore, if this approach is taken to identify what is significant, and the cumulative impacts only address significant impacts reliant on this first pass to sieve out what are to be included in the EIA, it appears that schemes that may have impacts could be omitted from a full and reasonable CEA.

20.6 Commentary on Study Area

- 20.6.1 The study area for CEA is described within section 22.5 'Stage 1 Project ZoI and Long List of Other Major Development' and is shown on accompanying figures 22.1.1, 22.1.2 and 22.2.1 of the PEI. The Zone of Influence (ZoI) has been determined by extending the Development Order Limits (DOL) by a set distance for each environmental topic depending on criteria listed in Table 22.1. This has created in effect, layers or rings spreading around and from the DOL to create the ultimate ZoI size shown on the Figures 22.1.1 to 22.2.1.

Table 20.2 Commentary on study area selection

EIA Topic	ZoI and WYG Comment on matters to be addressed
Hydrology and Flood Risk	ZoI is 5km from DOL. 5km from DOL is an acceptable distance.
Hydrogeology	ZoI is 1km from DOL and 5km from tunnel heads. 1km from DOL and 5km from tunnel heads is an acceptable distance.
Geology and Soils	ZoI is 1km from DOL. 1km from DOL is an acceptable distance.
Marine	ZoI: Projects identified in the Irish Sea and 1km from DOL and below Mean High Water in Duddon Estuary and Ravenglass estuaries. The PPA group does not have a particular remit that extends beyond their boundaries to comment on the Marine aspects although it reserves the right to comment should those activities affect the land areas concerned. These comments will be addressed in the specific chapter analysis if required.
Waste	ZoI: All major developments and minerals and waste applications for Cumbria and Lancashire, particularly to the west of the M6. The ZoI for waste will need to advance beyond these boundaries if through the study, it becomes evident that there are no facilities present. The PPA Group note National Grid state that extra information on capacity is being gathered beyond Lancashire and Cumbria to include the North West of England and the whole of England and Scotland.

EIA Topic	ZoI and WYG Comment on matters to be addressed
Noise (construction and operational) and Air Quality.	<p>ZoI is 1km and for Air Quality 1km from the DOL and main transport routes.</p> <p>1km from DOL is an acceptable distance.</p>
Landscape and Visual Effects	<p>ZoI is 10km generally or 45km for wind farms.</p> <p>The cumulative study area has therefore been increased from 5km to 10km, but not to the 15km the PPA Group recommended in the Scoping Response. The 15km study area was recommended to tie in with the CIVI study which extends out to this distance.</p> <p>With regard to the cumulative wind farm study area, this has not changed from that proposed in the Scoping Report. Our previous response suggested this could be extended out to 60km but also acknowledged that significant effects are unlikely at this distance. Nonetheless, for the avoidance of error or missing the single opportunity to be thorough in approach, the PPA Group would therefore reiterate our recommendations that this be considered.</p>
Terrestrial and Avian Ecology	<p>ZoI is 20km.</p> <p>This section is ambiguous and needs further clarification. The distances provided here are satisfactory as the ZoI away from the corridor route, so for example, for defining the survey spatial extents.</p> <p>However when considering cumulative effects the same distances will not necessary apply. The cumulative effects along the length of the scheme will obviously require a consideration of, for example, total woodland and red squirrel habitats lost; total ponds lost etc and this will apply along the length of the scheme, hence in excess of the 1-2km and 20km suggested.</p> <p>In addition the cumulative effects or in-combination effects to take into account other developments will need to be addressed. In this case the PPA Group would suggest that these will need to be assessed as specific individual impacts and may need the ZoI for cumulative effects to be identified according to the type(s) of potential effect being assessed. For example there may be a requirement to assess the in-combination impacts on SPA birds as a result of other vertical development(s) along the Cumbrian Coast (e.g. windfarms). In this case the assessment may need to consider the whole scheme or it may only be relevant to assess a certain section of the scheme.</p> <p>Potential for in-combination effects where there is hydrological connectivity between the scheme itself, additional developments, and European designated sites would require specific zones of influence to be identified.</p>
Historic Environment	<p>ZoI is 10km.</p> <p>10km from DOL is an acceptable distance.</p>
Traffic and Transport	<p>ZoI is 10km from the main transport routes from the M6.</p> <p>This is acceptable from a transport point of view west of the M6 assuming the following:</p>

EIA Topic	ZoI and WYG Comment on matters to be addressed
	<ul style="list-style-type: none"> • If 'construction traffic' comprises HGVs and workers, as well as workers travelling from their place of temporary/permanent residence and the workplace. • The assumption in the PEI was that they would all arrive via the M6. Roads links from the ports to the DOL are also included. • North, East and South of the M6 HGVs will use the trunk road network with the exception of any coming across the A69. They will turn onto the A689 (county road) at Linstock to access the northern strategic route. Therefore, if HGV's use the M6 this is acceptable. • If they come via the A69 the volume using the A689 needs to be ascertained. • The ZOI should also include helicopter flight paths.
Socio-economics	<p>ZoI is 20km.</p> <p>This distance is considered acceptable as long as National Grid's Stated aim is maintained of: <i>"A NSIP could be of a size that creates effects beyond 20km. Other major projects for Cumbria and the north west will be identified through reference to the NSIP website."</i></p>

20.7 Commentary on Existing Environment

20.7.1 There is no baseline with regard to the cumulative assessment per se; however the developments to be taken into account set the baseline for this part of the PEI. These are defined by National Grid from the above ZoI distances and by determining what development or projects are likely to come forward through degrees of confidence expressed in 'Tiers' 1 to 3, with 1 being the most likely to come forward (e.g. that which has secured planning consent) and 3 which has the most uncertainty (e.g. developments that have been identified in plans or programmes only).

20.7.2 The criterion set within these tiers is a reasonable and understandable approach. Further comment on the ZoI methodology is made below.

20.8 Commentary on Factors influencing Future Baseline

20.8.1 For the sake of creating a suitable cumulative assessment, the existing environment needs to be as up to date as possible, particularly given the time that will be required post submission of the DCO order application until the order is finally made within which there will be less opportunity to update the study.

20.8.2 National Grid has stated that their assessment of the monitored developments would 'officially' cease in December 2016. The PPA Group therefore welcome that National Grid

also state: “*should cumulative projects come forward after this date and before the proposed submission date; the implications of each individual project will be considered.*” It is imperative that such future major developments that come forward are included to avoid abortive work. The PPA Group would therefore advise that the method by which these later inclusions are to be evaluated is presented upfront so as to be clear on how or why developments are included (or not) in the CEA.

- 20.8.3 It is strongly recommended the baseline for cumulative will need to be reviewed and updated at regular stages during the preparation of the ES in order to take account of the factors listed in the future baseline section.

20.9 Adequacy of Assessment Methodology and Commentary on Application of Methodology and Assessment Conclusion

20.10 Assessment Methodology

- 20.10.1 The assessment methodology is set out within section 22.3 of Cumulative Development, Chapter 22 (Volume 2.2). The approach taken by National Grid is divided into four stages:

- Stage 1 Establishing the Project ‘Zone of Influence’ (ZoI) and ‘Long List’ of Other Major Development;
- Stage 2 Identifying a Short List of Other Major Development;
- Stage 3 Information Gathering on those projects; and,
- Stage 4 Cumulative Environmental Assessment (CEA) from that list.

- 20.10.2 In terms of general overarching approach, the PPA Group agree that this is a suitable methodology in accordance with guidance held in The Planning Inspectorate Advice Note 17 - Cumulative Effects Assessments (PINS Advice Note 17 -2015). However as outlined by the PPA group in previous correspondence and elsewhere within this document, the PPA Group has major concerns about National Grid’s application of the levels of significance associated to impacts from other developments that may or may not mean appropriate developments are considered through the four stage process.

- 20.10.3 Furthermore, whilst the environmental topic assessments are yet to be completed to provide the data for such analysis, the PEI should still clearly demonstrate commitment to how the Stage 4 is to be undertaken, e.g. intra topic analysis. This is important to understand and agree a methodology that can ensure proper practice whereby significant impacts beyond those identified by individual topics only, and how they may aggregate to larger impacts can be realised in time to have the opportunity to still affect design and options.



21.0 Comments on Draft Development Consent Order

21.1.1 The following section provides a review of the draft Development Consent Order (DCO) produced by National Grid (NG) as part of the statutory consultation on NWCC

21.1 Main Issues:

Absence of Schedules

21.1.2 The PPA Group are concerned that a complete draft DCO including schedules have not been provided, given they contain much of the detail and control on the scope of the development. In particular, the PPA Group note that the mitigation measures (the 'Requirements') and the 'Protective Provisions' have not been released.

21.1.3 The PPA Group have been advised that National Grid do not expect to consult on the provisions of the Schedules in advance of submitting its application, and that all the details including the scope of the development, the mitigation measures etc, are contained in the PEI that is currently the subject of consultation. The PPA Group are concerned about the extent to which this is the case, as the topic by topic review of the PEI has suggested a number of areas where information and detail on the project and mitigation appears absent (see topic chapters).

21.1.4 By contrast, the s.42 consultation on the Hinkley Point C Connection appears to have included a full suite of proposed application materials (see Stage 4 Consultation Strategy, paragraph 6.1.4 and 6.1.6)³. Without sight of the Schedules, it is not possible to comment on the extent of the controls securing adequate delivery of the proposed mitigation measures.

21.1.5 The PPA Group also note that the definition of 'Preliminary Environmental Information' in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the Regulations), refers to the information referred to in Part 1 of Schedule 4 "*which ... is reasonably required to assess the environmental effects of the development (and of any associated development)*". Part 1 of Schedule 4 expressly requires "*a description of the aspects of the environment likely to be significantly affected by the development*", and "*a description of the measures envisaged to prevent reduce and where possible offset any significant adverse effects on the environment*".

21.1.6 The Planning Inspectorate's advice note 7, suggests that the PEI document should enable "*consultees (both specialist and non-specialist) to understand the likely environmental effects of the proposed development and [help] to inform their consultation responses on the proposed development.*"

³ http://nationalgrid.opendebate.co.uk/files/1-Stage_4_Consultation_Strategy.pdf

Chapter 21 – Comments on Draft Development Consent Order

21.1.7 The PPA Group are concerned that the absence of details regarding both certain impacts and mitigation measures in the PEI together with the absence of the relevant schedules to the Order means that the consultees (and in particular the PPA Group as specialists) are not able at this stage to properly understand the likely impacts of the proposed scheme or how those impacts can be mitigated.

21.1.8 The PPA Group is aware that the s. 42 and article 10 consultation obligations are potentially onerous. However, paragraph 23 of Part 1 to Schedule 4 of the Regulations allows an application to indicate what and explain why relevant information could not be obtained. It is a matter of concern that NG does not appear to have taken advantage of this provision.

Response Times:

21.1.9 As a general comment, the maximum specified response time is set at 28 days following which consent is deemed. The PPA Group understands why a response deadline is in most cases required. However, given the wide range of powers that will be exercised under the order, and the particular sensitivity of the areas through which the project runs, the PPA Group consider that references to a 28 day response period should be changed to a '42' day response period.

21.2 Proposed Amendments to Order

21.2.1 As part of the consultation the PPA Group have reviewed the DCO and consequently there are a number of amendments to the draft order in that are set out in the table below.

Table 21.1: Proposed Amendments to DCO

Article	Provision Definitions	Comment
2 (1)	" <i>Commence</i> ": this is a standard definition from a section 106 agreement. The word 'commence' is otherwise not used in the Order as currently drafted. It may be used in the Schedule that have not yet been disclosed, and will act as a trigger before which certain steps are likely to need to be taken.	This definition does not appear to be required.
	" <i>Authorised Development</i> ": refers to development and associated development described in Schedule 1 and <i>any other development authorised by the Order</i> .	<p>The PPA Group need sight of Schedule 1.</p> <p>In the interests of certainty, 'other development' should be restricted by reference to the particular articles that authorise it.</p> <p>This is particularly important as the route of the proposal will affect designated heritage assets, and the definition of 'Development' in s. 32 of</p>

Article	Provision Definitions	Comment
		<p>the 2008 Act extends to the demolition and works to listed buildings, the demolition of a building in a conservation area and demolition, destruction or damage to any scheduled ancient monument,</p> <p>'Maintenance' should also be carved out (see comment below).</p>
	"Maintain" – broadly defined to include repair, alteration, improvement, reconstruction and replacement.	<p>This definition potentially includes development (alteration, improvement, reconstruction and replacement).</p> <p>Potentially a very broad effect, which would normally require express planning permission (particularly given the relative flexibility in the scope of development permitted by the order).</p> <p>Restrict definition to activities that do <u>not</u> give rise to any new or changed likely significant environmental impacts.</p>
2(3) & 2(4)	<p>These two provisions state that all the distances, directions, lengths and areas are approximate. This makes sense in the context of Article 5 (Limits of Deviation) and in particular article 5(3) which makes it clear that the precise locations of structures (pylons or poles) can vary within certain constraints from those shown on plans.</p> <p>Articles 2(3) & 2(4) may also have the effect that the limits of deviation themselves can vary. Contrast with the DCO for the Thames Tideway Tunnel which required distances to be measured from the centre line of the limit of deviation for the relevant work.</p>	<p>Amend 2(4) so that the distances for scheduled linear works are measured along the centre line of the limit of deviation for the relevant work or clarify that approximations in 2(3) and 2(4) do not apply to the limits of deviation themselves.</p>
3	<p>Development Consent: Consent is granted for the authorised development (as described in Schedule 1) subject to the <u>requirements</u> set out in Schedule 3. It is impossible to comment on the scope of the consent without sight of the Schedules to the Order.</p> <p>Article 3(8) requires the authorised development to be constructed in the lines and situations shown on the works plans, subject to the Requirements and in general accordance with the levels shown on the Sections.</p>	<p>The PPA Group are unable to comment without sight of Schedule 3 (Requirements).</p> <p>See comments on Articles 2(3) & 2(4).</p>
4	Maintenance: General power to 'maintain'	See comments on definition of

Article	Provision Definitions	Comment
	authorised development	<p>'maintain' above.</p> <p>Amended article to confirm that it does not grant permission for development other than as defined in 'authorised development'.</p>
5	<p>Limits of Deviation: Provision allows the structures to be moved (a) laterally within the Limits of Deviation, (b) up to 4 metres vertically (from heights in Schedule 1) and (c) up to 40 metres longitudinally (lattice pylons) and longitudinally generally (wooden poles).</p> <p>(2) Decommissioning and demolition of existing above ground lines can take place within the Order limits</p>	<p>The need for flexibility is understood.</p> <p>However, as drafted, the flexibility applies to the entire project irrespective of how sensitive the area is through which the corridor runs. Restrict flexibility to specified parts of the development corridor where 'shifting' the structures will not involve otherwise unassessed or unacceptable environmental impacts.</p> <p>Include requirements for removal and safe disposal of existing equipment.</p>
13	Street Works: Power to carry out street works for the purposes of the authorised development. The scope of the works is set out in Schedule 4 (unavailable).	<p>The PPA Group need to see Schedule 4 to properly comment.</p> <p>There is no time limit on the power. Recommend amendment so that power is "for the purposes of carrying out the authorised development" and that the power ceases on the date that the authorised development becomes operational.</p>
15	<p>Power to alter layout etc of streets</p> <p>Art 15(1) allows the permanent or temporary alteration of the layout of any works in a street specified in Column 1 of Parts 1 or 2 of Schedule 5 <i>"in the manner specified in relation to that street in Column 2"</i>.</p> <p>Art15(2) allows any street within the Order Limits and any street having a junction with such a street to be altered <u>with</u> the consent of the relevant highways authority.</p> <p>Art (3) Is an obligation to restore any temporarily altered street to the reasonable satisfaction of the street authority</p> <p>Art 15(5) provides a deemed consent by the relevant highways authority if it has not provided its decision on the undertakers application within</p>	<p>The PPA Group need to see Schedule 5 to comment on specified works.</p> <p>Works allowed under Art 15(2) could be significant. See comments above on the response period.</p> <p>Include obligation for temporary and permanent works to be constructed to satisfaction of authority, and (permanent) works maintained to satisfaction of authority for period of 12 months before become publicly adopted.</p> <p>There should be provision to deem the dedication of any additional land required to deliver new street layout.</p> <p>Include express power for highways</p>

Article	Provision Definitions	Comment
	28 days from the date the application was made	authority to provide conditional consent. Standard conditions to be agreed before the order is granted and attached to the Order in a further schedule.
16	<p>Permanent stopping up of streets and public rights of way</p> <p>16 (1) Power to permanently stop up "<i>streets specified in columns (1) and (2) of Schedule 6 (streets or public rights of way to be permanently stopped up) to the extent specified in column (3)</i>" in connection with carrying out the development.</p> <p>16(2) No street to be stopped up unless the substitute street specified in column (4) have been completed to reasonable satisfaction of the street authority and opened for use or temporary alternative route is first provided and maintained by the undertaker to the reasonable satisfaction of the street authority.</p>	<p>The PPA Group need to see Schedule 6 to comment.</p> <p>NB: Street is defined by reference to s. 48 of the New Road and Street Works Act 1991 and includes "<i>any highway, road, lane, footway, alley or passage</i>" and "<i>any land laid out as a way whether it is for the time being formed as a way or not</i>". This is potentially a wide ranging provision which authorises the stopping up of public rights of way. The public rights of way are an important tourist asset.</p>
17	<p>Temporary stopping up of streets and public rights of way:</p> <p>Power to temporarily stop up, alter or divert any street or public right of way:</p> <p>shown on the access and rights of way plans <i>or within the Order limits</i> for any reasonable time (prior consent of street authority required, to which conditions may be attached);</p> <p>(4) specified in Columns (1) and (2) of Parts (1) and (2) of Schedule 7 (consultation with but no prior consent of street authority required).</p> <p>Street authority is deemed to have consented if does not respond to an application for consent within 28 days of the date the application is made.</p> <p>Power exercised during and for purposes of carrying out the authorised development.</p>	Given broad scope of definition of 'authorised development', include prohibition on exercise of power after the development comes into operation.
24	Right to dredge: power to deepen, dredge, scour, cleanse, alter and improve so much of the bed, shores and channels of the land within the Order limits as adjoin or are near to the authorised development and may use, appropriate or dispose of the materials ... from time to time dredged by them.	Arrangements for the disposal of materials to be confirmed.

Article	Provision Definitions	Comment
	The disposal must not contravene any enactment relating to the disposal of waste and no disposal in any place below the level of high water other than with the consent of the Marine Management Organisation.	
31	<p>Power in relation to relevant navigations or watercourses: power to alter, occupy and interfere with relevant navigation or watercourses <i>regardless of any interference with public or private rights</i></p> <p>31(2) requires undertaker to give notice to owner of any affected mooring except in emergencies (no minimum notice period specified).</p> <p>NB: No definition of 'relevant navigation' (left blank at 31(5)). Definitions of watercourses is very broad definition of 'watercourse'.</p>	Restrict power either by reference to schedule of 'relevant navigation and watercourses' or by a requirement of prior consent of the LPA which may be granted subject to conditions.
32	<p>Compulsory Acquisition of land: National Grid authorised to acquire "<i>so much of the Order land specified in columns (1) and (2) of Schedule 9 as is required for the construction, operation and maintenance of the authorised development or is incidental to it or required to facilitate it.</i>"</p> <p>Order Land is defined as "<i>land shown on the land plans which is within the Order limits and described in the book of reference</i>".</p>	<p>The PPA Group need sight of Schedule 9. Assume that Schedule 9 will differentiate between land to be acquired and rights to be acquired, subsoil etc.</p> <p>The PPA Group need to see draft book of reference to comment further.</p>
36	Compulsory Acquisition of rights: power to CPO rights over Order land and impose the restrictions described in the book of reference.	The PPA Group need sight of book of reference.
37	Acquisition of land limited to subsoil lying more than 9 meters beneath surface: Only subsoil more than 9 metres beneath surface of land specified in Schedule 11 may be acquired.	<p>The PPA Group need sight of Schedule 11.</p> <p>Query whether Art 37(4)(b) applies to off-shore tunnel, please clarify.</p>
45	<p>Temporary use of land by National Grid: power to take temporary possession of:</p> <p>Land specified in column (1) of Part 1 of Schedule 13 to exercise powers in Book of Reference;</p> <p>Any of the Order land in respect of which no notice of entry has been served under s. 11 of 1965 Act (i.e. acquisition by way of Notice to Treat), or no declaration made under the 1981 Act (i.e. Vesting Declaration).</p> <p>In order to remove any electric lines etc,</p>	<p>The PPA Group need sight of Schedule 13 and Book of Reference</p> <p>It is unclear why possession is required for so long after the works completed. To the extent that the works are in AONBs, and SRAs this appears to perpetuate the harm beyond what is really required.</p>



Article	Provision Definitions	Comment
	<p>buildings, structures and vegetation, construct temporary works and buildings, and construct any works specified in relation to that land in Column (2) of Part 1 of Schedule 13 or any other mitigation works.</p> <p>14 days notice to be given to the owners and occupiers of the land Unless otherwise agreed with the Owners, the duration of possession of land in:</p> <p>(a) limited to 1 year beginning with the date of completion of the part of the authorised development specified in relation to that land in Column (3) of Pt 1 of Schedule 13; (b) limited to 1 year following completion of the work for which temporary possession taken unless notice of entry/vesting declaration made for land.</p> <p>Temporary works etc to be removed and land restored to the reasonable satisfaction of the owners of the land before possession given up.</p> <p>Art 45(10) – Prohibits National Grid from Compulsory Purchasing land described at (a) above, but allows it to acquire new rights or interests, impose restrictions over any part of that land or acquire subsoil/air rights under articles 36 and 42.</p> <p>Art 45(13) – Allows National Grid to take temporary possession more than once in relation to land at (a).</p>	
46	<p>Temporary Use of Land by ENLW: mirror power to take temporary possession of land granted to National Grid in Art 45, but relating to:</p> <p>Land specified in column (1) of Part 2 of Schedule 13 to exercise powers in Book of Reference;</p> <p>Any of the Order land in respect of which no notice of entry has been served under s. 11 of 1965 Act (i.e. acquisition by way of Notice to Treat), or no declaration made under the 1981 Act (i.e. Vesting Declaration).</p>	See comments above
47	<p>Temporary use of land for maintaining the authorised development: power to enter land temporarily, construct temporary works (including means of access) and buildings, maintain authorised development on 28 days notice served on owners and occupiers of land.</p>	Compensation is payable. Include timetable for payment of compensation.

Article	Provision Definitions	Comment
	Undertaker can only remain in possession for as long as is reasonably necessary to carry out the maintenance.	
53	Deemed marine licence: Provides for the grant of a deemed marine licence to be subject to deemed conditions. However, the provision has been drafted without reference to the definition of 'deemed marine licence' which then refers to a draft set out in Schedule 13 and appears to conflict with that definition.	<p>The PPA Group need Sight of Schedule 13.</p> <p>Amend to read: "the undertaker is deemed to have been granted the deemed marine licence to carry out the works and make the deposits described in that licence and subject to the licence conditions which are deemed to have been attached to the licence by the Secretary of State under Part 4 of the 2009 Act".</p>
56	<p>Temporary closure of and works in rivers</p> <p>Power to temporarily 'interfere' with the relevant part of the river in connection with the construction of the authorised development. A definition of 'relevant part of the river' is to be added at Art 56 (6) by reference to the public rights of navigation plan.</p> <p>Power to be exercised in such a way so that minimises affected part of the river and minimises period when complete closure to navigation may be necessary.</p>	<p>'Interfere' is very broad. Judging by the heading of this section, it includes works within the river itself. There is currently no indication of the nature of these works, or scope for limiting them.</p> <p>Qualify power to ensure that power ceases on development becoming operational.</p> <p>The PPA Group need sight of public navigation plan.</p>
57	<p>Traffic Regulation: power to regulate traffic in respect of lengths of roads specified in Part 1 of Schedule 15. The prior consent of the traffic authority for the area in which the road is situated is required.</p> <p>Consent of traffic authority will be deemed if no response within 28 days of receiving application for consent.</p>	<p>The PPA Group need sight of Schedule 15.</p> <p>See comment above on response deadlines.</p> <p>Include express power to make consent conditional.</p>
58	Felling or lopping of trees and removal of hedgerows: power to fell or lop trees near any part of the authorised development if undertaker reasonably believes it to be necessary to do so to prevent obstruction or interference with the construction, maintenance or operation of the authorised development etc.	<p>Reference in Article 58(6) to "59(1)" should be corrected to read "58(1)".</p> <p>There are compensation provisions, but <u>no</u> reinstatement provisions. This should this be incorporated, particularly in sensitive landscape and heritage areas together with an obligation to replant any replacement vegetation that dies within 5 years of replanting.</p>

Article	Provision Definitions	Comment
59	<p>Trees subject to TPO: power to fell or lop any tree described in Schedule 17 and identified on the trees and hedges to be removed or affected plans if the undertaker reasonably believes it to be necessary to do so to prevent obstruction or interference with the construction, maintenance or operation of the authorised development etc.</p> <p>Obligation to provide replacement trees in s. 206(1) of 1990 act disapplied.</p>	<p>The PPA Group need sight of Schedule 17 to comment.</p> <p>This potentially would affect trees which would not interfere with the operation of the development, but which are obstacles to construction. It is unclear why shouldn't such trees be replaced.</p>
60	Protection of interests: Article gives effect to Schedule 8 (Protective Provisions).	The PPA Group need sight of Schedule 8 to comment.
62	<p>Service of Notices:</p> <p>Standard provisions. Art 62(3) does not appear to accommodate service on local authorities.</p>	Amend so that where consent is required: application is made in writing and; served on specific role within the local authorities.
63	<p>Procedure regarding certain approvals</p> <p>This is largely a standard provision from a Section 106 legal agreement. It is not necessary, as deadlines have been set for written approvals after which consent is deemed.</p> <p><i>"Schedule 18 (discharge of requirements) has effect in relation to all consents, agreements or approvals granted etc in relation to the requirements set out in Schedule 3".</i></p> <p>The procedure In paragraphs 3, 4 and 5 of Schedule 18 has effect in relation to any other required consent, agreement, approval granted subject to any condition to which the undertaker objects, or is refused or is withheld.</p>	The PPA Group need sight of Schedule 18 to comment.
65	<p>Amendment of local legislation: disapplies local legislation specified in Part 1 of Schedule 19</p> <p><i>"insofar as inconsistent with a provision of, or a power conferred by, this Order".</i></p>	<p>The PPA Group need sight of Schedule 19</p> <p>Hinkley C Connection equivalent provision includes requirement where notified that there has been a breach of local legislation, that National Grid explains within 14 days whether it agrees with the assessment.</p> <p>Include similar provision here to avoid drawn out dispute about interpretation of this provision.</p>

Article	Provision Definitions	Comment
67	Arbitration: provision allowing for disputes to be referred by agreement to single arbitrator. In the absence of agreement on the arbitrator, to be appointed by the Secretary of State.	Given high sensitivity of route, and to retain confidence in effective arbitration, appointment of experts should be by the heads of relevant national bodies (e.g. RICS, Bar Council) depending on the nature of the dispute. (See Thames Tideway Tunnel DCO provisions).
69	Ancient Monuments and Archaeological Areas Act 1979: Order comprises Scheduled Monument consent under the 1979 Act in relation to the scheduled monuments detailed in Columns (1) and (2) of Part 2 of Schedule 20 and for carrying out the development described in Column (3) on the plots described in column (4). Conditions set out at Part 5 of Schedule 20 deemed to be attached to consent.	The PPA Group need sight of Schedule 20 to comment fully.
18	Access to Works: Power to form and lay out/improve access at locations within the Order limits as the undertaker reasonably requires. Undertaker must consult the highway authority, but secure consent of planning authority. Failure to respond within 28 days of application for consent results in deemed consent.	Include express power to attach conditions to the consent to be consistent with Art 17(5)(b).
20	Discharge of Water: Power to drain water into any watercourse, public sewer or drain (Art 20(1)) with the prior consent of the owner (20(3)). The consent may be subject to reasonable terms and conditions. Failure to respond to application for consent within 28 days results in a deemed consent (20(10)).	See comments on response timetable above.
21	Protective Work to Buildings: Power to carry out certain works to building or structure within the Order Limits.	Arrangements for the mechanism for provision of details to be confirmed.

21.3 Additional Provisions

- 21.3.1 The review suggests that at this stage there are three additional provisions that should be included (see table). However, it must be also noted that the absence of detail on all aspects of the project, there may be other several additional conditions that need to be considered.

Table 21.2: Additional Provisions

Article	Provision
Other/Missing	Include prohibition on undertaker commencing any works before s. 106 undertaking entered into with the PPA group securing mitigation measures and compensation etc in accordance with adopted 106 policies.
	Include requirement to carry out the authorised development in strict accordance with the measures in the various approved mitigation strategies, comprising an Archaeological mitigation strategy, Biodiversity Mitigation Strategy, Construction Environmental Management Plan, Construction Traffic Management Plan, Environmental Statement, Landscape Strategy, Noise and Vibration Management Plan, Public Right of Way Management Plan, Waste Management Plan.
	Recovery of costs of new connections - include provisions allowing person whose premises is supplied by statutory undertaker apparatus removed under article 49 to recover compensation re expenditure incurred as a result of that removal in effecting a connection to other apparatus.

Appendix 1.1 – Project Acronyms

AA	Appropriate Assessment
ABP	Associated British Ports
AEP	Annual Exceedance Probability
ALSE	Assessment of Likely Significant Effects
AONB	Area of Outstanding Natural Beauty
API	Aerial Photo Interpretation
BMV	Best and Most Versatile
BPAAP	Barrow Port Area Action Plan
C2C	Coast to Coast
CAs	Conservation Areas
CBDC	Copeland Borough District Council
CCC	Cumbria County Council
CCW	Cumbria Coastal Route
CEA	Cumulative Environmental Assessment
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environment Management
CIVI	Cumulative Impact of Vertical Infrastructure
CNDR	Carlisle Northern Development Route
CoCP	Code of Construction Practice
CoNE	Centre of Nuclear Excellence
CSE	Cable Sealing End
CTMP	Construction Traffic Management Plan
CWS	County Wildlife Sites
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DNO	Distribution Network Operator
DOL	Draft Order Limits
DPD	Development Plan Document
DSM	Digital Surface Model
ECP	English Coastal Path
EIA	Environmental Impact Assessment
ENW	Electricity North West

Appendix 1.1 – Project Acronyms

ENWL	Electricity North West Limited
ES	Environmental Statement
ESF	Employment and Skills Framework
EPUK	Environmental Protection UK
FRA	Flood Risk Assessment
FRE WHS	Frontiers of the Roman Empire World Heritage Site
FTE	Full-Time Equivalent
FZ	Flood Zone
GCN	Great Crested Newt
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GWDTEs	Groundwater Dependent Terrestrial Ecosystems
HC	Highland Council
HDD	Horizontal Directional Drilling
HDV	Heavy Duty Vehicle
HER	Historic Environment Record
HGVs	Heavy Good Vehicles
HIA	Health Impact Assessment
HLC	Historic Landscape Character
HMP	Her Majesty's Prison
HoPI	Habitat of Principal Importance
HRA	Habitats Regulation Assessment
HVAC	High Voltage Alternating Current
IAQM	Institute of Air Quality Management
ICOMOS	International Council On Monuments and Sites
INNS	Invasive Non Native Species
IPC	Infrastructure Planning Commission
IROPI	Imperative Reasons of Overriding Public Interest
LBs	Listed Buildings
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Area
LCC	Lancashire County Council
LCGT	Landscape Character Guidance and Toolkit
LCT	Landscape Character Type

Appendix 1.1 – Project Acronyms

LCST	Landscape Character Sub Type
LDA	Land Drainage Act
LDNP	Lake District National Park
LDNP WHS	Lake District National Park World Heritage Site
LDNPA	Lake District National Park Authority
LEP	Local Enterprise Partnership
LERC	Local Environment Records Centre
LLWR	Low Level Waste Repository
LoCI	Landscape of County Importance
LoD	Limits of Deviation
LSA	Local Study Area
LSOA	Lower Super Output Area
LVIA	Landscape and Visual Impact Assessment
MHWM	Mean High Water Springs
MPS	Moorside Power Station
MS	Method Statements
MU	Maintenance Unit
NCA	National Character Area
NCR	National Cycle Routes
NETS	National Electricity Transmission System
NETS SQSS	National Electricity Transmission System Security and Quality of Supply Standards
NG	National Grid
NGRs	National Grid References
NMP	National Mapping Programme
NNR	National Nature Reserves
NPS	National Policy Statements
NPPF	National Planning Policy Framework
NSIPs	Nationally Significant Infrastructure Projects
NVC	National Vegetation Classification
NVMP	Noise and Vibration Management Plan
NWCC	North West Coast Connections
OAAT	Options Appraisal of Alternative Technologies

Appendix 1.1 – Project Acronyms

OESF	Outline Employment and Skills Framework
OHL	Overhead Line
OUV	Outstanding Universal Values
PEI	Preliminary Environmental Impact
PEIR	Preliminary Environmental Impact Report
PINS	Planning Inspectorate Advice Note
PMP	Public Rights of Way Management Plan
PP	Partnerships Plan
PPA	Planning Performance Agreement
PPG	Planning Policy Guidance
PRC	Proposed Route Corridor
PRoW	Public Rights of Way
ProW MP	Public Rights of Way Management Plan
pSPA	Potential Special Protection Area
PWS	Public Water Supply
PSOR	Preliminary Strategic Options Report
ROI	Radius of Influence
RPG	Registered Park and Garden
SAC	Special Areas of Conservation
SEP	Strategic Economic Plan
SFRA	Strategic Flood Risk Assessment
SIC	Standard Industrial Classification
SILCT	Seascape and Intertidal Landscape Character Types
SLDC	South Lakeland District Council
SNH	Scottish Natural Heritage
SoS	Secretary of State
SPA	Special Protection Areas
SPD	Supplementary Planning Document
SpOPI	Species Of Principal Importance
SPZ	Source Protection Zones
SRG	Stakeholder Reference Group
SSSI	Sites of Special Scientific Interest
UU	United Utilities



Appendix 1.1 – Project Acronyms

UXO	Unexploded Ordnance
WFD	Water Framework Directive
WHS	World Heritage Site
WRAP	Waste and Resources Action Programme
WSA	Wider Study Area
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility



Appendix 5.1 – Previous PPA Group Feedback

- Review of National Grid’s Assessment of Mitigation Options Methodology and Focus Areas January 2016 (14 January 2016);
- Letter regarding National Grid’s Appraisal of Focus Area Locations and the Response to Consultee Feedback to Assessment of Mitigation Options Methodology (15 April 2016);
- Review of National Grid’s Mitigation Methodology Assessment (3 June 2016);
- Key Impacts Report (21 July 2016); and
- Comments on revised Option Appraisal of Alternative Technology (24 August 2016);



PPA Group Authorities

NWCC

Review of National Grid's Assessment of Mitigation Options Methodology and Focus Areas

January 2016



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1 INTRODUCTION

1.1 Scope

1.1.1 National Grid presented a paper on the Assessment of Mitigation Options: Methodology and a number of 'Focus Areas' for mitigation at the NWCC Technical Stakeholder Reference Group (SRG) Workshop on the 18 November 2015, and requested feedback from the members of the SRG. This report sets out the PPA Group Authorities joint comments on the National Grid Mitigation Methodology Paper and the Focus Areas that were received on 27 November 2015.

1.1.2 The report includes;

- a review of National Grid's Mitigation Methodology Paper ('the Paper'), providing comments for each of the topic areas considered;
- a review of the application of the methodology in order to provide comment on the 'Focus Areas'; together with commentary and recommendations for additional areas, and/or extensions or changes to those already identified; and
- a review of proposed mitigation options.

1.1.3 This response has been prepared by WYG in support of the PPA Group, it has been informed by the views of topic specialists from the PPA Group Authorities supplemented by WYG support where required.

1.2 Document Structure

1.2.1 It must be noted that these comments are provided based on the level of detail made available by National Grid following the Technical SRG and should be viewed in this context. The response is therefore largely strategic and related to the Paper and Focus Areas. It is an informal officer response and does not prejudice the PPA response to the formal consultation and future development of the project, including the EIA process and mitigation. Furthermore, the joint response does not preclude additional individual responses by the PPA Group members, and equal weight should be given any such representations.

1.2.2 In order to address the above, the paper is structured as follows:

- **Section 3** provides a consideration of National Grid's Mitigation Methodology on a topic by topic basis;



- **Section 4** reviews the Focus Area designations and extent; and
- **Section 5** provides an initial assessment of the proposed mitigation options suggested for the Focus Areas;
- **Section 6** provides conclusions.



2 REVIEW OF NATIONAL GRID'S ASSESSMENT OF MITIGATION OPTIONS

2.1 General Comments

- 2.1.1 The PPA Group recognises and welcomes continued informal scoping and engagement by National Grid, and recognise that this current consultation is an important initial start to towards addressing the significant impacts of the proposed NWCC project. However, it is considered that the level of information and timescale for response has not enabled the PPA Group specialists to provide fully informed comments, especially related to the application of the methodology.
- 2.1.2 In particular the PPA Group has not had access to National Grid's initial assessments that have underpinned the establishment of Focus Areas; this has led to a more general response in a number of areas, most notably in ecology where the impact of the proposed development could not be fully appreciated. Information presented at the SRG workshop has also not all been made available; specifically the presentation slides have not been fully disclosed for consideration. It is considered that the lack of information and evidence has undermined the merits of the consultation process related to the design of mitigation measures. This is an essential element of the overall NWCC Project and could result in significant impact on the communities and businesses in the area. Consequently it is considered that although the process is a positive first step, at this stage little weight can be attached to National Grid's proposed Focus Areas and mitigation options. Substantive evidence is required to qualify the basis of the assessment and decision making process. The PPA Group value the ongoing engagement on the NWCC Project and the Authorities would like to continue to work with National Grid to understand the impacts of the Project and develop appropriate mitigation measures.
- 2.1.3 The online GIS system has been a useful tool in this exercise; however, the level of data layers has not been sufficient or consistent across all topics. This has lead to difficulties in reviewing the Focus Areas, especially in the topics of historic environment and socio-economics. In future it is suggested that the tool could play an important role in disseminating spatial data related to the Project and as such its capabilities should be maximised.



- 2.1.4 Furthermore, it should be noted from the outset that the title of the document implies that the whole Project is being dealt with; however there is no reference to the proposed Morecambe Bay Tunnel in the Paper. For the sake of clarity it is suggested that a paragraph should be added in Section 1 to explain the overall approach, and set out when the tunnel will be the subject of a similar assessment and mitigation process.
- 2.1.5 It is important that there is an opportunity to fully consider appropriate mitigation across the whole Project. It is essential that any future consultation be clearly and consistently disseminated, including a clear scope and appropriate levels of information to undertake the assessment/response.
- 2.1.6 The Scoping Opinion issued by PINs recognises issues over the lack of project definition and the difficulty to comment on the scope of assessment required where components of the development are not defined. It is considered that this constraint applies equally to this assessment process, inhibiting effective application of the methodology.

Timetable for mitigation assessment

- 2.1.7 The PPA Group have repeatedly identified the critical need to adequately consider mitigation options ahead of the formal S.42 public consultation; both at meetings and in writing. The PPA Group have indicated that there is a need to allow enough time for the PPA Group and others to input into an iterative discussion with National Grid. This informal pre-application consultation is required to meet the statutory NSIP process and guidance. To be clear, informal consultation with statutory and planning authorities, including on mitigation, ahead of the S.42 public consultation is a required rather than a preferred stage.
- 2.1.8 The PPA Group is very concerned that there have been considerable delays in National Grid taking forward an assessment of mitigation options, and that the steps for engagement have been unclear. There is a significant risk that National Grid could fail to meet the NSIP requirement to have engaged the PPA Group and others in adequate informal consultation on mitigation ahead of the consultation if National Grid proceed with the proposed consultation timetable.
- 2.1.9 To help National Grid to establish a clear and agreed timetable for developing mitigation options for the NWCC proposals, and help meet the NSIPS requirement to address this key issue, the PPA Group suggest the following indicative timeline. The PPA Group consider this is the minimum to



allow us and others sufficient opportunity to input to mitigation proposals for Focus Areas related to the Project:

- By 22 January 2016 – a detailed initial assessment of non-pylon options in writing, including likely impacts of mitigation options on key assets (e.g. ecology and historic environment)
- By 22 January 2016 – for the Duddon crossing only - an outline assessment of this option, including identifying likely impacts of this mitigation options on key assets
- By 12 February 2016 – the PPA Group and others provide written comments on the two assessments of mitigation options above (i.e. a 3 week response period)
- By 26 February 2016 – National Grid provide details of the draft mitigation package that is proposed to include in the S.42 public consultation, the reasons for selection of these options and your written response to the comments made by the PPA Group and others, as above.
- By 4 March 2016 – a full SRG meeting is held to discuss the National Grid's draft mitigation package, ahead of the 'design freeze' for the S.42 consultation (to be held at least a week after written proposals are received)

2.2 Approach to Option Appraisal

2.2.1 The PPA Group welcomes the use of the National Planning Statements (NPS) as the basis for the options appraisal. The methodology states that the appraisal aims to identify '*those areas (Focus Area) where mitigation for environmental effects relating to use of an overhead line supported by steel lattice pylons is appropriate*' (paragraph 2.1.1). It is important that mitigation is considered for the whole length of the development, not just the Focus Areas. Whilst it may not be appropriate or proportionate to consider alternative technologies as a method of mitigation in all areas, mitigation should be considered for all aspects and locations along the scheme. This should be clarified in any future documentation to ensure it is clear that mitigation measures are not applied exclusively to Focus Areas.

2.2.2 With this in mind the Paper is solely related to the NWCC project between Harker substation and the proposed tunnel head at Roosecote. Given this approach it is expected that National Grid will be undertaking a similar mitigation exercise to appraise the tunnel head areas at Roosecote and



Heysham, both on their own and in accumulation with the proposed 400kV line (whether via OHL or underground) , as well as the mitigation of impacts upon Morecambe Bay. The PPA Group consider that, in order to progress mitigation work related to the tunnel, a clear programme is required in order to achieve meaningful engagement prior to the statutory consultation.

