



Department for
Communities and
Local Government

Planning practice guidance for onshore oil and gas

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What is the purpose of this guidance?

1. Mineral resources are concentrations of minerals which can be removed from the earth's crust, whether by underground or surface working, in an economically viable and environmentally acceptable manner for use by society. They make an essential contribution to the country's prosperity and quality of life.
2. Oil and gas (hydrocarbons) underpin key aspects of modern society, supplying energy to power industry and heat homes, fuel for transport to carry goods and people all over the world, and raw materials to produce everyday items. Hydrocarbons remain an important part of the UK's energy mix whilst the country transitions to low carbon energy supplies.
3. This guidance provides advice on the planning issues associated with the three phases of extraction of hydrocarbons. It will be kept under review and should be read alongside other planning guidance and the National Planning Policy Framework.
4. This guidance is not intended to replace the need for judgement by minerals planning authorities and those making planning applications. Nor is it intended to be a source of definitive legal advice. Those seeking to make applications for oil and gas development, or taking decisions on such applications, are responsible for obtaining and acting on their own legal advice.

Planning Policy on Hydrocarbons

5. Paragraphs 142 to 149 of the National Planning Policy Framework set out minerals planning policy. It makes clear that minerals planning authorities should identify and include policies for extraction of mineral resource of local and national importance in their area. This includes both conventional hydrocarbons and unconventional hydrocarbons such as shale gas and coalbed methane (see Annex A). It also expects minerals planning authorities to ensure that mineral extraction does not have an unacceptable adverse impact on the natural or historic environment or human health. Unconventional hydrocarbons are emerging as a form of energy supply, and there is a pressing need to establish – through exploratory drilling - whether or not there are sufficient recoverable quantities of unconventional hydrocarbons present to facilitate economically viable full scale production.

Why is there a separate minerals planning process?

6. Planning for the supply of minerals, including hydrocarbons, has a number of special characteristics that are not present in other forms of development:
 - minerals can only be worked (i.e. extracted) where they naturally occur, so location options for the economically viable and environmentally acceptable extraction of minerals may be limited. This has implications for the preparation of local minerals plans;
 - working is a temporary use of land, although it often takes place over a long period of time;
 - working may have adverse and positive environmental effects, but most adverse effects can be mitigated;
 - since extraction of minerals is a continuous process of development, there is a requirement for routine monitoring, and if necessary, enforcement to secure compliance with conditions that are necessary to mitigate impacts of mineral working operations; and
 - following working, surface land should be restored to make it suitable for beneficial after-use; and
7. The minerals planning authority is the County Council in two-tier parts of the country, the Unitary Authority, or the National Park Authority.
8. Onshore extraction of hydrocarbons may only take place if the operator has first obtained a petroleum licence and subsequently obtained both planning permission and other necessary permits and approvals.

The Phases of onshore hydrocarbon extraction

What are the phases of onshore hydrocarbon extraction?

9. There are three phases of onshore hydrocarbon extraction: exploration, testing (appraisal) and production.

When is planning permission required for the extraction of hydrocarbons?

10. Planning permission is required for each phase of hydrocarbon extraction, although some initial seismic work may have deemed planning consent under Part 2 of Schedule 22 to the Town and Country Planning (General Permitted Development) Order 1995 (see <http://www.legislation.gov.uk/ukxi/1995/418/schedule/2/made>)

i) Exploratory phase

What is the exploratory phase of hydrocarbon extraction?

11. The exploratory phase seeks to acquire geological data to establish whether hydrocarbons are present. It may involve seismic surveys, exploratory drilling and, in the case of shale gas, hydraulic fracturing.

What geological data will operators collect before carrying out any exploratory drilling?

12. It is a matter for individual operators to determine how much preliminary data is necessary before undertaking exploratory drilling. However, preliminary data which the operator might obtain to consider the most appropriate locations for exploratory drilling include:

- existing geological and other relevant data to gather information about rock formations under the earth's surface;
- information from earlier drilling for oil, water, coal or other minerals and mining or quarrying activities;
- information on aquifers and groundwater resources; seismic reflection, gravity and magnetic surveys and remote sensing data e.g. satellite photographs, and results of previous seismic surveys.

Why carry out seismic surveys?

13. Seismic surveys are essential to understand the structure under the earth's surface and be able to predict the depths of the key target formations. Operators will often wish to conduct new surveys with the latest technology, even where previous survey data exists. Among other things, this helps to determine the most promising target for drilling.

How long does exploratory drilling last?

14. For conventional hydrocarbons, exploration drilling onshore is a short-term, but intensive, activity. Typically, site construction, drilling and site clearance will take between 12 to 25 weeks.