- 2.2.3 It is noted that this is *'driven by identifying the possibility of particularly significant adverse environmental effects as a result of constructing steel lattice pylons'*. Any adverse affects should be considered in relation to reducing their impact and effect on the receptors of the area, although all the *'alternative transmission technologies'* listed in the report may not be appropriate.
- 2.2.4 Items 1 (Selection of alternative alignments), 2 (Siting of pylons) and 3 (Use of mitigation planting or screening) are not considered to be alternative transmission technologies (paragraph 2.1.2). These are mitigation measures which should be applied to the whole route alignment to deliver the optimum scheme alignment, minimising environmental effects along the whole route alignment, not just those with particularly significant adverse effects. The use of the phrase alternative technology mitigation needs to be clarified to outline whether alternative technologies include items 1-6 or just 4-6. This has consequent implications for the use of the phrase alternative technology throughout the remainder of the methodology e.g. paragraphs 2.2.15, 2.2.16, 4.1.4, 5.1.6. Figure 1 in the document indicates that items 4-6 are considered as alternative technology: *'preferred mitigation may be alternative technology, other mitigation (such as planting), or siting.'*
- 2.2.5 While it is recognised that the legislative requirements are listed under Section 2.2 it should be noted that statutes such as the Conservation of Habitat and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended), include requirements for competent authorities relating to the protection of European and nationally designated sites, habitats and species.
- 2.2.6 The PPA Group welcome the recognition that the landscapes of National Parks are provided the highest level of protection in Government legislation, policy and guidance, and that this is reflected in the criteria. However, the PPA Group are concerned that the proposed methodology fails to recognise that impacts from developments that affect the landscape setting of National Parks should be given equal weight to impacts within the designated National Park area. This is an error that should be addressed through revision of the methodology.



- 2.2.7 Additionally, there is extensive reference to relevant electricity policy and guidance Section 2, of the methodology, and further significant gap in relation to National Parks. Both the Lake District National Park Authority (LDNPA) and the PPA Group responses have previously advised that the extant English National Parks and the Broads UK Government Vision and Circular (Defra: 2010), which makes clear that the Government continues to regard National Park designation as conferring the highest state of protection as far as landscape and natural beauty is concerned. At the time of its publication, Government planning policy was that major development should not take place within a National Park except in exceptional circumstances. The methodology should be amended to include this important policy guidance.
- 2.2.8 All statutory undertakers, including National Grid, have the duty to have due regard to the purposes of National Parks. The LDNPA has previously provided advice on the importance of National Park purposes and the hierarchy for these is set out in Annex 1, section 1. The draft methodology fails to fully recognise these duties, and it should be amended to include specific reference to the inclusion of the setting of National Parks, beyond the designated boundary.
- 2.2.9 It is broadly considered that the use of the steel lattice pylon as the initial basis for route/alignment identification and assessment is a sound approach (paragraph 2.2.8). This will provide a consistent baseline against which alternatives can be considered.
- 2.2.10 Paragraph 2.2.14 suggests that a key objective of the Methodology Paper is to identify areas where *'significant environmental effects are likely to occur and identify of 'particularly sensitive areas' referred to as Focus Areas'*. The Paper (paragraph 3.1.1) scopes a number of topics out of the exercise at this stage. However, it is not clear from the approach section that socio-economic effects are being considered, additionally there are concerns regarding how this topic has been addressed within the Paper and the wider application of the methodology.
- 2.2.11 Paragraph 2.2.16 states that *'this approach has been developed to avoid the unnecessary appraisal of alternative technologies in areas where **particularly significant** effects are unlikely to occur'* (our emphasis). This should be clarified to explain whether alternative alignments, siting of pylons, and use of mitigation planting or screening will not be considered where significant effects are likely to occur (rather than particularly significant effects). Alternatively does the use of the phrase *'alternative technologies'* just relate to discounting low height lattice pylons, T-pylons and underground cable technology? As stated under point 2.1.2, mitigation should be considered for all aspects and the whole alignment of the scheme as appropriate, not just in particularly significant



adverse areas. It is acknowledged that this mitigation should be proportionate to the significance of effect; however, route alignment and micro-siting of pylons are unlikely to be disproportionate considerations in many cases of significant and mid level effects.

2.3 Topics to be considered

2.3.1 It is understood that the objective of the Paper is to establish where alternative electricity transmission technologies may be necessary to mitigate the effects of an overhead line, and as such this is an initial step following the 'strategic mitigation options' (such as rationalisation of existing lines and the Morecombe Bay Tunnel) that will lead to establishing the overall mitigation and/or compensation package that will be required to deliver the NWCC project. Given that this is one step in the process it is understood that where topics have been scoped out of this exercise, mitigation will be considered through the EIA process, alongside the topics that have been included.

2.3.2 It is broadly accepted that the topic list set out in paragraph 3.1.1 is appropriate for the purposes of this Paper/process.

Soils and Geology

2.3.3 While the decision to scope soil and geology out of this exercise is broadly accepted, when considering this topic in the future, detail is required of the mitigation options required in the event that contaminated soils are encountered.

Traffic and transport

2.3.4 Paragraph 3.2.9 states that the construction transport affects along the route would be similar regardless of which technology option is selected. Whilst it is accepted that the number and location of highway accesses and the use of temporary haul roads may remain broadly the same regardless of technology option, the PPA Group would anticipate that undergrounding (for example) would generate higher volumes of construction related traffic through those accesses than would overhead lines.



- 2.3.5 As such it is suggested that National Grid should continue to work with the PPA Group to understand the impacts and manage/mitigate any impacts.

2.4 Methodology for Identification of Focus Areas

- 2.4.1 It is considered that the three stages for the methodology outlined in paragraph 4.1.2 to 4.1.5 are not clearly carried forward in the subsequent text, and overall the approach across the topics is confusing, and lacks clarity of purpose.
- 2.4.2 Paragraph 4.1.2 notes that the process '*identifies Areas of Likely Significant Effect. These are those areas in which it is proposed to consider alternative technologies.*' It is considered that this is at odds with the remainder of the document where alternative technologies are only considered within Focus Areas, not within the Areas of Likely Significant Effect. The Areas of Likely Significant Effect have not been provided to consultees and so it is not possible to comment on whether these are appropriate.
- 2.4.3 The methodology notes that it does not at this stage appraise and take account of consultation responses. There is a clear requirement, in order for appraisal to be complete, to identify a process which links assessment of the validity of consultation response to conclusions relating to likely significant effect. Therefore, it is considered that clarification is required as to whether the review of consultee comments could trigger a review and/or inclusion of Areas of Likely Significant Effect or Focus Areas not included in the technical specialists' initial appraisal (paragraph 4.1.6).
- 2.4.4 In relation to paragraph 4.1.8 the PPA Group would welcome the statement relating to when the detailed assessment is carried out, as it suggests that if particularly significant effects are identified at this stage, the need for mitigation or alternative technology choices will be considered at this later stage. This would seem to address some of the concerns identified above.
- 2.4.5 While paragraph 4.1.8 is welcomed, the statements are considered to be of particular relevance to ecological considerations. In view of this, the initial stage of assessment being undertaken in the absence of any baseline ecological data from field surveys, or without consideration of this data where it does exist (e.g. WeBs data, surveys conducted to date). For large scale development, particularly in proximity to designated sites, consideration of 2 years survey coverage for relevant species (e.g. birds and bats) is often required by competent authorities in order to make informed decisions.



- 2.4.6 It is also noted that the methodology states it is based upon Institute for Ecology and Environmental Management (2006) Guidelines for Ecological Impact Assessment in the UK. This is welcome; however, an updated version of the guidelines was released in the first week of January 2016. Given the release of the second edition of the Guidelines for Ecological Impact Assessment the Methodology Paper and EIA should be reviewed in light of the updated guidelines.

2.5 Landscape and Visual

- 2.5.1 The extract from NPS EN-5 is in relation to mitigation points 4-6 (paragraph 4.2.3). The PPA Group would emphasise that points 1-3 (as described in paragraph 2.1.2) should be considered over the whole length of the route.
- 2.5.2 Paragraphs 4.2.7 to 4.2.11 state the criteria used to determine the areas of likely significant effect and Focus Areas. It is unclear how issues such as '*orientation/likely focus of a receptor, factors that may screen or reduce visibility and the number of people/properties*' (paragraph 4.2.11) have been considered at this stage as this is very detailed information. It also states that where major/moderate or major effects have been identified these are '*likely to be significant*'. The PPA Group would agree that major/moderate or major effects are likely to be significant, however this implies that a detailed assessment has already been carried out on all the landscape and visual receptors. The PPA Group has not had the opportunity to review this assessment (if it has been carried out), therefore, if available, this information would be very helpful to review in order to provide comment on the Focus Areas.
- 2.5.3 Given the magnitude of the scale of the project extending to some approximately 130km in length it is considered that the methodology needs to provide a clear breakdown of how cumulative impact has been evaluated and from which viewpoints and how the rationale for substantial or very substantial is arrived at (especially in the context of the existing EIA regulations and their respective triggers and thresholds).
- 2.5.4 Clarification is sought on the definition and extent of the setting areas for both the landscape designations of the National Park and the Solway Coast Area of Outstanding Natural beauty and the Hadrian's Wall World Heritage site (which was similarly highlighted from a landscape perspective). These are crucial for views both into and out of the national/international designations and their respective settings.



2.5.5 Within the National Park and its setting it is expected that there must be consistency in the criteria and professional judgements made using them. There is a long-established recognition that the legislative and policy framework, including current planning guidance, provides protection of the setting of National Parks. While these areas are not designated as National Park, developments within the setting can impact upon their statutory purposes and Special Qualities.

2.5.6 Landscape planning guidance from DCLG, including that shown on its website, provides clarity that development by 'relevant authorities' impacting on the setting of National Parks should be considered in the same way as those within the National Park.

'.....in exercising or performing any functions in relation to, or so as to affect, land in National Parks and Areas of Outstanding Natural Beauty, relevant authorities 'shall have regard' to their purposes [....]

*This duty is particularly important to the delivery of the statutory purposes of protected areas. The duty applies to all local planning authorities, not just national park authorities. **The duty is relevant in considering development proposals that are situated outside National Park or Area of Outstanding Natural Beauty boundaries, but which might have an impact on the setting of,** and implementation of, the statutory purposes of these protected areas.'* (our emphasis). (NPPG - Paragraph: 003 Reference ID: 8-003-20140306 - Revision date: 06 03 2014)

2.5.7 Appendix 1, section 2 has been included to provide the citation and further relevant policy and guidance.

2.5.8 The methodology identifies that Section 62 (11A) of the Electricity Act 1995 outlines National Grid's duty to have regard to National Park purposes. Whilst there is no specific reference to the setting of National Parks in the wording of the Act, it is consistently interpreted to mean that development proposals immediately adjacent but outside the boundary of the designated area is subject to the same duty if the National Park itself is affected. This is particularly the case with landscape and visual effects. Various planning decisions, often relating to wind energy developments, have evidenced this principle.

2.5.9 The concept of having setting or buffer areas around statutorily protected landscapes is also embedded into planning procedures. For example, Natural England has identified Impact Risk Zones (IRZs) for all of England's designated landscapes, to help identify the sensitivity of the setting of these areas geographically. In addition, Natural England sets out its priorities for



responding to planning applications in '*Natural England Standard: Responding to Development Management Consultations*'. This states that their priorities include proposals outside of protected landscapes that may have significant adverse impacts upon it. Specifically the prioritise impacts from '*Proposed on-shore wind farms or similarly prominent vertical structure where the (hub) height is less than 80m*' when they are located less than 5km kilometres from the boundary of protected landscapes.

2.5.10 The Methodology Paper fails to recognise that planning policy and guidance to enable National Park legislation includes protection of the setting of National Parks beyond their designated boundary. This is a major omission that needs to be addressed if your methodology is to be robust and not open to legal challenge.

2.5.11 Our concerns that the methodology does not effectively consider the setting of the National Park are demonstrated by the online mapping layer for landscape character types failing to include those which straddle the National Park boundary. The Lake District National Park Landscape Character Assessment is clear that landscape types extend across the boundary of the National Park; and that landscape type is not defined by the administrative boundary. These landscape types extending outside the designated area of the Park demonstrate the importance of the setting of the Park beyond the boundary.

2.5.12 In particular, changes to section 2, section 4.2 'Landscape and Visual' and the hierarchy table in 4.1.10 are required to address this deficiency. The mapping layer for landscape character types should be revised.

2.5.13 The Methodology has little detail related to cumulative impact of the proposal both in itself as a linear line of structures, in combination with other structure e.g. turbines or sequentially especially along the major highway network. It is considered that the methodology should have incorporated the Cumulative Impact Vertical Infrastructure (CIVI) Report (and data) which are an essential contribution to any methodology and assessment of the proposal.

2.5.14 Furthermore, it is considered that there is little evidence or rating given to the value of local landscapes. It is wrongly assumed for methodology purposes that this will be dependent on the reactive stakeholder response to the submitted details. The weight of the importance of local landscape values, especially by local communities has been an important consideration in other planning applications. The absence of any representations does not automatically mean it can be



interpreted that they support the project, especially as such views can be channelled through differing organisations, e.g. parish councils, pressure groups etc.

3.5 Historic Environment

- 2.5.15 The historic environment criteria for identifying Areas of Likely Significant Effect (paragraph 4.1.10) should be clarified that these are considered to be effects which are '*moderate significance of effect*' and above consistent with the proposed methodology within the Scoping report.
- 2.5.16 The historic environment criteria for identifying Focus Areas (paragraphs 4.1.10 and 4.3.6) are not consistent with the EIA methodology outlined within the Scoping report. Focus areas can be identified based on '*large or very large effects upon medium value designated assets*' however there is no very large significance of effect category for medium value heritage assets. Additionally the identification of significance of effect is designed to allow comparison of effects for assets of differing value or magnitudes of effect. It is therefore unclear why a moderate significance of effect is considered '*particularly significant*' for some values of assets, but not others.
- 2.5.17 The methodology document does not specifically state that an assessment of the physical impact on undesignated heritage assets of demonstrable significance to designated heritage assets has been undertaken and is a criteria for the focus areas. This is particularly important around Hadrian's Wall World Heritage Site (WHS) where undesignated assets directly related to the WHS are known to survive. It is considered that it is an oversight that the document does not state that this criteria is included, as this was raised as an issue at the workshop and verbal confirmation was received that such criteria was considered. It is advised that this point be clarified, and if such criteria has been included in the assessment then the methodology document should therefore be revised to state this.
- 2.5.18 The statement that '*Substantial Harm*' represents too high a threshold for the identification of Areas of Likely Significant Effect and Focus Areas is welcomed (paragraph 4.3.5).
- 2.5.19 In paragraph 4.3.6 justification has not been provided as to why only designated heritage assets are considered to be subject to '*particularly significant effects*'. It is noted that paragraph 139 of



NPPF identifies instances when non-designated assets should be considered against the policies for designated assets.

- 2.5.20 It should be noted that Conservation Areas are designated heritage assets and do not require separate identification (paragraph 4.3.7). It is considered that little reference in the methodology was given the setting of Conservation Areas e.g. Hayton village. Similarly little heritage methodology has been provided to explain for setting and the realignment of the lines around the listed buildings at Aikton and Parton which increase the negative impact on setting and encircling the villages.
- 2.5.21 The description of the application of the methodology only considers potential effects on the setting of heritage assets. The potential direct physical effects on heritage assets e.g. Muncaster Registered Park and Garden and Scheduled Monuments should be reported.
- 2.5.22 It is unclear from the description of the application of the methodology whether the assessment to identify Focus Areas has been applied to the full study areas identified within the Scoping Report e.g. 10km for very high and high value assets and 2km for medium value assets.
- 2.5.23 The identification of effects on heritage assets to allow the identification of Focus Areas implies that an assessment of effects arising as a result of the proposed development has been completed. This information would be very helpful to review in order to provide comment on the Focus Areas.

2.6 Ecology

- 2.6.1 It is understood that Focus Areas are determined initially through identification of where likely significant effects could occur using an EcIA based assessment and that significant effects are only considered to occur for sites of local or greater value (paragraph 4.4.3). Following this, Focus Areas identified on ecological grounds are where '*significant harm*' is considered likely upon assets of national value or above.
- 2.6.2 The Methodology Paper as it stands does not provide an explanation or justification of the use of significant adverse effect on assets of national value and above as a criteria for establishing the Focus Areas in terms of ecology. Overall the approach prompts a number of questions that are expanded on in paragraphs 2.6.3 to 2.6.8.



- 2.6.3 It is unclear whether an assessment of effects upon sites of between local and national importance been undertaken, or indeed the assessment has only been conducted on sites of national and greater importance. It is noted that consultee/stakeholder comments have not been included in the preliminary stages of determining Focus Areas. However, this may be an area where such information may help to identify highly notable County Wildlife Sites for example, which have not recently been reviewed but might otherwise qualify as having greater ecological value than for example, SSSIs in unfavourable condition. A table could be produced of these assets and reasons why they are not potentially an issue to demonstrate the threshold suitability.
- 2.6.4 Additionally, RSPB sites do not have any legal designations in and of themselves but they can contain international/national designated sites. RSPB sites are specifically designed to attract birds either in large numbers and/or of protected/notable species, and thus they may be of great significance. It does not appear that this has been considered in the process of establishing Focus Areas.
- 2.6.5 Clarity is required as to how has the potential for adverse effects on national to European level sites been assessed. Specifically the Methodology Paper should make it clear whether buffer zones have been used; if assessments of designating features and their sensitivity have been carried out; and if local expert judgement/consultation been undertaken for each site. A Habitat Regulations Assessment (HRA)/Appropriate Assessment (AA) is the usual/appropriate format for such considerations. These have to be informed by detailed baseline data and assessments. Assumptions based upon distance buffers for example would be considered inappropriate.
- 2.6.6 From the brief methods section, it is assumed that '*likely significant*' effects upon European and national sites are '*particularly significant*' effects (i.e. there is no further assessment into degrees of harm). This should be explicitly addressed.
- 2.6.7 The lack of baseline data available at this time means that there may well be previously unidentified assets that would qualify for national or greater recognition which are presently undesignated. Surveys could reveal nationally significant populations of species/habitats that would qualify as assets. However, the PPA Group appreciate the 'high level' nature of this review.
- 2.6.8 It is unclear how have National and Local Nature Reserves been assigned. It must be noted that these are statutory designations, which often have equal or greater social and economic benefits



than their ecological value and such factors may be missed by a purely ecological assessment of these.

2.7 Socio Economic

- 2.7.1 Section 4.5 provides a brief description of the socio-economic methodology for the establishment of Focus Areas. Unlike for other topics, a context for the criteria is not provided. It is noted that the definition involves significant effect on visitor, PRoW and land use receptors, however, the definition of '*land use receptors*' is vague and does not seem to cover the breadth of receptors outlined in the Scoping Report (Scoping Report paragraph 16.1.8). The Planning Inspectorate Scoping Opinion notes the need to have regard to potential effects arising from land take and severance. The assertion that the methodology reflects the topic areas covered by the EIA Scoping process is inaccurate. This should be corrected and the methodology adjusted to ensure that consideration of wider, socio economic issues is applied.
- 2.7.2 It is considered that reflecting the suggestion above, this would identify additional part of the NWCC route, especially in the area between south Whitehaven and the West Lakes Science Park into the scope of the methodology in terms of sterilisation of land recognised as having potential to support economic growth; and also areas to the south of Moorside where impact of development has been recognised in terms of continued issues over resilience of supply. It is considered that both these issues would result in particularly significant effects, with appropriate consideration of potential mitigation through the application of alternative mitigation options.
- 2.7.3 The Methodology Paper states (paragraph 4.5.1) that '*an initial assessment has been carried out following the principles of the methodology set out in the Scoping Report*', however, the PPA Group understands that assessments are at an early stage in a number of key areas. Furthermore, the Scoping Opinion published in November 2015 concluded that the impact on the socio-economic topic and particularly tourism is a key concern; therefore, the PPA Group would question whether the 'initial assessment' informing the Methodology Paper is sufficient to designate Focus Areas. With this in mind there will be a need to revisit the exercise when a better understanding of the assessments is known.
- 2.7.4 Overall, it is considered that the section setting out the methodology (paragraph 4.5.1 to 4.5.4) is general and not specific to socio-economic effects. The scope of the assessment and receptors are not defined. Clarification is required as to what socio-economic effects are to be considered.



Furthermore, the criteria used for designating Focus Areas from a socio-economic perspective is confusing and does not aid understanding of the process.

2.8 Appraisal of Mitigation Options

- 2.8.1 Overall, it is suggested that this section is very unclear about the purposes and outcomes of the Focus Area assessments.
- 2.8.2 It is agreed that it is appropriate to discount mitigation options, which would be disproportionate in cost to the benefit provided (paragraph 5.1.1). However, the process and rationale for discounting these options should be explicitly discussed within the subsequent report on mitigation options.
- 2.8.3 Whilst it is considered appropriate that each discrete Focus Area is appraised (paragraph 5.1.3), the assessment should also consider the interrelationships and cumulative effects between Focus Areas or their sub-sections where they abut each other, or where there are relatively short areas of non-Focus Area between sections e.g. Whicham Valley and the Duddon Estuary.
- 2.8.4 With regard ecology and paragraph 5.1.3, the potential for project related cumulative effects should be considered, noting that displaced species might otherwise be further effected by works affecting similar habitats, e.g. arable/coastline, in the surrounding areas. The linear nature of the development is likely to exacerbate displacement impacts, where it follows the course of coastal habitats. Additionally, it is not clear how cumulative impacts in relation to other consented or proposed developments been considered. For example, at Haverigg Windfarm, permission has been granted for additional turbines; but it is unclear whether the potential for cumulative impacts and/or impacts upon mitigation areas been considered (e.g. the northeast of Haverigg, along the Duddon Estuary).
- 2.8.5 Fundamental to the paragraph above is that it is understood that a high level approach is required at the outset to inform feasibility and direct further studies. However, it is feasible, that alternative technologies may provide the only suitable mitigation to avoid adverse effects in some areas upon national/European designated sites when considering a development of this magnitude. In view of the scale of likely financial considerations associated with potential abortive works, programme slippage, alternative technology costs, 'knock-on' effects etc; the feasibility of returning to



alternative technology considerations at a later stage is questionable. It is suggested that National Grid needs to demonstrate further project planning/programming accordingly.

- 2.8.6 Paragraph 5.1.5 reinforces that *'the views of consultees will be considered by National Grid'*. It is not clear at what stage these views will be fed into the decision making process or the weight these will have. It is noted in paragraph 4.1.6 that consultee views have not been considered at this stage but that they have been reviewed. It is considered that feedback on how these have been considered should be provided.
- 2.8.7 Regarding paragraphs 5.1.6 and 5.1.7 it is unclear from this whether just alternative transmission technologies, or all mitigation options as outlined in 2.1.2 will be considered and reported in this process.
- 2.8.8 The PPA Group are concerned over the absence of clarity over the way in which the methodology was applied to define the precise extent of focus areas, e.g. why do the areas identified begin and end at the specific points which they do? There is logic for a focus area to extend across the entire route through the LDNP, but should there also be assessment of where significant likely effects would cause that Focus Area to begin and end as the boundaries of the National Park are crossed.



3 REVIEW OF PROPOSED FOCUS AREAS

3.1 Introduction

- 3.1.1 National Grid presented an initial set of Focus Areas at the Technical SRG Workshop on the 18 November 2015, in addition to highlighting the reasons for the areas being designated as Focus Areas. The Focus Areas are shown on the online mapping tool provided by Nation Grid, however, the reasons for the area being a selected 'Focus Area' is not included within this mapping tool. The only reference to the rationale for the selection of specific Focus Areas is based on the personal notes taken when following the presentation at the SRG workshop. It would be beneficial to be issued with the reasons for selection for each Focus Area along with an explanation of this reasoning.
- 3.1.2 This has resulted in difficulties in the full consideration of the Focus Areas, as a fundamental element of the mitigation process (the link between the methodology and the mapping) is missing.
- 3.1.3 The application of the mitigation methodology has resulted in the segmented consideration of impacts, such as in areas around the LDNP, Duddon, and around Whitehaven. It is considered that mitigation of impact at Moresby Parks and Whitehaven could and should be considered together rather than in isolation. Additionally the PPA Group are concerned in particular that, with proposed short sections of the route at the head of the Duddon estuary not identified as Focus Areas (Pylons 109 – 111; 113 - 117), there could be a 'piecemeal' approach to mitigation proposals for the entire Duddon estuary landscape. The final mitigation package must be holistic and consistent for the entire National Park and its setting.
- 3.1.4 It is critical that when applying the approach the overall impacts are fully considered together rather than in isolation. This may result in alternative and more appropriate approaches to mitigation than is the case with the piecemeal approach currently advocated. This principle should be applied across the route.
- 3.1.5 The comments provided in the review of proposed Focus Areas must be viewed with this in mind. If National Grid subsequently issue the reasons for each Focus Area along with an explanation of this reasoning the PPA Group will be happy to review. Furthermore, comments provided are made in a context of comments, and potential flaws identified in section 2 of this report. Comments also



reflect particular issues over the absence of specific project definition and the consequent ability to assess specific impacts and mitigation. Whilst endeavouring to provide constructive assessment, the PPA Authorities would reserve the right to table further observations as the project evolves, becomes more defined, as and when issues with methodology are resolved.

3.2 Focus Areas

3.3 Landscape

- 3.3.1 It is considered that there is no clear rationale provided on the parameters for the proposed Focus Areas or just as importantly the non-focus areas, which needs to be judged in their entirety. Specifically, in respect of Allerdale, the PPA Group has a different view on the character of the landscape compared to National Grid's assessment with the topography, cumulative impact and little vegetation resulting in the suggestion that the overall length of the line in Allerdale should constitute a Focus Area. Therefore it is considered that this section of line requires appropriate mitigation as opposed to the limited mitigation offers being proposed for this section. This in turn has implications for the evidence within any ZTV's.
- 3.3.2 Application of the proposed criteria for landscape and visual impacts in the methodology results in sections of the proposed route within the setting of the National Park not being identified as Focus Areas. By not considering mitigation needs within the setting of the National Park it is considered that National Grid is at risk of failing to comply with existing legal and policy protections for National Parks. Unlike National Park boundaries the extent of the setting of a National Park is not defined as a line on a map. It will depend upon the nature of a proposed development and potential impacts. Given that the 'default' transmission technology current being considered for the NWCC Project is approximately 50m tall pylons it is likely that the setting National Grid should consider will be extensive.
- 3.3.3 It is considered that National Grid as the developer must identify the relevant extent of the setting and provide appropriate justification. The PPA Group would be happy to review and provide comment on a draft statement outlining this.
- 3.3.4 Our records show that of the Focus Areas the following;



- **FA08; FA09a; FA09b; FA09c; FA09d; FA09e; FA10** were chosen as Focus Areas based on landscape criteria. However, the PPA Group have not been provided with detail on the landscape aspects of these areas where '*particularly significant*' effects are considered to be able to comment.
 - The PPA Group understand that Focus Areas; **FA01; FA02; FA03; FA04; FA07; FA08; FA09a; FA09c; FA09d; FA10; FA12** were chosen as Focus Areas based on visual criteria and being potential subject to particularly significant visual effects. However, the PPA Group have not been provided with any more detail on the visual aspects of these areas where particularly significant effects are considered to be able to comment.
- 3.3.5 It should be noted that for the purposes of completeness the remaining Focus Areas not listed above were selected on the grounds of other review criteria e.g. historic environment, ecology, socio-economic and do not form part of this landscape & visual review document.
- 3.3.6 Following visits to the general areas identified within the Focus Area mapping the PPA Group have considered the selection and approximate extent and would make the following observations.

FA01a/b – Whitehaven/St Bees

- 3.3.7 This Focus Area has been selected on visual criteria and extends south providing a virtual continuation of FA02 at Moresby Park. The Focus Area follows the proposed route immediately to the east of the large conurbation of Whitehaven. A further extension of the Focus Area south along rising topography to Outrigg Road should be considered or alternatively a rational provided for the curtailment currently shown to the east of Low Walton.
- 3.3.8 Furthermore Copeland Borough Council and the PPA Group have consistently flagged the potential impact of additional pylon infrastructure on areas north and east of Bigrigg given the prominent location on the edge of the St Bees Valley within an area where landscape value and visual quality is already compromised by existing transmission and distribution equipment in the landscape.

FA02 - Moresby Park

- 3.3.9 The selection on visual criteria appears to correlate to the observations on the ground with locally rising topography to the east of Moresby Park which lies to the west and residential properties to



the east of Moresby Park Road. The PPA Group would wish to see an extension to the Focus Area to the north east to take in Moresby Moss.

FA03 - Stainburn & Great Clifton

3.3.10 The Focus Area coincides with a heavily populated section of the corridor and the PPA Group would concur that this has been justifiably identified on the grounds of visual criteria. The PPA Group would however wish to understand the justification for not extending the Focus Area to the north east to take in the section between Seaton and Broughton Moor due in part to the proximity to visual receptors and the complex nature of the existing transmission routes along this section. The route passes very close to Broughton Moor to the west and through a section of Flimby Great Wood. The Focus Area appears to identify with the proximity to Stainburn to the west and Great Clifton to the east in its northern portion. Extension of the Focus Area to the south to consider the potential for cumulative effects should also be considered and justification provided to support the cessation to the east of Stainburn.

3.3.11 Overall the proximity to settlements appears to be applied in an inconsistent manner with the re-siting of the route away from settlements near the Duddon estuary, whereas it is close to clipping some other settlements e.g. Broughton Moor in FA03. There was no evidence in the methodology to explain this.

FA04 – Hayton

3.3.12 The selection has been based on visual criteria and the PPA Group concur that with Hayton immediately to the west and Prospect to the south, the proposed route will pass in very close distance to both villages with the potential for particularly significant visual effects occurring. The PPA Group would wish to understand why the Focus Area has not been extended to Aspatria to the north east given the proximity to the northern edge of the village and public rights of way which extend from the village to the north-west. The route is proposed to form a series of doglegs in proximity to Bulgill to the south west. With the localised topography being raised along the route, the PPA Group would suggest that the rationale for exclusion of this section from the Focus Area be provided, given the potential for visual impacts on Bulgill and the route of the Allerdale Ramble.

FA05 - Aikhead Hall



3.3.13 The criterion for selection is historic environment, however, the proximity of the hamlet of Aikhead immediately to the south of the route and the route taking in localised high ground immediately north of the hamlet, would suggest that this may also be included under visual criteria. Intervening topography may limit some open views beyond the Focus Area however it is considered appropriate to also extend the Focus Area to take in the route area immediately south of Waverbridge to the west. It is also noted that the village of Blencogo is in proximity to the route but has not been included. It would be valuable to provide a rationale for its exclusion.

FA07 - Great Orton

3.3.14 FA07 is defined under visual criteria and this short Focus Area extends to the south of the village of Great Orton which lies circa <1km to the north. This appears to be a logical section of Focus Area. As the village aligns north south it is not clear as to the level of visibility likely to be experienced by residential receptors. It is noted a touring caravan site lies on the southern fringe adjacent to the village pub and a public bridleway to the south east, which will gain prominent views of the route. The PPA Group would suggest that justification should be provided for the short stretch of Focus Area and the rationale for not extending north east to take in the additional short section to the south of Orton Moss.

FA08 - West Carlisle and Frontiers of the Roman Empire WHS

3.3.15 FA08 extends generally in a westerly then southerly direction and is noted to commence circa 1.5km west of the proposed sub-station site at Harker where a series of lines converge to form a prominent feature. Whilst the Focus Area has been defined under Landscape and Visual criteria it was noted there are a number of isolated properties and hamlets that would appear to lie within the anticipated ZTV including properties at Newtown of Rockliffe and Rockliffe itself. Further properties lie in close proximity to the east along the A7. It is necessary to understand whether these were discounted as 'Significant' rather than particularly significant and the rationale given the Focus Area has been defined on landscape and visual criteria.

3.3.16 The definition of the FA08 Focus Area to the west and subsequently south appears logical as it follows the Eden Valley and buffer zone for the Frontiers of the Roman Empire (Hadrian's Wall), the course of and Hadrian's Wall Path is crossed by the route close to Kirkandrews-on-Eden. The PPA Group would challenge why the Focus Area does not extend to and take in the section of route passing directly east of Little Orton where it diverges from the existing alignment.



FA09a - LDNP Drigg to Ravenglass

3.3.17 This Focus Area has been selected on both landscape and visual criteria and clearly represents a highly sensitive section of the coastal corridor both with the LDNP and containing a number of highly sensitive receptors including the Cumbria Coastal Way and amenity and heritage receptors. The Focus Area extends all the way along the coast plain between the lower fells and coastal foreshore.

FA09b - Wider Coastal Plain from Waberthwaite to Bootle

3.3.18 This Focus Area reflects the undulating coastal plain and has been selected on landscape criteria. The Focus Area follows the alignment of the existing towers with localised variation generally on lower ground to the north of the existing alignment.

FA09c - LDNP Narrow Coastal Plain from Bootle to Silecroft

3.3.19 The Focus Area follows the narrowing coastal plain, which narrows further as it approaches the entrance to the Whicham Valley to the south and Silecroft. The Focus Area has been selected on both landscape and visual criteria and plays a key part in the setting of the LDNP with the lower foothills rising steeply to the east.

FA9d - LDNP Silecroft to Whicham Valley

3.3.20 This short Focus Area section is identified for both landscape and visual criteria and clearly extends along a sensitive mouth of the Whicham Valley, located within the LDNP and also plays a role in contributing towards the setting of the LDNP. Prominent views exist to the east from upon raised ground across this Focus Area with Millom Park and its series of PROW and vantage points facing west across the valley. There are a number of residential properties in Silecroft for whom the introduction of a new feature would have the potential for '*particularly significant*' effect.

FA9e - LDNP Whicham Valley

3.3.21 On inspection this Focus Area appears to extend along the pronounced valley with the low fells rising to the north and northwest with Lowscale Bank and Great Knott forming enclosure to the south. A series of elevated vantage points to the south within Millom Park afford views across the valley and west to the coastline. Consideration should be given to extending the focus east to include the small hamlet known as the 'The Green' and east properties within Arnaby and Ladyhall.



Here the suggested Focus Area would include the crossing of the narrow valley in close proximity to residential receptors and a series of PROWs.

3.3.22 The PPA Authorities are very concerned that the proposed Focus Areas do not include areas around the head and to the west and east sides of the Duddon estuary. While these are outside the National Park they are within its setting. Most of the proposed route is within 2km of the National Park boundary, with the closest point being 0.9km. The gap between the east end of the Whicham Valley and Duddon crossing point (Pylons 93 – 101) is of particular concern.

3.3.23 Therefore the proposed route pylon sections that should as a minimum be added to these Focus Area due to their proximity to the National Park are:

- Whicham valley + Duddon estuary west - Pylons 93 – 101
- Duddon estuary east – Pylons 109-111 and 113-117

3.3.24 Additional areas require to be included once National Grid has defined the extent of the setting of the National Park. It is considered appropriate to consider extension beyond Arnaby Moss towards Lady Hall to maintain consistency of technology within Focus Area FA10 and to recognise the contribution made towards the setting of the LDNP.

FA10 - Duddon Estuary

3.3.25 On initial inspection the Focus Area extends along the sensitive approaches to the Duddon crossing and the mouth of the Duddon. The PPA Authorities understand the area has been selected on both landscape and visual criteria, and it is observed that the area forms an important attribute in the setting of the LDNP to the west when viewed from the east. Foxfield contains a number of sensitive receptors and the proximity of the Duddon Mosses to the southern extent of the Focus Area to be considered for its landscape value. The extension to include Lady Hall both supported by comments previous for FA9e will ensure consistency of approach and technology.

FA12 - Kirkby-in-Furness

3.3.26 Following a clear course along the estuaries eastern bank the Focus Area would appear to reflect the presence of the populated areas of Kirkby-in-Furness and within close proximity to receptors within Beckside. The localised raised topography presents a more visible aspect to the proposed route against the backdrop of rising land to the east. The route passes a pinch point at Sandside



and Becks side which presents the potential for particularly significant visual effects and has the potential to extend with significant effects beyond Soutergate to the south.

3.4 Historic Environment

3.4.1 Our notes record the following:

- **FA05; FA06; FA08; FA11; FA13** were chosen as Focus Areas with historic environment effects being one of the reasons for classification as such; and
- **FA01; FA02; FA03; FA04; FA07; FA09; FA10; FA12** were selected as Focus Areas on the grounds of other review criteria e.g. landscape, visual, ecology or socio-economic.

3.4.2 Following a review of the National Grid online mapping tool and information previously provided as part of the Scoping Report PPA, Group would make the following observations on Focus Areas with historic environment effects an identified reason for inclusion.

FA05 - Aikhead Hall

3.4.3 FA05 – this has been identified on the basis of the potential effects on the setting of two Grade II Listed Buildings at Aikhead Hall. This is considered to be an appropriate location for a Focus Area. The Focus Area has been restricted to the immediate area to the north of Aikhead Hall. The extension of this area to the east and west should be considered. Should a low height lattice pylon or T-ylon be considered in this Focus Area, a longer Focus Area would reduce potential for the change between pylon types for a short distance to be as noticeable in wider views of the area.

FA06 - Parton Hall

3.4.4 FA06 – this has been identified on the basis of the potential effects on the setting of a Grade II Listed Building at Parton Hall. This is considered to be an appropriate location for a Focus Area. The Focus Area has been restricted to the immediate area to the north of Parton Hall. The extension of this area to the east and west should be considered. Should a low height lattice pylon or T-ylon be considered in this Focus Area, a longer Focus Area would reduce potential for the change between pylon types for a short distance to be as noticeable in wider views of the area.



FA08 - West Carlisle and Frontiers of the Roman Empire WHS

3.4.5 FA08 – this has been identified on the basis of potential effects to the Frontiers of the Roman Empire World Heritage Site and associated Scheduled Monuments. This is considered to be an appropriate location for a Focus Area. It is unclear whether the consideration of effects on the setting of Listed Buildings is a consideration in the identification of this location as a Focus Area. There are a number of concentrations of Listed Buildings close to the proposed alignment within this Focus Area.

FA09a - LDNP: Drigg through Ravenglass to Waberthwaite

3.4.6 FA09a – this has been identified on the basis of potential effects on the Frontiers of the Roman Empire World Heritage Site and associated Scheduled Monument and Ravenglass and the Muncaster Registered Park and Garden. This is considered to be an appropriate location for a Focus Area. It is unclear whether the consideration of effects on the setting of Listed Buildings or Ravenglass Conservation Area is relevant in the identification of this location as a Focus Area. There are a number of Listed Buildings close to the proposed alignment within this Focus Area.

FA11 - Angerton Farmhouse

3.4.7 FA11 – this has been identified on the basis of the potential effects on the setting of a Grade II Listed Building at Angerton Farmhouse. This is considered to be an appropriate location for a Focus Area. The Focus Area has been restricted to the immediate area to the east of Angerton. The extension of this area to the north and south should be considered. Should a low height lattice pylon or T-ylon be considered in this Focus Area, a longer Focus Area would reduce potential for the change between pylon types for a short distance to be as noticeable in wider views of the area.

FA13 - Marsh Grange Farmhouse

3.4.8 FA13 – this has been identified on the basis of the potential effects on the setting of Grade II Listed Buildings at Marsh Grange Farmhouse. This is considered to be an appropriate location for a Focus Area. The Focus Area has been restricted to the immediate area to the east of Marsh Grange Farmhouse. The extension of this area to the north and south should be considered. Should a low height lattice pylon or T-ylon be considered in this Focus Area, a longer Focus Area would reduce



potential for the change between pylon types for a short distance to be as noticeable in wider views of the area.

Non-Historic Focus Areas

3.4.9 Following a review of the National Grid online mapping tool and information previously provided as part of the Scoping Report, the PPA Group would make the following observations on Focus Areas where historic environment effects were not identified as a reason for inclusion.

FA01a/b – Whitehaven/St Bees

3.4.10 There are Listed Buildings at Scalegill and Sneckyard Farm located close to the proposed alignment. It is unclear whether these could have particularly significant effects as a result of the proposed development. If they have been discounted the rationale for this should be included in the appraisal report.

FA4 - Hayton

3.4.11 There are a number of Listed Buildings and a Scheduled Castle at Hayton located close to the proposed alignment. It is unclear whether these could have particularly significant effects as a result of the Proposed Development. If they have been discounted the rationale for this should be included in the appraisal report.

FA9b - LDNP: Wider coastal plain from Waberthwaite to Bootle

3.4.12 There is a Grade II Listed Building at The Nook Vickers. It is unclear whether this could experience particularly significant effects as a result of the proposed development. If it has been discounted the rationale for this should be included in the appraisal report.

FA10 - Duddon Estuary

3.4.13 There is a Grade II Listed Building at Sand Gap. It is unclear whether this could experience particularly significant effects as a result of the proposed development. If it has been discounted the rationale for this should be included in the appraisal report.

FA12 - Kirkby-in-Furness



3.4.14 There is a Grade I Listed Building at Kirkby Hall and the Grade II* Church of St Cuthbert at Beck Side located close to the proposed alignment. It is unclear whether these could have particularly significant effects as a result of the Proposed Development. If they have been discounted the rationale for this should be included in the appraisal report.

Non Focus Areas

3.4.15 Baseline information in the form of heritage asset data sets for the 2km and 10km study corridors or a Zone of Theoretical Visibility or a wireframe model have not been provided by National Grid to assist in the identification of visibility of the scheme from assets. This is particularly the case for designated assets in upland locations where longer views across the landscape and proposed development may make important contributions to the setting and heritage significance of the assets. Therefore, it has not been possible to undertake a detailed review of the areas which have not been identified as Focus Areas to determine whether there may be particularly significant effects in other areas warranting their inclusion as Focus Areas.

3.4.16 However, the PPA Group have identified the following locations where consideration of the Scoping Report figures has identified designated heritage assets in proximity the Draft Order Limits where significant effects may occur. Further information outlining why they have been excluded, or detailed assessment within the ES chapter should be provided which demonstrate that particularly significant effects do not occur should be provided:

- Section A1 – Grade II* Church of St Bridget and Scheduled cross shafts and Grade II Listed Building at Woodow Bank
- Section A2 – Grade II Listed Buildings near Howman Bridge
- Section B1 – Grade II registered Park and Garden at Workington Hall and associated Grade II* Listed Buildings and Grade II Listed Building at Ivy Lodge
- Section B3 – Scheduled Castle and Grade II Listed Buildings at Westnewton
- Section C1 and partially extending south-west into B3 – Grade II Listed Buildings around Langrigg and Gill Farm; St Mungo's Castle Scheduled Monument and Grade I Listed St Mungo's Church; and Grade II Listed Waverbridge Farmhouse and Barns.
- Section C2 – Low Dockray Rigg Grade II Listed Building; Scheduled enclosures at Sceughmire and Tempest Tower Folly Grade II Listed Building at Little Orton



- Section D1 – Calder Farmhouse and Hallsenna Farmhouse Grade II Listed Buildings

3.5 Ecology

General Comments

- 3.5.1 In the absence of any further details relating to the assessment methodology and in view of the points raised in section 2.6, it is not possible to comprehensively review the Focus Areas chosen and their suitability to any degree of detail. However, general comments have been made as provided below.
- 3.5.2 It was stated by National Grid at the Technical SRG that no Focus Areas have been identified on the grounds of the potential for likely significant harm to assets of national or greater value. It is difficult to understand how this conclusion has been reached, and the PPA Group would argue that it presents a considerable risk to the proposed scheme and ecological interests alike. In the absence of baseline data and further detailed assessments, a precautionary approach is advisable in particular areas where, for example, the route dissects or borders notable designated sites.
- 3.5.3 In such contexts, the potential for adverse effects upon designating features are many including:
- Direct land-take to OHPs stanchions and infrastructure;
 - Direct disturbance and displacement of designating species from construction activities, whilst within designated sites;
 - Disturbance and displacement of designated species whilst using important supporting habitats around designated sites;
 - Bird and bat collisions with cables and stanchions during adverse weather;
 - Hydrological changes to habitats/bogs from infrastructure;
 - Stanchions reducing breeding success due to avoidance nesting avoidance to increasing radii under tall upright structures.

Focus Areas

- 3.5.4 No in-depth assessment of Focus Areas is provided here for the above reasons and given that no areas have been designated as Focus Areas for review on ecological grounds. However, it is worth noting that the proposed route of OHLs around the Duddon Estuary and Ravenglass are particular



areas of ecological concern. Potential disturbance to birds feeding on the estuary/coast at low tide and in surrounding fields at high tide would be potentially subject to habitat loss and/or disturbance throughout. Potential disturbance effects could occur pervasively, along large stretches of coastal agricultural land for long periods of time, for large flocks of certain designating species. The assumption that OHLs would result in the least ecological impacts may be true in the majority of scenarios, but is considered to exacerbate this potential issue. Further, the area from the Estuary progressing inland provides a rich diversity of habitats over a relatively small distance, including coastal, agricultural, fen, woodland, moorland and wider habitats. The proposed route runs through and/or adjacent to these with adverse effects therefore having the potential to occur at the ecosystems level, of consequence to natural processes and green infrastructure.

- 3.5.5 It is recommended that the potential for a tunnel under the Duddon Estuary, resulting in limited areas of disturbance at headwalls - which could potentially be screened, is investigated. In the absence of this and without baseline survey data, it is hard to understand how the conclusion of no significant adverse effects of OHLs on associated designations can be reached.
- 3.5.6 Many of the species associated with such coastal habitats are also at potential risk of collision due to the high altitude, speed and nature of their flight offering limited manoeuvrability. The use of alternative pylon structures is a further potential area of investigation to be considered in relation to potential impacts upon bird populations.
- 3.5.7 Potential effects upon Semi-natural Ancient Woodland, wetland/fens/bogs and dissection of woodland core areas are also an area of recommended note, given the associated biodiversity, supporting value and regeneration times of such habitats.

3.6 Socio-economic

General Comments

- 3.6.1 Our notes record the following:
- 3.6.2 **FA01b; FA08; FA09a; FA09b; FA09c; FA09d; FA09e; FA10** were chosen as Focus Areas with socio-economic effects being one of the reasons for classification as such.
- 3.6.3 **FA01a; FA02; FA03; FA04; FA05; FA06; FA07; FA09; FA11; FA12** were selected as Focus Areas on the grounds of other review criteria e.g. landscape, visual, ecology or historic environment.



- 3.6.4 Following a review of the National Grid online mapping tool and information previously provided as part of the Scoping Report, the PPA Group would make the following observations on Focus Areas with socio-economic effects an identified reason for inclusion. It is reiterated that it is considered that the methodology fails to appropriately take account of socio-economic impacts of the route option.

FA01b - St Bees

- 3.6.5 This area starts under 1km from the Moresby Park (FA02) and runs to the east of Whitehaven. From the mapping it is unclear where FA01a and FA01b separate, however, notes suggest that only FA01b has been designated as a Focus Area due to socio economic reasons. In this area there are a number of strategic current and future land allocations and employment sites, including the NuGen area of search for associated development. It is suggested that FA01a should also have been designated due to socio-economic reasons and the assessment of the potential impact from the OHL is required to understand the difference. Given the proximity to FA02 it is considered that the mitigation of impacts at Moresby Parks and Whitehaven could and should be considered together rather than in isolation to avoid segmented mitigation solutions.

FA08 - West Carlisle and Frontiers of the Roman Empire WHS

- 3.6.6 FA08 runs around the west of Carlisle close to strategic current and future employment and residential sites. In this respect there is potential that the proposed development could constrain future development opportunities and growth in the city. Furthermore, given the importance of the area for tourism from both the WHS and the Solway coast AONB there is likely to be some impact on the important and sensitive receptors. It is suggested that the Focus Area should be extended south ward as it is considered that the current alignment does not fully meet its objective.

FA09a/b/c/d/e LDNP

- 3.6.7 Given the proximity and similarity of socio-economic issues leading to the designation of these Focus Areas from a socio-economic perspective these have been grouped in this review. From a socio-economic perspective the key sensitive receptor is the LDNP and its setting, and allied to this is the potential influence upon tourism and visitors. In this way the potential effects are linked to landscape, and as such the comments set out in the landscape section have equal relevance. Additionally there are a number of other visitor and tourism receptors such as; Ravensglass (part of



Hadrian's Wall WHS), a number of listed buildings and heritage assets, Cumbria Coastal Way in FA09a, a series of PROWs and vantage points throughout the other areas.

- 3.6.8 Given the importance of the landscape on tourism receptors and visitor number there is a clear need to extend the focus east to include the small hamlet known as the 'The Green' and join up with FA10.

FA10 - Duddon Estuary

- 3.6.9 Within this Focus Area there are a number of sensitive socio-economic receptors, of which the LDNP and its setting are again key considerations, where the potential impact on landscape are central. Additionally the proposed alignment crosses the Cumbria Coastal Way twice.

FA01a - Whitehaven

- 3.6.10 FA01a has been proposed as a Focus Area due to impacts on residential and landscape receptors. It is considered that FA01a should be also considered for mitigation due to the same reasons as set out for FA01b (paragraph 3.6.4). Additionally, the impact of additional pylon infrastructure on areas north and east of Bigrigg is considered to be significant to given prominent location on the edge of the St Bees Valley within an area where landscape value and visual quality is already compromised by existing transmission and distribution equipment in the landscape. Undermining the quality of the receptor in terms of landscape consequently has the potential to impact on the receptor from a tourism/visitor and socio-economic perspective. Given this link, it is suggested that consideration should be given to extending the Focus Area southwards to address potentially significant impacts.

- 3.6.11 Whilst there may be some scope to utilise pylon design to mitigate visual impact it is considered that this does not deal with the issue of route preference potentially resulting in the sterilisation of areas of land between the existing settlement boundary of south Whitehaven and the West Lakes Science Park. Consideration needs to be given to the emerging proposals of associated development site requirements of NuGen and the development of a new Nuclear Power Station at Moorside, together with emerging local growth strategies and site allocations planning policy documents. Additional consideration should be given to mitigation through re-routing or undergrounding.

Other Non Focus Areas

3.6.12 Aside from the need to reconsider several areas set out above, from solely a socio-economic perspective there does not seem to be a compelling argument for re-applying the methodology set out in the Paper to other non Focus Areas. However, if the methodology changes or as assessments become available there may be the requirement to re-assess, especially in areas close to important sites for development and tourism/visitor receptors.

3.7 Conclusion

3.7.1 Overall, our review of the proposed Focus Areas has suggested that a number of revisions across the whole route are required. Changes and extensions have been suggested to all areas, however, it should be noted that our initial high level review has suggested a varying level of extension, from adjustment of boundaries of Focus Areas to more substantive additions such as between FA09e and FA10. Figure 1 – **Changes/additions to Focus Areas** below provides a summary of the key changes and the topic areas that have led to these conclusions.

Focus Area	Change/addition	Topic
FA01a	Extension of the Focus Area south along rising topography to Outrigg Road and St Bees. Given the proximity to FA02 it is considered that the mitigation of impacts at Moresby Parks and Whitehaven could and should be considered together rather than in isolation to avoid segmented mitigation solutions.	Landscape, Socio-economic.
FA01b		
FA02	Requires an extension to the Focus Area to the north east to take in Moresby Moss.	Landscape.
FA03	Extension of the Focus Area to the northeast and south to consider the potential for cumulative effects should also be considered and justification provided to support the cessation to the east of Stainburn.	Landscape.
FA04	With the localised topography being raised along the route, it is suggested that the Focus Area be extended north east to Aspatria and south given the potential for visual impacts on Bullgill and the route of the Allerdale Ramble.	Landscape.
FA05	Extend to south of Waverbridge to the west, possibly extending to the south of the village of Blencogo. And to the east.	Landscape, Historic Environment.
FA06	The Focus Area has been restricted to the immediate area to the north of Parton Hall. The extension of this area to the east and west should be considered.	Historic Environment.
FA07	Justification is provided for the short stretch of Focus Area and the rationale extending north east to take in the additional short section to the south of Orton Moss.	Landscape.



FA08	Definition of the FA08 Focus Area to the west and subsequently south appears logical as it follows the Eden Valley and buffer zone for the Frontiers of the Roman Empire Hadrian's Wall), the course of and Hadrian's Wall Path is crossed by the route close to Kirkandrews-on-Eden. The PPA Group challenge why the Focus Area doesn't extend to and take in the section of route passing directly east of Little Orton where it diverges from the existing alignment.	Landscape, Socio-economic.
FA09a	Extend south beyond Arnaby Moss towards Lady Hall to maintain consistency of technology within Focus Area FA10 and to recognise the contribution made towards the setting of the LDNP. Given the importance of the landscape on tourism receptors and visitor number there is a clear need to extend the focus east to include the small hamlet known as the 'The Green' and join up with FA10.	Landscape, Socio-economic.
FA09b		
FA09c		
FA09d		
FA09e		
FA10	The extension northwards to include Lady Hall both supported by comments previous for FA09e and to ensure consistency of approach and technology.	Landscape.
FA11	The Focus Area has been restricted to the immediate area to the east of Angerton. The extension of this area to the north and south should be considered.	Historic Environment.
FA12	The route passes a pinch point at Sandside and Beckside which presents the potential for particularly significant visual effects and has the potential to extend with significant effects beyond Soutergate to the south.	Landscape.
FA13	The Focus Area has been restricted to the immediate area to the east of Marsh Grange Farmhouse. The extension of this area to the north and south should be considered.	Historic Environment.

Figure 1 – Changes/additions to Focus Areas

3.7.2 The PPA Group would reiterate that these suggestions are made based on the level of information provided by National Grid and did not benefit from a review of National Grid's assessment and conclusions related to the Methodology. As such the comments provided in the review of proposed Focus Areas must be viewed with this in mind. If National Grid subsequently issue the reasons for each Focus Area along with an explanation of this reasoning the PPA Group will be happy to review.



4 REVIEW OF PROPOSED MITIGATION OPTIONS BY FOCUS AREA

4.1 Introduction

- 4.1.1 For each of the Focus Areas established by the mitigation methodology National Grid has proposed mitigation options considered to be most appropriate in each case. It is understood that National Grid will appraise each of these options and in early 2016 and make the assessments available to the PPA Group for further discussion prior to the Section 42 consultation in April 2016. The appraisal of options has been informed by both cost and technical considerations, however, this information is not available, and therefore the PPA Group is unable to provide detailed commentary on this subject.
- 4.1.2 It is suggested that the mitigation alternatives outlined in the presentation and Paper are incomplete with little reference to rationalisation of existing overhead lines and the option of excluding either one or both overhead lines as mitigation. Whilst it is understood that it is National Grid's preference for one up one down principle to rationalisation, this would continue to result in an overall increased negative visual impact on the site and surroundings in open countryside locations.
- 4.1.3 The options and merits of any types of overhead of alternative means of pylon type are difficult to judge without visualisations, and/or the opportunity to undertake example site visits. It is considered that aspects such as the Lavender test be applicable in terms of methodology for this type of development.
- 4.1.4 Generally the PPA Group question the benefits of landscaping as mitigation measures across much of the study area given the topography of the landscape and its open character with a number of areas with little woodland screening, especially along the coastal plain. The provision of such landscaping would offer little benefit in the way of visual or landscape mitigation, given both the scale, linear form and height of any proposed pylons on the open coastal plain.
- 4.1.5 Additionally, the PPA Group note that the use of alternative pylon options will be considered within most of the Focus Areas (T-pylons, lower height pylons). While the PPA Group understand National Grid's procedures require a stepwise analysis of mitigation options, it is suggested that the use of alternative pylons is extremely unlikely to lead to a reduction in landscape and visual impacts that



would make these insignificant. As set out in section 2.1 the PPA Group expect National Grid to have fully assessing non-pylon options for Focus Areas by the 22 January to enable the PPA Group and others to provide further comment to National Grid.

- 4.1.6 It is considered that generally the options for alternative lengths of differing pylons are dependent on the extent of focus areas. However, without any evidence for their inclusion their inclusion or exclusion, it is difficult to judge. It is difficult to assess local elected member's perspective of these options at this stage of the proposal, and therefore such it is suggested that judgements may be premature or carry little weight. A more definitive response will derive from the future statutory consultation next year.
- 4.1.7 Figure 2 – **Proposed mitigation options** provides a summary of the mitigation options as extracted from National Grid's online mapping system. This has been sent to National Grid for verification, but its accuracy has not been confirmed.

Focu s Area ID	Further Siting Lattice Towers of	Bespoke Mitigation	Use of Alignment 132kv	Use of Height Lattice Towers Low	Use of T-Pylon	Undergrounding
FA01a	No	Consider screening	No	Yes	Yes	Yes
FA01b	No	Consider screening	No	Yes	Yes	Yes
FA02	No	Consider screening	No	Yes	No	Too short/cost
FA03	No	Consider screening	No	Yes	No	Too short/cost
FA04	No	Consider screening	No	too bulky	No	Too short/cost
FA05	No	Consider screening	No	Yes	No	Too short/cost
FA06	No	Consider screening	No	No Benefit	No	Too short/cost
FA07	No	Consider screening	No	Yes	No	Too short/cost
FA08	No	Consider screening	No	No Benefit	No	Yes
FA09a	No	Too extensive for screening	No	Yes	Yes	Yes
FA09b	No	Too extensive for screening	No	Yes	Yes	Yes
FA09c	No	Too extensive for screening	No	Yes	Yes	Yes
FA09d	No	Too extensive for screening	No	Yes	Yes	Yes
FA09e	No	Too extensive for screening	No	Yes	Yes	Yes
FA10	No	Consider an independent cable bridge for crossing Estuary	No	Yes	No	Yes
FA11	No	Consider screening	No	No Benefit	No	Too short/cost/SSSI
FA12	Yes	Consider screening	No	Yes	No	Yes
FA13	No	Consider screening	No	No Benefit	No	Too short/cost/SSSI

Figure 2 – Proposed mitigation options

4.1.8 It is understood that National Grid have suggested that there is a need to explore bespoke mitigation, in FA10 Duddon Estuary, including consideration of an independent cable bridge for crossing Estuary. While bearing in mind the comments set out in paragraph 4.4.2 of this response the undertaking to explore appropriate bespoke technology in this location welcome. An appropriate bespoke solution has the potential to address the landscape and visual impacts from around the entire Whicham Valley and Duddon sections of the proposed route. However, the PPA



Authorities expect National Grid to provide an initial assessment of this option by the 22 January to enable the PPA Group and others to provide further comment to National Grid. This is especially important given the sensitive nature of the area and the need to appropriately consider the impacts of the mitigation option on across the EIA topic and especially ecological receptors.

FA09a Drigg through Ravenglass to Waberthwaite

- 4.1.9 It is advised that the assessment of possible mitigation options in the Ravenglass area should additionally include a bespoke tunnelling option. Ravenglass is a particularly challenging focus area where multiple important assets and issues converge. Assessment of this costly option is justified by the area's importance for historic environment, ecology and landscape – and the constraints these are likely to place on using mitigation such as undergrounding.
- 4.1.10 The PPA Group urge National Grid to engage with the Group and other consultees as soon as possible over mitigation options in the Ravenglass area given the challenges your proposals and any mitigation of its impacts will raise.
- 4.1.11 It is considered that in light of the PPA Group comments regarding revision to the Focus Areas the initial assessment of mitigation options should be re-appraised. For example if FA04 was extended as suggested then the conclusion regarding undergrounding is likely to altered.
- 4.1.12 The PPA Group has not had information related to how these technologies choices have been arrived at, however, should this information become available the PPA Group would be happy to provide comments as appropriate.

4.2 Landscape

- 4.2.1 Mitigation options that will be appraised for each Focus Area have been identified. PPA Group make the following comments with regard to each of the areas:

FA01a/b – Whitehaven/St Bees

- 4.2.2 The use of screening has a number of localised opportunities along this focus area as long as this is in keeping with the local landscape character and proportionate to the benefit gained. The use of low height lattice would be well suited given the continuity with a suggested extension to the focus area. So too would the adopted of T-pylons if these could be proposed in sufficient length to



alleviate disparity with existing lattice style. Undergrounding would be suited given the proximity to the sensitive populated areas to the east and west.

FA02 - Moresby Park

- 4.2.3 Appropriate screening may have a part to play to the west however this is considered to be limited due to distance. The use of low height lattice would be appropriate to make best use of the localised topographical changes. T-pylons are not considered appropriate for a short section such as this as they would form the introduction of a new feature within the existing lattice style landscape.

FA03 - Stainburn & Great Clifton

- 4.2.4 Appropriate use of localised screening has a part to play along this focus area given the heavily populated nature of the area. The use of low height lattice towers could be considered given the risk of introducing disparity in height between the new and existing lattice towers. This would need to be considered carefully as there is also a risk of the additional bulk having a greater cumulative effect when considered in the context of the existing towers. T-pylons are not considered appropriate for a short section such as FA03. Undergrounding is considered inappropriate which the PPA Group would agree and based on the short length would result in cable sealing compounds being close together.

FA04 - Hayton

- 4.2.5 Given the proximity to both Hayton and Prospect the use of localised screening may well serve to limit adverse visual effects if considered in the context and character of the existing views and landscape character.
- 4.2.6 The use of low height lattice towers within a relatively narrow corridor may increase the perception of encroachment and therefore not considered appropriate. The use of T-pylons would introduce a new feature within the landscape which is currently that of a lattice tower type and therefore not considered appropriate. This is again a relatively short section of focus area and the use of undergrounding would be compounded by the relative spacing of the cable sealing compounds.

FA05 - Aikhead Hall



- 4.2.7 The use of localised screening would be appropriate within this focus area due to the proximity of the residential receptors to the route as long as the treatment is considered appropriate for the existing landscape character.
- 4.2.8 The localised change in topography within the focus area lends itself to the use of low height lattice pylon to address the potential for disparity between pylon heights along this visually prominent section. The adoption of T-pylons would not serve any great benefit over low height lattice for what is a short section of focus area. The PPA Group would agree that undergrounding would not be appropriate for the length of the focus area unless the focus area were to be extended and at which point this should be reconsidered.

FA07 - Great Orton

- 4.2.9 The adoption of screening mitigation may be appropriate in particularly sensitive locations along the southern edge of the village of Greta Orton.
- 4.2.10 The use of low height lattice pylons would address areas particularly where localised topography causes a relative height disparity between new and existing pylons and where alignment accommodate this topographical change.
- 4.2.11 The use of T-Pylons is not considered appropriate due to the presence of existing lattice type towers within the landscape. Undergrounding is not considered appropriate due to the relative short length of the focus area, however should the focus area extend this should be revisited during the assessment.

FA08 - West Carlisle and Frontiers of the Roman Empire WHS

- 4.2.12 The consideration of screening as mitigation should be an iterative process along the whole route alignment and dependent on the anticipated visual effects from particularly sensitive receptors as these are identified within the assessments. The suitability of screening, by which it is understood to be planned screen planting and lengths of strategic hedgerow reinforcement should be considered first and foremost in the context of the current landscape character and seek to reinforce this character rather than change it. This may be considered appropriate for localised interventions along Focus Area 08 particularly around Kirkandrews-on-Eden and Rockliffe but would need to be detailed further before a fuller account could be given.
- 4.2.13 The use of low height lattice towers may serve to reduce the visual effect and the risk of disparity in height between new and existing pylons, given the open nature of views along the Eden valley.



It is not considered appropriate to introduce T-pylons given the presence of existing lattice type pylons and the intersections of multiple line routes in the northern sector of the focus area.

4.2.14 The use of undergrounding is considered appropriate for this focus area and should be informed by the extent and location of particularly significant effects and further assessment.

FA09a - LDNP Drigg to Ravenglass

4.2.15 The PPA Group would counter the assertion that screening is inappropriate due to the extensive nature as localised screening may well have a part to play where particularly sensitive receptors are located. Due to the accessibility of the route the use of low height lattice towers may be appropriate but this would need to be balanced when considering the bulk of such towers to near distance sensitive receptors. The use of T-pylons over a longer distance would be appropriate and would have the benefit of lower height and bulk. Undergrounding would be an appropriate solution for particularly sensitive sections of the route where both landscape and visual effects cannot be mitigated through any other technology.

FA09b - Wider Coastal Plain from Waberthwaite to Bootle

4.2.16 Screening is deemed difficult due to the nature of the coastal plain and the open character. The use of low height lattice towers would reflect more the height of the existing towers and over the length maintain continuity. The use of T-pylons as a continuation of treatment from previous focus area is considered appropriate. Undergrounding is also stated as being an option, which the PPA Group would concur with.

FA09c - LDNP Narrow Coastal Plain from Bootle to Silecroft

4.2.17 The reasons stated above for FA09b are deemed as appropriate here for FA09c and given the nature of the coastal plain and its open low lying character not deemed suitable for screening.

FA09d - LDNP Silecroft to Whicham Valley

4.2.18 The reasons stated above for FA09b are deemed as appropriate here for FA09d and given the narrow nature of the coastal plain and its open low lying character which is not deemed suitable for effective screening other than in a few localised scenarios.



FA9e - LDNP Whicham Valley

4.2.19 It is difficult to identify how screening could be effective other than in localised scenarios and individual properties. The adoption of low height lattice would ensure that the line does not extend above the localised topography when viewed from the south and north. The use of T-pylons would suffer from back grounding when viewed from elevated ground to the north and south. Undergrounding would serve to mitigate the impacts upon the areas to the east around 'The Green' where the route passes through the centre of the village.

FA10 - Duddon Estuary

4.2.20 The PPA Group would concur that screening would only be effective in localised scenarios. The use of independent cable bridge across the visually sensitive estuary subject to detail may well provide a suitable solution. The introduction of t-pylons may be subject to backgrounding to the west and to the north of Foxfield so not deemed suitable. The PPA Group Authorities would concur that undergrounding would be appropriate and proportionate in this focus area.

4.2.21 The PPA Group welcome that the use of T pylons within Focus Area 10 Duddon Estuary has been ruled out at this stage. An initial assessment of options may well rule out other areas.

FA12 - Kirkby-in-Furness

4.2.22 Localised mitigation may well be appropriate due to the near distance views afforded by residential receptors in close proximity namely Beckside and Sand Side. The PPA Group would concur that t-pylons may result in backgrounding when viewed from the west against the low fells to the east and therefore be visually more prominent than lattice style towers. The use of low height lattice whilst benefitting from the height continuity may suffer from the additional bulk presented by their structure. The PPA Authorities concur that undergrounding would be suitable due to the proximity of sensitive receptors.

4.3 Historic Environment

4.3.1 Mitigation options that will be appraised for each Focus Area have been identified. The PPA Group make the following general comments:



- 4.3.2 *Further siting of lattice towers* – whilst the PPA Group acknowledge consideration has been given when reaching the current alignment this should be an ongoing process and continue to be applied along the whole scheme throughout the design phase.
- 4.3.3 *Bespoke mitigation*, specifically screen planting – this needs to be considered within the context of the surrounding landscape character and whether the introduction of screening would in itself result in an effect on the significance of the heritage asset.
- 4.3.4 *Use of 132kV alignment* - whilst the PPA Group acknowledge consideration has been given when reaching the current alignment this should be an ongoing process and continue to be applied along the whole scheme throughout the design phase. Particular consideration should be given to the potential for this in Focus Areas FA05 and FA06 where this could avoid the listed building being encircled by lines to the north and south of the asset and FA11 where the 132kV alignment is further away from the Listed Building and the railway line would be between the two elements.
- 4.3.5 *Use of low height lattice towers and T-pylons* – the use of alternative pylons has been excluded from consideration for Focus Areas FA05, FA06, FA11 and FA13 as it is considered the tower would still be located within the setting of the building and would not provide any significant benefit. The PPA Group consider the alternative pylons should be considered in these locations as the lower height and alternative design, whilst not removing effects, may reduce them. In particular the lower height of the pylons may reduce the feeling of pylons being overbearing. Our comment regarding the length of these Focus Areas and the change in pylon types should be noted.
- 4.3.6 Within FA08 the PPA Authorities would agree that the use of T-pylons within a landscape containing significant other lattice pylons would create additional adverse effects through the conflicting structure designs. The PPA Authorities consider that low height lattice towers should however be considered as whilst not removing effects, may reduce them, particularly through reducing the disparity in height between existing and new pylons.
- 4.3.7 The PPA Authorities agree with the proposal to consider both low height lattice and T-pylons in Focus Area FA09a.
- 4.3.8 *Undergrounding* – the exclusion of undergrounding from the consideration of mitigation options for Focus Areas FA05, FA06, FA11 and FA13 is considered to be appropriate given the short length of the Focus Area and the visible presence of cable sealing compounds. The consideration of undergrounding for Focus Areas FA08 and FA09a is considered to be appropriate. The consideration



of undergrounding in these areas must be informed by an understanding of the nature of buried archaeological remains and potential. It is considered that this should extend beyond desk-based assessment to include consideration of field surveys including site walkover and geophysical survey results. The use of directional drilling to underground below Scheduled Monuments should be considered.

4.4 Ecology

- 4.4.1 In terms of ecology there are a number of general comments relating to the proposed mitigation options. It is noted that there are LNR, NNR, Ramsar, SSSI, SAC, SPA designations along the proposed route and this may cause issues regarding the pads for towers, access tracks for OHL construction. In addition, although undergrounding may resolve issues from the perspective of other topics, there may be conditions where it is not possible due to important national and international ecological features. It is noted that National Grid have acknowledged this for FA11 and FA13, however, this may also be the case for other Focus Areas. As such detailed assessment and specific sites are required to understand the impacts.
- 4.4.2 National Grid has suggested that for FA10 Duddon Estuary one of the options will '*consider an independent cable bridge for crossing Estuary*'. It is considered that this effectively raises the power cables higher, and adds the actual bridge structure into the potential flight line of birds moving up the estuary, thus potentially creating a larger structure that birds could collide with especially during poor weather conditions (fog, heavy rain etc.). More information is required about this option to provide a full appraisal
- 4.4.3 Given the potential that mitigation options may in turn result in significant adverse impacts on ecological receptors a full assessment based on specific and up-to-date surveys is required. The PPA Group would be very happy to comment on proposals as they develop.

4.5 Socio Economic

- 4.5.1 From a socio-economic perspective mitigation options that address adverse impacts on landscape and tourism receptors is favoured, and therefore the comments outlined for landscape mitigation has equal relevance. More information is required to understand the impact of construction on socio-economic receptors for each of the technology options, however, this is unlikely to preclude



the use of different technologies and it is considered that adverse impacts that result can be considered through the EIA process.

- 4.5.2 In FA01 it is considered that although there is some scope to utilise pylon design to mitigate visual impact, this does not deal with the issue of route preference potentially resulting in the sterilisation of areas of land between the existing settlement boundary of south Whitehaven and the West Lakes Science Park. Consideration needs to be given the emerging proposals of the associated development site requirements of NuGen associated with the development of a new Nuclear Power Station at Moorside in Copeland, together with emerging growth strategies and site allocations policy documents. Additional consideration should be given to mitigation through re-routing or undergrounding.
- 4.5.3 Furthermore, it is suggested that there is consensus over concerns that electricity supply to areas south of the Moorside site are insufficiently robust and lack resilience. This is a potential barrier to the delivery of growth objectives which form part of Copeland Borough Council's adopted Development Plan. The NWCC and rationalisation of the existing Electricity North West 132kV network offers the potential to impact upon this issue positively and negatively. The identified Focus Areas in this locality fail to reflect the socio-economic impacts which may need to be mitigated depending upon final decisions over routing, design and rationalisation. The scope to consider cabling under the Duddon Estuary is of relevance in this context if a solution, which initially deals addresses critical landscape and visual impact, is also capable of securing mitigation in terms of removing additional impact on the resilience of the local distribution network.



5 CONCLUSION

- 5.1.1 The PPA Group welcomes continued engagement by National Grid, and recognises that this current consultation is an initial and important start towards addressing the significant impacts of the proposed NWCC project. However, as set out in this document it is considered that clarity of scope, level of information and timescale for response has not enabled the PPA Group specialists to provide fully informed comments, especially related to the application of the methodology.
- 5.1.2 In particular the PPA Group has not had access to National Grid's initial assessments that have underpinned the establishment of Focus Areas and information presented at the SRG workshop. This undermines the merits of the consultation related to mitigation, which is an essential element of the overall project that could have significant impacts on the local communities and businesses.
- 5.1.3 The PPA Group have reviewed National Grid's Mitigation Methodology Paper that has been produced to develop mitigation options for Focus Areas on the NWCC route between Harker and Roosecote. Although the identification of Focus Areas is an initial step in developing the package of mitigation/compensation it is important to state that National Grid must fully consider the mitigation for the whole length of the development. This is in terms of both the 'non Focus Areas' and the Morecambe Bay Tunnel element of the Project. The PPA Group expect National Grid to undertake a similar mitigation exercise to appraise the tunnel head areas at Roosecote and Heysham, both on their own and in accumulation with the proposed 400kV line (whether via OHL or underground).
- 5.1.4 Our review has identified areas of concern and inconsistencies in approach, both across topics and between the Paper and Scoping Report/Scoping Opinion. The methodology set out for landscape has been particularly challenged with a number of important omissions in policy; while the consideration of cumulative impact, the LDNP and its setting, other settings and local landscapes are of concern. Furthermore the lack of available assessment and evidence has severely constrained that PPA Group response to this informal consultation and understanding of the Focus Areas (see paragraphs 0 to 2.8.8).
- 5.1.5 The PPA Group Authority's review of National Grid's proposed Focus Areas has suggested that a number of revisions are required across the whole route. Changes and extensions have been suggested to all areas, however, it should be noted that our initial high level review has suggested a varying level of extension, from adjustment of boundaries of Focus Areas to more substantive additional areas. Key areas for revisions include extending several of the northern Focus Areas to



address landscape and historic environment impacts, extending the Focus Area north and south around Whitehaven and closing the gaps around the LDNP and Duddon Estuary. Additionally, the PPA Group is concerned that the identification of short sections for mitigation relatively close to other Focus Areas will result in a piecemeal and segmented approach to mitigation. Therefore, in a number of locations a more holistic approach should be taken (see paragraphs 3.1.1 to 3.7.2).

- 5.1.6 As stated earlier in this response, the consideration of the Focus Areas is an initial step in developing an appropriate overall mitigation package for the NWCC Project. However, it must be noted that mitigation must also be considered and provided across the whole route alignment to deliver the optimum scheme, minimising environmental effects along the alignment, not just those with particularly significant adverse effects.
- 5.1.7 The PPA Group value the ongoing engagement on the NWCC Project and the Authorities would like to continue to work with National Grid to understand the impacts and manage/mitigate any impacts. The PPA Group wish to continue working with National Grid to identify mitigation needs and assess feasible options to reduce and where possible minimise the impact of the proposals. It is considered that National Grid should undertake an assessment of feasible mitigation options to address and reduce the likely significant impacts on the most sensitive sections of their proposed route, as an urgency.
- 5.1.8 Where possible the mitigation and legacy benefits from the Project need to be embedded into the design. For this to happen effectively and in time to influence the design outcome, National Grid must ensure that the proposed mitigation along the entire length of the alignment is explicit. Furthermore, the local authorities and other relevant stakeholders must be afforded enough time and opportunity to comment on and shape the proposed mitigation to ensure the overall acceptability of the project.
- 5.1.9 The PPA Group is conscious of the fast progressing Project and is becoming very concerned about the delays in taking forward an assessment of mitigation options and allowing sufficient time to fully consider and address our response. Consequently, the PPA Group suggest that the assessment of mitigation options should commence as soon as possible, based on the timetable set out by the PPA Group (paragraph 2.1.9) so that this response can inform the design process ahead of the April 2106 consultation.



Appendix 1 – National Park legislative and policy framework

Text in bold has been added to indicate relevance to this proposal.

1. National Park purposes

As set out in the National Parks and Access to the Countryside Act 1949 and amended by the Environment Act 1995, the statutory purposes of National Parks are:

- To conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park; and
- To promote opportunities for the understanding and enjoyment of the special qualities of the National Park by the public.

The following duty applies in pursuing those purposes:

- To seek to foster the economic and social wellbeing of local communities within the National Park by working closely with the agencies and local authorities responsible for these matters, but without incurring significant expenditure.

Section 62 of the Environment Act 1995 is the starting point for understanding National Grid's responsibilities. Its provisions immediately challenge National Grid's assertion that National Park designation in itself is not sufficient to justify exploring significant mitigation of adverse impacts of development. It states that **when exercising or performing any functions which affect land in a National Park any relevant authority (of which National Grid is one) shall have regard to National Park purposes. If it appears that there is a conflict between those purposes, greater weight should be attached to the purpose of conserving and enhancing the natural beauty, wildlife and cultural heritage of the National Park.**

2. Impacts on the setting of National Parks

<http://planningguidance.communities.gov.uk/blog/guidance/natural-environment/landscape/>

Paragraph: 003 Reference ID: 8-003-20140306

[Section 11A\(2\) of the National Parks and Access to the Countryside Act 1949](#), [Section 17A of the Norfolk and Suffolk Broads Act 1988](#) and [Section 85 of the Countryside and Rights of Way Act 2000](#) require that 'in exercising or performing any functions in relation to, or so as to affect, land' in National Parks and Areas of



Outstanding Natural Beauty, relevant authorities 'shall have regard' to their purposes. A list of the public bodies and persons covered under "relevant authorities" is found in Defra guidance on the ['have regard' duty](#). Natural England has published good practice guidance on the ['have regard' duty](#).

This duty is particularly important to the delivery of the statutory purposes of protected areas. The duty applies to all local planning authorities, not just national park authorities. **The duty is relevant in considering development proposals that are situated outside National Park or Area of Outstanding Natural Beauty boundaries, but which might have an impact on the setting of, and implementation of, the statutory purposes of these protected areas.**

Revision date: 06 03 2014

Under this section 'relevant authority' includes any statutory undertaker, including National Grid.

Our Ref: WYG/A072895/NWCC/Mitigation Methodology

Date: 12th April 2016

Simon Pepper
North West Coast Connections Project Manager
National Grid
National Grid House
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Gallows Hill
Warwick, CV34 6DA

Dear Mr Pepper,

**North West Coast Connections
National Grid's Revised Mitigation Methodology Paper**

The PPA Group Authorities received National Grid's Appraisal of Focus Area Locations and the Response to Consultee Feedback to Assessment of Mitigation Options Methodology on the 6 April 2016.

The Authorities have reviewed both documents and are disappointed that National Grid has only made minor revisions to the methodology. It is considered that key comments have not been addressed and importantly, there are no changes to the focus areas for mitigation. Furthermore, the documents do not provide any information on why the suggested revisions to the focus areas have not been carried out. This information is vital to ongoing discussions and our understanding of the project, therefore the PPA Group request a response to this request.

Furthermore, we continue to emphasise that there is a great need to consider mitigation and alternative technologies in a number of areas that National Grid have excluded from this analysis. For example, it is considered that a southward extension to the Carlisle Focus Area and around the Whicham Valley and the Duddon Estuary section must be included in the entirety.

The PPA Group recognise the National Grid may reach a different conclusion on mitigation measures required to address the significant impacts of the route, however, given the current position, the PPA Group advises National Grid that it will now prepare an evidence base which will support reiteration of these points in the formal s42 consultation response. As part of this work, an alternative assessment will

be prepared highlighting at least some of the focus areas to present to National Grid in our response during this consultation and potentially later at Examination. The scope for this work is attached to this letter.

In order to undertake this work, the PPA Group needs to be able to access the online mapping to understand the extent of the focus areas and the current route alignment. As such we are extremely disappointed to find that the access to National Grid's mapping system has been withdrawn. We understand that this will be reinstated for the S42 consultation, however, it is important that we get access to this at this stage so appraisal work can be undertaken. The current lack of access frustrates the PPA Group's ability to review the evidence base, and will undermine the ability of the Group to respond fully to the consultation. Therefore, we request immediate access to the mapping to enable the work outlined.

Lastly, you will recall that the PPA Group shared a draft framework document for legacy benefit with National Grid in advance of the meeting on 26 February 2016. In the course of the preparation for the proposed Moorside NSIP Cumbria County Council and Copeland Borough Council have produced a more extensive document which takes this a stage further outlining the outcomes that they would expect to see during the delivery of the NuGen and National Grid projects (this is attached). The PPA Group intends to build on the framework set out in this strategy to provide greater detail on the specific legacy and mitigation measures we expect to see delivered through NWCC, whether these are voluntary or required through the formal process.

The Authorities would like to continue to work with National Grid to understand the impacts of the complex project and develop an appropriate mitigation strategy for the whole route.

Yours sincerely



North West Coast Connections Project

PPA Group Review of National Grid's Mitigation

Methodology Assessment

Draft without prejudice

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1.0 KEY ISSUES

- 1.1.1 The PPA Group are concerned that National Grid's overall Mitigation Methodology is fundamentally flawed and therefore its application has resulted in the establishment of inappropriate Focus Areas for mitigation of the NWCC project.
- 1.1.2 The use of 'particularly significant' sets an artificially high bar for the establishment of Focus Areas. The PPA Group has previously raised this issue and furthermore, the current review has failed to identify a sound basis in policy for the use of this test. Therefore, the Group are very concerned that use of the term has effectively pre-determined the identification of 'Focus Areas' without National Grid having carried out a thorough assessment process of likely significance of impact of alternative mitigation options for the whole of the route prior to their identification. (see 6.1.5 to 6.1.6 and 6.1.15 to 6.1.17)
- 1.1.3 The standard approach for assessing likely impacts from proposed development is to identify where these are significant. Mitigation is then considered to address these likely significant effects. This applies to all major development proposals, including major infrastructure projects. This is set out in EU, national and local planning policy and guidance – see section 6.1.6. It is noted that this standard approach is being applied to the assessment of the concurrent major infrastructure project for Moorside nuclear power station.
- 1.1.4 Great weight is given in legislation and national policy to conserving landscape and scenic beauty in National Parks and AONBs. Major development should only be allowed in 'exceptional circumstance'. Furthermore, the Environment Act 1995 states that in developing on land which will affect a National Park, National Grid must have regard to National Park purposes. It is unclear whether this assessment has taken place in NWCC. (see 6.1.9)
- 1.1.5 EN-1, DCLG guidance as well as the Electricity Act 1995 make it clear that the 'setting' of National Parks should be considered in the same way as those areas within the National Park. The PPA Group consider that the current Mitigation Methodology is particularly deficient in its assessment of effects on the setting of the LDNP. This is a key issue that needs to be appropriately addressed. (see 6.1.10)
- 1.1.6 National Grid's approach to defining the preferred route of the Hinkley Point C Connection Project (HPCC Project) chose to separate the whole of the preferred route corridor into seven study areas and undertake a section by section assessment. This more thorough and robust approach does not seem to have taken place in the case of the NWCC Project generally and specifically in relation to the identification of the Focus Areas. It is not clear from our review of

National Grid's Mitigation Methodology that a sufficiently robust methodology has been used to investigate the suitability of 'undergrounding' and whether or not the landscape and visual benefits outweighed other disbenefits in each of the individual 'Focus Areas'. (see 6.1.13 to 6.1.14)

- 1.1.7 The current Methodology also appears to exclude areas of potential significant effect from the consideration of mitigation in the form of alternative technology. This is in conflict with National Grid's 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology' (February 2016), which states that mitigation will be considered for the entire length of the route. (see 6.1.19)
- 1.1.8 National Grid's OAAT methodology has not been applied to the level of detail described within the methodology in the appraisal tables. The appraisal tables also make a number of statements without the evidence base being presented to support these statements in sufficient detail. The tables must provide a full explanation of the details in order that the PPA Group can understand the basis of the statement and consider the appropriateness and its credibility. (see 6.1.20)
- 1.1.9 While, the PPA Group understand the basis for National Grid's early assessment work, the conclusion from the work were to inform the S42 design, in terms of addressing adverse impacts on landscape and visual only. This is not clearly stated in the OOAT-based Appraisal of Focus Area Locations report. To be credible the OOAT must reflect and use the same framework as the relevant planning guidance, EIA Regulations. (see 6.1.15)
- 1.1.10 The PPA Group expect that landscape character would be used to form the basis of the work to establish the subsections, however, there is no explanation provided as to how these sections used to appraise the Focus Areas have been identified. (see 6.1.20)
- 1.1.11 Given the PPA Group's significant concerns and uncertainties outlined in this report it is suggested that the 'precautionary approach' be adopted. This review concludes that should the 'precautionary approach' be applied to significant effects as well as 'particularly significant' effects, a larger section of the route would be considered for mitigation by alternative technology. (see 6.1.21)
- 1.1.12 A robust methodology must be used to assess the options for undergrounding and that appropriate mitigation is provided as part of the scheme in accordance with the national legislation, policy and local baseline studies and policies as required by EN-5. This review has found a number of important deficiencies in the approach taken, which will need to be addressed prior to the S.42 consultation.