15. For unconventional hydrocarbons exploratory drilling may take considerably longer, especially if there is going to be hydraulic fracturing and, in the case of coalbed methane, removing water from the coal seam.

ii) Appraisal Phase

What is the appraisal phase of hydrocarbon extraction?

16. The appraisal phase takes place following exploration when the existence of oil or gas has been proved, but the operator needs further information about the extent of the deposit or its production characteristics to establish whether it can be economically exploited.

What does the appraisal phase involve?

17. The appraisal phase can take several forms including additional seismic work, longer-term flow tests, or the drilling of further wells. This may involve additional drilling at another site away from the exploration site or additional wells at the original exploration site. For unconventional hydrocarbons it may involve further hydraulic fracturing followed by flow testing to establish the strength of the resource and its potential productive life. Much will depend on the size and complexity of the hydrocarbon reservoir involved.

iii) Production phase

What is the production phase of hydrocarbon extraction?

18. The production phase normally involves the drilling of a number of wells. This may be wells used at the sites at the exploratory and/or appraisal phases of hydrocarbon development, or from a new site. Associated equipment such as pipelines, processing facilities and temporary storage tanks are also likely to be required.

How will any additional sites for appraisal or production be determined?

19. Any additional sites, following exploration, will be selected by the operator taking account of what they have learnt or discovered through previous phases. In doing so, they should take also account of their ability to access the resource whilst seeking to minimise or avoid any adverse environmental and amenity issues.

What is the production life of an oil or gas field?

20. Production life of an oil or gas field can be up to 20 years, possibly more. When production ceases, the facilities should be dismantled and the sites restored to their former use, or, in some circumstances, an appropriate new use.

Planning for hydrocarbon extraction

How should mineral planning authorities plan for hydrocarbon extraction?

21. Mineral planning authorities are encouraged to make appropriate provision for hydrocarbons in local minerals plans through:

- use of published data on information on the location of conventional and unconventional hydrocarbons, for example: <https://www.gov.uk/oil-and-gas-onshore-exploration-and-production>;
- use of ordnance survey based proposals maps; and
- available data on existing wells. (see <https://www.og.decc.gov.uk/pls/wons/wdep0100.qryWell>)

This approach will allow minerals planning authorities to highlight areas where proposals for hydrocarbon extraction may come forward, as well as managing potentially conflicting objectives for use of land.

In what areas can hydrocarbon extraction take place?

22. The exploratory, appraisal or production phase of hydrocarbon extraction can only take place in areas where the Department of Energy and Climate Change have issued a licence under the Petroleum Act 1998 (Petroleum Licence). Details of licensed areas may be found at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205261/andfield_lics.pdf

What are minerals planning authorities expected to include in their local plans on hydrocarbons?

23. Where minerals planning authorities consider it is necessary to update their local plan, they are expected to include the following:

- Petroleum Licence Areas on their proposals maps;
- Criteria-based policies for each of the exploration, appraisal and production phases of hydrocarbon extraction. These policies should set clear guidance and criteria for the location and assessment of hydrocarbon extraction within the Petroleum Licence Areas.

Can mineral planning authorities include site-specific locations in their local plans?

24. Existing hydrocarbon extraction sites should be identified in local plans where appropriate, and minerals planning authorities may include specific locations should the onshore oil and gas industry wish to promote specific sites.

Should minerals planning authorities be safeguarding areas for the extraction of hydrocarbons?

25. There is normally no need to create mineral safeguarding areas specifically for extraction of hydrocarbons given the depth of the resource, the ability to utilise directional drilling and the small surface area requirements of well pads.

The Planning Application Process

What is the role of planning in obtaining permissions for drilling wells?

26. Planning permission is one of the main regulatory requirements that operators must meet before drilling a well, for both conventional and unconventional hydrocarbons. A flow chart setting out the process for drilling an exploratory well, and how these regulatory regimes interact, is set out at Annex B.

Who are the key regulators for hydrocarbon extraction?

27. The key regulators for hydrocarbon extraction are:

- a) **Department of Energy and Climate Change** – issues Petroleum Licences, gives consent to drill under the Licence once other permissions and approvals are in place, and have responsibility for assessing risk of and monitoring seismic activity, as well as granting consent to flaring or venting;
- b) **Minerals Planning Authorities** – grant permission for the location of any wells and wellpads, and impose conditions to ensure that the impact on the use of the land is acceptable;
- c) **Environment Agency** – protect water resources (including groundwater aquifers), ensure appropriate treatment and disposal of mining waste, emissions to air, and suitable treatment and manage any naturally occurring radioactive materials; and
- d) **Health and Safety Executive** - regulates the safety aspects of all phases of extraction, in particular responsibility for ensuring the appropriate design and construction of a well casing for any borehole.