2.0 INTRODUCTION

- 2.1.1 The PPA Group have reviewed National Grid's Mitigation Methodology Paper and Focus Areas, and have provided National Grid with a joint response on 14 January 2016.
- 2.1.2 The PPA Group's initial review of National Grid's Mitigation Methodology and proposed Focus Areas suggested that given impacts across the range of topics a number of revisions are required. Fundamentally, the PPA Group is concerned that the methodology does not provide an explanation or justification of the use of 'particularly' significant as the criterion for establishing the Focus Areas.
- 2.1.3 The PPA Group is particularly concerned about how the application of the methodology is used to identify or exclude areas for mitigation of landscape and visual impacts. Consequently this leads to an artificially high bar for landscape and visual impacts in the methodology, which prohibits the consideration of the most appropriate mitigation to address these.
- 2.1.4 In particular, the PPA Group is concerned that the criterion to identify Focus Areas is not consistent with EIA guidance and practice which requires assessment of mitigation for significant (and not the chosen more stringent 'particularly significant') impacts. The criteria in National Grid's methodology have been developed and applied ahead of the PEI and supporting impact assessment. There is a serious risk that this has bypassed the EIA process and drawn conclusions on landscape and visual impacts prematurely.
- 2.1.5 The PPA Group understands that National Grid has considered the comments, and although changes have been made to the methodology, there have been no changes to the focus areas for mitigation.
- 2.1.6 Given this, the Group has a number of significant outstanding concerns related to mitigation that have not been addressed and considers that suitability of the methodology will be a substantive issue in the forthcoming statutory consultation and the resulting Examination of the proposed NWCC.
- 2.1.7 The PPA Group welcomes continued constructive informal engagement by National Grid, and recognises that this ongoing consultation is an important step towards addressing the significant impacts of the proposed NWCC Project. The Authorities would like to continue to work with National Grid to understand the impacts of the complex project and develop an appropriate mitigation strategy for the whole route.

- 2.1.8 In order to inform the PPA Group position a more thorough review of National Grid's Mitigation Methodology for landscape and visual impacts and its application is required. This review will inform the PPA Group's response to the next stages of statutory consultation and aims to provide a transparent peer review of National Grid's application of mitigation on the project, particularly with regard to landscape and visual impacts.

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3.0 CURRENT POLICY AND REGULATIONS ON ENVIRONMENTAL IMPACT ASSESSMENT MITIGATION METHODOLOGY

3.1.1 This section of the report provides a review of current legislation, national and local policy context that gives guidance over the role of Environmental Impact Assessments (EIA) and the application of methodology especially in relation to landscape and visual impacts and mitigation as part of the EIA process. This section also provides helpful references to baseline documents that should be used for the North West Coast Connections (NWCC) Project.

Infrastructure Planning (Environmental Impact Assessment) Regulations 2009

3.1.2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 is the starting point for understanding what is strictly required by law, and is specific major infrastructure projects such as the North West Coast Connections projects. The EIA Regulations impose procedural requirements for carrying out EIA for nationally significant infrastructure projects (NSIPs), which fall to be considered as 'EIA development' under the EIA Regulations.

3.1.3 The EIA 2009 Regulations require a description of the physical characteristics, the main processes, estimates of expected residues and emissions of the proposed development. There should be a description of the aspects of the environment likely to be significantly affected by the proposed development and a description of the likely significant effects. There should also be an outline of the main alternatives considered and the main reasons for the applicant's choice taking into account the environmental effects.

3.1.4 Importantly in the context of this Mitigation Methodology Assessment Review, Part 1 Sections 21, 25 and 27 require:

- a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment;
- a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects; and
- an outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.

3.1.5 These legal requirements on an applicant to properly identify appropriate mitigation measures as part of the EIA process are mirrored in the equivalent legislation relating to non-NSIP developments, as found under Town and Country Planning (Environmental Impact Assessment) Regulations 2011.

Electricity Act 1989

3.1.6 National Grid is required under Section 38 of the Electricity Act 1989 to comply with the provisions of Schedule 9 of the Act when formulating proposals for new lines and other works. National Grid has a statutory obligation to develop and maintain an efficient, co-ordinated and economical electricity transition system to ensure the safe, secure and reliable distribution of electricity throughout the network.

3.1.7 Schedule 9 requires licence holders to:

- Schedule 9 (1) (a) - have regard to the desirability of preserving natural beauty, of conserving flora, fauna, and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and
- Schedule 9 (1) (b) - shall do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.

3.1.8 Schedule 9 also states that National Grid has a responsibility when assessing the effects of its proposals to:

- mitigate any effect which the proposals would have on the natural beauty of the countryside or any flora, fauna, features, sites, buildings or objects.

National Policy

National Policy Statement EN-1 - Overarching National Policy Statement for Energy (July 2011)

3.1.9 In determining applications for major infrastructure projects, there is no obligation on the Secretary of State (SoS) to have regard to any other statements of national planning policy

because the energy NPSs have taken account of relevant Planning Policy Statements (PPSs) and older style Planning Policy Guidance Notes (PPGs).

- 3.1.10 In this context, National Planning Statement EN-1 and National Planning Statement EN-5 (Electricity Networks Infrastructure) provide the primary basis for decision making on NSIPs rather than Local Development Plans, which otherwise provide the principal basis in law for the determination of planning applications, namely that they must be determined in accordance with the development plan unless material considerations indicate to the contrary. This provision is not incorporated in to the Planning Act 2008; instead for NSIP development the duty is to have regard to any local impact report submitted by a relevant local authority and the policy framework set out in EN-1 and EN-5 as emphasised by Section 104 of the Act.
- 3.1.11 However, given that paragraph 4.1.5 of EN-1 states that such Local Development Plan Documents may be considered potentially 'important' and 'relevant' by the SoS in the decision making process the relevant local policies should therefore be considered as part of any development proposal.
- 3.1.12 EN-1 paragraph 1.7.2 refers to *mitigation*, and states that new energy infrastructure development, at the scale and speed required to meet the current and future need, is likely to have some negative effects on landscape/visual amenity. EN-1 states that in general, it should be possible to mitigate satisfactorily the most significant potential negative effects of new energy infrastructure consented in accordance with the energy NPSs, and EN-1 and EN-5 explain ways in which this can be done; however, these policy statements suggest that the impacts on landscape/visual amenity in particular will sometimes be hard to mitigate.
- 3.1.13 Paragraph 4.1.3 in EN-1 states that in considering any proposed development, and in particular when weighing its adverse impacts against its benefits, the Examining Authority should take into account:
- its potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits; and
 - its potential adverse impacts, including any long-term and cumulative adverse impacts, as well as ***any measures to avoid, reduce or compensate for any adverse impacts*** (*our emphasis*).

- 3.1.14 EN-1 confirms that all proposals for projects that are subject to the European Environmental Impact Assessment Directive¹ must be accompanied by an Environmental Statement (ES). The Directive requires an assessment of the likely significant effects of the proposed project on the environment, covering the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects at all stages of the project, and *'also of the measures envisaged for avoiding or mitigating significant adverse effects'*. This requirement is mirrored in EN-1.
- 3.1.15 When considering a proposal, the Examining Authority should satisfy itself that likely significant effects, including any significant residual effects *'taking account of any proposed mitigation measures or any adverse effects of those measures, have been adequately assessed'*. In doing so, the Examining Authority should also examine whether the assessment distinguishes between the project stages and identifies any mitigation measures at those stages. The Examining Authority should request further information where necessary to ensure compliance with the EIA Directive.
- 3.1.16 When considering cumulative effects, the ES should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been sought or granted, as well as those already in existence).
- 3.1.17 Section 5 of the EN-1 – "Generic Impacts" – lists generic impacts that should be considered as part of the application process. In terms of landscape and visual impact, EN-1 requires a Landscape and Visual assessment should include:
- "reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project".*
- 3.1.18 The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include light pollution effects, including on local amenity, and nature conservation.
- 3.1.19 EN-1 confirms that landscape effects depend on the existing character of the local landscape, its current quality, how highly it is valued and its capacity to accommodate change. All of these factors need to be considered in judging the impact of a project on landscape.

¹ Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, amended by Directives 97/11/EC and 2003/35/EC. In respect of energy NSIPs, Annex 1 of the directive applies to thermal power stations, nuclear power stations, waste-disposal installations for the incineration, chemical treatment or land fill of toxic and dangerous wastes. Under Annex 2 it applies to industrial installations for the production of electricity, steam and hot water (i.e. CHP), industrial installations for carrying gas, steam and hot water; transmission of electrical energy by overhead cables, surface storage of natural gas, underground storage of combustible gases and installations for hydroelectric energy production.

3.1.20 Paragraph 5.9.8 of EN-1 also states that:

"projects need to be designed carefully, taking account of potential impacts on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and where appropriate."

3.1.21 National Parks, the Broads and AONBs have been confirmed by the Government as having the highest status of protection in relation to landscape and scenic beauty. Nevertheless, the Examining Authority may grant development consent in these areas in exceptional circumstances. Consideration of such applications should include an assessment of:

- the need for the development, including in terms of national considerations, and the impact of consenting or not consenting upon the local economy;
- the cost of, and scope for, developing elsewhere outside the designated area or meeting the need for it in some other way, taking account of the policy on alternatives; and
- any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

3.1.22 EN1 states that the duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas, which may have impacts within them. The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational and other relevant constraints.

3.1.23 EN-1 states in paragraph 5.9.21 that reducing the scale of a project can help to mitigate the visual and landscape effects of a proposed project. However, reducing the scale or otherwise amending the design of a proposed energy infrastructure project may result in a significant operational constraint and reduction in function – for example, the electricity generation output. There may, however, be exceptional circumstances, where mitigation could have a very significant benefit and warrant a small reduction in function. In these circumstances, the Examining Authority may decide that the benefits of the mitigation to reduce the landscape and/or visual effects outweigh the marginal loss of function.

3.1.24 Within a defined site, adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within that site, design including colours and materials, and landscaping schemes, depending on the size and type of the proposed project. Materials and designs of buildings should always be given careful consideration. Depending on the topography of the surrounding terrain and areas of population EN-1 advises that it may be

appropriate to undertake landscaping off site. For example, filling in gaps in existing tree and hedge lines would mitigate the impact when viewed from a more distant vista.

- 3.1.25 Where green infrastructure is affected, EN-1 advises that the Examining Authority should consider imposing requirements to ensure the connectivity of the green infrastructure network is maintained in the vicinity of the development and that any necessary works are undertaken, where possible, to mitigate any adverse impact and, where appropriate, to improve that network and other areas of open space including appropriate access to new coastal access routes.

National Policy Statement EN-5 - Electricity Networks Infrastructure (July 2011)

- 3.1.26 National Policy Statement EN-5 covers above ground electricity lines whose nominal voltage is expected to be 132kV or above.

- 3.1.27 EN-5 sets out factors influencing site selection by applicants, and the general assessment principles for electricity networks. It provides more specific advice over the effects and mitigation that ought to be considered in relation to electricity networks infrastructure.

- 3.1.28 In terms of landscape and visual matters, Paragraph 2.8.2 of EN-5 states that:

*"Government does not believe that development of overhead lines is generally incompatible in principle with developers' statutory duty under Section 9 of the Electricity Act to have regard to amenity and to mitigate impacts. In practice new above ground electricity lines, whether supported by lattice steel pylons or wooden poles, can give rise to adverse landscape and visual impacts, dependent upon their scale, siting, degree of screening and the nature of the landscape and local environment through which they are routed. For the most part these impacts can be mitigated, however at **particularly sensitive locations**, the potential for adverse landscape and visual impacts of an overhead line proposal may make it unacceptable in planning terms, taking account of the specific local environment and context."* (our emphasis)

- 3.1.29 EN-5 goes on to state that where there are serious concerns about the potential adverse landscape and visual effects of a proposed overhead line, the Examining Authority will have to balance these against other relevant factors, including the need for the proposed infrastructure, the availability and cost of alternative sites and routes and methods of installation (including undergrounding).

- 3.1.30 EN-5 advises that the Examining Authority should, however only refuse consent for overhead line proposals in favour of an underground or sub-sea line if it is satisfied that the benefits

from the non-overhead line alternative will clearly outweigh any extra economic, social and environmental impacts and the technical difficulties are surmountable. In this context it should consider:

- the landscape in which the proposed line will be set, (in particular, the impact on residential areas, and those of natural beauty or historic importance such as National Parks, AONBs and the Broads);
- the additional cost of any undergrounding or sub-sea cabling; and
- the environmental and archaeological consequences of undergrounding.

3.1.31 In terms of landscape and visual mitigation, EN-5 advises that in addition to following the principles set out in the Holford Rules and considering undergrounding, the main opportunities for mitigating potential adverse landscape and visual impacts of electricity networks infrastructure are:

- consideration of network reinforcement options (where alternatives exist) which may allow improvements to an existing line rather than the building of an entirely new line; and
- selection of the most suitable type and design of support structure (i.e. different lattice tower types, use of wooden poles etc) in order to minimise the overall visual impact on the landscape.

3.1.32 There are some more specific measures that might be taken, and which the Examining Authority could require through requirements if appropriate, as follows:

- landscape schemes, comprising off-site tree and hedgerow planting are sometimes used for larger new overhead line projects to mitigate potential landscape and visual impacts, softening the effect of a new above ground line whilst providing some screening from important visual receptors. These can only be implemented with the agreement of the relevant landowner(s) and advice from the relevant statutory advisor may also be needed; and
- screening, comprising localised planting in the immediate vicinity of residential properties and principal viewpoints can also help to screen or soften the effect of the line, reducing the visual impact from a particular receptor.

National Planning Policy Framework (NPPF)

3.1.33 Although the NPPF does not provide specific policies for NSIPs it is part of the decision making framework and therefore provides a helpful context to EIA methodologies, and refers to

'mitigation' generally in the 'Core Planning Principles' in paragraph 17. Whilst this is not specifically in relation to EIA mitigation methodology, it nevertheless sets the scene in terms of land-use policy at a national level.

3.1.34 Paragraph 109 of the NPPF says that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils. Distinctions should be made between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status. Local Planning Authorities should maintain the character of the undeveloped coast, protecting and enhancing its distinctive landscapes particularly the heritage coast.

3.1.35 Paragraph 115 of the NPPF states that:

"great weight should be given to conserving landscape and scenic beauty in National Parks and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The conservation of wildlife and cultural heritage are important considerations in all these areas....."

3.1.36 Paragraph 116 of the NPPF states that:

"planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated that they are in the public interest."

3.1.37 It goes on to state that applications for such development should be accompanied by assessments of the need for the development; the scope for meeting the need outside the designated area; and the extent to which these could be mitigated. The need for additional energy infrastructure in general and electricity transmission infrastructure in particular, is recognised in EN-1 and EN-5.

3.1.38 In terms of conserving and enhancing the natural environment, the NPPF states in paragraph 121 that planning policies and decisions should ensure that the site is suitable for its new use and take account of any proposals for *mitigation* including land remediation or impacts on the natural environment arising from that remediation.

3.1.39 The NPPF states that where safeguards are necessary to make a particular development acceptable in planning terms (such as environmental mitigation or compensation), the development should not be approved if the measures required cannot be secured through appropriate conditions or agreements.

National Planning Practice Guidance (NPPG)

3.1.40 As per the NPPF, the NPPG gives helpful guidance and context on the use and application of Environmental Impact Assessments (EIAs) for non-NSIP developments. In terms of mitigation, whilst there is no specific reference to NSIP projects, it provides useful context to decision-making on planning applications. It advises that measures proposed in an Environmental Statement are designed to limit or remove any significant adverse environmental effects of a development. Local Planning Authorities will need to consider carefully how mitigation measures proposed in an Environmental Statement are secured. The NPPG refers to Part 1 of Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, which states that in addition to providing a description of the physical characteristics of the whole development, it confirms that Environmental Statements must include:

- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.

3.1.41 Part 2 of Schedule 4 requires:

- A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.

3.1.42 The NPPG goes on to state that conditions attached to a planning permission or subsequent consent may include mitigation measures. However, a condition requiring the development to be “in accordance with the Environmental Statement” is unlikely to be sufficient unless the Environmental Statement was exceptionally precise in specifying the mitigation measures to be undertaken, and the condition referred to the specific part of the Environmental Statement, rather than the whole document. Mitigation measures can also be secured through planning obligations, which are enforceable by the Local Planning Authority. Planning obligations may be entered into unilaterally by a developer or by agreement between a developer and the Local Planning Authority.

Planning Inspectorate: Advice Note Two: ‘The role of local authorities in the development consent process’

3.1.43 The Planning Inspectorate’s Advice Note 2: ‘The role of local authorities in the development consent process’ relating to NSIP developments states that Local authorities should consider,

as part of the pre-application consultation, discussing the requirements (akin to planning conditions) that should be included within the draft DCO and how they will be discharged.

- 3.1.44 Whilst the detailed wording can be clarified at the examination stage, early agreement on draft requirements will help the Examining Authority to provide greater focus to the examination and make the best use of the time available. The Advice Note does not go into detail about what kinds of things should be considered as part of the mitigation process other than to say that important mitigation documents, which may be relied on in the application might include: Code of Construction Practice; Environmental Management Plan; s106 Planning Agreement; air quality and other strategies.
- 3.1.45 Local authorities have a key role to play in informing the drafting of these documents by the developer during the pre-application stage. These documents are likely to be a focus for the Examining Authority during the examination.

Planning Inspectorate: Advice Note Nine: Rochdale Envelope

- 3.1.46 Advice Note 9 concerns 'The Rochdale Envelope', which is an acknowledged way of dealing with an application comprising EIA development where details of a project have not been resolved at the time when the application is submitted.
- 3.1.47 The Advice Note states that when considering a proposal the Planning Inspectorate must be satisfied that the likely significant effects, including any significant residual effects taking account of any proposed mitigation measures or any adverse effects of those measures, have been adequately assessed, and the environmental information submitted should be sufficient for an Examining Authority to make a recommendation, and for the relevant Secretary of State to make a decision on the application.

The Holford Rules

- 3.1.48 The Holford Rules were guidelines on overhead line routeing, which were first formulated in 1959 by Sir William later Lord, Holford, who was a part-time member of the CEGB. National Grid has reviewed these guidelines, concluded that they have stood the test of time and intends to continue to employ them as a basis of the company's approach to overhead line routeing.
- 3.1.49 The Holford Rules remain a valuable tool in selecting and assessing potential route options as part of the environmental assessment process. Whilst they do not mention 'mitigation' per se,

they provide helpful context to the approach that should be employed when considering mitigation of new electricity overhead lines. The Rules include:

- Rule 1 - avoid major areas of highest amenity value;
- Rule 2 - avoid smaller areas of high amenity value (or scientific interest);
- Rule 3 - choose the most direct route to reduce the number of angle towers;
- Rule 4 - choose tree and hill backgrounds in preference to sky backgrounds;
- Rule 5 - prefer moderately open valleys with woods to reduce the apparent height of the towers;
- Rule 6 - in flat open countryside, keep the electricity lines as far as possible independent of smaller lines to avoid concentration or wirescape;
- Rule 7 - approach urban areas through industrial zones and when pleasant residential and recreational land intervenes between the approach line and the substation, go carefully into the comparative costs of undergrounding;

3.1.50 The Holford Rules include supplementary notes, which state the following:

- avoid routeing close to residential areas on grounds of general amenity;
- where possible choose routes which minimise the effects on Special Landscape Areas, Areas of Great Landscape value and other similar designations of County, District or Local Value; and
- evaluate where appropriate the use of alternative tower designs now available where these would be advantageous visually.

National Grid Company's Substations and the Environment: Guidelines on Siting and Design (the Horlock Rules)

3.1.51 The National Grid's policy statement on the environment, recognises the importance of giving due regard to protecting and enhancing the environment and taking into account the environmental effects of the Company's actions. The Horlock Rules explains the approach NG takes towards such developments (Section II) and contains Guidelines (Section III) to assist those responsible for siting and designing substations to mitigate the environmental effects of such developments and so meet the Company's policy. The document complements the Company's Holford Rules guidelines on the routeing of high voltage transmission lines and when appropriate should be used in conjunction with them.

3.1.52 The Guidelines require the following:

- consideration must be given to environmental issues from the earliest stage to balance the technical benefits and capital cost requirements for new developments against the consequential environmental effects in order to keep adverse effects to a reasonably practicable minimum;
- the siting of new substations, sealing end compounds and line entries should as far as reasonably practicable seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections;
- areas of local amenity value, important existing habitats and landscape features including ancient woodland, historic hedgerows, surface and ground water sources and nature conservation areas should be protected as far as reasonably practicable;
- the siting of substations, extensions and associated proposals should take advantage of the screening provided by land form and existing features and the potential use of site layout and levels to keep intrusion into surrounding areas to a reasonably practicable minimum;
- the proposals should keep the visual, noise and other environmental effects to a reasonably practicable minimum;
- the land use effects of the proposal should be considered when planning the siting of substations or extensions;
- in the design of new substations or line entries, early consideration should be given to the options available for terminal towers, equipment, buildings and ancillary development appropriate to individual locations, seeking to keep effects to a reasonably practicable minimum;
- space should be used effectively to limit the area required for development consistent with appropriate mitigation measures and to minimise the adverse effects on existing land use and rights of way, whilst also having regard to future extension of the substation;
- the design of access roads, perimeter fencing, earthshaping, planting and ancillary development should form an integral part of the site layout and design to fit in with the surroundings;
- in open landscape especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance; and
- the inter-relationship between towers and substation structures and background and foreground features should be studied to reduce the prominence of structures from main viewpoints. Where practicable the exposure of terminal towers on prominent ridges should be minimised by siting towers against a background of trees rather than open skylines.

National Park purposes and setting

3.1.53 As set out in the National Parks and Access to the Countryside Act 1949 and amended by the Environment Act 1995, the statutory purposes of National Parks are:

- To conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park; and
- To promote opportunities for the understanding and enjoyment of the special qualities of the National Park by the public.

The following duty applies in pursuing those purposes:

- To seek to foster the economic and social wellbeing of local communities within the National Park by working closely with the agencies and local authorities responsible for these matters, but without incurring significant expenditure.

3.1.54 Section 62 of the Environment Act 1995 is the starting point for understanding National Grid's responsibilities. It states that when exercising or performing any functions which affect land in a National Park, any relevant authority (of which National Grid is one) shall have regard to National Park purposes. If it appears that there is a conflict between those purposes, greater weight should be attached to the purpose of conserving and enhancing the natural beauty, wildlife and cultural heritage of the National Park.

3.1.55 Landscape planning guidance from DCLG, including that shown on its website, provides clarity that development by 'relevant authorities' impacting on the setting of National Parks should be considered in the same way as those within the National Park. There is a long-established recognition that the legislative and policy framework, including current planning guidance, provides protection of the setting of National Parks. Although these areas are not designated as National Park, developments within the setting can impact upon their statutory purposes and Special Qualities.

3.1.56 Whilst there is no specific reference to the setting of National Parks in the wording of Section 62 (11A) of the Electricity Act 1995, it is consistently interpreted to mean that development proposals immediately adjacent but outside the boundary of the designated area is subject to the same duty if the National Park itself is affected. This is particularly the case with landscape and visual effects. Various planning decisions, often relating to wind energy developments on the edge of the LDNP, have evidenced this principle

Local Plan Policies

3.1.57 Paragraph 4.1.5 of EN-1 confirms that other matters which the Secretary of State may consider both important and relevant to his decision-making include Development Plan documents or other documents in the Local Development Framework. The same paragraph explains, however, that in the event of a conflict, the NPS prevails for the purposes of Secretary of State decision-making given the national significance of the infrastructure.

3.1.58 This does not infer that regional, county-wide or local considerations are not important. Instead paragraph 4.1.5 demonstrates that strategic and local policy itself is unlikely to be determinative when it comes to the consideration of an NSIP. Although an application for an Order granting Development Consent is not subject to Section 38 6) of the Planning and Compulsory Purchase Act 2004, local development plans are a material planning consideration. The detailed consideration of Local Plan Policies is beyond the scope of this report. However, they will be important in the consideration of National Grid's application for a Development Consent Order for the NWCC Project containing their EIA Methodology and mitigation proposals, and can form part of the relevant policies that the Local Planning Authorities can refer to in setting out their views on the effects of the development upon their areas as part of their Local Impact Report. Of particular relevance to this Mitigation Methodology Assessment Review are those policies relating to the Lake District National Park as set out below.

Landscape Character Assessments

3.1.59 In 2011, Cumbria County Council published their Landscape Character Toolkit, which was an update of the previous long-standing Landscape Character Classification and the Landscape Character Strategy (1995). These previous documents had provided a county-wide landscape character assessment and strategy for landscapes outside the Lake District and Yorkshire Dales National Parks, and provided baseline evidence to support landscape character and visual impact assessments.

3.1.60 The revised Landscape Character Toolkit seeks to describe and map the elements and features that make up distinctively different types of landscape throughout the county (outside the LDNP and YDNP). The vision, landscape changes and guidelines provide a framework to help protect, manage, enhance and restore landscapes in the future and keep their distinctiveness.

3.1.61 The Landscape Character Assessment and Toolkit provides a base line of information that can be used when making decisions on future land use and management. Importantly it supports the Local Plans and can be used to influence where future development takes place and what

it might look like. It identifies and assesses landscape types and provides a strategic framework that includes visions and objectives for future landscapes and guidelines to help protect, manage and plan changes to maintain and enhance landscape distinctiveness.

- 3.1.62 For example, the area immediately north and west of Carlisle is identified as a mix of landscape sub-type 2c, 5a, 5b and 5c, which are considered sensitive to vertical infrastructure, such as pylons located on ridgelines. Any new pylon development proposed by the NWCC Project would therefore need to take account of the Toolkit as baseline context for suitable mitigation. Moreover, planning policies contained in the District Local Plans have embedded the Landscape Character Assessment Toolkit to ensure consistency and robustness to local decision-making.
- 3.1.63 The LDNPA has also carried out a Landscape Character Assessment that maps and describes the different landscape character types, and areas of distinctive character within the National Park. These LCAs extend across the LDNPA boundary into the adjoining Local Planning Authority administrative areas outside the Park area to ensure that they corresponded to the character areas identified in the Cumbria County Council Landscape Character Assessment and Toolkit. Consequently, landscape types are not therefore defined by the administrative boundary. These landscape types, which extend outside the designated area of the Park, also demonstrate the importance of the setting of the Lake District National Park beyond its boundary.

Cumulative Impact of Vertical Infrastructure (CIVI)

- 3.1.64 The Cumulative Impact of Vertical Infrastructure (CIVI) is recognised as an increasingly relevant issue in parts of Cumbria and Lancashire. The CIVI objectively assessed this impact, under guidance from Cumbria County Council, in partnership with Lancashire County Council, Allerdale Borough Council, Carlisle City Council and the Lake District National Park Authority. The work considered all vertical energy and communications infrastructure over 15m in height lying within the study area of Cumbria and North Lancashire, as well as the influence of larger infrastructure outside the study area.
- 3.1.65 The methodology adapted industry standard good practice guidance on landscape and visual impact assessment, and the assessment of wind turbine developments. Whilst the remit of the work is wider than wind turbine development alone, it has been designed to supplement the Cumbria Wind Energy SPD, (which remains the primary source of guidance in regard to wind turbine assessment in Cumbria). The 'Key Findings and Guidance' document summarises the findings, and gives practical guidance in regard to how this work can be used in the assessment of applications for vertical infrastructure development, including the effects of the

North West Coast Connections Project. For example, the main findings of the study, which assess the cumulative landscape effects of existing and consented vertical infrastructure shows that there are hot spots throughout the study area where a 'Great Significance of Effect' is experienced. Likewise for cumulative visual effects, the main findings found that a 'Great Significance of Effect' from vertical infrastructure is experienced in areas on the periphery of the National Parks and AONBs. The findings of the CIVI will therefore be important as a baseline in considering suitable mitigation for the NWCC Project.

Guidelines for Landscape and Visual Impact Assessment (3rd Edition), 2013 (GLVIA3)

- 3.1.66 GLVIA3, published by the Landscape Institute and Institute for Environmental Management and Assessment in 2013, is guidance produced by practitioners for practitioners of landscape and visual impact assessment (LVIA). It advocates a step-wise approach to the assessment methodology, with the emphasis on identifying likely significant effects, and advises on approaches to mitigation of adverse effects. LVIA is often said to be subjective and so greater importance is attached to explaining the process of analysis and reasoning, leading to the conclusions and to providing information in a way that will help decision-makers. In presenting the findings of the LVIA, GLVIA3 urges proportionality in the assessments undertaken, so that appropriate emphasis is given to the most important issues, and recommends narrative text supported by tables and matrices to summarise and explain the assessment.
- 3.1.67 GLVIA3 requires LVIAs to distinguish clearly between effects on the landscape, as a resource, and on visual amenity, which addresses effects on the amenity of people viewing the landscape. The approach to assessing landscape and visual effects is defined in three main steps:
- Understanding the nature of what is likely to be affected by the proposal, the value associated with them and their susceptibility, assessed as the sensitivity of the 'receptors';
 - Understanding the nature and magnitude of the changes likely to arise from the proposal, by considering their scale, geographic extent, duration and reversibility; and
 - Combining these considerations to arrive at an assessment of the effects and whether they are likely to be significant.

Conclusions

- 3.1.68 The above review provides a guide to a number of important legislative and policy references that should be used as a baseline to considering suitable mitigation as part of the Landscape & Visual Impact Assessment process to underpin the EIA. It sets out the relevant national

legislation, national and local policy context, as well as specific reference to particular studies recently carried out in Cumbria.

3.1.69 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, the Electricity Act 1989, and national policy contained in EN-1, EN-5, and the NPPF/NPPG are key reference points. All the policy documents provide very clear Government guidance and there is a golden thread running through them where Government expects applicants to adequately assess the effects of new development in all areas and landscape types, and to set out the measures envisaged to avoid, reduce, remedy or mitigate significant adverse effects.

3.1.70 EN-5 recognises that in '*particularly sensitive locations*', the potential for adverse impacts may make overhead lines unacceptable in planning terms. However, the merits of alternative proposals for undergrounding or sub-sea lines in these areas have to be weighed against any extra economic, social and environmental impacts, and that any technical difficulties can be surmounted. Where the visual effects are likely to be '*particularly significant*', 'appropriate consideration' should be given to the potential costs and benefits of other feasible means of connection or reinforcement, including underground and sub-sea cables where appropriate. The term 'particularly sensitive' is not defined (nor is '*particularly significant*') and is open to interpretation but it could be applied to many parts of the landscape in Cumbria. It is also worth pointing out that National Grid's own publication – 'National Park Commitments'² does not use the term 'particularly significant' as a means to emphasise visual impacts on a designated landscape when it states:

*"Where National Parks cannot be avoided in routeing new electricity transmission lines we will consider the use of underground cable where the impact on visual amenity would be **significant** in sensitive locations and could not be mitigated by other means".*

3.1.71 National Grid's own Holford Rules and Horlock Rules provide sound baseline tests, and make clear that new overhead electricity lines and substations should avoid altogether areas of highest amenity value, such as internationally and nationally designated areas, and choose routes that minimise the effects on landscapes which are valued locally.

3.1.72 Great weight is also given in legislation and national policy to conserving landscape and scenic beauty in National Parks and AONBs, where major development should only be allowed in these areas in exceptional circumstances and where they can be demonstrated to be in the public interest. DCLG guidance and interpretation of the Electricity Act 1995 makes clear that the 'setting' of National Parks should be considered in the same way as those areas within the National Park. There is long established recognition that developments within the setting can

² See <http://www2.nationalgrid.com/uk/services/land-and-development/publications/>

impact upon the statutory purposes and special qualities of National Parks, particularly in terms of landscape and visual impacts.

- 3.1.73 The above review has also identified a whole raft of other important and relevant local policies references, including Local Plan Policies, the LDNPA Landscape Character Assessment, the Cumbria Landscape Character Toolkit and the Cumulative Impact of Vertical Infrastructure (CIVI) study. National Policy Statement EN-5 states that wherever the nature or proposed route of an overhead line proposal makes it likely that its visual will be '*particularly significant*', the applicant should have given appropriate consideration to the potential costs and benefits of other feasible means of connection or reinforcement, including undergrounding and sub-sea cables where appropriate.
- 3.1.74 However, none of the policy documents refer to 'particularly significant effects' as a tool to measure the significance of effect, and this terminology does not provide a definition or criteria to determine when that level of effect is reached in terms of the normal assessment of sensitivity and magnitude of change as recommended in best practice, such as the GLVIA (3rd Ed).
- 3.1.75 The PPA Authorities joint response to National Grid's 'Assessment of Mitigation Options Methodology and Focus Areas' made clear their concerns at the time about the adequacy of the National Grid methodology, which failed to recognise the setting of the LDNP, other settings and local landscapes. They expect that National Grid must therefore use all these documents as key baseline information, and to assess the effects of the NWCC Project, and then to ensure proper mitigation is provided that respects the varied character of landscapes found in Cumbria, which would be consistent with national policy outlined above.

4.0 HOW HAVE THESE POLICIES AND REGULATIONS BEEN APPLIED TO OTHER INFRASTRUCTURE PROJECTS

Hinkley C Connection Project (HPPC)

- 4.1.1 The approach used by National Grid to the application for an electricity connection of a new nuclear power station at Hinkley Point, Somerset (Hinkley Point C Power Station) is helpful in demonstrating the extent to which some of the above policies and regulations were successfully applied, and therefore whether National Grid's approach to the North West Coast Connections Project is any different so far.
- 4.1.2 The main component of the HPCC project is the construction of a new 400kV electricity connection of approximately 57km between Bridgwater, Somerset and Seabank Substation, near Avonmouth. The application for development consent was submitted to the Planning Inspectorate in May 2014, and consent was granted in January 2016. The area of the proposed development is predominantly rural, although built development is largely focused along the Severn Estuary to the west of the proposed development and includes settlements of Bridgwater, Burnham-on-Sea Weston-super-Mare, Clevedon, Portishead and Avonmouth. The proposed development also affected the Mendip Hills AONB and the Quantock Hills AONB was approximately 10km south west of part of the route.

Potential routes

- 4.1.3 In developing potential routes in the case of the HPCC project, it would seem that National Grid relied principally upon the guidance provided by the aforementioned Holford Rules as well as national policy EN1 and EN5. In development of draft initial route corridors, extensive baseline surveys from visual receptors were used to identify routes and preliminary pylon positions, which maximised distance from sensitive receptors and sought to minimise effects as far as possible. National Grid had sought to avoid negative effects on important landscape features and views from key public and private receptors by considering the likely effects of alternative overhead line and underground cable routes on landscape and views.
- 4.1.4 Within the documentation (Design & Access Statement, and the Environmental Statement) supporting the Development Consent Order (DCO), National Grid stated that, where possible, consideration was given to receptors of high sensitivity (e.g. Areas of Outstanding Natural Beauty), which were avoided as far as it was reasonably practical to do so, having regard to other wider factors. Their approach was that those options that avoided or mitigated impacts

were generally preferred to those that did not. Nonetheless, this was not always possible in a number of cases, for example, in the case of the Bridgewater to Seabank connection, consideration was given to a route that avoided the Mendip Hills AONB. However, this was not considered feasible due to areas of ancient woodland and built development at Weston-super-Mare to the west and the extent of the AONB designation to the east.

- 4.1.5 Undergrounding of cables had been a primary request during the consultation stages of the project. From the evidence presented with the DCO, National Grid had considered those options outside of the AONB. Whilst it was recognised that undergrounding of cables would minimise negative effects on landscape and views, equally there was the potential for greater impacts on buried archaeology and ecological species and habitats as well as the additional costs associated burying the transmission infrastructure.
- 4.1.6 Evidence suggests that National Grid adopted a methodical approach to develop the whole scheme in accordance with the Holford Rules. In 2009, National Grid considered an extensive range of options to solve the need case. A total of 23 options were identified, which included 'do nothing,' subsea cables, and various overhead connections options. The Strategic Optioneering exercise concluded that two broad options should be taken forward. National Grid made information relating to the selection of the Strategic Options available at each consultation stage.

Strategic Options

- 4.1.7 During 2011, National Grid developed their Strategic Route Options. Five route options were appraised against different technologies including two sub-sea routes. The environmental appraisal for each potential connection considered environmental constraints of international and national importance. A high level planning policy and socio-economic appraisal was also undertaken. The conclusion of that exercise was that the option of constructing an overhead transmission line between Bridgewater and Seabank would best meet National Grid's technical, economic and environmental obligations but that any particularly environmentally sensitive sections along the route could require mitigation, which include undergrounding. When developing the NWCC project National Grid undertook a similar exercise in 2012.

Route Corridor Study

- 4.1.8 A subsequent Route Corridor Study identified three broad corridors for achieving the Bridgewater to Seabank connection:
- Corridor 1 Option A - involved a route based on an existing 132kV overhead line and removal of that existing line as well;

- Corridor 1 Option B - considered the construction of a new 400kV overhead line parallel to the existing 132kV overhead line but leaving the existing line intact;
- Corridor 2 – sought to avoid the paralleling of existing transmission and distribution overhead lines, and due to the presence of environmental constraints and urban areas in certain locations, this was considered not possible in certain locations.

4.1.9 The route corridors were informed by the Holford Rules, and were chosen to avoid residential areas as far as possible on grounds of general amenity. They also sought to keep high voltage overhead lines away from smaller lines, distribution poles and other masts, wires and cables in order to avoid the creation of a 'wirescape'. The route options also sought to avoid those areas of highest amenity value. However, it was not considered feasible to avoid the Mendip Hills AONB in any reasonably direct connection (between Bridgwater and Seabank).

Preferred Connection Report

4.1.10 In August 2011 following consultation on route corridors, National Grid published its "Preferred Connection Report". National Grid adopted an approach, which applied a mix and match with one of the other options where there would be clear environmental or socio-economic benefits.

4.1.11 During 2012 and 2013, National Grid sought to identify the draft route, and the whole preferred route corridor was separated into seven study areas (later renamed sections) within which a range of overhead line routes were developed. These study areas could be considered the equivalent to 'focus areas' adopted for the NWCC Project, but importantly allowed the appraisal of the whole route. This approach is considered in more detail below.

Connections Options Report

4.1.12 In October 2012, National Grid published its Connections Options Report (COR). This report demonstrated how its statutory duties, policy considerations, environmental, socio-economic, technical and cost issues were considered in arriving at the draft alignment and identified the extent and location of undergrounding proposed. The overall approach to the appraisal was guided by national policy contained in EN-1 and EN-5 (see above Section 2) as well as relevant planning policies at a national and local level and National Grid's "Approach to the Design and Routeing of New Electricity Transmission Lines" (August 2012) and "Our Approach to Options Appraisal" (August 2012).

4.1.13 In its "Approach to the Design and Routeing of Electricity Transmission Line", National Grid suggests that "*candidates for undergrounding might include: locations with physical difficulties*

in constructing an overhead line (such as urban areas), wide river or estuary crossing, the presence of highly valued landscapes (which include National Parks and AONBs but could also include particularly sensitive landscapes and iconic views of areas where other potential impacts could only be mitigated by undergrounding)". National Grid acknowledges that this list is not exhaustive, and projects are considered on a case-by-case basis.

4.1.14 In each of the seven Study Areas, National Grid considered the benefits of undergrounding in the context of the landscape in which the proposed connection would be set, together with the additional cost and the environmental and archaeological consequences of undergrounding. In all of the areas with the exception of Study Area C (which included the Mendips AONB), National Grid considered that, whilst the use of undergrounding cables would minimise the negative effects on landscape character, views and socio-economic resources associated with an overhead line, it would result in a greater effect on buried archaeological remains and ecologically designated sites and species. Consequently, National Grid concluded that overall the benefits from the use of underground cables as an alternative to an overhead line in six of the seven Study Areas would not clearly outweigh any extra economic, social and environmental impacts and would not be justified for the majority of the Project area (as per the advice in EN-5).

4.1.15 National Grid's 'Connections Options Report' (COR) concluded that one of the Study Areas (Area C) would be regarded as a '*particularly sensitive location*' in the context of paragraph 2.8.2 of EN-5. The judgement about defining an area as particularly sensitive was based principally on the Holford Rules (1 & 2), which requires alignments to avoid major areas of high/highest amenity value or scientific interest. In coming to this view, reference was also made to National Grid's "Approach to the Design and Routing of Electricity Transmission Lines", which suggests:

"candidates for undergrounding might include:the presence of highly valued landscapes (which include National Parks and AONBs but could also include particularly sensitive landscapes and iconic views or areas where other potential impacts could only be mitigated by undergrounding)".

4.1.16 National Grid concluded that whilst there would be negative effects particularly on buried archaeology and ecology during construction of the underground cables, a new 400kV overhead line within the Mendips AONB would not positively contribute to the purpose of the AONB designation (to '*conserve and enhance natural beauty*'). However, removal of the 132kV F Route and undergrounding of the 400kV would make such a contribution. As a consequence, National Grid concluded that the benefits from the use of underground cables as an alternative to an overhead line in the AONB would clearly outweigh any extra economic,

social and environmental impacts, and the additional costs of undergrounding could therefore be justified in accordance with National Grid's underground policy.

Section.42, S.47 and S.48 consultation of the Hinkley Project

- 4.1.17 The subsequent S.42, 47 and 48 consultation, which took place in September to October 2013 resulted in a number of requests to consider alternative strategic options and alternative routes.
- 4.1.18 Important changes were made to the route of five of the seven Study Areas (Sections) in response to these consultations, which sought to mitigate the effects of the development upon the landscape and visual impact and to still align with the Holford Rules. Some of the mitigation measures involved detailed adjustments to the direction of the line of the route, moving specific pylons or changing types of pylons to reduce the effects of the scheme from major adverse to moderate adverse effect. In some cases, the changes reduced the visual effects from moderate to minor adverse, for example, by creating oblique views of the scheme from specific receptor points. Some mitigation included choosing a less direct line to enable established recreation uses to continue to operate with a reduction in adverse socio-economic effects. In another case, for example, it involved removal of large angle pylon type from a nature reserve and alteration to the line of the route, and replacing it with a lighter flying angle pylon, which requires a smaller footprint and shorter construction period. In all these cases, National Grid sought to maintain compliance with the Holford Rules, whilst seeking to minimise the adverse socio-economic and environmental effects and not resulting in technical or engineering difficulties.

Selection of 400kV pylons

- 4.1.19 Importantly, as part of the development of the project and in response to feedback received during these consultations, National Grid assessed the traditional steel lattice pylon and the alternative T-pylon design to establish whether there were particular landscapes where one pylon type offered advantages or disadvantages over the other. This assessment was included in National Grid's Pylon Design Options report, which was published with their statutory Stage 4 consultation. The appraisal considered National Grid's statutory duties, its guidance notes on the routing and siting of infrastructure including its Schedule 9 Statement and the Holford Rules. The T-Pylon and steel lattice pylon were assessed against each other on a section by section basis using a range of environmental criteria to balance the issues and compare the effects of routes to identify the preferred route option or combination of options. The process was repeated for each Study Area (renamed - Section), and it would seem that where there

was strong support from representations to use the T-pylon, National Grid proposed to use them in the final design.

Cable Sealing End Compounds

4.1.20 A study to identify possible locations for Cable Sealing End (CSE) Compound locations was undertaken. In total three CSE Compounds were required, including one to the north and south of the Mendips AONB to provide connection between the overhead line and the underground cables through the AONB. The eventual selection of a site was informed by a comparison of the likely landscape and visual impact on the AONB, effects on nature conservation and heritage asset and Conservation Area values, and consideration in accordance with the Horlock Rules. The development also included embedded mitigation measures including site specific landscape proposals so as to increase the natural screening associated with the topography of the site.

Substations

4.1.21 To consider the various options to maintain supplies, National Grid and Western Power Distribution (WPD) prepared a Distribution Systems Options Report, and a subsequent Substation Siting Study to identify options for siting the substation in the Churchill/Sandford area.

4.1.22 National Grid considered minimising the effects of the proposed substation on the AONB was an important consideration in the substation design. The landscape and visual assessment surveys undertaken considered all receptors in the vicinity of the proposed substation including those of the Mendip Hills AONB. The findings of these surveys were an important factor in the micro siting and design of the substation and the design of a comprehensive scheme of landscape mitigation. The design was further refined following feedback received from the Local Electricity Network Consultation. An underground cable was preferred from a landscape and visual perspective. However, National Grid considered the benefits from using underground cables was outweighed by other socio-economic and environmental considerations.

4.1.23 Similar approaches were used to consider changes to the 132kV distribution network at other substations elsewhere.

Western Power Distribution 132kV route undergrounding

4.1.24 Undergrounding was considered elsewhere, including the draft route to the Avonmouth Docks. In this case, routing an overhead line was considered to have potential serious safety issues.

Alternative overhead route options in the vicinity were not considered feasible due to other structures and based on environmental and other factors, an underground option was chosen.

A critique of National Grid's methodology for the Hinkley Project versus the NWCC Project

4.1.25 National Policy EN-5 does not define the term '*particularly sensitive locations*', and nor is '*particularly significant effect*' a commonly used technical measure of 'significance of effect' upon a landscape or visual receptor. However, national policy EN-5 does refer to 'particularly sensitive locations' (see Chapter 2.0 above), in so far as the potential for adverse landscape and visual impacts of an overhead line proposal may make the overhead option unacceptable in planning terms. In this context, the undergrounding of lines as an alternative to overhead lines would have to clearly outweigh any extra economic, social and environmental impacts and technical difficulties would have to be surmountable.

4.1.26 There seems to be a major difference between the approaches taken in the case of the Hinkley Project and the NWCC Project. In the case of the Hinkley Project, the division of the corridor into the seven study areas assisted in the gathering, assessment and presentation of environmental information. Organising the options appraisal by study area allowed careful consideration in turn of where undergrounding could be justified within each part of the route corridor. The selection of study areas was influenced by a number of factors, including Landscape Character Areas and inputs from thematic groups (i.e. technical officers from Local Authorities and statutory consultees, three Local Community Forums and one Strategic Community Forum). Up to this point, this approach is broadly similar to that taken in the case of the NWCC Project.

4.1.27 However, in the case of the NWCC Project, the use of the term 'particularly sensitive location' appears to have effectively pre-determined the identification of the 'Focus Areas', without National Grid having carried out a thorough assessment process of likely significance of impact of alternative mitigation options for the whole of the route alignment prior to their identification in order to deliver the optimum scheme. National Grid's 'Assessment of Mitigation Options Methodology and Focus Areas' paper openly acknowledged in paragraph 2.2.16 that:

"this approach (*i.e. Focus Areas*) has been developed to avoid the unnecessary appraisal of alternative technologies in areas where ***particularly significant effects*** are unlikely to occur" (our emphasis).

- 4.1.28 The PPA Group's Review of National Grid's Mitigation Methodology and Focus Areas had raised concern that alternative alignments, siting of pylons, and use of mitigation planting or screening would be considered only where effects were assessed as 'particularly significant', but other 'significant' effects would not be considered for such mitigation, which is not considered acceptable.
- 4.1.29 The PPA Group had also raised concern that there had been segmented consideration of impacts, such as in areas around the LDNP, Duddon and around Whitehaven. In particular, for example, with the proposed short sections of route at the head of the Duddon estuary not identified as Focus Areas, it was felt there could be a 'piecemeal' approach to mitigation proposals for the entire Duddon estuary landscape. Concerns were therefore raised by the PPA Group about the lack of consideration of mitigation within the 'setting' of the LDNP in this non-Focus Area. The PPA Group had argued that National Grid must ensure that the proposed mitigation along the entire length of the NWCC Project alignment (i.e. non Focus areas) be made explicit.
- 4.1.30 Moreover, it is not clear that a sufficiently robust methodology had been applied in the case of the NWCC Project so far to test the suitability of 'undergrounding' and whether or not the landscape and visual benefits outweighed other disbenefits in each of the individual 'Focus Areas'. The PPA Group had found that the lack of available assessment and evidence had severely constrained their ability to respond to National Grid's Mitigation Methodology and Focus Areas paper and understanding of the Focus Areas.
- 4.1.31 This contrasts with the Hinkley Project where the starting point for the identification of routes was to consider potential alignments, which lay within the limits of the preferred route corridor. This was defined taking account of a range of environmental factors and criteria, taking account of particular local landscape and visual sensitivities, using the design principles of the Holford Rules, together with the other environmental, technical and cost implications of underground cable solutions as required by National Policy Statements EN-1 and EN-5.
- 4.1.32 The assessment resulted in three overhead line routes, one of which comprised two potential alternatives in one section of the route and a single underground cable route. Each of the overhead line routes was assessed against the others in each of the seven study areas using a range of criteria from the disciplines of environment, socio-economics and cost and applying professional judgement. Most significantly, the preferred route was then compared against the underground cables route to determine whether benefits of the underground cables would "*clearly outweigh any extra economic, social and environmental impacts*" as required by EN-5.

Planning Inspectorate (PINS) Project Update meeting – 12 August 2015

- 4.1.33 A meeting between National Grid and the Planning Inspectorate held in August 2015 to discuss progress of the NWCC Project highlighted the need for consistency between the Nugen Moorside nuclear new build project. PINS had advised that a common assessment criteria should be adopted if possible, so that the respective EIAs take a similar approach to defining 'significance'. PINs thought that it would also be helpful in determining cumulative effects if both projects used the same baseline.
- 4.1.34 It should be borne in mind that these two NSIP projects are entirely different in terms of the form and nature of the developments – one involving a block of building/s concentrated on one site, and the other involving tall vertical lattice structures spread across a significant area of countryside. It is understood that in response to a discussion document to inform the Moorside Project Preliminary Environmental Information Report (PEIR), Nugen provided the full assessment matrix that they intend to employ relating to sensitivity and magnitude of change, and the scale of assessment ranged from 'very low' to 'very high' in accordance with the GLVIA (3rd Ed). Nugen appears not be to any enhanced test using the measure 'particularly significant' effects.
- 4.1.35 It is felt there is merit in the PPA Group considering the two approaches used to determine the landscape and visual effects of the developments, and to see whether there is sufficient commonality, and whether or not a common approach should be adopted, as suggested by PINS..

Conclusions

- 4.1.36 National Grid would appear to have carried out a methodological approach to defining the preferred route of the Hinkley Point C Connection Project (HPCC Project). National Grid chose to separate the whole of the preferred route corridor of the Hinkley Project into seven study areas within which a range of overhead line routes were developed. The important point of this Methodology is that the division of the corridor into these study areas allowed careful consideration in turn of where undergrounding could be justified within each part of the route corridor, together with the additional cost and the environmental and archaeological consequences of undergrounding.

- 4.1.37 This more thorough and robust approach does not seem to have taken place in the case of the NWCC Project and specifically in relation to the identification of the Focus Areas. In the case of the NWCC Project, the use of the term 'particularly sensitive location' appears to have effectively pre-determined the identification of 'Focus Areas' without National Grid having carried out a thorough assessment process of the likely significance of landscape and visual impacts and therefore, the choice of appropriate mitigation options. Moreover, it is not clear that a sufficiently robust methodology had been applied to test the suitability of 'undergrounding' and whether or not the landscape and visual benefits outweighed other disbenefits in each of the individual 'Focus Areas'.
- 4.1.38 National Policy EN-5 does not define the term '*particularly sensitive locations*', and nor is '*particularly significant effect*' a commonly used technical measure of 'significance of effect' upon a landscape or visual receptor. However, national policy EN-5 does refer to 'particularly sensitive locations', in so far as the potential for adverse landscape and visual impacts of an overhead line proposal may make the overhead option unacceptable in planning terms in these areas. In this context, the undergrounding of lines as an alternative to overhead lines would have to clearly outweigh any extra economic, social and environmental impacts and technical difficulties would have to be surmountable.
- 4.1.39 This difference in approach is of particular concern to the PPA Authorities, especially where the proposed route of the NWCC Project is likely to affect nationally and locally designated landscapes in Cumbria. The CIVI also highlights that many parts of rural Cumbria are sensitive to vertical infrastructure. It is of vital importance that a robust methodology is therefore used to assess the options for undergrounding and that appropriate mitigation is provided as part of the scheme in accordance with the national legislation, policy and local baseline studies and policies as required by EN-5.
- 4.1.40 It is considered there is merit in exploring the approaches for landscape and visual assessment being taken to the Nugen nuclear new built project at Moorside, and to compare that against the NWCC Project to assess whether or not a common approach should be adopted, as suggested by PINS.
- 4.1.41 It would appear that Nugen are using the more standard range to measure sensitivity and magnitude of change to assess landscape and visual impacts from 'very low' to 'very high' in accordance with the GLVIA (3rd Ed).

5.0 Comment on National Grid's Revised Mitigation Methodology and Appraisal of Focus Area Locations

Review of National Grid's Mitigation Methodology

5.1.1 Feedback has previously been provided on the original methodology (Assessment of Mitigation Options North West Coast Connections Project Methodology: issued for Consultation, November 2015) for undertaking an Options Appraisal of Alternative Technologies (OAAT), and to date we have not received the revised version of this methodology (which has been referred to in National Grid's 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology', dated February 2016). We have therefore been unable to review this revised methodology and would reiterate the following points which were raised previously:

- Mitigation should be considered for the whole length of the development, where the potential for adverse effects has been identified, not just the focus areas. The 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology' does respond on this point detailing that 'National Grid will give consideration to appropriate mitigation measures on a case by case basis. This will not only be restricted to the Focus Areas and will be presented within the ES'. We would welcome this approach, but would then question the need to identify focus areas at this stage if the whole route is being considered for appropriate mitigation. The response also highlights that 'the need for mitigation will be considered, discussed with consultees and reported in the ES.' A programme of when these further discussions will be carried out has not been provided so it is not clear how this will fit into the assessment process;
- Any adverse effects should be considered in relation to reducing their impact and effect on the landscape and visual receptors of the area;
- Has a detailed assessment already been carried out on all the landscape and visual receptors? This has been responded to in the 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology' to confirm that 'the appraisal of the draft alignment used to identify Areas of Likely Significant Effect and Focus Areas will be made available in advance of Statutory Consultation'. It is assumed that 'National Grid's Appraisal of Focus Area Locations', March 2016, is this assessment, however it does not go into the detail described in the methodology, e.g. 'orientation/likely focus of a receptor, factors that may screen or reduce visibility and the number of people/properties' and we would question whether this detail in the methodology has been applied as it is not evident;

- A number of comments were provided in relation to specific sections of focus area. How and if these comments have been taken on board has not been addressed to date.

Review of National Grid's Appraisal of Focus Area Locations

5.1.2 This review focuses solely on the Landscape and Visual aspect of the Appraisal study, with particular focus given to the areas of the Duddon Estuary; Whicham Valley and Carlisle as sample locations for review. It was carried out without access to the GIS system highlighting the focus area locations, with only text descriptions to support the review, as this was not available from National Grid at the date of issue of this report. This review was carried out as a desk based review only at this stage.

5.1.3 The review looks at the application of the methodology used for OAATs and the contents of the landscape and Visual Appraisal tables within National Grid's Appraisal of Focus Area Locations, March 2016.

Application of methodology and general comments

5.1.4 It appears that the CIVI study has not been used in order to inform the preparation of this study. As highlighted in previous responses to National Grid, the CIVI study provides useful background information in relation to vertical infrastructure. Appendix 4 contains a series of Landscape Character Assessment Tables which collate Landscape Character Assessments carried out by local authorities within Cumbria and Lancashire, summarising information in relation to key characteristics, sensitivities in relation to vertical structures and guidance in relation to vertical infrastructures. It also records the finding of CIVI in relation to the sensitivity of each landscape area to change due to vertical infrastructure, the magnitude of cumulative change due to vertical infrastructure, and significance of the cumulative effect. This can be found on the Cumbria County Council website (<http://www.cumbria.gov.uk/planning-environment/countryside/countryside-landscape/civi/civi.asp>) and has previously been provided to National Grid's consultants in a digital format. If the study has been used to inform the assessment this is not clear as it is not referenced within the report. The study addresses each of the landscape character sub-type areas and describes, in tabular form, each area's sensitivity to large, medium and small scale vertical infrastructure. As this was predominantly a desk based study, it is likely that there will be variations identified on site during the course of the NWCC project in relation to landscape sensitivity. However, we would suggest this document is used as a tool in the NWCC assessment process. It should also be highlighted that although the transmission infrastructure falls into the small-scale group based upon the height range of pylons, for the

purpose of assessing magnitude of change within the CIVI study, cumulatively, the overhead line as a whole has been defined as medium-scale infrastructure, but with the ZTV extent of small-scale infrastructure. This is to balance the size of the components – the pylons – with the length of the corridors they occupy. We would therefore suggest that a similar methodology is adopted for NWCC.

- 5.1.5 Natural England's Advice note looks at the areas in question in far more detail than is evident in National Grid's Appraisal of Focus Area Locations. This should be used as part of the baseline to inform any further studies (refer to paragraph 5.1.19 below for further details).
- 5.1.6 The assessment tables provided in this report do not have references back to the focus area numbering system that was provided in previous reports and presentations (FA01a; FA01b; FA02; etc). This would have aided in cross referencing previous comments and allowed the assessor to illustrate how previous comments have been taken on board. We would stress the importance of using a consistent numbering/labelling system through the process to avoid confusion and allow easier tracking of assessment process.
- 5.1.7 The subsection areas described in the rows within the Landscape tables are not consistent with the subsection areas described in the rows within the Visual tables. This makes it impossible to compare areas to see if likely significant effects on a subsection area have been identified in relation to both landscape and visual issues. For example, within the Landscape tables 5 rows describing various areas have been identified within the subsection E2, whereas 10 rows with descriptions are provided in relation to the visual tables within subsection E2. We assume this is also the case for other topic areas and illustrates effects have not been considered cumulatively across topic areas in order to feed into the focus area methodology. Although this was not identified in the mitigation methodology, cumulative effects across topic areas should also be considered.
- 5.1.8 The descriptions provided in relation to the subsections do not appear to form a continuous description along the length of the route. We would query why this is and question therefore if the whole route has been considered within this study. For example, within subsection E2 the description of one row is 'c. 740m E of Hallthwaites to c. 460m NW of Foxfield'. The following row is described as 'c.240m N to c. 270m NE of Foxfield'. Where is the review for the area that lies between c.460m NW of Foxfield and c.240m N of Foxfield? We appreciate this may only be a small section in the example given, but this is also evident for a number of the other subsections described within the landscape and visual tables.

- 5.1.9 We note it is stated that 'as part of the next stage of OAATs, the 'Areas of Likely Significant Effect' and 'Focus Areas' will be back checked and reviewed in light of more detailed appraisal work'. We would question when this is to be done and how it will feed into any amendments to the 'Focus Areas'. This ties back to a point in the methodology which stated that 'Consultee feedback will also be taken into account by National Grid in decision making in respect of the selection of transmission technology for the Project'. We would request evidence and review dates of when this has been done/is likely to be done, and the subsequent outcomes.
- 5.1.10 There is insufficient detail contained within the tables to justify the conclusions being made in the majority of cases. The Options Appraisal of Alternative Technologies methodology (OAAT) states in section 4.2.9 that 'the threshold for 'particularly significant' will be where significant effects are most likely to occur upon highly sensitive landscapes such as nationally designated areas or landscapes of highest value/susceptibility and/or where the likely magnitude of change would be substantial'. The appraisal tables do not mention value and susceptibility in relation to assessment of the sensitivity of receptors, let alone break each element down as does the Natural England approach. The lack of this information results in a lack of foundation to the assessments being made. The same is applicable for visual receptors where the OAAT methodology states that, amongst other things, likely significant effects have been based on 'consideration or the orientation/likely focus of a receptor, factors that may screen or reduce visibility and the number of people/properties'. The consideration of this detailed information is not evident in the appraisal tables.
- 5.1.11 The approach adopted for identifying 'particularly significant' effects is not in alignment with other recognised methodologies (refer to paragraph 5.1.13). The principle of the GLVIA3 approach is that the sensitivity of the receptor and the magnitude of change affecting the receptor are considered together to arrive at a judgement of the degree and nature of effect and its significance. In the OAATs methodology approach, once a judgement has been reached, the process is then 'back tracked' to see if the receptor has a high sensitivity or the magnitude is substantial, which is not a recognised approach for LVIA assessment.

Subsection Review

- 5.1.12 This review relates to the tables titled 'Landscape Focus Area Tables' (3.2) and 'Visual Impact Focus Area Tables' (3.3) only. Only the subsections E1, E2 and part of C2 have been reviewed in detail as a sample review of the study to date. The remainder of the subsections will be reviewed at a later date, leaving opportunity for them to be revised and updated in accordance with the comments provided here.

5.1 Landscape Appraisal Tables Review: Duddon Estuary and Whicham Valley

Subsection	Description	Comment
E1	c. 790m ENE of Silecroft to c. 650m SW of Dunningwell	This subsection has been identified as a focus area within the Appraisal document.
E1/E2	c. 650m SW of Dunningwell to c. 740m E of Hallthwaites	Within the landscape table, under key receptors, 2b Coastal mosses is described as 'High to Medium sensitivity'. Likely significant effect is identified as 'yes' yet the focus area is not triggered as 'particularly significant effects are not predicted to occur as a result of the predicted magnitude of change being medium'. However, the approach described in the methodology states that the criteria for a focus area being triggered is if 'significant effects are most likely to occur upon highly sensitive landscapes such as nationally designated areas or landscapes or highest value/susceptibility'. As the sensitivity is described as high, and no value given for value and susceptibility to this sub-type, it is assumed this area should trigger a focus area, according to the methodology.
E2	c. 740m E of Hallthwaites to c. 460m NW of Foxfield	This subsection has been identified as a focus area within the Appraisal document.
There appears to be a gap in data – 460m NW of Foxfield to 240m N of Foxfield?		
E2	c.240m N to c. 270m NE of Foxfield	This subsection has been identified as a focus area within the Appraisal.
E2	c.270m NE of Foxfield to c. 450m NW of Wall End	2b Coastal mosses character sub type is described as 'medium sensitivity' within this subsection. Within the subsection described above (E1/E2) this area is described as 'high to medium sensitivity'. There is no explanation to support this reduced sensitivity. It is also noted that within the CIVI study, sub type 2b: coastal mosses is described as having a high sensitivity to medium scale vertical infrastructure and it is recommended that the CIVI study is used as a guidance to inform this assessment. If the sensitivity is considered as high, this is likely to trigger this area as a focus area according to the approach NG has adopted.
There appears to be a gap in data from 450m NW of Wall End to 150m W of Wall End		
E2	c. 150m W of Wall End to c. 720m NE of Ireleth	Refer to below for comments on the combination of medium sensitivity and medium magnitude as described in this section.
E2	c. 520m NE of Ireleth to c. 740m NW of Lindal in Furness	The explanation provided is too brief with more detail required on the effects mentioned in relation to Askam Wind Farm and the 'more localised effects' in Lindal in Furness. Utilising the matrix for levels of Landscape Effect (table 6.10) in the scoping report, the combination of medium sensitivity and medium magnitude results in a moderate significance as stated,

Subsection	Description	Comment
		however, this is neither categorised as a 'significant effect' or a 'not significant effect' in the scoping methodology and falls between the two categories. The focus area tables state that there 'is potential for significant effects' due to this combination, but more detail is required to understand how this has been applied as it is not evident from following the matrix or information provided. We would also add that we do not advocate the use of a matrix, but as it is being used, the descriptive text provided should provide justification for the outcomes assessed.

5.2 Landscape Appraisal Tables Review: Carlisle

Subsection	Description	Comment
C2	Harker Substation to c. 500m NE of Rockcliffe	The key receptors described are both character types from the Cumbria character assessment and the Solway Coast AONB character assessment. Within the CIVI report, the distinct areas of each landscape type have been considered separately and these areas are identified variously as slight, moderate and great susceptibility to medium scale vertical infrastructure. Likely significant effects have been identified in the Focus Area Tables, yet these do not trigger 'particular significant effects' or focus areas. There is no discussion on value or susceptibility of the landscape and if the areas have been identified as high sensitivity (they have been described as high/medium sensitivity). We would expect this to trigger a focus area due to the significant effect stated.
C2	c. 500m NE of Rockcliffe to c.500m E of Kirkandrews-on-Eden	A focus area has been triggered for this location due to a substantial magnitude of change on a high/medium sensitivity landscape. No description of value or susceptibility has been included.
The description between these two sections is not continuous. Is there a gap?		
C2	c. 530m W of Grinsdale tp c. 1.4km NNE of Waverton	This is a very long section compared to the previous 2 sections of route. No description of value or susceptibility is provided. 2 of the character areas crossed are considered high/medium sensitivity and the setting of the Solway coast AONB is covered, which is considered a nationally designated area (as described in the methodology). Therefore 'particularly significant' effects should be triggered, according to the methodology used.

5.3 Visual Appraisal Tables Review: Whicham Valley and Duddon Estuary

Subsection	Description	Comment
E1	C, 790m ENE of Silecroft to c. 650m SW of Dunningwell	Of the key receptor groups commented on in this section, all are described as experiencing significant effects. These are all discussed separately and due to the dispersed nature of the settlements; distance of open access land from the route; and medium magnitude of change to the road corridor, they are discounted from being considered 'particularly significant' effects. However, residential receptors are considered a highly sensitive visual receptors (as stated in para 4.2.10 of the OAATs methodology) and therefore, according to the methodology, where a substantial magnitude also occurs, this should be considered as a 'particularly significant' effect and this location identified as a focus area. In addition, we would query how the cumulative effect on all the receptor types has been addressed. If a significant effect is being identified on all receptor types, how does the methodology address this combined effect?
E1	c. 100m S of Hugh Dunningwell to c. 200m S of the Green	This appears to be a relatively short section to review and we would question how the subsections have been identified. Only settlements have been identified in this location, whereas there are a number of rights of way in the area which we would assume are relevant. The description includes 'the overhead alignment would be prominently skylined'; 'localised significant effects could occur'; views of prominent towers would be of 'a greater intensity due to the increased scale'. A significant effect is identified, yet, this is not regarded as 'particularly significant', in one case stating this is because it relates to a single receptor. Yet due to the short section being reviewed here, there will inevitably be a fewer number of receptors in the study area, so we would question the identification of the sections of route. Again, according to the methodology, as these are highly sensitive receptors, this should be identified as 'particularly significant'
E2	c. 200m S of The Green to c. 300m NE of New Arnaby	There is no description of value and susceptibility provided, a high sensitivity is recorded and a substantial magnitude. However, the text states that as this relates to dispersed receptors, it is not regarded as particularly significant. We would question this approach as the methodology does not define how 'dispersed receptors' will be considered differently from other settlements.
E2	c. 300m NE of New Arnaby to c. 100m NE of Roanlands	This is a very short section of route and the assessment refers to one single property. It is questionable, for a project of this scale, if a single visual receptor should be considered in isolation in the LVIA. This would be more appropriate in a 'residential amenity assessment', otherwise all visual receptors would need to be considered individually. We would also raise

Subsection	Description	Comment
		again how the sections of route to consider have been identified, as it could be argued that by reducing the extent of the area being assessed, the number of receptors subject to the assessment are reduced, in turn down-playing the magnitude of change and the likely significance of effects. The methodology for route section selection should be clear stated to avoid any queries.
There is a gap in the description between the two areas here		
E2	c. 350m SSW of Lady Hall to c. 450m SE of Lady Hall	Particularly significant visual effects have been recorded at this location and a focus area triggered.
E2	c. 450m SE of Lady Hall to c. 300m E of Foxfield	Particularly significant visual effects have been recorded at this location and a focus area triggered.
E2	c. 300m E of Foxfield to c. 430m NW of Wall End	There is no description of value and susceptibility provided, a high sensitivity is recorded and a substantial magnitude. However, the text states that as this relates to dispersed receptors, it is not regarded as particularly significant. We would question this approach as the methodology does not define how 'dispersed receptors' will be considered differently from other settlements.
E2	c. 430m NE of Wall End to c. 370m S of Kirby-in-Furness	A focus area has been triggered for this location due to the substantial magnitude of change and high sensitivity receptors. However, no discussion has been included on value and susceptibility.

5.4 Visual Appraisal Tables Review: Carlisle

Subsection	Description	Comment
C2	Harker Substation to c. 500m NE of Rockcliffe	A description of the proposed route is provided, and a medium magnitude of change predicated, although there is no detail provided to support the medium magnitude of change. There is no discussion of value or susceptibility and high sensitive receptors are included, which according to the methodology used would trigger particularly significant effects. Although the west coast railway is mentioned in the description, it is not listed as a key receptor.
C2	c. 500m NE to c. 580m SE of Rockcliffe	A focus area has been triggered for this location due to the substantial magnitude of change and high sensitivity receptors. However, no discussion has been included on value and susceptibility.
There is a gap in the description between the two areas here		
C2	c. 950m SSE of Rockcliffe to c. 790m SW of Grinsdale	There is no discussion of value and susceptibility. A number of high sensitivity receptors are noted, but a focus area is not triggered, as the methodology suggests it should be. There is little description to support the assessment of a medium

Subsection	Description	Comment
		magnitude of change.
C2	c. 950m NW to c. 1.1km W of the outskirts of Carlisle	There is little description to support the assessment of a medium magnitude of change. There is no discussion of value and susceptibility. For these highly sensitive receptors, the methodology would suggest a focus area is triggered.
C2	c. 1.2km W of the outskirts of Carlisle to c. 1km SE of Great Orton	There is no discussion of value and susceptibility. The receptors are identified as high sensitivity within the table, and according to the methodology, this would suggest a focus area is triggered.

Review of methodology and appraisal in the context of recognised guidance documents and available baseline data

5.1.13 In the absence of the revised methodology being available to review, we have provided comment below based on the original methodology provided for undertaking the OAATs and National Grid's Appraisal of Focus Area Locations (March 2016) document, verses the methodology adopted by National Grid. Where applicable, the review has concentrated on the sample review areas of the Duddon Estuary; Whicham Valley and Carlisle.

Guidelines for Landscape and Visual Impact Assessment, Third Edition, 2013 (GLVIA3).

5.1.14 The methodology described within chapter 6 of the NWCC Scoping report (Landscape and Visual Impact Assessment) does align with the methodology described within LVIA3. However, the methodology for undertaking OAATs adds an extra tier to this methodology, with 'particularly significant' being introduced, which is not defined in the methodology or strictly consistent with the GLVIA3 approach.

Visual Impact Provision (VIP): Landscape and Visual Impact Assessment of Existing Electricity Transmission Infrastructure in Nationally Protected Landscapes in England and Wales, Technical Report, October 2014

5.1.15 National Grid's VIP methodology has its foundations in the GLVIA3 approach. However, the purpose of the VIP study is different from the NWCC assessment and, therefore, has limited relevance to National Grid's assessment.

5.1.16 The VIP methodology attempts to "reverse engineer" an assessment of landscape and visual effects of existing overhead lines on the designated landscapes and views. The purpose of the NWCC assessment methodology is to predict effects on the landscape and visual amenity as it now is.

5.1.17 In its Scoping Report for NWCC, National Grid's proposed methodology adopts the tables of criteria for value/ susceptibility/ sensitivity and scale/ geographic extent/ duration/ magnitude of change used in the VIP methodology, and goes on to provide a matrix relating the degree of sensitivity of receptor and the degree of magnitude of change to provide levels of effect and significance. That is amplified by sample descriptions of various levels of effect.

5.1.18 It does not provide definitions or criteria for 'particularly sensitive' receptors or for 'particularly significant' effects.

North West Coast Connections Advice to National Grid, Natural England, September 2015

5.1.19 This document was prepared by Natural England specifically for the NWCC project and focuses on the section of the proposed line that runs from Drigg through to Duddon. It divides the section of route into 5 distinct areas based on their landscape character and provides Natural England's assessment of potential issues associated with the routing of this part of the line. The study identifies the landscape types and areas through which the proposed transmission route passes, and those in close proximity. It considers a number of factors to assess landscape susceptibility, and addresses a number of visual receptor groups in turn, and the potential impact on the views of these receptors. A statement is made that all visual receptor groups listed are considered to have a high susceptibility with their attention focused on the landscape, and the value of views within a National Park is considered to be high. This is consistent with GLVIA3.

5.1.20 Within the NE study, the areas of relevance to this review are covered under Area 4: Whicham Valley and Area 5: Duddon Estuary. The summary description for Area 4: Whicham Valley, concludes that 'the entire area of the National Park and immediate setting is considered to be valued at the national level'. The categories of landform, landcover, scale, backgrounds, prominent landscape features, human influence, vertical infrastructure, perceptual aspects and tranquillity are all worked through in turn in relation to susceptibility of the landscape. Visual receptor groups are then discussed in turn, as described above.

5.1.21 The summary description for Area 5: Duddon Estuary concludes 'in practice the transition from the upland to the estuary and coast forms a single landscape unit, and this area is important as part of the setting to the National Park and for the views to and from the National Park. It is therefore considered to be valued at the national level.' The same categories are identified for this area for both landscape and visual amenity.

5.1.22 In summary, the advice paper looks into the susceptibility of the landscape and visual receptors in far more detail than is evident in National Grid's Appraisal of Focus Area

Locations. This document would be a useful baseline for National Grid in establishing susceptibility of the route in the south of the area, and the methodology could be applied to the route through the north.

- 5.1.23 By analysis the various components of the landscape and visual receptors the advice note produces a clearer evidence base to support the statements made, which is lacking in National Grid's Appraisal of Focus Area Locations document.

Cumulative Impact of Vertical Infrastructure, April 2014 (CIVI)

- 5.1.24 The CIVI study has its foundations in the GLVIA3, and elements of background information found within this study (as described in paragraph 5.1.4) would be useful in informing National Grid's study, although they appear not to have been used to date. The purpose of the study was to identify areas within Cumbria that currently experience cumulative effects from the presence of vertical infrastructure. This is illustrated through a series of maps generated from GIS analyses and explanatory text. A large proportion of landscape and visual receptors within Cumbria were identified as experiencing significant effects due to vertical infrastructure, and in order to distinguish the severity of these effect, these were illustrated as 'Great Significance'; 'Significant' ; 'Intermediate'; and 'Not Significant'³. National Grid's Appraisal of Focus Area Locations does not use the information identified within this study as baseline information. However, it would be expected that the baseline information used by National Grid would be based on the CIVI study but analysed at a more detailed scale to that of the CIVI study due to the nature of the project.

Conclusions

- 5.1.25 The methodology contained within the Scoping report for the purpose of the LVIA is in accordance with current guidance;
- 5.1.26 The methodology contained within Assessment of Mitigation Options North West Coast Connections Project Methodology: Issued for Consultation (Nov 15) for the OAAT introduces a new tier to significance which is not in accordance with current guidance (and is not defined with criteria or thresholds in the methodology) and appears to exclude areas of potential significant effect from the consideration of mitigation in the form of alternative technology. This is in conflict with feedback provided by National Grid which states that mitigation will be

³ As noted above, CIVI included criteria for "very sensitive" receptor, "very large" magnitude of change, leading to assessments of "great significance" of effect.

considered for the entire length of the route. The PPA Group consider that the bar is set artificially high and as stated this is not consistent with planning guidance;

5.1.27 The OAAT methodology has not been applied to the level of detail described within the methodology in the appraisal tables;

5.1.28 The appraisal tables make a number of statements without the evidence base being presented to support these statements in sufficient detail;

5.1.29 there is no explanation provided of how the subsections to appraise for the focus areas have been selected;

5.1.30 there is no evidence to suggest that landscape and visual effects have been addressed in combination, or addressed in line with other topic areas; and

5.1.31 Should the 'precautionary approach' be applied to significant effects as well as 'particularly significant' effects, a larger section of the route might be considered for mitigation by alternative technology, which is likely to include the entire Whicham Valley and Duddon Estuary corridor and around Carlisle.

6.0 CONCLUSIONS

6.1.1 The PPA Group has undertaken a further review National Grid's Mitigation Methodology Paper and Focus Areas for the NWCC Project, subsequent to the initial one it carried out in January 2016. The purpose of this latest review is to inform and provide the PPA Group with a more thorough review of National Grid's Mitigation Methodology, this time concentrating on landscape and visual impacts that is intended to inform the PPA Group's response to the statutory consultation to follow. The PPA Group has a number of significant outstanding concerns relating to mitigation that have not been addressed so far.

6.1.2 This review comprises four sections:

- section 3.0 clarifies current policy/regulations regarding EIA and mitigation methodology;
- section 4.0 reviews how these policies and legislation have been applied to other infrastructure projects focusing upon Hinkley Point Connection Project, and a comparison is made against the approaches used in the NWCC Project;
- section 5.0 comments on National Grid's revised Mitigation Methodology, which has not been made available to the PPA Group and reviews National Grid's Appraisal of Focus Area locations for landscape and visual impacts. This part of the review focuses on the Duddon Estuary and Carlisle. Regard is given to other methodologies and assessments to identify any major flaws, including reference to key baseline documents such as the Landscape Institute's Guidelines for Landscape and Visual Impact Assessment (3rd Edition), National Grid's VIP Methodology, Natural England's Advice, and Cumbria County Council's Cumulative Impact of Vertical Infrastructure (CIVI). This part of the review considers the relevance of the term 'particularly significant' as an aspect of the impact assessment process.

6.1.3 Section 3.0 of this review has identified national legislation and policy documents along with other local policies and baseline studies, which are relevant to the assessment of significance of landscape and visual impacts and the consideration of appropriate mitigation for overhead electricity power lines. Key legislation is contained in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 and the Electricity Act 1989, which provide clear requirements for developers to adequately assess the effects of new development in all areas and landscape types, and to set out the measures envisaged to avoid, reduce, remedy or mitigate significant adverse effects.

6.1.4 National Policy Statements EN-1 and EN-5 and the Planning Inspectorate's Advice Notes Two and Nine provide the basis for determining Nationally Significant Infrastructure Projects. EN-1

reflects the EU Environmental Impact Assessment Directive, which requires an assessment of the measures envisaged for avoiding or mitigating significant adverse effects. The policy document states that there are number of factors that must be considering when judging the landscape impacts of a development, importantly the existing character, quality, value and the capacity to accommodate change.

- 6.1.5 An issue that arose with the previous review of National Grid's Methodology is the term 'particularly sensitive'. EN-5 recognises that in '*particularly sensitive locations*', the potential for adverse impacts may make overhead lines unacceptable in planning terms. However, the merits of alternative proposals for undergrounding or sub-sea lines in these areas have to be weighed against any extra economic, social and environmental impacts. Key to this review is that EN-5 states that in particular the landscape of National Parks must be considered together with other impacts. 'Particularly sensitive' is not defined in EN-5, and so is also open to interpretation but it could be applied to many parts of the landscape in Cumbria and not just to the area within the LDNP.
- 6.1.6 The review of policy failed to identify a policy basis for using 'particularly' significant as a bar for assessing the effect of new development upon landscape character and visual receptors and consequent mitigation. The PPA Group are therefore concerned about using this 'test' to establish mitigation. Furthermore, the review identified a whole raft of other important international, national and local policies references; including EU EIA Directive and Regulations, National Planning Policy (and) Guidance, Local Plan Policies, the LDNPA Landscape Character Assessment, the Cumbria Landscape Character Toolkit, the Cumulative Impact of Vertical Infrastructure (CIVI) study and the Landscape Institute's Guidelines for Landscape and Visual Impact Assessment (3rd Edition), which use 'significant' as a bar and which should be used as baseline evidence to support the NWCC Project.
- 6.1.7 The National Planning Policy Framework and National Planning Practice Guidance both provide context to the consideration of landscape matters, and in particular to the importance of conserving the landscape and scenic beauty on National Parks and Areas of Outstanding Beauty.
- 6.1.8 National Grid's own Holford Rules and Horlock Rules provide sound baseline tests, and make clear that new overhead electricity lines and substations should avoid altogether, if possible, the major areas of highest amenity value, such as internationally and nationally designated areas by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence (Rule 1). In addition, overhead lines should avoid smaller areas of high amenity value or scientific interests by deviation, provided this can be done without using too many angle towers (Rule 2). With these rules in mind, the PPA Group seek

to ensure that the best option is achieved and their effects properly and rigorously assessed. Where there are significant landscape and/or visual effects, the assessment must acknowledge the effects and it must explain them, especially where the effects cannot be avoided, or if they could be avoided the assessment must state what other considerations have led to the routing decision.

- 6.1.9 Great weight is also given in legislation and national policy to conserving the landscape and scenic beauty in National Parks and AONBs, where major development should only be allowed in these areas in exceptional circumstances, and where they are in the public interest. Particular attention must be paid to section 62 of the Environment Act 1995 which states that in developing on land which will affect the National Park, National Grid must have regard to National Park purposes. Furthermore, where there appears to be a conflict between purposes, greater weight should be given to conserving and enhancing the natural beauty, wildlife and cultural heritage of the National Park. It is unclear whether this assessment has taken place.
- 6.1.10 Importantly, DCLG guidance as well as interpretation of the Electricity Act 1995 makes clear that the 'setting' of National Parks should be considered in the same way as those areas within the National Park. EN-1 also places great weight on the 'setting' of National Parks and states that the duty to have regard to the purposes of nationally designated areas must be equally applied to outside these areas where development may have impacts within. This is important as the PPA Group consider that the current Mitigation Methodology is particularly deficient in its assessment of effects on the setting of the LDNP. Whilst 'setting' cannot be defined as a fixed boundary such as a buffer zone, consideration of the effects of a development upon the setting needs to be considered in the context of the form of the individual landscape affected. There is a long-established recognition that the legislative and policy framework, including current planning guidance, provides protection of the setting of National Parks.
- 6.1.11 Natural England's advice note "North West Coast Connections Advice to National Grid" (September 2015) is helpful as it focuses on the section of the proposed line that would run from Drigg through to Duddon. It found that all visual receptor groups listed were considered to have a high susceptibility, and it produced a clearer evidence base to support the statements made, which is lacking in National Grid's Appraisal of Focus Area Locations document.
- 6.1.12 All of the documents set out in this section provide the necessary baseline tools to assessing landscape and visual impacts of new development, and in the case of the CIVI study highlights areas within Cumbria that are sensitive to the cumulative effects of vertical infrastructure.

- 6.1.13 Section 4.0 examines National Grid's methodology to defining the preferred route of the Hinkley Point C Connection Project (HPCC Project). In this case, National Grid chose to separate the whole of the preferred route corridor into seven study areas within which a range of overhead line routes were developed. The important point of this Methodology is that the division of the corridor into these study areas allowed careful consideration in turn of where undergrounding could be justified within each part of the route corridor, together with the additional cost and the environmental and archaeological consequences of undergrounding.
- 6.1.14 This more thorough and robust approach does not seem to have taken place in the case of the NWCC Project and specifically in relation to the identification of the Focus Areas. In the case of the NWCC Project, the use of the term 'particularly sensitive location' appears to have effectively pre-determined the identification of 'Focus Areas' without National Grid having carried out a thorough assessment process of likely significance of impact of alternative mitigation options for the whole of the route prior to their identification. Moreover, it is not clear that a sufficiently robust methodology had been applied to test the suitability of 'undergrounding' and whether or not the landscape and visual benefits outweighed other disbenefits in each of the individual 'Focus Areas'.
- 6.1.15 While, the PPA Group understand National Grid's intentions of undertaking the early assessment work, it is considered that the OOAT work was to inform the S42 design and any conclusions from it must be viewed in the context of addressing adverse impacts on landscape and visual only. This is not clear in the OOAT-based Appraisal of Focus Area Locations report. Furthermore, undertaking this work early provides a clear basis for use of a precautionary approach and therefore in this context adding 'particularly' to the bar for assessing mitigation is further invalid. The OOAT has been delivered ahead of the EIA but it must reflect and use the same framework as the relevant planning guidance, EIA Regulations, and without doing so it is not credible as a methodology.
- 6.1.16 National Policy EN-5 does not define the term '*particularly sensitive locations*', and nor is '*particularly significant effect*' a commonly used technical measure of 'significance of effect' upon a landscape or visual receptor. However, national policy EN-5 does refer to 'particularly sensitive locations', in so far as the potential for adverse landscape and visual impacts of an overhead line proposal may make the overhead option unacceptable in planning terms in these areas. In this context, the undergrounding of lines as an alternative to overhead lines would have to clearly outweigh any extra economic, social and environmental impacts and technical difficulties would have to be surmountable.
- 6.1.17 This use of the term 'particularly' in EN5, albeit in a different context is the only reference that the review was able to establish. The PPA Group are therefore concerned that relying on this

single reference results in a risk to the project, especially when the approach in the OOAT methodology is compared to EIA Regulations, national and local planning policy.