What other bodies may be involved in the process of consenting hydrocarbon extraction?

28. Other bodies which may be involved in the consenting of the process include:

- a) **the Coal Authority**, whose permission will be required should drilling go through a coal seam;
- b) **Natural England**, who may need to issue European Protected Species Licences in certain circumstances;
- c) the **British Geological Survey**, who need to be notified by licensees of their intention to undertake drilling and, upon completion of drilling, must also receive drilling records and cores; and
- d) **Hazardous Substances Authorities**, who may need to provide hazardous substances consents.

There may also be additional consents and orders, such as stopping up rights of way or temporary road orders, which must be obtained.

What is the relationship between planning and other regulatory regimes?

29. The Planning and other regulatory regimes are separate but complementary. The planning system controls the development and use of land in the public interest and, as stated in paragraphs 120 and 122 of the National Planning Policy Framework, this includes ensuring that new development is appropriate for its location taking account of the effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution. In doing so the focus of the planning system should be on whether the development itself is an acceptable use of the land, and the impacts of those uses, rather than any control processes, health and safety issues or emissions themselves where these are subject to approval under other regimes. Minerals planning authorities should assume that these non-planning regimes will operate effectively.

What are the principal environmental issues of hydrocarbon extraction that should be addressed by minerals planning authorities?

30. The principal issues that mineral planning authorities should address, bearing in mind that not all issues will be relevant at every site, to the same degree, include:

- noise associated with the operation
- dust
- air quality
- lighting
- visual intrusion into the local setting and the wider landscape caused by any the placement of any building or structure within the application site area
- landscape character
- archaeological and heritage features
- traffic
- risk of contamination to land
- soil resources
- the impact on best and most versatile agricultural land
- flood risk
- land stability/subsidence
- internationally, nationally or locally designated wildlife sites, protected habitats and species, and ecological networks
- nationally protected geological and geomorphological sites and features
- site restoration and aftercare

What hydrocarbon issues can minerals planning authorities leave to other regulatory regimes?

31. Some issues may be covered by other regulatory regimes but may be relevant to minerals planning authorities in specific circumstances. For example, the Environment Agency has responsibility for ensuring that risk to groundwater is appropriately identified and mitigated. Where an Environmental Statement is required, minerals planning authorities can and do play a role in preventing pollution of the water environment from hydrocarbon extraction, principally through controlling the methods of site construction and operation, robustness of storage facilities, and in tackling surface water drainage issues.
32. There exist a number of issues which are covered by other regulatory regimes and minerals planning authorities should assume that these regimes will operate effectively. Whilst these issues may be put before minerals planning authorities, they should not need to carry out their own assessment as they can rely on the assessment of other regulatory bodies. However, before granting planning permission they will need to be satisfied that these issues can or will be adequately addressed by taking the advice from the relevant regulatory body:
- Mitigation of seismic risks – the Department of Energy and Climate Change is responsible for controls, usually through the licence consent regime, to mitigate seismic risks. Seismic assessment of the geology of the area to establish the geological conditions, risk of seismic activity and mitigation measures to put in place is required by the Department of Energy and Climate Change for all hydraulic fracturing processes;
 - Well design and construction – the Health and Safety Executive are responsible for enforcement of legislation concerning well design and construction. Before design and construction operators must assess and take account of the geological strata, and fluids within them, as well as any hazards that the strata may contain;
 - Well integrity during operation – under health and safety legislation the integrity of the well is subject to examination by independent qualified experts throughout its operation, from design through construction and until final plugging at the end of operation;
 - Operation of surface equipment on the well pad – whilst planning conditions may be imposed to prevent run-off of any liquid from the pad, and to control any impact on local amenity (such as noise), the actual operation of the site's equipment should not be of concern to minerals planning authorities as these are controlled by the Environment Agency and the Health and Safety Executive;
 - Mining waste – the Environment Agency is responsible for ensuring that extractive wastes do not harm human health and the environment. An environmental permit is required for phases of hydrocarbon extraction and this will require the operator to produce and implement a waste management plan;
 - Chemical content of hydraulic fracturing fluid – this is covered by the environmental permit as operators are obliged to inform the Environment Agency of all chemicals that they may use as part of any hydraulic fracturing process;