- 6.1.18 This difference in approach compared to policy and Hinkely Point C Connections is of particular concern to the PPA Authorities, especially where the proposed route of the NWCC Project is likely to affect nationally and locally designated landscapes in Cumbria. The CIVI also highlights that many parts of rural Cumbria are sensitive to vertical infrastructure, providing further evidence why it is vital that a robust approach is followed that adheres to national legislation and policy as well as local baseline studies and policies as clearly set out in EN-5. Furthermore, a potential alternative that should be explored is being following for the development of Moorside Nuclear Power, where NuGen are using a more standard approach to assess landscape and visual impacts in accordance with the GLVIA (3rd Ed).
- 6.1.19 Section 5.0 found that the methodology contained within the National Grid Scoping report for the purpose of the LVIA is in accordance with current guidance. However, the methodology contained within the Assessment of Mitigation Options North West Coast Connections Project Methodology: Issued for Consultation (Nov 15) for the Options Appraisal of Alternative Technologies methodology (OAAT) introduces a new tier to significance, which is not in accordance with current guidance (and is not defined with criteria or thresholds in the methodology). As set out in this report it is considered that the bar has been set artificially high and, in theory, simply removing this heightened threshold could largely address the PPA Group's main concern related to the methodology. It also appears to exclude areas of potential significant effect from the consideration of mitigation in the form of alternative technology. This is in conflict with National Grid's 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology', dated February 2016, which states that mitigation will be considered for the entire length of the route.
- 6.1.20 This review has found that National Grid's OAAT methodology has not been applied to the level of detail described within the methodology in the appraisal tables. The appraisal tables also make a number of statements without the evidence base being presented to support these statements in sufficient detail. In addition, there is no explanation provided as to how the subsections to appraise for the focus areas have been selected, however, it is considered that landscape character types should be a basis of any exercise to identify such geographic delineations. Additionally, there is no evidence to suggest that landscape and visual effects have been addressed in combination, or addressed in line with other topic areas.
- 6.1.21 Finally, this review considers that should the 'precautionary approach' be applied to significant effects as well as 'particularly significant' effects, a larger section of the route might be

considered for mitigation by alternative technology, which is likely to include the entire Whicham Valley and Duddon Estuary corridor and around Carlisle.

- 6.1.22 To conclude, it is of vital importance that a robust methodology is therefore used to assess the options for undergrounding and that appropriate mitigation is provided as part of the scheme in accordance with the national legislation, policy and local baseline studies and policies as required by EN-5. This review has found a number of important deficiencies in the approach taken, which will need to be addressed prior to the S.42 consultation.

Draft without prejudice

Appendices

Draft without prejudice

Appendix A Report Conditions

Draft without prejudice

WYG Environment Planning Transport Ltd

NWCC Mitigation Methodology Assessment Review

This report is produced solely for the benefit of the PPA Group of Authorities for NWCC and no liability is accepted for any reliance placed on it by any other party unless specifically agreed by us in writing.

This report is prepared for the proposed uses stated in the report and should not be relied upon for other purposes unless specifically agreed by us in writing. In time technological advances, improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using reasonable skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented accordingly within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG by others, no independent verification of these has been made by WYG and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst reasonable skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal, budget and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.

8 November 2012

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Our Ref: WYG/A072895/NWCC/Mitigation Response

30 June 2016

Neil Lyons
National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick, CV34 6DA

Dear Mr Lyons

North West Coast Connections – Duddon Estuary

The delay to your consultation on the preferred route option for the North West Coast Connections project has created the opportunity for improved collaborative working between National Grid and the affected authorities. As you know, the County Council is leading the PPA Group that is comprised of all the affected local authorities and this letter is written on behalf of the PPA group. Your project, whilst delivering substantial investment into the UK, will have significant impact on the coast of Cumbria, passing through areas that are cherished by our communities and areas of national, and international, landscape significance. We therefore welcome the opportunity for additional engagement and hope that this will result in your preferred route option being more acceptable to our communities.

The PPA Group was pleased to have had a more open discussion on mitigation options for the Duddon Estuary in the workshop held on 10th June. There is a complex set of environmental issues in this area that requires careful consideration by National Grid. After consideration of the Duddon Estuary options presented by National Grid, the PPA Group strongly recommends that a tunnel is the only acceptable route option across the Duddon Estuary. This option would avoid the considerable problems raised by the proposed route across Foxfield Ridge and the Duddon Mosses SAC, as well as in the setting of the Lake District National Park that have been identified in the Duddon Estuary. Whilst we acknowledge that designing a route crossing the Duddon Estuary is challenging and costly, it is vital that the appropriate design and mitigation is provided.

The preference is for a tunnel head east of Millom in an existing industrial area, and a tunnel head to the north of Askam-in-Furness. Furthermore, it must be recognised that taking forward a tunnel across the Duddon route will lead to significant impacts in themselves that must be satisfactorily addressed. Additionally, this option has not previously been subject to consultation with the local residents of Haverigg and Millom, and this must be a priority. It is recommended that the route is undergrounded to the tunnel head to minimise impacts to the landscape and to local communities. We will continue to seek reassurance that the resilience of electricity provision and future ability to connect to the distribution system in this area will be addressed as part of a holistic plan for the area.

The PPA Group welcomes continued engagement by National Grid and the opportunity for collaboration. This will help to ensure that the significant impacts of the proposed NWCC project are properly addressed, thereby helping to de-risk the project through the DCO process and increase delivery certainty. The PPA Group expect that the views expressed in this letter will be fully considered in project design finalisation (in terms of the s42 consultation) and in developing an appropriate mitigation strategy for this part of the route.

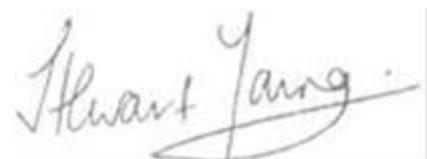
We would welcome the opportunity to meet with you to discuss the Duddon Estuary and other parts of the route and would be willing to participate in any discussions with OfGem to inform the decision that will be made on your preferred route for consultation.

With regards to ensuring satisfactory mitigation of the NWCC project as a whole, the PPA Group are considering the measures that will be required to address other impacts relating in particular to landscape mitigation, transport, skills and supply chain, tourism and tunnel construction. We will be sharing our views on those issues separately and would also wish to include these topics in future discussions with you.

Yours sincerely



Diane Wood
Chief Executive



Stewart Young
Leader of the Council



North West Coast Connections

Key Impacts

PPA Group

July 2016

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1. Introduction

- 1.1 National Grid's North West Coast Connections (NWCC), whilst delivering substantial investment to the UK electrical transmission system, will have a significant impact on Cumbria and an area of Lancashire. This document sets out the common position of the PPA Group Authorities¹ on key issues and identifies where further proposals for mitigation and compensation are needed.
- 1.2 This document has been produced following discussions between the PPA Group and National Grid, covering the areas of key concern for the NWCC project -
1. Landscape and Visual Impact;
 2. Visitor Economy;
 3. Tunnel head impacts at Barrow and Heysham;
 4. Transport and Connectivity; and
 5. Skills and Supply Chain.
- 1.3 The NWCC project brings many positive benefits to the area, supporting energy generation, production and creating many jobs directly and indirectly. However, the physical and human effects during construction and operation also need to be considered. The route passes through and impacts on areas that are important to communities and are areas of national, and international, landscape and ecological significance. There will also be a need to improve infrastructure to enable local workers and businesses to support and benefit from this development. Investment in the local infrastructure is vital to ensure there is no detrimental impact to the social and environmental fabric of the host communities and indeed the infrastructure should be strengthened for now and future generations.
- 1.4 The Overarching National Policy Statement for Energy (EN-1) is clear about the need for the impact of proposals to be appropriately mitigated, and the National Policy Statement for Electricity Networks Infrastructure (EN-5) is explicit that proposals must build in and adopt appropriate mitigation to the project.
- 1.5 The PPA Group echoes the findings of the NWCC EIA Scoping Opinion from the Secretary of State (SoS), published in October 2015, which highlighted key concerns to be addressed for the NWCC Project as:
1. Effects on the statutory purposes of the Lake District National Park (LDNP);
 2. Landscape and visual impact effects;

¹ It should be noted that this report presents officer level comments and has not been formally agreed by each Council.

3. Effects on ecology; and
4. Socio-economic effects, particularly in relation to effects on tourism

- 1.6 These are also key concerns for the PPA Group, together with transport and connectivity. This document will help inform the PPA Group's response to the S42 consultation. As such the PPA Group would like to see these issues adequately addressed in the Environmental Statement and in the development of the NWCC proposals prior to consultation. In this way, it is expected that the key issues will be ultimately be addressed by becoming embedded in the project proposals or negotiated through planning obligations.
- 1.7 Whilst these five topic areas are of immediate concern to the PPA Authorities, there are many further issues that have been raised during informal consultation with National Grid. These range from environmental concerns, such as the cumulative impact of vertical infrastructure, to socio economic issues such as the current integrity of the electrical distribution network and the future connection potential, especially in the Millom area. These will be fully set out in the PPA Group response to the forthcoming s42 Consultation.
- 1.8 The PPA Group welcomes continued engagement by National Grid and considers that adequately addressing the impacts raised in this paper will minimise the risks to the project through the DCO process and increase delivery certainty for National Grid. The Group wants to continue to engage in positive dialogue to enable delivery of the NWCC project in a way that meets both national and local needs, and is consistent with legislation and government policy.

2. Landscape and Visual Impact

2.1 Introduction

- 2.1.1 The landscape of Cumbria is one of its best assets. It includes areas of international and national significance, is a major tourist attraction and supports the quality of life for residents. The NWCC project passes through these areas and therefore it is paramount that the route and technology choice are appropriately designed to protect and enhance this significant asset.
- 2.1.2 The PPA Group is particularly concerned about the significant impact of the proposed transmission technology (overhead line with pylons) directly and cumulatively on the landscapes across Cumbria, including impact on the landscapes and special qualities of the Lake District National Park, both within the Park and its setting beyond the Park boundary, as well as impacts on the landscape surrounding the Solway Coast AONB, St Bee's Head Heritage Coast and Hadrian's Wall and the World Heritage Site. The choice of transmission technology is also important to the authorities in other districts. For example, the cumulative impact of vertical structures in Allerdale and Carlisle is already a concern and larger pylons in this district will further worsen this cumulative impact.
- 2.1.3 As set out in paragraph 1.5 the effect of the project on the Lake District National Park and on landscape and visual impact was also highlighted as a key concern by the Secretary of State in the Scoping Opinion.
- 2.1.4 The PPA Group has previously raised its concerns in relation to National Grid's Mitigation Methodology Assessment. Although, National Grid issued an updated note setting out their revised Approach to Option Appraisal of Alternative Technology (OAAT) on 17 June 2016, many of the concerns remain.

2.2 Key Issues and Evidence

Issue	Evidence
Approach to mitigation assessment.	National Grid's overall approach to considering appropriate mitigation for the impacts on landscape is flawed, and therefore its application has resulted in the establishment of inappropriate areas for mitigation of the NWCC project.

	<p>National Policy Statements EN-1 and EN-5 and the Planning Inspectorate's Advice Notes Two and Nine provide the basis for determining NSIPs. While EN-5 recognises that in 'particularly sensitive locations' this term is not defined in policy for assessing the effects of new development upon landscape character and visual receptors and consequent mitigation.</p>
Options Appraisal of Alternative Technologies methodology (OAAT)	<p>The OAAT introduced a new tier of 'particularly significant', which is not consistent with EIA and other planning regulations and guidance.</p> <p>The use of 'particularly significant' in the OAAT methodology sets an artificially high bar for the establishment of 'Focus Areas' areas for mitigation. It is not in accordance with current guidance and is in conflict with National Grid's 'Response to Consultee Feedback to Assessment of Mitigation Options Methodology' (February 2016), which states that mitigation will be considered for the entire length of the route.</p> <p>In this regard, there is concern that whilst 'significant' effects would be measured in the EIA, it is not clear as to how areas outside the identified 'Focus Areas' will be considered for appropriate mitigation where there are significant effects, in a way that is both robust and accountable.</p> <p>National Grid's approach to defining the preferred route of the Hinkley Point C Connection Project (HPCC Project) used a more thorough and robust approach. This has not been undertaken for the NWCC Project.</p> <p>The OAAT methodology has not been applied to the level of detail described within the methodology in the appraisal tables. The lack of detail means that the OAAT methodology has not been robustly applied.</p> <p>The appraisal tables also make a number of statements without the evidence base being presented to support these statements in sufficient detail. The tables must provide a full explanation of the details in order that the PPA Group can understand the basis of the statement and consider the appropriateness and its credibility.</p> <p>It is standard practice to use landscape character to form the basis to</p>

	appraise landscape and visual impact mitigation using established baseline documents, such as the Cumbria Landscape Character Assessment Toolkit and the Lancashire Landscape Character Assessment.
Lake District National Park status (WHS)	<p>The Environment Act 1995 states that when developing on land which will affect a National Park, National Grid must have regard to National Park purposes.</p> <p>Great weight is also given in legislation and national policy to conserving landscape and scenic beauty in National Parks and AONBs. Major development should only be allowed in 'exceptional circumstances', and if taken forward must include adequate mitigation and compensation measures</p> <p>National Policy EN-1, DCLG guidance, the Electricity Act 1995 as well as current planning practice make it clear that the 'setting' of National Parks should be considered in the same way as those areas within the National Park. However, the approach to mitigation is particularly deficient in its assessment of the effects on the 'setting' of the LDNP.</p> <p>The Lake District has been nominated by Government for listing as a WHS by UNESCO. DCLG and DCMS guidance clearly states that nominated WHS sites should be treated as if they are fully listed. The protections and requirements for World Heritage Sites apply equally to the Lake District nominated WHS.</p> <p>NWCC has the potential to impact on the Outstanding Universal Values of the Lake District. These impacts need to be fully assessed and mitigated.</p>
Hadrian's Wall World Heritage Site (WHS) status	<p>The WHS and its buffer is given great significance in national policy and EN-1 states that substantial harm to WHS should be 'wholly exceptional'. NWCC has the potential to impact on the WHS in terms of impact on the Site, including the landscape and buffer zone. This impact will need to be fully assessed and mitigated.</p>
St Bees Heritage Coast	<p>The coastal area at St Bees is the only stretch of Heritage Coast in the North West England. This is a national designation recognising the landscape quality of the headland, and it is also a very important bird habitat and hosts an SSSI/RSPB Reserve along the sandstone cliffs. Local</p>

	<p>Planning Policy also seeks to protect the intrinsic qualities of the St Bees Head Heritage Coast in terms of proposals affecting views from the designation</p> <p>NWCC has the potential to impact on St Bees, therefore, it is vital that these impacts need to be fully assessed and mitigated.</p>
Cumulative landscape and visual impact.	<p>There is a lack of assessment of the potential cumulative landscape and visual impacts of the Project in areas that are known to be highly sensitive to change and already contain considerable existing vertical infrastructure.</p> <p>Evidence from the CIVI study² suggests that the area around Carlisle is already subject to extensive cumulative impact from vertical infrastructure. Additionally, the route interacts with the Hadrian's Wall WHS and its setting.</p> <p>In accordance with EN-5, it is vital that a robust approach is followed that adheres to national legislation and includes local baseline studies and policies such as the CIVI Study.</p>

2.3 PPA Group Position - Outcomes, mitigation and positive legacy to be delivered

A robust methodology must be used to assess the options for mitigation, including undergrounding. Appropriate mitigation must be provided in all areas as part of the scheme in accordance with the national legislation, policy and local baseline studies and policies as required by EN-5. Careful consideration must be given to areas of the route where significant effects are likely to occur.

2.3.1 The PPA Group consider that 'significant' effects, and therefore the potential use of alternative technology such as undergrounding, should be considered across the whole length of the preferred route corridor. Particular attention to design is required in the following areas:

- The route around Carlisle with particular consideration given to Hadrian's Wall World Heritage Site;

² The Cumulative Impact of Vertical Infrastructure (CIVI) objectively assessed the impact of all vertical energy and communications infrastructure over 15m in height lying within the study area of Cumbria and North Lancashire, as well as the influence of larger infrastructure outside the study area. The Study gives practical guidance for the assessment of applications for vertical infrastructure development, including the effects of the North West Coast Connections Project. The findings of the CIVI will therefore be important as a baseline in considering suitable mitigation for the NWCC Project

- Routing east of Whitehaven with regard to the impacts on West Lakes Science Park and other important social and economic receptors;
- In proximity to the St Bees Heritage Coast;
- Within Lake District National Park, all of the route should be considered for undergrounding in recognition of National Park purposes and its candidate designation as a World Heritage Site, which is of global importance;
- Duddon estuary - it is vital that the appropriate design and mitigation is provided. The only reasonable alternative technology option that has been presented by National Grid is a tunnel across the Duddon. This will avoid major adverse impacts, particularly at the Foxfield Ridge and the Duddon Mosses SAC, plus the wider landscape setting of the LDNP³.
- Moorside site – the routing of the line from the Moorside site and the cumulative impacts on communities needs to be considered carefully. As there will be substantial earth movement proposed in this area, undergrounding could be appropriate, reducing the length of disruption for local communities;
- It is also considered that the area north of Ireleth (the Paradise area) be particularly considered for undergrounding.

2.3.2 The cumulative impact will be significant at the following locations:

- Around the west side of Carlisle up to Harker;
- North of the Moorside site especially communities in close proximity for example, Beckermest and Braystones;
- Along the route on the east side of Whitehaven; and
- The corridor east of Workington following the existing 132kV line north to the east of Carlisle.

2.3.3 The list described above is not exhaustive and further specific locations may equally be impacted by the cumulative effects of development infrastructure. The PPA Group expects National Grid to explore opportunities to maximise rationalisation, removal and undergrounding of existing lines and infrastructure across the route in order to reduce the impact of the new 400kV line.

2.3.4 Given the significant number of existing lines around Carlisle and south along the proposed route to Workington it is considered that two lines should be taken down. Additionally, rationalisation should be used to reduce landscape and adverse socio economic impacts on the local community and on local tourism businesses for example, around Kirkby-in-Furness.

³ NB Correspondence 30th June 2016 from Diane Wood and Stewart Young to Neil Lyons on this point.

- 2.3.5 Whilst removal of overhead lines is highly desirable from an environmental perspective, the integrity of the electricity distribution network and connection opportunities across the route should not be weakened as a result. There are significant concerns regarding electricity network in the areas of Millom considering current requirements, and the ability of new energy generators/users to connect to the distribution system.
- 2.3.6 The Cumulative Impact of Vertical Infrastructure (CIVI) study should be used as part of the assessment process to highlight areas within Cumbria that are sensitive to the cumulative effects of vertical infrastructure.

3. Visitor Economy

3.1 Introduction

Tourism plays a key role in Cumbria and Lancashire's economy and consequently the economy is far more dependent on tourism than most other parts of the UK. The PPA Group shares the concerns of the SoS regarding impacts of the project on the visitor economy. The area that NWCC passes through is unique and requires careful consideration and local evidence to understand the potential impacts. The PPA Group is concerned that using general evidence from other projects and areas may underplay the impact on the tourist economy. Designing appropriate landscape mitigation is essential to safeguarding the visitor economy given the clear links between visitor draw factors, especially in Cumbria and the Lake District National Park.

3.2 Key Issues and Evidence

Issue	Evidence
Significance of the Cumbria visitor economy.	The Lake District and Cumbria are amongst the most popular tourism destinations in the UK, with many visitors attracted to the area for its landscape, wildlife, history and culture. In 2015 Cumbria received over 43 million visitors, that cumulatively contributed £2.62 billion to the county's economy and supported over 35,482 FTE jobs in thousands of local enterprises. In the peak summer months the number of people employed in tourism is estimated to be over 61,000, representing around 20% of Cumbria's total employment. Even a 5% impact could see a £131m reduction in GVA and the NWCC project therefore has potential to have a noticeable economic impact on the local visitor economy.
Impact on visitor numbers and spend in the area	A large proportion of tourists are drawn to the scenery, the unspoilt nature of the area and outdoor activities available. Recent research by Cumbria Tourism (Cumbria Visitor Survey 2015) found that the top 2 reasons given for visiting Cumbria was due to the scenery and landscape, and the peaceful, relaxing and beautiful characteristics of the area. This finding was broadly consistent across Cumbria, but more pronounced in the LDNP. The recent floods in December 2015 highlighted the potential for a decline in visitor numbers and spend as a consequence of changes to visitor perception and disruption to infrastructure.

<p>Impact on the destination brand and visitor perception</p>	<p>Cumbria has strong visitor brands, being the second most popular visitor destination in the UK. The Lake District National Park and Hadrian's Wall World Heritage Site are leading destination brands with international significance, and there is potential that these brands will be significantly affected by this project. The Morecambe Bay area is also a well-established visitor destination, extending around the bay from Barrow to Morecambe.</p> <p>This is a key concern of the PPA Group, as the project (in combination) with other major projects has the potential to disrupt tourist trade through displacement and negative image.</p> <p>In previous research to understand the potential impact of a search for a geological disposal facility in Cumbria, results suggested that 17% of businesses that use the Cumbria and Lake District brand reported a very negative impact on sales due to the publicity about the development proposal.</p>
<p>Impact of project workforce on visitor accommodation supply during construction</p>	<p>Occupancy rates for serviced accommodation in Cumbria and the Lake District have been steadily increasing over the last three years. In 2015, rates were 3% up on previous year, reaching a high of nearly 80% in August, and close to 70% and above for 6 months of the year. Self-catering occupation rates are also high with a peak of over 80% during peak season. Although similar occupancy rates are available for Lancashire, these are related to the County as a whole and therefore would not be representative of the spatial area affected by NWCC. More localised work is required for the Morecambe area in Lancashire and the areas affected by the route in Cumbria.</p>

3.3 PPA Group Position - Outcomes, mitigation and positive legacy to be delivered

3.3.1 The PPA Group wants to work with National Grid and tourism partners to understand and manage the short and long term impacts on tourism and on tourist accommodation and destinations. Key actions are required to ensure the project is able to demonstrate that adverse impacts on the leisure and visitor economy will be mitigated. The Group recommends to National Grid that a tourism strategy is developed. This should identify a series of interventions that are required to mitigate the negative impacts on the tourism sector. It is important in the development of the strategy that:

- There is full engagement with the Cumbria and Lancashire LEPs and tourism bodies to provide quantitative background from the tourism sector;
- Investment is identified to support marketing/promotional initiatives of the area and local businesses to counter potential perceptions.
- Interventions are identified that mitigate the impacts of major development on the visitor economy, particularly on Hadrian's Wall World Heritage Site (from Carlisle to Ravenglass), the Lake District National Park and Morecambe;
- There is consideration of the loss of, and disruption to, cycle paths and rights of way during the construction and operational phases of the development. Mitigation could include a funded package of signage and promotion to improve recreational facilities and activities for visitors including improvements to Hadrian's Wall National Trail, Cumbrian Coastal Way, National Cycle Network (NCN) routes 70, 72 and 700 and C2C cycleway;
- Support should be targeted at those coastal attractions/visitor facilities currently led by community groups and potentially adversely impacted by NWCC route proposals;
- Improvements should seek to secure permanent improvement and legacy for the area;
- Careful consideration and planning of worker accommodation is given to mitigate any negative impacts on accommodation. This is especially pertinent where there will be a concentration of workers, such as the tunnel heads at Barrow and Heysham; and
- Creation of opportunities for new hotel and accommodation facilities and high quality visitor destinations and attractions.

4. Tunnel Head Impacts at Barrow and Heysham

4.1 Introduction

- 4.1.1 National Grid proposes to construct a tunnel across Morecambe Bay tunnelling from both Roosecote and Heysham. The tunnel element of the project represents a significant project in its own right, with a build programme of 5 years, 1.2m tonnes of spoil generated and requiring over 500 workers. Although the proposals for the tunnel heads at Roosecote and Heysham are likely to result in a number of significant impacts across a number of topic areas, there has been limited engagement and information sharing.
- 4.1.2 The context at each of the tunnel head locations is different, however, the main concerns are shared by the PPA Group members in the two areas. Significant issues have been raised regarding the impact of the tunnel construction on the local community, transportation links and social infrastructure. The Group needs to understand and assess the potential impacts and mitigation requirement of the tunnel head operations on the local area, and work with National Grid to develop appropriate mitigation measures that will deliver positive legacy to the communities affected.
- 4.1.3 Should National Grid commit to progress the Duddon Tunnel option the impacts and consideration of this are likely to be similar in kind to those outlined in this chapter, albeit, different in scale and context. Such impacts will need to be considered and addressed in consultation with the PPA Group, other stakeholders and the community affected.

4.2 Key Issues and Evidence

Issue	Evidence
Impact of tunnel head construction	National Grid has proposed substantial construction works for each of the tunnel head locations at Roosecote and Heysham, and temporary shafts at Half Moon Bay and Rampside. The PPA Group has significant concern about both proposed layouts given their proximity to existing and proposed residential and commercial development, and adverse impacts on Public Rights of Way. Little information is available regarding the onsite processes, such as the 20m high Slurry Treatment Plant or off site movements. It is not clear whether the local areas will be subject to an unacceptable adverse impact on amenity and health for a prolonged

	period of construction.
Worker accommodation	<p>The construction of the tunnel will require over 500 direct workers for an extended period of time. In addition, there will also be workers on the project to construct the substation and onward distribution network. This will be a substantial number of workers and must be considered in the existing environment and in the context of ongoing and other future projects that are progressed in the area. The impact of this level of workforce has clear implications for the local area in terms of accommodation, movement and social facilities.</p> <p>The PPA Group considers that National Grid and their contractors should prioritise the employment of local workers to construct the tunnel, however, we recognise that given specialist skill requirements and other competing projects, a proportion of these workers will need to be recruited from outside the local areas. In Barrow there is very limited serviced accommodation, in part due to the ongoing development such as the BAE expansion. In the Heysham area the use of former holiday accommodation for workers on previous major projects, coupled with inadequate legacy planning has led to social and regeneration issues that the Council has been working to address. Both localities have areas of deprived neighbourhoods and existing empty building stock. There is therefore the opportunity for National Grid to utilise existing housing stock in Barrow and Heysham/Morecambe that addresses the project's construction worker needs and in turn delivers a lasting benefit for the local communities..</p>
Waste and materials	<p>The Morecambe Bay Tunnel will generate 1.2m tonnes of spoil, in addition it will require significant materials for construction of the concrete tunnel lining, cabling and other building materials. Careful planning is required to ensure that communities and businesses are not adversely affected by the movement of materials to the construction sites and the removal of waste, (largely tunnel spoil). The implications are largely to do with transportation; however, there are also issues of project sustainability and environmental impact, including where the waste material will be placed.</p>
Transportation and movement	<p>A project of the scale of NWCC will make extensive use of transport infrastructure to import materials, workforce and deal with waste generated. All these movements will result in a huge increase in pressure</p>

	on local and regional infrastructure. Given the nature of the construction sites, the extent of the movements this and other projects will generate, the PPA Group is concerned about the impact on transport networks and local communities and businesses. This impact will be emphasised in the areas of the tunnel head, however, it is also a wider concern for the whole project, as set out in the transport pages of this report.
Cumulative impact	Appropriate consideration of the cumulative impact of the NWCC project across the whole route, and areas of intensive construction are a key concern of the PPA Group. There are a number of major developments, such as the Centrica proposal at Roosecote currently underway that directly and indirectly interact with NWCC in the localities. These projects will share the same transport and social infrastructure, and will also require a skilled workforce to deliver them. Therefore, the cumulative impact of the NWCC project across a number of topic areas must be carefully and thoroughly considered, and addressed by National Grid.

4.3 PPA Group Position - Outcomes, mitigation and positive legacy to be delivered

4.3.1 Impact of tunnel head construction;

- It is vital that National Grid provides details of construction impacts (e.g. noise, processes, working times, detailed site movement plans); and the tunnel head sites must be redesigned accordingly to address amenity and environmental concerns;
- Consideration needs to be given to the design of the tunnel head in Roosecote given emerging proposals that will affect the land take for the construction site layout. This exercise needs to assess whether the segment production facility and storage can still be accommodated as there are likely to be significant impact if segments are brought into the site rather than manufactured in-situ on site ;and
- National Grid should be clear on the advanced works outside the NSIP process that will be required to support the NWCC project.

4.3.2 Worker accommodation;

- National Grid should develop a worker's accommodation strategy that prioritises the re-use of existing buildings and land first, and considers the long-term legacy of the area by delivering sites that have clear future benefit to the local area. This principle is applicable across the whole project; and

- National Grid should work with the PPA Group to develop a range of appropriate sites for worker accommodation.

4.3.3 Waste and materials;

- The re-use of spoil and manufacture of materials as close as possible to the source should be a key principle of the NWCC project;
- National Grid should work with the PPA Group to develop opportunities for the re-use of tunnel spoil locally to deliver local positive legacy and minimise the need for transportation. National Grid should support the development of evidence or feasibility work to underpin and develop plans for these opportunities. For example, there are potential schemes close to Barrow that will provide real legacy for the area and will reduce the impact of transportation of spoil. These include reclaiming land at Cavendish Docks, use for improving access at Salt House Mills, land improvements at Marina Village, Ulverston flood defences, Walney Island flood protection works and also re-using the spoil for the NWCC project;
- The PPA Group considers that a key principle should be to manufacture concrete segments close as possible to the tunnel heads. At Heysham, the site indicated for the concrete segment factory is owned by the City and County Councils. It is not available for use by National Grid on the NWCC project, but alternative sites are available with willing owners in the vicinity.

4.3.4 Waste Heat

- The operation of the tunnel will generate significant amounts of waste heat. Consideration should be given to the beneficial use of this heat energy within the Barrow area, either for heating of buildings or maintaining the ecological designation of the nearby Cavendish Dock, (which previously benefitted from waste heat from Roosecote Power Station).

4.3.5 Transportation and movement

- Ensure that a sustainable transport strategy is researched and adopted that minimises movement and fully addresses impacts (see transport section); and
- Facilitate the delivery of the Cumbria and Lancashire Infrastructure Plans by funding and constructing infrastructure schemes relevant to the NWCC Project, which have been identified within each of these Plans.

4.3.6 Cumulative impact

- National Grid need to address the concerns regarding cumulative impact of the NWCC project, by understanding the other projects in the area and the programming of when construction is taking place; and
- The NWCC must address and mitigate the share of impacts that will be generated.

5. Transport and Connectivity

5.1 Introduction

5.1.1 Improved connectivity is at the heart of all economic growth plans for Cumbria and Lancashire. A key aim of the PPA Group is to secure a positive transport legacy through securing new rail facilities and services used by National Grid during construction to encourage economic development and greater use of the railway and other sustainable methods of transport, to help support a modal shift from road to rail use. The local highway, especially in Cumbria also requires improvements to address capacity, road safety and traffic network management issues arising from increased demand in traffic movement.

5.1.2 NWCC must be viewed in the context of the current and available transport infrastructure in Cumbria and Lancashire. Developing the NWCC project will require a number of large construction sites at tunnel heads and substations, and a large number of additional sites required to build the overhead or underground line. The PPA Group is concerned about the cumulative impact of major developments on the ability of transport infrastructure to support delivery of the projects. This is especially the case in Cumbria, where there is potential for increased demand for rail capacity due to overlapping major projects. These concerns were also emphasised by the SoS in the Scoping Opinion.

5.2 Key Issues and Evidence

Issue	Evidence
Overarching Transport Strategy.	<p>Transport and connectivity is one of the key issues that National Grid will need to address in developing the NWCC project and as such a comprehensive overarching transport strategy is required.</p> <p>The PPA Group understands that National Grid are currently developing, and will consult on both a road based and a multimodal transport option for delivery of the NWCC project. While there are clear benefits to a multimodal strategy more detailed information is required to fully appreciate and assess the impacts on Cumbria and Lancashire. A comprehensive Transport Assessment utilising agreed traffic modelling baseline data will be needed to take into account both construction traffic and construction workforce attending sites.</p>

Rail infrastructure	<p>A rail led strategy is the most sustainable mode of transport for major construction projects. However, currently the Cumbria Coast railway line does not have the capacity to accommodate the forecast cumulative demand in freight distribution. The LEP and the County Council are working with Network Rail to facilitate a collaborative approach to enable co-ordinated and efficient delivery of the rail improvements that are required to support the major developments in west Cumbria. For the NWCC project it is anticipated that work will be required to improve rail facilities close to the Roosecote and Heysham tunnel head locations, and near the depot sites.</p>
Highway infrastructure	<p>The local highway network in Cumbria is constrained and has a number of well known 'pinch points' and it is unlikely to have the capacity to cope with the additional demand generated by the development during the construction. Although the transport options are less constrained in the Heysham area, given the rail, port links and the recent road upgrade, the impact from the construction of the tunnel head must also be carefully considered by National Grid.</p> <p>The over land element of the project (whether overhead line or underground) will require extensive traffic movements related to the importing (and decommissioning) of material for access and haul roads. There is concern about the cumulative impact of these movements on the transport network especially if a single source is used and a road based approach adopted. Early sight of the construction programme as it is developed would allow us to better consider the localised impact (and to align with the transport strategy) Traffic modelling work is currently being undertaken in Barrow where the impacts on the highway are expected to be most significant.</p>
Port Infrastructure	<p>The construction of the tunnel elements of the project presents a significant transport challenge for National Grid. Exporting the tunnel spoil will present significant impacts on the wider areas. As set out in section 4, the PPA Group recommends that spoil is re-used locally to reduce the range of impacts including those on the transport infrastructure. Once again a multimodal transport strategy is supported and in this respect it is suggested that where possible appropriate material and waste are transported via rail from the tunnel head locations.</p>

	Investment will be required in port infrastructure to facilitate transportation of waste and materials. There are a number of existing ports available that should be investigated such as Workington, Millom, Barrow and Heysham. In addition to supporting the transportation of waste and materials, there is land available to the north of the Port of Workington that could provide space for logistics and consolidation activities for the supply chain.
Public Rights of Way (PRoW)	<p>The NWCC project will have temporary (during construction) and permanent effects on the PRoW across Cumbria and in the Heysham area around the tunnel head and the temporary shaft at Half Moon Bay. This may include closures, diversions and a reduction in the amenity and ability of users to enjoy the routes.</p> <p>This project presents the opportunity to enable the creation of new and enhanced public rights of way and cycle ways given the need to have access along the length of the corridor. National Grid should work closely with the PPA Group to develop a strategy for the rights of way network.</p>
Travel Plan	The NWCC will require a number of major construction sites for the duration of the project, and a large number of smaller temporary sites along the route. These will require significant movements of workers and materials/waste therefore a Green Travel plan will be required.

5.3 PPA Group Position - Outcomes, mitigation and positive legacy to be delivered

5.3.1 There is a clear need to understand the transport strategy and the details of National Grid's proposals for NWCC. From the initial understanding of the project and the current transport infrastructure in the area, it is clear that there will need to be a multimodal approach to the transport strategy using rail, port and highway infrastructure. However, it is also clear that there are many known constraints that will need to be appropriately mitigated and addressed working collaboratively with the PPA Group and relevant highway authorities. These are as follows;

- Rail improvements are required at each of the tunnel heads, distribution depots, and to increase capacity for rail freight and improve the speed, reliability, frequency and capacity in

general. The PPA Group expects National Grid to provide an appropriate contribution to the investment required to upgrade the rail infrastructure;

- National Grid will need to deliver required local highway improvements and address pinch-points in the network;
- The NWCC project should not inhibit/prevent the development of, and could help enable the delivery of the Whitehaven Eastern Relief Road.
- Improvement to the port access and infrastructure, and specifically port facilities is required to support multi-modal logistics activity;
- The NWCC project should secure long term enhancement to local and long distance cycling and walking routes to mitigate the impacts of construction and operation of the infrastructure;
- National Grid must develop and manage a green travel plan to promote more sustainable travel, especially at the key areas of employment such as the tunnel head compounds, rail depots and 400kV cable route construction compounds;
- National Grid should seek to work with the PPA Group to ensure positive planning of construction compounds and rail depots to facilitate future re-use and legacy.

6. Skills and Supply Chain

6.1 Introduction

- 6.1.1 NWCC will require thousands of skilled workers with the right skills available at the right time to complete the project. There are clear benefits for National Grid and the host communities for these skills to be locally available in order to reduce the socio-economic and transport impacts from the project.
- 6.1.2 The PPA Group want to work together with National Grid, local LEPs and other key stakeholders to ensure that maximum employment and skills benefits as a result of the NWCC development. The PPA Group is keen to develop key initiatives with National Grid as a first step in agreeing and implementing a detailed plan for employment and skills linked to the development and other major developments in the area, to ensure the delivery of a lasting legacy to the local economy.

6.2 Key Issues and Evidence

Issue	Evidence
Access to employment	<p>The workforce required to successfully deliver the NWCC project must be viewed against the considerable investment in Cumbria and Lancashire. National Grid will need to compete for skilled workers with other major projects such as Moorside Nuclear Power Project that alone requires 6,500 direct workers during peak construction.</p> <p>Local people will need to be encouraged to pursue relevant subjects and training qualifications leading to career opportunities created by the NWCC project. This will require the creation of pathways for training to maximise the development of skills locally, including training for unemployed and underemployed residents, as well as improving access to opportunities for local young people by offering apprenticeships and graduate training.</p> <p>Supplying the skilled workforce needed will require close working between a number of key bodies including, developers, LEPs, supply chain businesses, schools and HE/FE institutions. In Cumbria the LEP, through</p>

	<p>its Skills Plan, is working with NuGen and National Grid to identify the skills and training needs and the interventions that will be required in order to meet those needs and in turn help local people access employment as well as attract people to the area.</p> <p>In Lancashire, the Construction Skills Training Board's Shared Apprenticeship Training Scheme (administered by Calico) provides an opportunity for National Grid (and appointed contractors) to maximise additional training opportunities for apprentices.</p>
Training facilities	<p>In order to ensure the training and educational places are available National Grid, working together with the LEPs will need to resource facilities and educational providers. This will include investment in existing educational institutions to increase capacity to meet the skills demands.</p> <p>Work will be required with Barrow College, West Lakes, Morecambe and Carlisle. In some cases, there is provision available, (e.g. new overhead line training facility at Newton Rigg), however, in others there is need for capital investment in facilities. Working alongside LEPs, other developers and with Growth Deal funding, National Grid will need to make appropriate contributions towards facilities.</p>
Supply chain opportunities	<p>Local businesses have a key role in delivering the NWCC project. However, there is much work to be done to ensure there is maximum local benefit. It will be important to engage with the Growth Hub and to encourage businesses to be supported to win work and to continue to be successful after the project is complete.</p> <p>The PPA Group understands that National Grid is developing a Procurement Framework; however, there must be clear mechanisms to ensure barriers to participation are removed for local businesses, such as providing support to help local businesses up skill and improve capacity and knowledge of opportunities of NWCC. Working with the LEPs this support will help local businesses benefit from the NWCC project directly and grow and diversify, leaving a real positive legacy for the local economy.</p> <p>Clear and measurable and evidence based targets are required to create</p>

	local training, employment and supply chain opportunities and benefits.
Employment sites	<p>The NWCC project will need a number of logistics depots and construction compounds along the route to deliver the project.</p> <p>There are a number of opportunities for logistics hubs on existing strategic employment sites that could provide the land for this development. For example, in Cumbria the land to the north of the Port of Workington which could be used working jointly with NuGen. There is also Kingmoor Park Enterprise Zone (with its Enhanced Capital Allowance benefits) with good rail and road access that provides opportunity for logistics and assembly activity. While in the south of the County it is suggested that Barrow Waterfront should be explored for this purpose. In Lancashire there are also a number of employment sites that could fit the requirements of the NWCC project.</p>

6.3 PPA Group Position - Outcomes, mitigation and positive legacy to be delivered

6.3.1 Providing the skilled workforce for NWCC will require close and joint working with NuGen and other major employers in the local areas. Collaborative development of a Procurement Framework and Skills Plan is vital to the delivery the project. The PPA Group, LEPs and partners should be fully involved in establishing and monitoring clear and enforceable targets that cascade down through all tiers of contractors. Targets and monitoring arrangements should be integrated into the DCO through submission of the Procurement Framework and Skills Plan as associated documents to the examination process so the targets are delivered by National Grid or any contractor working on the project.

6.3.2 Skills Plan

- The Skills Plan should set out how National Grid will work with the PPA Group and partners to deliver the skills and training locally required to ensure local people are able to benefit from the project. It is expected that this will include contractual commitments from National Grid (and contractors) for target numbers to be achieved for;
 - Work experience placements be offered per year to local schools / skills providers;
 - Previously unemployed residents recruited through employer-led academies; and
 - Apprenticeships for young people, including higher and degree apprenticeships.

- Working with partners, together with Growth Deal funding, National Grid needs to make appropriate contributions towards capital improvements at key training facilities, including those at; Barrow, West Lakes, Morecambe, Kendal and Carlisle Colleges.
- National Grid, with the support of local partners, should be seeking to target support for unemployed/underemployed in deprived communities along the line of the route.

6.3.3 Procurement Framework

- National Grid should work jointly with local partners in the development of the Procurement Framework, taking lessons from the nuclear industry such as the procurement activities at Sellafield and Heysham; and
- The Procurement Framework must focus on local businesses, and provide the support to develop the capacity and capability to secure contracts and use the opportunity to grow and diversify to be able to win contracts elsewhere. National Grid will need to include targets and mechanisms that create opportunities for engagement of local supply chain companies in their project delivery. Targeted business support will be required for supply chain companies, to improve their capability or to enable their expansion, whether for individual companies or for clusters of businesses.

6.3.4 Employment Sites

- National Grid should work with the PPA Group Authorities to ensure positive planning of construction compounds and rail depots on existing sites, and plan to facilitate future re-use and legacy. Key strategic employment sites include;
 - Kingmoor Park Enterprise Zone, Carlisle (with its Enhanced Capital Allowance benefits);
 - Port of Workington;
 - Barrow Waterfront;
 - Lillyhall.
- Other local employment sites along route with potential to act as hubs and also in close proximity to the railway are:
 - Wigton
 - Aspatria
 - Askam-in-Furness
 - Flimby
 - Millom
 - Bootle
 - Heysham
 - Ulverston



1.0 Introduction

- 1.1.0 In response to the PPA Group's review of the NWCC Mitigation Methodology Assessment (3rd June 2016), National Grid have prepared a revised approach to their Option Appraisal of Alternative Technology (OAAT).
- 1.1.1 It is understood that this document provides the next stage, following the November 2015 methodology; it has been designed to build on it, however it does not replace or revise it. The PPA Group have previously expressed concerns about the November 2015 OAAT methodology, and these remain.

2.0 Key Issues

- 2.1.1 The expanded OAAT methodology confirms that National Grid is clearly looking at alternative technology mitigation for areas that they consider would have '*particularly significant*' effects (Stage 3a) as well as '*residual significant*' effects (Stage 3b) only, and the areas to be considered will be covered by the following criteria: the LDNP, Solway Coast AONB and the FRE WHS (including the Buffer Zone).
- 2.1.2 The methodology makes clear that the assessments carried out are not full EIA assessments, but will inform the EIA.
- 2.1.3 National Grid believes that their case of mitigating for alternative technologies is supported by paragraph 2.8.4. in the National Policy Statement (NPS) on Electricity Networks EN-5, which states '*.... wherever the nature or proposed route of an overhead line proposal makes it likely that its visual impact will be **particularly significant**, the applicant should have given appropriate consideration to the potential costs and benefits of **other feasible means of connection or reinforcement, including underground and sub-sea cables** where appropriate.*'
- 2.1.4 Whilst '*particularly significant*' is used in NPS (EN-5), it is only mentioned once and in regard to visual impact only. To apply this purposefully limiting assessment method to other environmental topics is not, as inferred a benefit, but a clear stretch of the guidance to cover subjects, which was only intended for visual impacts.



- 2.1.5 NPS EN-5 accepts the inevitable impacts of pylons, in a landscape and sets the bar to a relevant level to make sensible assessments. However, it is an oversimplification and incorrect association to apply this for other impacts that do not necessarily 'have' to acknowledge a large affect from the outset. In fact, to associate other topics in this way to an assessment measure only designed for visual impact, which cannot be appropriately mitigated, is a false approach, especially as presented as a benefit. If, for example, there is an impact to a watercourse, this does not carry some similar inevitability such that only extremely significant impacts are worthy of mitigation. There is no other evidence to support the application of this high standard to additional topics other than National Grid's previous paper. To be clear, it is not that environmental topics should not be included, but they should not be included via this deliberately high measure.
- 2.1.6 The methodology does not explain how the results from the different topic areas will be balanced against each other when considering the mitigation hierarchy. It is likely that a different solution will be identified as appropriate in relation to ecology and visual for example, and we would wish to understand how this will be addressed.
- 2.1.7 Overall, the methodology is difficult to understand. Our understanding is that along the whole route, areas of '*likely significant effect*' will be identified; these in turn will be assessed to identify areas of '*particularly significant*' effects. In these '*particularly significant*' effect areas (Focus Areas) a mitigation hierarchy is applied to appropriately address effects in increasing order of cost to lower the level below '*particularly significant*'. Where these areas lie within the LDNP, WHS, AONB, and their settings, the aim is to lower the effects below significant (based on the designation criteria of the designation only), it is also assumed that moderate effects will also be included in the assessment. Any significant effects identified outside these designated areas will be addressed in the ES, but not within this assessment. The PPA Group would wish to see all '*significant*' effects clearly identified (either here or in the EIA) and clear evidence provided of the process applied to address significant effects.
- 2.1.8 The map supporting the Draft "*Approach to Option Appraisal of Alternative Technology*" (17th June 2016) document appears to pre-empt any EIA assessment. Large sections of the route corridor in West Cumbria, especially within Allerdale and Copeland are not identified as Focus Areas or '*residual significant effects areas*'. The map produced to support the approach is, in effect, therefore a product. There is no evidence to demonstrate why these sections have been excluded and there is no documentation provided (text or illustrative) to explain how these results shown have been reached. Without the clear chain of assessment, we are



unable to understand how the decisions on the map have been reached. This is required to understand the progression.

- 2.1.9 The first paragraph of the document makes it clear that this document relates to *'technological mitigation, particularly undergrounding' only*. However, Stage 3a (page 6) lists a number of bullet points, which includes landscape planting and amendments to the route. The previous OAAT methodology included mitigation options such as alternative alignments, siting of pylons, and the use of mitigation planting and screening. It is therefore unclear exactly what mitigation is being considered at this stage and this should be clarified.
- 2.1.10 The revised assessment states that the existing towers will form part of the baseline, which the PPA Group agree with. What is not stated is what structures forms part of the development. It is assumed the assessment is undertaken with the 400kV overhead line and the underground cable, however, it is considered that the proposed substations; groundworks; access tracks, Electricity North West (ENW) infrastructure, etc, should also be considered. The methodology should make clear what forms the development, in the context of this appraisal. The PPA Group would expect the substations, as a minimum, should be considered as they are likely to result in an effect which may contribute to particularly significant effects in some areas.
- 2.1.11 In addition, Stage 3a states that where there is an existing 132kV line, it will be included in the baseline assessment, and the significance of effects will be measured between the existing baseline situation and the proposed replacement 400kV line. Whilst this seems reasonable, the distance of the route of the new 400kV line from the existing 132kV line will be important to determine the degree to which the existing 132kV line should be included as the baseline situation.
- 2.1.12 It appears that National Grid intend to avoid mitigation where there are just *'significant'* effects, this is illustrated by Section 1 "*Basic Principles Adopted & Design Context*". The methodology quotes from SCHEDULE 4 of the TCPA EIA Regs 2011: Information for inclusion in environmental statements. Part 1 no. 5 states:

'a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment'



2.1.13 National Grid infers from this that the regulations '*do not require significant effects to be mitigated.*

2.1.14 We would add that Part 2 no. 2. also says:

'A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.'

2.1.15 Although it is true that the Regulations do not state that '*significant effects*' must be mitigated, the extent of '*significant effects*' is likely to influence decisions about the acceptability of the development. Also if an applicant is describing measures envisaged to mitigate any significant adverse effects, then there must be an intention on behalf of an applicant to undertake action, rather than just record it.

2.1.16 Inset 1 (page 5) shows a flow chart to illustrate the relationship between OAAT stages and the integration of design, EIA and OAAT. It lists '*Identify Areas of Likely Significant Effect*', but nowhere in the methodology does it describe how these are identified, or refer back to the original methodology. We would assume this should refer back to the original methodology, but this is not confirmed. We would welcome clarification if this has been revised following previous comments.

2.1.17 Stage 3b (page 7) confirms that the impact assessment only considers where there is potential for residual '*significant*' effects within the designated areas of: LDNP, Solway Coast AONB and the FRE WHS *and* their settings. The PPA Group welcome the recognition given to the settings of these designated areas – We also note the precautionary approach to include moderate levels of effect as if they were all '*significant*'.

2.1.18 Stage 3b (page 7) confirms that the application of any mitigation (not just alternative technologies) for remaining '*significant effects*' affecting land outside these designated landscapes along the remaining length of the route corridor will be considered on a case-by-case basis, and reported in the PEI and the ES. This is not satisfactory, as it would appear that there is not a comprehensive approach to mitigation for the whole length of the route corridor, and there is a concern that the focus for mitigation '*using alternative technologies*' will be concentrated on the designated areas of: LDNP, Solway Coast AONB and the FRE WHS and their settings only.



- 2.1.19 The methodology does not appear to consider mitigation involving alternative technologies where there might be '*significant effects*' anywhere else along the route corridor – National Grid does recognise that '*significant*' effects will nonetheless be considered and reported as part of the EIA. However, there is a question as to how National Grid will deal with appropriate '*mitigation*' where there might be '*significant*' adverse effects in all other areas of the route corridor, not included by the criteria above – mitigation does not necessarily require exclusively the use of alternative technology.
- 2.1.20 Part 3 (page 9) – '*Application of the mitigation hierarchy*' is confusing and states that 'the alignment has already been optimised'. If this is the case and there are no plans to change it, it should not be listed as a possible mitigation option. However, Part 4 does suggest that potential changes to the route could be identified; clarification on this point is required.
- 2.1.21 The inclusion of "*Inset 2: Basis for assessment*" (page 7) is welcomed and illustrates a rationale for '*particularly significant*'.
- 2.1.22 Stage 3a (page 6) confirms that the impact assessment considers '*particularly significant*' effects on the whole of the 400kV route only.
- 2.1.23 We welcome the information that additional field visits are being carried out to inform the '*Focus Area*' selection, as listed in the numbered points following Insert 2.
- 2.1.24 Following the numbered points on page 7, a statement is made about how the application of the methodology '*has identified a suite of proposed changes to the route and technology*'. Can these be made available so it can be made clear how this has been applied and the methodology followed through? We assume this information must be available given this statement has been made.
- 2.1.25 We note the statement '*further ENW rationalisation is **not an option** in some parts of the route*'. This indicates that it **is an option** in other parts of the route, and we would expect to see this considered.
- 2.1.26 If T-pylons have now been removed from the mitigation options ('*T-pylon designs are not appropriate within this general area*') this mitigation option should be removed from the considerations in the bullet points on page 3 as there is no intention to consider them further.



2.1.27 We note that stage 3c (page 10) is the decision making process. This would need to be clearly documented so it is evident why a particular approach has been adopted.

2.1.28 We understand the OAAT will be available as part of the PEI. As this methodology is accompanied by plans illustrating '*residual significant effects assessment area*' and '*Focus Area*' we understand that these areas have already been identified. We would therefore welcome acknowledgement, which, if any, of our previous comments on the identification of these areas have been addressed.

3.0 Next Stages/Recommendations

3.1.1 The PPA Group have previously expressed concern regarding National Grid's approach to their OAAT. The extended approach (17 June 2016) does not replace or revise it; instead it has been developed to augment the methodology. Whilst the latest iteration seeks to counter the onerous use of '*particularly significant*', it does not address the PPA Group fundamental concerns regarding the methodology. Indeed, it generates additional issues.

3.1.2 National Grid has been developing the OAAT over a number months and the PPA Group Authorities have provided detailed comment on the following occasions;

- Review of National Grid's Assessment of Mitigation Options Methodology and Focus Areas January 2016 (14 January 2016);
- Letter regarding National Grid's Appraisal of Focus Area Locations and the Response to Consultee Feedback to Assessment of Mitigation Options Methodology (15 April 2016);
- Review of National Grid's Mitigation Methodology Assessment (3 June 2016); and
- Meeting with National Grid on the NWCC Mitigation Methodology to discuss concerns (7 June 2016).

3.1.3 Thus far, agreement on the methodology has not been achieved and the concerns expressed during this informal consultation largely still stand.

3.1.4 Through the forthcoming statutory consultation the PPA Group have the opportunity to again reiterate and record these concerns regarding the assessments that have been used to choose technology solutions. These comments will be informed by the alternative designs that will form part of National Grid's PEI Report and consultation materials.



3.1.5 The PPA Group welcomes continued engagement with National Grid and considers that adequately addressing the concerns raised regarding the OAAT will minimise the risks to the project through the DCO process and increase delivery certainty for National Grid. The Group wants to continue to engage in positive dialogue to enable delivery of the NWCC project in a way that is consistent with legislation and government policy.

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Northern Strategic Routes - Access Report

Introduction

- 1.1.1 Site inspections were carried out at the identified Temporary Construction Access points for the 400kV works for the Northern strategic route.
- 1.1.2 The Northern section of the strategic route was visited over several days between August and November 2016 to investigate localised traffic issues, this started in Carlisle to the north and concluded at Oughterside and Allerby to the south. The main aim of the site visits was to consider any issues along the local road network and at the Temporary Construction Access junctions that may arise from construction traffic associated with the proposals.
- 1.1.3 Traffic flow information presented in the PEI Report for the Northern Route, as well as the draft access routes for the 400kV pylons shown in Amec Foster Wheeler Transport Support Document were taken as the basis for the site visits. This report summarises the findings of the site inspections.

Methodology

- 1.1.4 For each of the Temporary Construction Access site measurements and observations were undertaken. The observations covered a wide range of highway-relevant measurements such as the width and alignment of the major road, the general location and condition, and the speed limit.
- 1.1.5 The route from the strategic route network to the Construction Access was considered during the site visits to determine suitability for construction traffic. In particular this focused on the standard of carriageway, speed limits, carriageway width (including verge provision) and any alignment or gradient issues.
- 1.1.6 It should be noted that on the access forms, the minor road measurements and observations refer to the access point itself, i.e. the type of access (field gate, farm track, etc.) as well as the width and setback measurements. Where possible, the visibility from the construction access was measured from a setback of 2.4m, otherwise visibility from the carriageway edge was measured. In addition to the standard access measurements, any STATS provisions or PRowS located in the vicinity of the Access were recorded as they will require consideration when assessing construction impacts.



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Results

- 1.1.7 There are a total of 45 Temporary Construction Access junctions in the Northern section of the Strategic Route. Each construction access along the overhead section serves varying number of Pylons supporting the 400kV line. From the submitted information it is not clear how National Grid intend the tunnelled section to be accessed by construction traffic and whether there will be intermediate access points used.
- 1.1.8 From the site investigations a number of Temporary Construction Accesses were flagged up for having potential issues. For the most part these related to typical access issues such as poor/ restricted visibility, narrow road widths and steep gradients. These issues were exacerbated by particularly sensitive road networks or high volumes of predicted construction traffic.
- 1.1.9 In additional to the reoccurring issues identified above it became apparent during the site visits that a number of more localised issues may also impact construction traffic routes. These issued varied but were predominately associated with existing infrastructure such as appropriate management associated with railway crossings and as a result require careful consideration.
- 1.1.10 The following junctions were identified from the site visits as requiring further consideration for the impact of construction traffic:
- **400N45** – Sheet no.17
 - **400N44** – Sheet no.19
 - **400N43** – Sheet no.20
 - **400N42** – Sheet no.24
 - **400N41** – Sheet no.1
 - **400N40** – Sheet no.2
 - **400N39** – Sheet no.3
 - **400N38** – Sheet no.4
 - **400N36** – Sheet no.5
 - **400N37** – Sheet no.6



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- **400N35** – Sheet no.7
- **400N34** – Sheet no.8
- **400N33** – Sheet no.9
- **400N32** – Sheet no.10
- **400N31** – Sheet no.11
- **400N30** – Sheet no.12
- **400N29** – Sheet no.13
- **400N28** – Sheet no.14
- **400N27** – Sheet no.15
- **400N26** – Sheet no.16
- **400N25** – Sheet no.17
- **400N24** – Sheet no.18
- **400N23** – Sheet no.19
- **400N22** – Sheet no.21
- **400N21** – Sheet no.20
- **400N20** – Sheet no.22
- **400N19** – Sheet no.23
- **400N18** – Sheet no.24
- **400N17** – Sheet no.25
- **400N16** – Sheet no.26
- **400N15** – Sheet no.1



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- **400N14** – Sheet no.2
- **400N13** – Sheet no.3
- **400N12** – Sheet no.4
- **400N11** – Sheet no.5
- **400N10** – Sheet no.6
- **400N9** – Sheet no.7
- **400N8** – Sheet no.8
- **400N7** – Sheet no.9
- **400N6** – Sheet no.10
- **4005N + ZVN1** Sheet no.11
- **400N3** – Sheet no.12
- **400N4 + ZVN3** – Sheet no.13
- **400N1** – Sheet no.6
- **400N2** – Sheet no.2
- **ZVN5** – sheet no. 3
- **VN1** – Sheet no.5
- **ZVN2**

Access 400N45 is 3.5m wide field gate on the corner of an unnamed road between Prospect and Hayton. The unnamed road has a carriageway width of 5m and is subject to National Speed Limit. From a 2.4m setback, the visibility is in excess of 150m and is restricted by the crest in the road which may pose issues for vertical alignment. To the right, the visibility is approximately 180m. It is suggested that an ATC speed survey is undertaken to overcome the issues with visibility and to provide a reduced visibility splay in both directions.

Access 400N44 is a 3.5m wide field gate set back 3.5m from the carriageway edge. The access is located between a junction (26m south) and a bend (42m north) on a quiet road that connects



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Hayton village and Aspatria. The carriageway at the access junction is 4.5m wide, with verges of 3.3m, and is subject to the national speed limit. The carriageway width and horizontal visibility are the main issues, particularly owing to the proximity of the bend. It is suggested that an ATC survey be undertaken to determine current vehicle speeds and the appropriate mitigation measures.

Access 400N43 is located approximately 200m to the west of Access 400N44, further along the road to Aspatria. This access is a 3.8m wide field gate, set back 2.5m from the carriageway edge. The carriageway at the access is 4.4m wide with approximately 1m wide verges, and is subject to the national speed limit. The visibility splays are far substandard for the posted speed limit. However, it is likely that actual vehicle speeds are much lower, and, subject to demonstration, the available visibility may be adequate.

Access 400N42 is a 6m wide farm track with a gravel surface which is accessed directly off the B5301 just north of Aspatria. The B5301 at the access is approximately 5.5m wide and is subject to a 60mph speed limit. The visibility at the access is very poor from a 2.4m setback. It would need to be demonstrated that the removal of the hedges would be sufficient to overcome the visibility issue. The track is a public footpath and appropriate mitigation measures will be required such as signs to alert pedestrians and motorists.

Access 400N41 is a 3.7m wide access road to a farm and holiday cottages at Pasture House located on the B3501 Aspatria to West Newton route. The access is located on the southern site of the carriageway set back into existing hedgerow with a grass verge of approximately 1.8m width. The B3501 has a speed limit of 60mph and a carriageway width of 6m in the vicinity of the access. Approximately 200m to the right of the access there is a crest in the carriageway; additionally to the left, visibility at a 2.4m set back is restricted by hidden dips and blind spots owing to the existing hedgerow. It is recommended the existing hedgerow on either side of the access is cut back to allow the necessary visibility splays. Given the posted speed along this stretch, the two existing visibility concerns will need addressing further, and it is recommended to undertake an ATC speed survey at the access location to determine existing vehicle speeds and determine mitigation accordingly.

Access 400N40 is a metal field gate accessed from an unnamed road to Langrigg. In the vicinity of the gate the unnamed road is straight. The road is 4m wide on approach to the access and there is a 2m grass verge either side, providing additional operation space if required. The visibility from the gate to the right is viewed as acceptable with an approximate visibility distance in excess of 200m at a 2.4m set back. To the left, the visibility is restricted due to a crest in the road to approximately 150m from a 2.4m setback. Due to the crest it is suggested that an ATC survey is undertaken to determine the vehicle speeds to identify whether a reduced visibility splay is appropriate. The unnamed road forms a priority junction onto the A596 which has acceptable visibility in both directions. From the gated access to the A596 there is a steep crest on the hump back bridge which may provide issues with forward visibility and therefore it may be appropriate to operate temporary traffic signals to overcome the issue.

Access 400N39 is a wooden, gated field access located on an unnamed road close to the A596 at Langrigg. The access has a width of 4.8m and is set back 7.7m from the carriageway edge. The unnamed road has a carriageway width of approximately 5.1m with a 7m wide grass verge which tapers to the gate. The visibility to the right is restricted by a crest in the road which provides an approximate substandard visibility splay of 140m. The visibility to the left is acceptable with a splay in

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excess of 250m. An ATC speed survey may be required to justify the lower visibility splay to the right. Alternatively, temporary traffic signals may be introduced to slow the traffic in the vicinity of the access.

Access 400N38 is a 3.8m wide metal gated access which is set back 4.7m from the carriageway edge. The access is on a bend on the south side of the unnamed road to Langrigg from the A596. The carriageway width is 4.8m in the vicinity of the access with a 3.4m verge on either side. The road adopts a National Speed Limit and the visibility to the left is on a bend however, a splay in excess of 200m can be achieved from a setback distance of 2.4m which may meet the visibility requirement. To the right, the visibility is substandard owing to a crest in the road and is approximately 150m. It is recommended that an ATC speed survey is undertaken to justify a reduced visibility splay to the right and appropriate signs should be displayed to alert motorists of HGV traffic.

Access 400N36 is a 3.8m wide metal field gate on a lightly trafficked road near Bromfield. The route from local highway network may consider to be challenging for construction traffic owing to the small, winding and narrow 3.4m wide carriageway of the unnamed road. From a 2.4m setback distance, the visibility is poor in both directions owing to the bend in the road, the hedgerow and gatepost. There is the risk that construction vehicles may struggle to see oncoming vehicles when pulling out onto the unnamed road and as present, the access is considered unsuitable. In this instance, it may be appropriate to introduce a temporary one-way system.

Access 400N37 is a 3.6m wide metal field gated access on an unnamed road to Bromfield. The unnamed road has a bend and (as per above) a carriageway width of 3.2m which is considered to be unsuitable to allow a car and HGV to pass. The visibility in both directions is substandard for a National Speed Limit road. To the right, the visibility is poor owing to the hedgerow at the access and the bend in the road. To the left, the visibility is approximately 100m owing to the hedgerow, bend and crest in the road. The visibility from the access could be improved in both directions through a cut back of the hedgerow, however the bend and crest will restrict visibility. It may be possible to provide traffic management for a one-way system through this stretch

Access 400N35 is a 3m wide lanning located off the loop road to Blencogo. In the vicinity of the access, the road has a bend in the carriageway and a width of approximately 5.1m with a grass verge of 1.7m. From a 2.4m setback distance, the visibility to the left and right is in excess of 215m visibility which is acceptable. It is recommended that temporary signs are displayed to alert motorists of turning HGV traffic in advance of the access.

Access 400N34 is a field gate which provides access to a 4.5m wide track from the north side of the Blencogo loop road. To the right of the gate, the road has a bend in the carriageway which restricts the horizontal visibility to the right. The visibility to the left is in excess of 200m which is acceptable, however to the right; the visibility is restricted to approximately 40m owing to the bend. It is recommended that a speed survey is undertaken to justify a reduced visibility splay to the right. To the left, the carriageway is straight and flat and the requisite visibility can be achieved. It may be reasonable to introduce a one-way system to overcome this issue, also there is an alternative route for traffic accessing the A596 and therefore would limit the disruption for local residents.

Access 400N33 is a 4m wide gated access onto the loop road to Blencogo. The road widths and

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gradients are viewed as acceptable. The visibility to the right is deemed substandard owing to the bend in the road at approximately 120m. The visibility to the left is in excess of 250m which is acceptable. Similar to Access 400N34 above, a speed survey may justify a reduced visibility splay to the right or the access could be relocated on a straight section of the road. It may be possible to introduce temporary traffic signals to halt traffic on the road to allow construction traffic into the carriageway.

Access 400N32 is a 3.8m wide, gated field access directly from an unnamed road to Blencogo. At the proposed location the carriageway is well maintained, flat and straight. The carriageway width is 5m wide and is subject to National Speed Limit, although the speed limit changes to 30mph approximately 25m away from the access. The visibility from a 2.4m setback is in excess of 250m to the left which is acceptable although to the right, the visibility is restricted by the bend in the road to approximately 130m. Due to the close proximity of the change in speed limit, a speed survey may justify a reduced visibility splay to the right. It is recommended to consider relocating the access away from the bend in the road.

Access 400N31 is a 4.1m gated field access located on Station Hill Road, which has a carriageway width of approximately 4.1m which is considered too narrow for construction traffic and cars to pass simultaneously. The road is straight and flat which provides acceptable visibility in excess of 200m in both directions from a 2.4m setback. To overcome the issue of a narrow carriageway on Station Hill Road, it may be reasonable to provide traffic management for a one-way system and a suitable diversion in place for local residents.

Access 400N30 is a 3.1m wide metal field gate which is set back 3.2m from the carriageway edge of Station Hill Road. Station Hill Road is straight and flat with a carriageway width of 5.5m and a grass verge of 3m on either side. From a 2.4m setback, the visibility to the right is in excess of 230m to the crest; to the left the visibility is substandard at approximately 110m. It may be appropriate to undertake a speed survey in order to provide a reduced visibility splay to the left.

Access 400N29 is a 3.9m wide metal field gate accessed directly from Station Hill Road at Waverbridge. The carriageway is straight and flat with a width of 5.2m. At a setback distance of 2.4m, the visibility in both directions is in excess of 250m which is acceptable. It is suggested the hedgerow is cut back at both sides of the access to provide the required visibility splays.

Access 400N28 is a 4m wide track from the A596. The A596 has a 5.5m wide carriageway with 1.6m wide footway on one side and 1m verge on the other. From a 2.4m setback, the visibility in each direction is less than 30m. To the left, the visibility is restricted by a stone wall. To the right the visibility is restricted by hedgerow and trees. The access is also a footpath for dog walkers and therefore there would need to be a suitable diversion in place for walkers and signs to alert motorists. It is recommended that temporary traffic signals are introduced to overcome the visibility issue to the left.

Access 400N27 is a gated field access which is directly accessed from Oulton Road. The access has a width of 3.6m and is set back 4.5m from the carriageway edge. Oulton Road has a carriageway width of approximately 6.1m with a 4m wide grass verge in the vicinity of the access. The visibility to the right is poor but could be improved to provide the required splays by cutting back the verge and

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relocating the signpost. However, the visibility to the left is restricted owing to the bend in the road and overgrown hedgerow. It may be appropriate to undertake a speed survey to justify a reduced visibility splay to the left. Alternatively it may be appropriate to relocate the access further north away from the bend to provide the necessary visibility splays.

Access 400N26 is a gated field which is directly accessed from an unnamed road north of Wigton. The unnamed road is subject to National Speed Limit and has a carriageway width of approximately 5m with 1m verge on either side. The visibility to the left from a 2.4m setback is poor at 57m owing to the crest in the road. The visibility to the right is also substandard at 150m and it is recommended a speed survey is undertaken to justify a reduced visibility splay. It is suggested possibly relocating the access further south to achieve an improved visibility splay.

Access 400N25 is a fence alongside the carriageway of Standing Stone Road which is not an existing access. The carriageway width is 5m with a 1m grass verge on both sides of the road. If the gate was to be removed, the visibility to the right is restricted to approximately 70m owing to the crest and bends in the road. To the left, the visibility is in excess of 150m which is also substandard for a National Speed Limit road. It may be suitable to relocate the access further south.

Access 400N24 is a 2.6m wide lanning access road alongside a property on an unnamed road through Parton. The road width is 5m but is narrow in places which would restrict a HGV and car passing simultaneously. The visibility to the left is in excess of 250m which is acceptable; however the visibility to the right is less than 100m which is substandard. It is reasonable to assume speeds are likely to be in excess of 60mph and therefore a speed survey should be undertaken to provide a reduced visibility splay to the right. As the carriageway is narrow in places it is suggested the road is subject to a one way system. The visibility at the A596 junction is inadequate looking right owing to the bend and crest in the road.

Access 400N23 is a 3.5m wide field gate which is directly accessed via the Micklethwaite loop road. The road is straight, flat and narrow which has a carriageway width of 3.5m at the access and adopts a National Speed Limit. The visibility in both directions is substandard, however if the hedgerow was cut back the visibility may achieve in excess of 150m in both directions. It is recommended that a speed survey is undertaken to justify a reduced visibility splay in both directions. In addition, a temporary one-way system may be implemented. The visibility at the A596 junction is inadequate looking right owing to the bend and crest in the road.

Access 400N22 is a 4.5m wide gated field access which is set back 3.2m from the carriageway edge of the Micklethwaite loop road. The road is subject to National Speed Limit, is narrow and features bends in the vicinity of the access. The visibility from a 2.4m setback is substandard in both directions. The visibility to the right is poor at approximately 10m owing to the hedgerow, bank and bend in the road. The visibility to the left is restricted to the bend at 110m. The visibility at the A596 junction is inadequate looking right owing to the bend and crest in the road. Due to the winding nature of the road it is suggested an ATC speed survey is undertaken to justify a reduced visibility splay to the left. It may be suitable to put in place a one-way system for northbound traffic to overcome the visibility issue to the right.

Access 400N21 is a 4.5m wide gated field access on the Micklethwaite loop road. The access is

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located on the north side of the carriageway set back 4.4m into the grass verge. Micklethwaite road is subject to National Speed Limit and has a carriageway width of 4.2m in the vicinity of the access which is considered to be narrow. From a 2.4m setback distance, the visibility is poor in both directions owing to bends in the road. The visibility splay to the right is 47m and 40m to the left respectively. Due to the winding nature of the road, it may be considered appropriate to undertake a speed survey at the access location to determine existing vehicle speeds and determine mitigation accordingly. Owing to the narrow sections of carriageway, it may be appropriate to operate a temporary one-way system. The visibility at the A596 junction is inadequate looking right owing to the bend and crest in the road.

Access 400N20 is a 3.3m wide gated field access on the Broomhills loop road. The access is set back 7.8m into the grass verge from the carriageway edge. The road is subject to National Speed Limit and has a carriageway width of 3.5m which is a narrow road. From a 2.4m setback distance, the visibility to the right is in excess of 250m which is considered acceptable, however visibility to the left is poor. If the hedge was cut back it may provide an improved visibility splay. A speed survey may be appropriate to justify a reduced splay to the left. The visibility at the A596 junction is acceptable to the right but substandard to the left.

Access 400N19 is a 4m wide gated field access on the Broomhills loop road. The access is set back 3.4m into the grass verge from the carriageway edge. The road is subject to National Speed Limit and has a carriageway width of 4.8m wide in the vicinity of the access. From a 2.4m setback distance, the visibility to the left is in excess of 250m which is acceptable. However, the visibility to the right is only 30m if the hedgerow is cut back as visibility is restricted by the crest in the road. It may be more appropriate to adopt a one-way system southbound and to relocate the access to a position which provides a more extensive visibility splay. The visibility at the A596 junction is acceptable to the right but substandard to the left.

Access 400N18 is a 4m wide, gated field access on the Broomhills loop road. The access is set back 4m into the grass verge from the carriageway edge. The road is subject to National Speed Limit and has a carriageway width of 2.4m which is extremely narrow. From a setback distance of 2.4m, the visibility in both directions is less than 30m. The visibility may be improved with the cut back of hedgerow on either side of the access however, owing to the narrow carriageway width measures may be put in place to temporarily stop traffic when a HGV is entering the carriageway such as temporary traffic signals. The visibility at the A596 junction is acceptable to the right but substandard to the left.

Access 400N17 is a 2.4m wide, gated field access on the Broomhills loop road. The access is set back 4m into the grass verge from the carriageway edge. The road is subject to National Speed Limit and has a carriageway width of 2.4m which is extremely narrow and will not be sufficient for a HGV and car to pass. The visibility from a 2.4m set back is considered substandard such that 140m to the right and 100m to the left can be achieved. The road width is considered unsuitable for construction traffic. The visibility at the A596 junction is acceptable to the right but substandard to the left.

Access 400N16 is a 3.5m wide, gated field access on the Broomhills loop road. The access is set back 2.1m into the grass verge. The road has a carriageway width of 4.6m and is subject to National Speed Limit. The visibility from a 2.4m setback is very poor owing to the hedgerow and gatepost however from the carriageway edge the visibility is good. The visibility to the right is 145m and in

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excess of 200m to the left. It is recommended a speed survey is undertaken to justify a reduced visibility splay, particularly to the right. The visibility at the A596 junction is acceptable to the right but substandard to the left.

Access 400N15 is a 3.2m wide, gated field access onto Broomhills loop road. The access is set back 4.8m into the grass verge. The road has a carriageway width of approximately 4.1m in the vicinity of the access and is subject to National Speed Limit. The visibility from a 2.4m setback is acceptable in both directions such that the visibility requirement can be achieved. The visibility at the A596 junction on the local access route is acceptable to the right but substandard to the left.

Access 400N14 is a 4m wide, gated field access onto Broomhills loop road. The access is set back 2.2m into the grass verge on the east side of the carriageway. The carriageway is flat and straight in the vicinity of the access and has a carriageway width of 5.3m. The road is subject to National Speed Limit. The visibility from a 2.4m setback is poor in both directions however, if the hedgerow was cut back it would likely provide an acceptable visibility splay in excess of 200m. In addition to the maintenance to the hedge, a speed survey may provide justification for reduced visibility splays. There are two PRoW in the vicinity of the access, one opposite and one adjacent which may need to be diverted. Appropriate signs for both pedestrians and motorists should be provided. The visibility at the A596 junction is acceptable to the right but substandard to the left.

Access 400N13 is a 3.6m wide gated field access onto the B5307 Newtown Road. The access is set back 4m into the grass verge on the south side of the carriageway. The road is straight, flat and well maintained with a carriageway width of 6m in the vicinity of the access. The road is subject to National Speed Limit. The visibility in both directions from a 2.4m setback is acceptable with splays in excess of 215m provided the verge and vegetation are cut back.

Access 400N12 is a 4m wide gated field access onto Newtler Hill Road which is National Speed Limit. The access is set back 1.8m into the grass verge on the east side of the carriageway. Newtler Hill Road has a carriageway width of 4.1m and is straight with a crest in the road. The visibility from a 2.4m setback is poor in both directions however the visibility can be improved by cutting the hedgerow either side of the access. To the right, the visibility can be improved to achieve 100m; to the left the visibility is restricted to 100m owing to the crest in the road. It is recommended that a speed survey is undertaken to justify a reduced visibility splay in both directions.

Access 400N11 is a passing place on Newtler Hill Road which has a carriageway width of 3.8m with a narrow grass verge. The back of the passing place to the fence has a 4.3m setback from the carriageway edge. The visibility from a setback distance of 2.4m is substandard with less than 10m visibility in both directions. From the carriageway edge, the visibility is improved to 150m to the right and 120m to the left, both visibility splays are restricted by the crest in the road. If the hedgerow is cut back there will be improved visibility from a 2.4m setback. As per Access 400N12 above, a speed survey should be undertaken for Newtler Hill Road to justify a reduced visibility splay. It may be appropriate to relocate the access point away from the crest to provide improved visibility or implement temporary traffic signals.

Access 400N10 is a gated field access with a width of 3.3m from a 2m setback from a private drive. The access is from Newtler Hill Road which is subject to National Speed Limit and has a carriageway

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width of 5.5m with a narrow grass verge on the west side of the carriageway. The access is in the vicinity of the crossroads junction with a crest to the right. The visibility to the right from a 2.4m setback is restricted to approximately 200m owing to the crest in the road. To the left, the visibility is to the crossroads arrangement for approximately 25m. It is expected that the vehicle speeds near to the junction will be low and therefore a speed survey is likely to justify a reduced visibility splay. There should be warning signs displayed to alert motorists of construction traffic.

Access 400N9 is a gated field access with a width of 4.3m with an 8m setback from the carriageway edge on Newtler Hill Road. Newtler Hill Road is subject to National Speed Limit and has a carriageway width of 5.4m with a 2m wide grass verge in the vicinity of the site. The access is set back 8m from the carriageway edge. From a 2.4m setback at the access, the visibility to the right is acceptable with visibility in excess of 250m. To the left the visibility is substandard at 60m, if the hedgerow is cut back, the visibility to the left may be acceptable. On the local access route south of the access there is a narrow 4m wide bridge in which two lorries would not be able to pass simultaneously. It may be appropriate to operate a one-way system to overcome the issue at the bridge.

Access 400N8 is a gated field access with a width of 4.1m set back 9.6m from the carriageway edge. The gate is accessed directly from an unnamed road south of Rockcliffe which has a carriageway width of 5.6m and is on the National Cycle Route 7 (NCN7). The road is undulated in the vicinity of the access and provides access to a farm track directly opposite. From a 2.4m set back, the visibility is poor in both directions and the visibility is not much better from the carriageway edge. There is a risk of grounding for HGVs due to the nature of the road. Opposite the access there is a public footpath. It is suggested the access is relocated due to the number of issues raised above.

Access 400N7 is a 3.4m gated field access which is directly accessed onto the west side of the unnamed road from a setback distance of 1.8m. The unnamed road is straight and flat and has a carriageway width of 6m with a narrow grass verge. The road is subject to National Speed Limit and is on the NCN7. The access is located directly opposite Brampton Skip Hire site. From a 1.8m setback, the visibility is substandard in both directions with 5m to the right and 50m to the left respectively. From the carriageway edge, the visibility is 85m to the left and 200m to the right. If the hedgerow either side of the access is cut back, the visibility will be improved.

Access 400N6 is hedgerow on the east side of the unnamed road, south of Rockcliffe. The unnamed road is subject to National Speed Limit and straight with a steep crest to the left of the access. The National Cycle Route 7 and 10 follow the unnamed road which has a carriageway width of 6.4m with a 1m grass verge on either side. The edge of carriageway is 2m in front of the hedgerow and 5m in front of the fence. From the carriageway edge, the visibility to the right is acceptable; however to the left, the visibility is poor owing to the crest in the road limiting the visibility to approximately 45m. It may be appropriate to relocate the access away from the crest or that appropriate measures are put in place to temporarily stop traffic such as temporary traffic signals.

Access 400N5 and ZVN1 is a 3.7m wide gated field access which is set back 3m from the carriageway edge of the unnamed road. In the vicinity of the access, the carriageway width is 5.8m and the road is subject to National Speed Limit. The visibility from a 2.4m setback is poor in both directions and does not improve from the carriageway edge owing to the bend to the right of the access. As the visibility is extremely poor it is recommended that appropriate measures are put in place to temporarily stop traffic when a HGV is entering the carriageway such as temporary traffic

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signals.

Access 400N3 is a 3.5m wide road leading to Heathlands farm and forms a crossroads junction with two unnamed roads at Harker Road Ends. The unnamed road runs in an east to west alignment and is straight and flat. From a 2.4m setback, the visibility to the right is in excess of 215m and is acceptable. To the left, the visibility may be an issue owing to the overgrown vegetation. It may be appropriate to cut back sections of vegetation to provide the necessary visibility splays to the left. The road provides public access and therefore appropriate signs should be provided to alert motorists and pedestrians of turning construction traffic.

Access 400N4 + ZVN3 is a 4.5m wide gated field access onto an unnamed road which has a carriageway width of approximately 6m and is subject to National Speed Limit. The access is setback 10.4m from the carriageway edge and has a tarmacked entrance. From a 2.4m setback, the visibility to the left is in excess of 215m and is acceptable however to the right the visibility is substandard, approximately 100m up to the crest in the road. It is recommended that warning signs should be displayed to alert motorists of HGV traffic.

Access 400N1 is a 6.2m wide entrance to a substation which is directly accessed from the northern side of an unnamed road at Harker Bridge. The unnamed road has a carriageway width of approximately 8m with a 2m wide grass verge on either side of the road. In the vicinity of the access, the road is on a bend with a layby and an emergency access onto the M6. The unnamed road is subject to National Speed Limit. From a 2.4m setback, the visibility to the left is acceptable; in excess of 215m, however to the right the visibility is poor and substandard with approximately 70m visibility. It is recommended that appropriate signs are to be provided to warn motorists of the presence of HGVs.

Access 400N2 is a 4.3m wide gated field access which is set back 8.3m from the carriageway edge on the outside of the bend on an unnamed road. The unnamed road is subject to National Speed Limit and has a carriageway width of approximately 6m. From a 2.4m setback, the visibility to the right is in excess of 215m, however; the visibility to the left is hindered slightly due to the crest in the road although with appropriate warning signs this should not be an issue.

Access ZVN5 is a 4m wide gated field access which is set back 3.5m from the carriageway edge. The access is directly accessed from an unnamed road which has a carriageway width of 4.9m and a 2.3m grass verge on both sides. The road is subject to National Speed Limit and the visibility from a 2.4m setback is substandard in both directions. The visibility to the right provides approximately 65m which is restricted by a bend in the road. To the left, the visibility is restricted to a crest approximately 75m from the access. It is recommended that signs are displayed alerting motorists to the presence of HGV traffic. In addition, it is suggested that a one way system is implemented owing to the narrow carriageway; this may be a short section with a set of temporary traffic signals.

Access VN1 is a 4m wide gated field access which is accessed onto an unnamed road. The road has a carriageway width of 4.6m with a 2.7m wide verge and is subject to National Speed Limit. From a 2.4m setback, the visibility to the right is in excess of 215m up to the bend in the road. To the left the visibility is approximately 130m up to the bend which is substandard. Due to the undulated road in the vicinity of the access there is a risk of grounding. It may be beneficial to relocate the access

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further north to accommodate an acceptable visibility splay to the left. Appropriate signs should be displayed to alert motorists of the presence of HGVs.

Access ZVN2 is a 4m wide field gate located on a small road approx 220m west of a large refuse site. At the access point the carriageway is 2.6m wide, has little useable verge, and is subject to the national speed limit. Visibility here is likely to be adequate, provided lower actual speeds can be demonstrated. An ATC speed survey should be arranged. The carriageway width is likely to be a problem, and appropriate mitigation will be required.

Harker Bridge Crossroads The visibility at the crossroads is a potential issue for drivers to/from access points ZNX1, 400N2, ZVN5, ZVN4, VN1 which will pass through the crossroads when re-joining the main network. The visibility to the right is limited by a hedgerow and by a significant crest, approximately 100m to the east. Additional mitigation measures will be required at the crossroads junction.