- Flaring or venting of any gas produced as part of the exploratory phase will be subject to Department of Energy and Climate Change controls and will be regulated by the Environment Agency. Minerals planning authorities will, however, need to consider how issues of noise and visual impact will be addressed;
- Final off-site disposal of water – Water that comes back to the surface following hydraulic fracturing may contain naturally occurring radioactive materials. Whilst storage on-site and the traffic impact of any movement of water is of clear interest to local authorities, it is the responsibility of the Environment Agency to ensure that the final treatment/disposal at suitable water treatment facilities is acceptable
- Well decommissioning/abandonment – following exploration, the well is likely to be suspended and abandoned for a period of time. Health and Safety Legislation requires its design and construction that, so far as reasonably practicable, there is no unplanned escape of fluids from it. The minerals planning authority is responsible for ensuring the wells are abandoned and the site is restored.

A) Development Management procedures

How can pre-application engagement improve the efficiency and effectiveness of the planning application system?

33. Pre-application engagement between the prospective operator and other interested parties offers significant potential to improve both the efficiency and effectiveness of the planning application system. This can be achieved by:

- providing an understanding of the relevant planning policies and other material considerations associated with the relevant phase of hydrocarbon extraction;
- working collaboratively and openly with interested parties at an early stage to identify, understand and seek to resolve issues associated with the relevant phase of hydrocarbon development;
- providing an opportunity for the prospective mineral operator to demonstrate they are aware of and utilise the latest techniques;
- where relevant, discussing possible mitigation of the local impact of the proposed phase of hydrocarbon extraction including any proposals for subsequent restoration and aftercare; and
- identifying and agreeing the information required to accompany a formal planning application, thus reducing the likelihood of delays at the validation stage. This may include whether an Environmental Impact Assessment is required.

The approach to pre-application engagement needs to be tailored to the phase of hydrocarbon extraction and the issues to be addressed.

Who can be involved at the pre-application stage?

34. Pre-application engagement is a collaborative process between the prospective operator and other parties which may include: the minerals planning authority; statutory and non-statutory consultees; elected members; and local people. Each party involved has an important role to play in ensuring the efficiency and effectiveness of pre-application engagement.

What information does a prospective applicant need to provide to the minerals planning authority at pre-application stage?

35. It is important to see the pre-application stage, between the minerals planning authority and the prospective operator, as a two-way process. It is recognised that the level of information necessary for effective pre-application engagement will vary depending on the phase of hydrocarbon extraction. In all cases, the level of information requested by the minerals planning authority needs to be proportionate to the phase of hydrocarbon extraction and the relevant stage of the operator in considering a site for extraction. At the stage of detailed discussion, a prospective operator would not necessarily be expected to provide all of the information that would accompany a formal planning application, but it needs to be sufficient information to allow the minerals planning authority to take an informed view.

What role do statutory and non-statutory consultees have at the pre-application stage?

36. Statutory consultees for planning applications play an important role at the pre-application stage of hydrocarbon extraction since they will be involved in providing advice to the minerals planning authority on a formal planning application. In the case of hydrocarbon extraction, relevant non-statutory consultees such as the Health and Safety Executive also play an important role. Pre-application discussions with statutory and relevant non-statutory consultees may also provide prospective operators with an opportunity to share information that may be relevant to obtain other permits and licences. The Environment Agency strongly recommends that prospective operators undertake pre-planning and pre-permitting discussions with them.

What can a prospective minerals operator expect from the minerals planning authority at the pre-application stage?

37. A prospective operator can expect a clear, timely and authoritative view on the merits of a proposal to extract hydrocarbons, as well as clear advice on consultation requirements and the information to be submitted with a formal planning application.

Should planning performance agreements be used for hydrocarbon extraction?

38. Minerals planning authorities and operators should seriously consider planning performance agreements where they consider the size and complexity of any proposed extraction justifies such an agreement being drawn up.

What is required to make a valid application for planning permission?

39. The submission of a valid application for planning permission requires:

- a completed application form;
- compliance with national information requirements;
- the correct application fee; and
- provision of local information requirements

What are the national information requirements?

40. An application for planning permission for hydrocarbon extraction must be accompanied by:

- Plans and drawings;
- Ownership Certificate and Agricultural Land Declaration;
- Design and Access Statements (where required).

What plans and drawings must be submitted with a planning application?

41. Prospective mineral operators will need to submit the plans and drawings required by article 6 of the Town and Country Planning (Development Management Procedure) (England) Order 2010. Any plans or drawings must be drawn to an identified scale and plans must show the direction of north. Any location plan should be based on an up-to-date map and wherever possible scaled to fit onto A4 or A3 size paper. In some cases additional plans and drawings may be requested by the minerals planning authority through their local list of information requirements.