Central Strategic Routes - Access Report

Introduction

- 1.1.11 Site inspections were carried out at the identified Temporary Construction Access points for the 400kV works for the Central strategic route.
- 1.1.12 The Central section of the strategic route was visited over several days from August to November 2016 to investigate localised traffic issues, this started in Carlisle to the north and concluded at Seascale to the south. The main aim of the site visits was to consider any issues along the local road network and at the Temporary Construction Access junctions that may arise with construction traffic associated with the proposals.
- 1.1.13 Traffic flow information presented in the PEI Report for the Central Route, as well as the draft access routes for the 400kV pylons shown in Amec Foster Wheeler Transport Support Document were taken as the basis for the site visits. This report summarises the findings of the site inspections.

Methodology

- 1.1.14 For each of the Temporary Construction Access site measurements and observations were undertaken. The observations covered a wide range of highway relevant measurements such as the width and alignment of the major road, the general location and condition, and the speed limit.
- 1.1.15 The route from the strategic route network to the Construction Access was considered during the site visits to determine suitability for construction traffic. In particular this

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focused on the standard of carriageway, speed limits, carriageway width (including verge provision) and any alignment or gradient issues.

- 1.1.16 It should be noted that on the access forms, the minor road measurements and observations refer to the access point itself, i.e. the type of access (field gate, farm track, etc.) as well as the width and setback measurements. Where possible, the visibility from the construction access was measured from a setback of 2.4m, otherwise visibility from the carriageway edge was measured. In addition to the standard access measurements, any STATS provisions or PRowS located in the vicinity of the Access were recorded as they will require consideration when assessing construction impacts.

Results

- 1.1.17 There are a total of 41 Temporary Construction Access junctions in the Central section of the Strategic Route. Each construction access along the overhead section serves varying number of Pylons supporting the 400kV line. From the submitted information it is not clear how National Grid intend the tunnelled section to be accessed by construction traffic and whether there will be intermediate access points used.
- 1.1.18 From the site investigations a number of Temporary Construction Accesses were flagged up for having potential issues. For the most part these related to typical access issues such as poor/ restricted visibility, narrow road widths and steep gradients. These issues were exacerbated by particularly sensitive road networks or high volumes of predicted construction traffic.
- 1.1.19 In additional to the reoccurring issues identified above it became apparent during the site visits that a number of more localised issues may also impact construction traffic routes. These issued varied but were predominately associated with existing infrastructure such as appropriate management associated with railway crossings and as a result require careful consideration.
- 1.1.20 The following junctions were identified from the site visits as requiring further consideration for the impact of construction traffic:
- **400C49** – Sheet no.1
 - **400C48** – Sheet no.2
 - **400C47** – Sheet no.3
 - **400C46** – Sheet no.4
 - **400C45** – Sheet no.5



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- **400C44** – Sheet no.1
- **400C43** – Sheet no.2
- **400C42** – Sheet no.3
- **400C41** – Sheet no.4
- **400C40** – Sheet no.5
- **400C39** – Sheet no.6
- **400C37** – Sheet no.7
- **400C38** – Sheet no.8
- **400C14** – Sheet no.1
- **400C15** – Sheet no.2
- **400C16** – Sheet no.3
- **400C17** – Sheet no.4
- **400C18** – Sheet no.5
- **400C19** – Sheet no.6
- **400C20** – Sheet no.7
- **400C21** – Sheet no.8
- **400C22** – Sheet no.9
- **400C23** – Sheet no.10
- **400C24** – Sheet no.11
- **400C25** – Sheet no.12
- **400C26** – Sheet no.13



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- **400C27** – Sheet no.14
- **400C28** – Sheet no.15
- **400C29** – Sheet no.16
- **400C30** – Sheet no.17
- **400C32** – Sheet no.19
- **Access 1**
- **Access 2**
- **Access 3**
- **Access 4**
- **Access 5**
- **Access 9**
- **Access 10**
- **Access 11**
- **Access 12**

1.1.21 Reference should be made to the listed sheet number in Appendix A for the site form and photographs for each of the construction access junctions that require further consideration. Each has been discussed in further detail below.

Access 400C49 is a 4.4m wide gated field access from a setback distance of 1.6m from the carriageway edge of a bend on Morras Road. Morras Road has a carriageway width of 5.2m in the vicinity of the access and is subject to a National Speed Limit and provides a route to Beckermat. From a 2.4m setback distance, the visibility splay to the right is approximately 140m and to the left and approximately 85m to the right. To improve the visibility the hedgerow on both sides of the access needs to be cut back. Given the posted speed along this stretch the two existing visibility concerns will need addressing further, and it is recommended to undertake an ATC speed survey at the access location to justify a reduced splay and to determine the appropriate mitigation. Signs will need to be displayed to alert motorists of HGV traffic.

Access 400C48 is a 2.6m wide gated farm entrance which is set back 9m from the carriageway of

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an unnamed road. The unnamed road has a carriageway width of 6.8m in the vicinity of the access and is subject to a National Speed Limit. Based on speed limit the visibility splays in both directions are substandard from a 2.4m setback. To the right, the visibility is approximately 140m and to the left, the visibility is poor at 54m. It is expected that HGV traffic will turn left out of the access and if a speed survey allows for a reduced visibility splay, the visibility to the right may be acceptable. At the access there is a telegraph pole and cable running across the width which will need to be relocated.

Access 400C47 is a hedge on the south side of an unnamed road. The road has a narrow carriageway width of 4.1m and has bends in the vicinity of the access. The unnamed road is subject to National Speed Limit. From the carriageway edge, the visibility in both directions is poor and it is suggested large sections of the hedge and bank and removed to provide an improved visibility splay. It is recommended that, based on the narrow carriageway and substandard visibility splays that a one way system may be appropriate. Signs should be displayed to alert motorists of turning HGV traffic.

Access 400C46 is a 4.9m wide gated field access which is set back 1.8m on the north side of an unnamed road. The road has a narrow carriageway width of 4.1m and is subject to National Speed Limit. From the gate the visibility in both directions is substandard at approximately 90m and as such, as per Access 400C47 above, a one-way system may be appropriate. It may be necessary to trim hedgerow to improve the visibility splay in both directions.

Access 400C45 is a 3.5m wide gated field access to a farm track and is set back 6.5m from the carriageway edge on a bend of an unnamed road. The road has a carriageway width of 4.1m in the vicinity of the access and is subject to National Speed Limit. From the gate, the visibility to the right is in excess of 215m which is acceptable for the speed limit of the road, however the visibility to the left is substandard at approximately 75m. Owing to the narrow carriageway and the low visibility in one direction, it is recommended that a speed survey is undertaken to justify a reduced visibility splay to the left. A temporary traffic signals arrangement or a one-way system may be appropriate to overcome the issue of the narrow carriageway width.

Access 400C44 is a 4.1m wide gated field access which is directly accessed from the east side of an unnamed road. The access is set back 5.8m from the carriageway edge. The unnamed road has a narrow carriageway width of 2.6m and is subject to National Speed Limit. The visibility from a 2.4m setback distance is in excess of 215m in both directions. The carriageway width of the unnamed road is narrow and it is recommended that a one-way system is implemented with appropriate signs.

Access 400C43 is a 5m wide gated field access which is directly accessed from the south side of Grove Road. The access is set back 2.2m from the edge of the carriageway. Grove Road has a carriageway width of 4.7m in the vicinity of the access and is subject to National Speed Limit. The road is straight and mostly flat with a crest to the left of the access. From a 2.2m setback the visibility to the left is restricted to approximately 70m due to the crest in the road. The visibility to the right is also substandard at approximately 100m however, if the hedgerow was removed or cut back, the visibility splay is likely to be in excess of 215m. Signs should be displayed to alert motorists of HGV traffic.

Access 400C42 is a 3.7m wide gated field access which is directly accessed from an unnamed road north of Grove Road. The access is set back 3.9m into the grass verge on the east side of the road.

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The unnamed road has a narrow carriageway width of approximately 4.2m and is subject to National Speed Limit. From a 2.4m setback, the visibility to the left is in excess of 215m and is acceptable. The visibility to the right is substandard at approximately 120m. As the carriageway width of the unnamed road is narrow, it is recommended that there is a one-way system in place or temporary traffic signals near to the access. A speed survey may be appropriate to justify a reduced visibility splay to the right.

Access 400C41 is a 6m wide farm track access which is located on the south side of an unnamed road forming a crossroads arrangement near to Loughrigg. The unnamed road has a carriageway width of 5.1m in the vicinity of the access and the road is subject to National Speed Limit. From a 2.4m setback, the visibility is poor in both directions owing to the stone wall either side. From the carriageway edge the visibility to the left is approximately 160m and approximately 40m to the right. It must be noted that the access needs to be reviewed in terms of visibility as the stone wall may need to be set back to provide the necessary splays in both directions.

Access 400C40 is a 3.2m wide gated field access which is set back 2.8m on the north side of an unnamed road. The carriageway width of the unnamed road is 5.4m and the road is subject to National Speed Limit. The visibility from a 2.4m setback is poor in both directions, if the hedgerow is maintained the visibility to the left is approximately 100m which is restricted owing to the crest and bend in the road. To the right, the visibility is approximately 80m. It must be noted that the access needs to be reviewed in terms of visibility. As the access is on the approach to a crossroads junction and vehicle speeds may be lower than the speed limit it may be appropriate to undertake a speed survey to justify a reduced visibility splay.

Access 400C39 is a 4.2m wide farm track access which is directly accessed onto the north side of an unnamed road near Loughrigg Cottages. The unnamed road has a narrow carriageway width of 4.2m in the vicinity of the access. From a 2.4m setback, the visibility is poor in both directions at approximately 10m to the right and 80m to the left respectively. The visibility to the right is restricted due to the high bank on the access side and bend in the road. The visibility to the right is restricted due to the bend and crest. It is suggested the hedgerow on either side of the access is cut back to provide a better visibility splay, particularly to the right. A detailed review of the visibility needs to be undertaken. A one-way system may be implemented due to the narrow carriageway in the vicinity of the access.

Access 400C38 is a 10m wide farm track entrance which is directly accessed onto the A595. The A595 has a carriageway width of 7.8m with a 2.2m wide footway on both sides. In the vicinity of the access, the speed limit is 50mph. The visibility from a 2.4m setback to the left is in excess of 190m which is acceptable; the visibility to the right is approximately 110m which can be improved if the fence is to be repositioned. As the road is extremely busy, appropriate signs will be required to alert motorists of turning HGV traffic.

Access 400C37 is a 4m wide field access onto an unnamed road south of Bromfield. The unnamed road has a carriageway width of 5.5m and has National Speed Limit. From a 2.4m setback, the visibility to the right is poor at approximately 20m restricted by hedgerow and fence. The visibility to the left is approximately 100m restricted by the bend in the road. If the hedgerow and fence to the left of the access was removed, the visibility is likely to be improved. Appropriate signs should be displayed to alert motorists of HGV traffic.

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Access 400C14 is a hedgerow on the north side of Stainburn Road. The road has a carriageway width of 7.7m with a 1.4m wide grass verge on both sides and is subject to National Speed Limit. From a 2.4m setback, the visibility to the right is good with visibility of approximately 100m up to the crest in the road. To the left the visibility is good at 150m however, both splays are substandard. It is recommended that a speed survey is undertaken to potentially justify a reduced visibility splay in both directions.

Access 400C15 is a 4m wide gated field access onto a BP garage forecourt on the south side of Stainburn Road. Stainburn Road has a carriageway width of 7.6m in the vicinity of the access and is setback 1.5m from the carriageway edge. From a 2.4m setback, the visibility in both directions is in excess of 150m which is substandard. As per Access 400C14, it is suggested a speed survey is undertaken to provide a reduced visibility splay.

Access 400C16 is a 3.8m wide gated field access which is directly accessed on the south side of Moor Road. Moor Road has a carriageway width of 6.8m in the vicinity of the access and is subject to National Speed Limit. The visibility from a 2.4m setback is poor in both directions at approximately 50m owing to the access being situated on a bend. The appropriate measure is to display signs alerting motorists of turning construction traffic.

Access 400C17 is a 3.5m wide gated field access which is on the south side of Moor Road. In the vicinity of the access, Moor Road has a carriageway width of 4m in the vicinity of the access with a 1.8m wide grass verge which is unsuitable for a construction vehicle. Moor Road is subject to National Speed Limit. The visibility to the right is in excess of 215m which is acceptable, to the left; the visibility is 150m which is substandard. In order to overcome the issues, the carriageway width is narrow at 4m and a one-way system is considered appropriate.

Access 400C18 is a 3.5m wide gated field access which is on the north side of the A595, north of Winscales. The A595 has a carriageway width of 8.3m in the vicinity of the access and is subject to National Speed Limit. From a 2.4m setback, the visibility to the left is in excess of 215m and is acceptable for the speed limit of the road. To the right, the visibility is ok, but can achieve 150m if the hedgerow is cut back. A review of the visibility is required. Signs should be displayed to alert motorists of turning HGV traffic.

Access 400C19 is a 3.2m wide gated field access to a footpath and stile. The access is set back 7.9m from the north side of the A595 carriageway edge. The carriageway width of the A595 in the vicinity of the access is approximately 7.9m with a 1.4m wide grass verge and 2.2m wide footway. From a 2.4m setback, the visibility to the right is good at approximately 200m - 215m which may meet the requirement for a National Speed Limit road. To the left, the visibility is ok at 160m, however is substandard for the speed of the road. The gated access is also a cycleway and footpath which would need appropriate warning signs. Signs should also be displayed for motorists on the A595 to warn of turning construction traffic.

Access 400C20 is a 4.7m wide gated field gate which is set back 6.1m from the north side of Blackwood Road. In the vicinity of the site, the carriageway width of Blackwood Road is 6.1m and the road is subject to National Speed Limit. From a 2.4m setback, the visibility to the left and right is poor at 30m and 40m respectively. From the carriageway edge, the visibility is good in excess of 250m to

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the left and approximately 100m to the right restricted by the bend and crest in the road. Appropriate signs should be displayed to alert motorists of turning HGV traffic.

Access 400C21 is a 5.2m wide gated access which is set back 20.5m from the carriageway edge. The road provides a route into a wind farm and has a tarmacked surface at the junction. From a 2.4m setback distance, the visibility to the left is acceptable in excess of 200m. The visibility to the right is restricted by a crest in the road and is approximately 50m. Signs should be displayed to alert motorists of turning construction traffic.

Access 400C22 is a 5m wide gated field access which is set back 5m from the carriageway edge of an unnamed road to Gilgarran. The road has a carriageway width of 3.5m in the vicinity of the access which is narrow and unsuitable for HGV traffic and cars to pass. The visibility from a 2.4m setback is substandard in both directions which is 100m to the right and 160m to the left. Due to the quiet nature of the road, signs should be sufficient. It is also recommended that a one-way system should be implemented owing to the narrow carriageway.

Access 400C23 is a 4.2m wide gated field access which is set back 4m from the southern carriageway edge of an unnamed road to Gilgarran. The road has a carriageway width of 3.8m which is considered narrow and unsuitable for a car and HGV to pass. The visibility to the right from a 2.4m setback is ok at 120m; however the visibility to the left is poor at 50m. Appropriate signs should be displayed to alert motorists of construction traffic turning. Also, it is recommended that a one-way system is implemented owing to the narrow carriageway.

Access 400C24 is a 3.2m wide gated field access which is setback 6.5m from the carriageway edge of an unnamed road to the south of Gilgarran. The unnamed road has a carriageway width of 6.5m and is subject to National Speed Limit. The visibility from a 2.4m setback distance is poor in both directions owing to the bend at 65m to the right and crest at 45m to the left. Owing to the nature of the road, the visibility at the junction cannot be improved, although appropriate signs displayed to alert motorists of HGV traffic may be sufficient.

Access 400C25 is an 8.3m wide double field gated access which is directly accessed from an unnamed road to the east of Pica. The unnamed road has a carriageway width of 6.3m and is subject to National Speed Limit. The visibility from a 2.4m setback is in excess of 215m to the left and is acceptable for the speed limit of the road. To the right, the visibility is poor, if the hedgerow is cut back then the visibility may be in excess of 75m. It is recommended that signs are displayed to alert motorists of turning HGV traffic which may be sufficient.

Access 400C26 is a 3.1m wide access which is directly accessed from an unnamed road to the east of Pica. In the vicinity of the site, the unnamed road has a carriageway width of 6.4m and is subject to National Speed Limit. The access is set back approximately 8m from the carriageway edge and is below the level of the road. The visibility from a 2.4m setback is very poor in both directions however, if the grass verge was cut either side of the access, the visibility would be acceptable to the right and much improved to the left to approximately 150m-200m. It is recommended that signs are displayed to alert motorists of turning HGV traffic.

Access 400C27 is a 3.5m wide gated field access which is directly accessed from an unnamed road

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north of Tutehill Farm. In the vicinity of the access, the unnamed road has a carriageway width of 4.1m which has steep slopes and bends in the road. The road is subject to National Speed Limit. The visibility from a 2.4m setback is poor in both directions with the visibility being restricted to 50m owing to the bend to the left and crest to the right. As the road has a narrow carriageway it is recommended that there is a one-way system. Also, appropriate signs should be displayed to alert motorists of turning HGV traffic.

Access 400C28 is a 2.7m wide farm track which is set back 5.8m from an unnamed road north of Tutehill Farm. The unnamed road has a carriageway width of 5.2m and is subject to National Speed Limit. The visibility from a 2.4m setback in both directions is substandard at 110m to the right owing to the bend and 85m to the left restricted due to the verge. If the hedgerow either side of the farm access was to be cut back then the visibility will be improved. It is recommended that signs are displayed to alert motorists of turning HGV traffic. Due to the quiet nature of the road, the measures above seem to be sufficient.

Access 400C29 is a 2.9m wide track which leads to a gate and is set back 24m from the carriageway edge of Moresby Parks Road. The unnamed road has a carriageway width of 9.4m with a narrow grass verge. The road is subject to National Speed Limit. The visibility from a 2.4m setback is restricted to approximately 100m in both directions owing to a bend to the left and right. It is recommended that signs are displayed to alert motorists of turning HGV traffic.

Access 400C30 is a 4.2m wide gated field access onto a bridleway which is setback 6.7m from the carriageway edge of an unnamed road south of Moresby Parks. The unnamed road has a carriageway width of approximately 6m and is subject to National Speed Limit. There is little or no visibility from a 2.4m setback; however the visibility can be improved if the hedgerow is cut back on either side of the access. A review of the visibility on site needs to be undertaken. Signs will be necessary to alert motorists and pedestrians of turning HGV traffic.

Access 400C32 is a 3.6m wide gated field access which is directly accessed from an unnamed road to the north of Keekle. The access is set back 3.6m from the carriageway edge and the road is subject to National Speed Limit. The unnamed road has a carriageway width of 4.6m which is relatively narrow for construction traffic. From a 2.4m setback, the visibility to the right is acceptable to the right and substandard at 85m to the left. It is recommended that a one way system is implemented owing to the narrow carriageway and bridge on the local access route.

Access 400C1 is located on the bend of a narrow road, south of Bullgill. The access is at a crossroads arrangement. The carriageway width of the unnamed road is 3.5m with a grass verge on both sides. The visibility in both directions is restricted owing to the hedgerow. If the hedgerow on both sides of the access is cut back, the visibility would be in excess of 215m. It is recommended that the hedgerow is cut back and appropriate signs are provided to alert motorists of turning HGV traffic.

Access 400C2 is a 4m wide farm track located opposite a minor road and access for 400C1, just south of Bullgill. The access fronts onto an unnamed road which has a carriageway width of 3.5m. The visibility from a 2.4m setback is less than 10m in both directions. The visibility from the carriageway edge is in excess of 215m to the right and approximately 100m-150m to the left. It may be appropriate to cut back the hedgerow to provide a suitable visibility splay. Signs should be

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displayed to alert motorists of turning HGV traffic.

Access 400C3 is a 3.7m wide field gate set back approximately 8.5m from the carriageway edge of Row Brow, to the east of Dearham. The carriageway width is approximately 5.2m. From a 2.4m setback, the visibility to the right is in excess of 215m and is acceptable. To the left, the visibility is approximately 70m restricted by a bend in the road. To overcome the visibility issue to the left, advanced warning signs may be sufficient.

Access 400C4 is located opposite the access 400C3 above. This access is a wooden gated access with an approximate width of approximately 4m. The gate accesses onto Row Brow which has a carriageway width of approximately 5.2m. Similarly to access 400C3, the visibility is approximately 30m to the right. To the left, the visibility is in excess of 215m if the verge is maintained. It is recommended that signs should be displayed to alert motorists of HGV traffic turning and to cutback the hedgerow to improve the visibility to the right.

Access 400C5 is a field gate located south of Dearham. The carriageway is approximately 4.7m wide and is subject to National Speed Limit. From a 2.4m setback, the visibility in both directions is limited to approximately 10m-20m owing to the hedgerow on both sides of the access. It is recommended that the hedgerow is cut back to provide 215m visibility to the left and improve the visibility to the right. To the right, there is a crest in the road which may hinder vertical visibility and therefore a review of the visibility splays is required. The carriageway width is too narrow for two lorries to pass and so temporary widening may be required or a one-way system may be appropriate.

Access 400C9 is located north of Broughton Moor. The access is via a field gate off Ewanrigg Brow. Ewanrigg Brow has a carriageway width of approximately 5.6m and is subject to National Speed Limit. From a 2.4m setback, the visibility to the right is approximately 30m restricted by the hedgerow. If the hedge was cut back, the visibility would likely be approximately 100m to the right. To the left, the visibility is approximately 80m. The visibility to the left is restricted by the hedgerow and crest in the road. The crest is approximately 110m from a driver's eye height (1.05m) to an object height of 600mm. It may be necessary to undertake a speed survey to demonstrate the visibility is suitable. This access has a public footpath in the vicinity of the gate and will need to be taken into consideration. Appropriate signs for pedestrians and motorists should be displayed.

Access 400C11 is accessed from a field gate on the east side of an unnamed road south of Filmby. From a 2.4m setback, the visibility is poor due to the hedgerow either side of the access. The unnamed road has a carriageway width of approximately 5m and is subject to National Speed Limit. It is recommended that the hedgerow is cut back to provide good visibility splays in both directions. There is a small crest approximately 80m south of the access and vertical analysis would be required. Appropriate signs should be provided to alert motorists of turning HGV traffic.

Access 400C12 is via a field gate off an unnamed road. The carriageway is 4.6m and subject to the national speed limit. There is a high pressure gas pipeline 72m north of this access and within the draft order limit. Drivers of abnormal loads should be made aware. The visibility is substandard owing to the hedgerow either side of the access. It is recommended that the hedgerow is maintained. A speed survey maybe required to demonstrate a reduced visibility splay in both directions. Appropriate signs should be provided to alert motorists of turning HGV traffic.

Southern Strategic Routes - Access Report

Introduction

- 1.1.22 Site inspections were carried out at the identified Temporary Construction Access points for the 400kV works for the southern strategic route.
- 1.1.23 The southern section of the strategic route was visited over four days in October and November 2016 to investigate localised traffic issues, this started in Sellafield to the north and concluded at Heysham in Lancashire to the south. The main aim of the site visits was to consider any issues along the local road network and at the Temporary Construction Access junctions that may arise with construction traffic associated with the proposals.
- 1.1.24 Traffic flow information presented in the PEI Report for the Southern Route, as well as the draft access routes for the 400kV pylons shown in Amec Foster Wheeler Transport Support Document were taken as the basis for the site visits. This report summarises the findings of the site inspections.

Methodology

- 1.1.25 For each of the Temporary Construction Access site measurements and observations were undertaken. The observations covered a wide range of highway relevant measurements such as the width and alignment of the major road, the general location and condition, and the speed limit.
- 1.1.26 The route from the strategic route network to the Construction Access was considered during the site visits to determine suitability for construction traffic. In particular this focused on the standard of carriageway, speed limits, carriageway width (including verge provision) and any alignment or gradient issues.
- 1.1.27 It should be noted that on the access forms, the minor road measurements and observations refer to the access point itself, i.e. the type of access (field gate, farm track, etc.) as well as the width and set back measurements. Where possible, the visibility from the construction access was measured from a setback of 2.4m, otherwise visibility from the carriageway edge was measured. In addition to the standard access measurements, any STATS provisions or PRowS located in the vicinity of the Access were recorded as they will require consideration when assessing construction impacts.

Results

- 1.1.28 There are a total of 48 Temporary Construction Access junctions in the southern section of the Strategic Route, including the junctions associated with the cut and cover tunnel through Lake District National Park. Each construction access along the overhead section serves varying number of Pylons supporting the 400kV line. From the submitted information



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it is not clear how National Grid intend the tunnelled section to be accessed by construction traffic and whether there will be intermediate access points used.

- 1.1.29 From the site investigations a number of Temporary Construction Accesses were flagged up for having potential issues. For the most part these related to typical access issues such as poor/ restricted visibility, narrow road widths and steep gradients. These issues were exacerbated by particularly sensitive road networks or high volumes of predicted construction traffic.
- 1.1.30 In addition to the reoccurring issues identified above it became apparent during the site visits that a number of more localised issues may also impact construction traffic routes. These issues varied but were predominately associated with existing infrastructure such as appropriate management associated with railway crossings and as a result require careful consideration.
- 1.1.31 For the southern section of the Strategic Route the majority of the issues relating to the construction access junctions were found between Sellafield and Askam in Furness as the road network improves significantly on approach to Barrow in Furness. The following junctions were identified from the site visits as requiring further consideration for the impact of construction traffic:
- **400C56** – Sheet no.2
 - **400S3** – Sheet no.5
 - **400S7** – Sheet no.11
 - **400S11/ 400S12/ 400S13** – Sheet no.13/14/15
 - **400S15** – Sheet no.17
 - **400S18** – Sheet no.20
 - **400S19** – Sheet no.21
 - **400S22** – Sheet no.24
 - **400S25** – Sheet no.27
 - **400S27** – Sheet no.29
 - **400S28** – Sheet no.30
 - **400S29** – Sheet no.31

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Access 400C56 is a wooden field gate located on the B5344 to the east of Seascale. The access is located on the southern site of the carriageway set back into existing hedgerow and adjacent to another field access which has no gate. The carriageway is well maintained between the A595 and Seascale, with a speed limit of 60mph and width of 6.5m in the vicinity of the access. 50m to the west of the field gate there is a steep dip the carriageway, additionally to the east visibility at a 2.4m set back is restricted to approximately 10m by existing hedgerow. Given the posted speed along this stretch the two existing visibility concerns will need addressing further, and it is recommended to undertake an ATC speed survey at the access location to determine existing vehicle speeds and determine mitigation accordingly.

Access 400S3 is a wooden field gate accessed directly from the A595, to the south east of Ravenglass. In the vicinity of the gate the A595 carriageway is well maintained, straight and flat. The road is 5.5m wide on approach to the access and there is a 2m grass verge either side, providing additional operation space if required. The visibility from the gate to the left is viewed as substandard, with an approximate 140m achievable at a 2.4m set back. To the right, the visibility is restricted due to a combination of the carriageway set back and existing hedgerow. In this direction only 6m is achievable at 2.4m set back, therefore it is recommended that the hedgerow be cut back to allow the necessary visibility. Due to the carriageway being straight and flat along the A595 it is felt that with the hedgerow removal the necessary visibility can be achieved.

Access 400S7 is a field gate located on the A5093 immediately to the south of the Kirkstanton north level crossing. This access is at the southern end of the cut and cover tunnel and there is also a large construction area. It is difficult from the information supplied to identify the anticipated number of traffic movements through this access. The farm gate is located in an awkward position located between the manually operated level crossing to the north, approached via a sharp bend, and a sharp bend in the A5093 to south. The 3m wide cable drums are to be delivered by low loader and a vehicle swept path will be needed to demonstrate that this type of vehicle can safely use the access. In addition discussion will need to be held with Network Rail about the safe use of the crossing. The visibility to the south is restricted to 25m and north to 30m by thick hedgerow and the level crossing, as well as existing road alignment. The DOL allow sufficient land for a 190m visibility splay, but the A5093 is a 60mph road and a speed survey would be needed to justify the lower visibility splay. To the north the DOL also includes sufficient land to form the visibility splays however this could only be delivered if the level crossing and signal control equipment was removed which will not be possible and so it is not clear how a satisfactory visibility spay can be delivered.

Halfway along Whicham Valley, adjacent to where the A595 crosses Whicham Beck, is a priority junction with a road that provides access towards Brockwood Hall and Mire House Farm, Dunningwell Hall and a number of residential properties. This road is typically less than 4m wide with hedges on banks that restrict forward visibility. Construction accesses **400S11, 400S12 and 400S13** are all intended to be served from this road in a one-way system from the A595 a priority junction with the A5093 south of The Green.

The initial section from the A595 towards Brockwood Hall is very narrow - 3m wide for an extended section. The road widens to approximately 5.5m for a short section in the vicinity of the Hall, before narrowing again to 3m towards through the Mire House farmyard past Dunningwell Hall to the A5093. Along the narrower sections there are limited passing place provision giving enough room in the verge to allow two cars to pass each other at slow speeds, a HGV and car would not be able to



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complete this manoeuvre.

Given that the PEI report estimates 70 HGVs per day in both the road based and multi modal scenarios on this section it is more than likely that there will be occurrences of HGVs and cars meeting along the narrower sections, whilst there may be some locations where passing places could be installed the section between the A595 and the 400kV line is not within the DCO Land so any temporary improvements would need separate consents. It is not clear how National Grid will manage the competing traffic demands on this road.

Access 400S15 is a metal farm gate on a lightly trafficked farm track near Arnaby. The route from local highway network is viewed as challenging for construction traffic owing to a combination of the approach road, which narrows to a 3m wide single track, coupled with a very steep and tight left hand bend to reach the access point. There is the risk that construction vehicles, especially any low loaders may struggle or become grounded when navigating the junction.

The access route from the Punch Bowl serves 7 pylons sites as well as work on the 132kV line, and the PEI report indicates this route is expected to carry an average of 15 HGVs per day in both the road based and multi-modal scenarios. The turning space requirements of HGV should be assessed and the vertical clearance checked. The road cannot be widened as it is constrained by a stream and houses and appropriate traffic management to allow safe two-way passage of HGVs and existing non-construction traffic need to be shown.

Access 400S18 is a metal field gate accessed directly from the A595 to the north of Foxfield. In the vicinity of the gate the A595 has a number of sharp bends in the carriageway. Although the A595 is well maintained through this section with a carriageway width of 7m and foot/cycleway provisions, the road alignment in the vicinity of the gate restricts visibility. From 2.4m set back only approximately 40m to the left and 20m to the right is achievable. Due to the road alignment significant hedgerow removal would be needed to acquire the necessary visibility, it may therefore be better to investigate traffic management schemes that would reduce vehicle speeds to justify a lower visibility splay.

Access 400S19 is a metal field gate accessed directly from the A595. In the vicinity of the gate the A595 carriageway is well maintained, straight and flat. The road is 6.2m wide on approach to the access with no verge provision. The visibility from the gate 2.4m set back is restricted in both directions due to existing hedgerow, approximately 10m to the left and 15m to the right. Therefore it is recommended that a speed survey is carried out and the hedgerow be cut back to allow the necessary visibility. Due to the carriageway being straight and flat along the A595 it is felt that with the hedgerow removal the necessary visibility can be achieved.

During site investigations a number of the construction routes were identified for having issues due to the sensitivity of the road network based on the estimated traffic flows. For example in Foxfield, to the south of Broughton-in-Furness, a number of temporary construction accesses are to be served from an Unnamed Road reached from the A595. In order to reach the temporary access junction **400S22** construction vehicles must use an access haul road before passing an unmanned railway crossing. This crossing requires drivers to phone ahead to check if there is time to cross the line.



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Access 400S25 is a wooden farm gate accessed directly from the A595. The highway aspects of the access with regards to road widths, gradients and visibility splays are all viewed as acceptable. However, adjacent to the wooden vehicular gate there is a metal pedestrian access for an existing PROW. Due to the close proximity of the pedestrian entrance, consideration is needed to ensure that pedestrians wishing to use the PROW are kept separate from any construction traffic and provided alternative safe route.

Access 400S27 is proposed to be accessed directly from the A595, currently existing hedgerow. At the proposed location the A595 carriageway is well maintained and fairly flat. The road is 6m wide and there is a lightly trafficked farm access opposite. Due to the lack of existing field gate, visibility could only be measure from the edge of carriageway as opposed to a 2.4m set back. The visibility to the right of the proposed gate is around 100m from the carriageway edge; this assisted by the straight and flat road alignment in this direction. However, to the left visibility is restricted by a bend in the carriageway. In this direction only approximately 20m is achievable from the carriageway edge. Therefore it is recommended to consider relocating this access further away from the bend in the carriageway; the exact location could be based on the required visibility splays based on the results of a speed survey along this section of the A595. Due to the carriageway being straight and flat along the A595 it is felt that with the hedgerow removal the necessary visibility can be achieved.

Access 400S28 is a metal farm gate located on a single track farm access, which is accessed from a priority junction with the A595 approximately 300m to the east. The farm road itself will likely be lightly trafficked and as a result the road widths, gradients and visibility splays are all viewed as acceptable in the vicinity of the gate. However, at the priority junction with the A595 visibility is restricted/ substandard, only to 8m to the left due to an adjacent stone wall and 60m to the right due a crest in the carriageway. Given the posted speed limit and high traffic volumes along this stretch of the A595 the visibility concerns will need addressing further. It is recommended to undertake an ATC speed survey at the access location to determine existing vehicle speeds and determine mitigation accordingly.

Access 400S29 is a metal field gate accessed directly from the A595, at a slight set back. In the vicinity of the gate the A595 carriageway is well maintained, however includes a number of bends in the carriageway. The road is 6.8m wide on approach to the access with a 1m verge provision on either side. The existing gate is only slightly set back from the carriageway edge (into hedgerow) and therefore visibility from a 2.4m set back was not achievable during site investigations. As a result visibility was measured from the edge of carriageway. From the edge of carriageway visibility was restricted, particularly to the left (20m) due to a bend in the carriageway. Visibility to the right was marginally better with 35m achievable. Given that from a 2.4m set back visibility will be restricted further, consideration should be given to ensuring adequate splays are provided.

Appendix 11.2 – Report of PRow and Cycle Routes

Northern and Central Routes

A1/A2 Moorside to Whitehaven

- 1.1.1 The C2C (NCR 72) long distance cycle route and two long distance footpaths (Coast to Coast and St Begas Way) have been identified within this area. All three are designated as high sensitivity. Within this area, six clusters of PRow are identified as high sensitivity, two footpaths (FP 424025, FP 414007) are identified as medium sensitivity, and three others (FP 42016, FP 425007, and FP 423005/423006/423014) as low sensitivity.
- 1.1.2 Effects: The C2C will be impacted by the provision of an internal access track crossing the route, stringing work between new pylons and removal of existing overhead line. For the medium sensitivity footpaths access from Beckermest will be affected by a proposed haul road crossing the public road. For the low sensitivity footpaths, one would be used as a temporary construction route and the others would have reduced access and be impacted by works crossing the route.
- 1.1.3 Mitigation: The proposed mitigation for the C2C (NCR 72) and for the medium sensitivity footpaths, comprises Packages 1 to 5, and the National Grid analysis assesses that this will result in a minor level of impact. For the low sensitivity footpaths, Packages 1 to 4 are proposed as mitigation.

B1/B2/B3 Whitehaven to Aspatria

- 1.1.4 Within this area the Workington branch of the C2C (NCR 71) long distance cycle route is identified as high sensitivity and one long distance footpath (the Allerdale Rambler) is identified as medium sensitivity. The PRow in this area make up five networks and are all considered medium sensitivity. A further 24 PRow are identified as low sensitivity.
- 1.1.5 Effects: The C2C and Allerdale Rambler will be affected by an internal haul road, stringing work between new pylons and removal of existing overhead line. A number of the medium sensitivity routes identified will be used as temporary construction routes. The remaining footpaths will generally be affected by the construction works crossing the footpaths and in some cases access to the footpaths will be restricted by construction works.
- 1.1.6 Mitigation: For footpaths that will be used as temporary construction routes, the proposed mitigation comprises Packages 1 to 5. For the remaining footpaths the mitigation comprises a combination of Packages 1 to 4, and 1 to 5.

C1/C2 Aspatria to Harker

- 1.1.7 Within this area two long distance cycleways (NCR 72, NCR 7) are identified as high sensitivity. Two long distance footpaths (the Hadrian's Wall Path, Cumbria Coastal Way) are identified as high sensitivity, as are the footpaths that run along them. Two footpaths (FP261004, FP120030/120012) are identified as medium sensitivity. the remaining 19 PROWs are identified as low sensitivity.
- 1.1.8 Effects: Sections of NCR 72 and NCR 7 would be used as temporary construction routes with most periods of disturbance limited to a few minutes' duration. Impacts on the Hadrian's Wall path are likely to be more significant; crossing traffic, directional drilling under the path and work pits, noise emissions and reduced access. For Hadrian's Cycleway impacts would include crossing traffic and greater HGVs over 1.7km. The Cumbria Coastal Way would experience crossing traffic. The remaining routes would experience a combination of crossing traffic and reduced accessibility
- 1.1.9 Mitigation: Impacts on NCR 72 and NCR 7 will be mitigated by Packages 1 to 5. National Grid have concluded that the impacts on the Hadrian's Wall path would not be mitigated by the measures included in Packages 1 to 6 and propose to develop a Hadrian's Wall Mitigation Plan, the primary objectives of which would be:
1. Careful planning of work to reduce duration of construction activities at crossing point of the Hadrian's Wall Path;
 2. Specific measures to be incorporated during particularly busy periods of use of the Path (such as large scale charity walks) to minimise impact on walkers. These measures may include the use of a banksman for the duration of the event to remove the potential for vehicles to impede movements along the path; and
 3. Signage along the footpath to explain why the works are being undertaken.
- 1.1.10 For the remaining footpaths the mitigation comprises a combination of Packages 1 to 4, and 1 to 5.
- 1.1.11 The same applies to the mitigation proposed for the Hadrian's Wall path; greater detail on the proposal is required before their suitability can be confirmed.

Southern Route

D1/D2 Moorside to Silecroft

- 1.1.12 Within this area, there is one long distance cycleway (NCR 72), identified as high sensitivity. There are two long distance footpaths (CCW, future ECP) identified as high sensitivity and two others (Eastern Hadrianic Way, Ravenber Way) identified as medium sensitivity. There are also 28 footpaths and 10 bridleways, all identified as medium sensitivity. There are a further 24 PROWs in this area identified as low sensitivity.



Appendix 11.2 – Report of PRow and Cycle Routes

- 1.1.13 Effects: NCR 72 would be affected at two locations where construction traffic will cross the route (shared with public road). The proposed England Coast Path (ECP) and the CCW will be affected by crossing construction traffic at three locations. Construction works would impact on the use of a number of medium sensitivity footpaths and access to a number of others. The low sensitivity footpaths will be impacted through temporary crossing points where they are crossed by the proposed haul road.
- 1.1.14 Mitigation: Impacts on NCR 72 would be mitigated through traffic management measures that ensure safe crossing for cyclists and vehicles. The impact on the ECP and CCW will be partially mitigated by Package 1 to 5. Additional measures would be required and a Local Liaison Plan would need to be developed setting out the following:
1. A framework for regular dialogue between National Grid and Natural England during the construction phase;
 2. A framework for coordinating the implementation of mitigation measures set out in the PRow Management Plan based on Package measures 1 to 5; and
 3. A strategy for the development of local publicity materials to be implemented at points on the proposed ECP in the sections where the DOL crosses it. These would explain to users why the works are taking place, the Project timing, longer term effects and other pertinent information.
- 1.1.15 For the medium sensitivity footpaths, the impacts will be mitigated applying Package measures 1 to 5. The impacts on the remaining, low sensitivity, footpaths will be mitigated by the implementation of Package Measures 1 to 4.

E1/E2 Silecroft to Lindal in Furness

- 1.1.16 Within this area, there is one long distance footpath (CCW), identified as high sensitivity. There are 24 footpaths and one bridleway identified as medium sensitivity. A further 18 footpaths are identified as low sensitivity.
- 1.1.17 Effects: The CCW will be crossed at 5 locations, with potential safety and delay issues. For the medium sensitivity routes identified as medium sensitivity, potential impacts include construction crossing and use as a temporary access route. The impacts of the low sensitivity routes are due to crossing by construction traffic.
- 1.1.18 Mitigation: The impacts on the CCW and on the medium sensitivity routes will be mitigated through implementation of Package of Measures 1 to 5. The impacts on the low sensitivity routes will be mitigated through implementation of package measures 1 to 4.



H1/H3 Lindal in Furness to Middleton

- 1.1.19 Within this area there are three long distance cycleways (NCR 70, 700, 6) and one long distance footpath (CCW), all identified as high sensitivity, along with the footpaths that follow the same routes. There are two other long distance footpaths (Cistercian Way, Grassington to West Coast) identified as medium sensitivity. On the Cumbrian side of this section, there are 20 footpaths and 4 bridleways identified as low sensitivity. On the Lancashire side, there are 6 footpaths all considered to be low sensitivity.
- 1.1.20 Effects: NCR 6 (and NCR 70) is crossed at Natland with regular access being taken across the route by construction vehicles. NCR 70 is crossed in two additional locations, east of Dalton. The works would be spread out over several years but would be intermittent. Although the works cross NCR 700 they would be subsurface and the impacts are assessed to be not significant. Crossings of the CCW will also be subsurface and the impacts are considered to be not significant. The Cistercian Way is crossed at three locations, one of which will be entirely subsurface. The remaining two sections will be impacted by crossing traffic and use of temporary construction accesses. The low sensitivity routes will be impacted by crossing traffic.
- 1.1.21 Mitigation: The impact on NCR 6 will be mitigated by the implementation of Package Measures 1 to 4. The impacts on NCR 70 will also be mitigated by Package Measures 1 to 4. The impact on the Cistercian Way and other medium sensitivity routes will be mitigated by the implementation of Package Measures 1 to 5. The impact of the low sensitivity routes will be mitigated by the implementation of the Package of Measures 1 to 4.