What is an ownership certificate?

42. A certificate which prospective minerals operators must complete that provides certain details about the ownership of the application site and confirms that an appropriate notice has been served on any other owners (and agricultural tenants).

43. An application is not valid, and therefore cannot be decided by the minerals planning authority, unless the relevant certificate has been completed. It is an offence to complete a false or misleading certificate, either knowingly or recklessly, with a maximum fine of up to £5,000.

What is the Government's policy on local information requirements?

44. As stated in paragraph 193 of the National Planning Policy Framework, minerals planning authorities should publish a list of their information requirements for applications, which should be proportionate to the nature and scale of development proposals and reviewed on a frequent basis. Minerals planning authorities should only request supporting information that is relevant, necessary and material to the application in question.

Can minerals planning authorities request information that must be provided with a planning application when it is submitted?

45. A minerals planning authority may request supporting information but only if its requirements are specified on a formally adopted 'local list' which is published on its website.

Can minerals planning authorities request any information from its local list?

46. The local list is prepared by the minerals planning authority to clarify what information is usually required for applications of a particular type, scale or location.

47. In addition to being specified on an up-to-date local list published on the minerals planning authority's website, information requested with a particular planning application must be:

- reasonable having regard, in particular, to the nature and scale of the proposed development; and
- about a matter which it is reasonable to think will be a material consideration in the determination of the application.

What issues should minerals planning authorities include on their local list for exploration of hydrocarbons?

48. Minerals planning authorities should normally expect to include on their local list those issues for which they are, or may be responsible, for assessing, when dealing with planning applications for exploratory hydrocarbon development. This list should be consistent with the spirit of this guidance.

What constitutes an application for an exploratory well?

49. The precise nature of what is included in an application for exploration will depend in part on the applicant. The applicant and DECC will already have agreed a work programme which might include acquisition of seismic data and one or more exploratory wells as part of the exploration licence application.

50. All exploratory phases will involve drilling vertically downwards, perhaps including directional drilling. However, the exploratory phase may include horizontal drilling once the appropriate rock formation is reached, and for unconventional hydrocarbons – hydraulic fracturing.

Can vertical and horizontal drilling, including hydraulic fracturing, be included in one application for exploratory drilling?

51. As far as it is practical to do so, any application for exploratory drilling should cover as much of the exploratory activity as possible, including the likely number of wellheads and extent of drilling, to avoid further planning applications at a later date.

B) Environmental Impact Assessment

When is an Environmental Impact Assessment required for hydrocarbon extraction?

52. The minerals planning authority should carry out a screening exercise to determine whether any proposal for onshore oil and gas extraction requires an Environmental Impact Assessment. A flow chart summarising the screening process is set out at Annex C.
53. Applications for the exploratory and appraisal phases will fall under Schedule 2 to the Town and Country planning (Environmental Impact Assessment) Regulations 2011 if they exceed the applicable threshold or any part of the development is to be carried out in a sensitive area. An Environmental Impact Assessment is only required if the project is likely to have significant environmental effects.
54. Whilst all applications must be assessed on a case-by-case basis, it is unlikely that an Environmental Impact Assessment will be required for exploratory drilling operations which do not involve hydraulic fracturing unless the well pad is located in site which is unusually sensitive to limited disturbance occurring over the short period involved.
55. Applications for the production phase are also likely to fall under paragraph 2 of Schedule 2 to the 2011 Regulations, in which cases they should be screened for likely significant effects, but applications where more than 500 tonnes of oil or 500,000 cubic metres of gas will be extracted per day may fall under Schedule 1, in which case an Environmental Impact Assessment is mandatory.

When should an operator assess cumulative effects?

56. Each application (or request for a screening opinion) should be considered on its own merits. There are occasions where other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development. The minerals planning authority should always have regard to the possible cumulative effects arising from any existing or approved phases of hydrocarbon extraction. There could also be circumstances where two or more applications should be considered together. For example, where the applications in question are not directly in competition with one another, so that both or all of them might be approved, and where the overall combined environmental impact of the proposals might be greater or have different effects than the sum of their separate parts.
57. It is unlikely that cumulative impact will be an issue at the exploration phase of development, regardless of how close individual well pads are to each other.

Should minerals planning authorities take account of the environmental effects of the production phase of hydrocarbon extraction at the exploration phase?

58. Individual applications for the exploratory phase should be considered on their own merits. They should not take account of hypothetical future activities for which consent has not yet been sought, since the further appraisal and production phases will be the subject of separate planning applications and assessments.
59. When determining applications for subsequent phases, the fact that exploratory drilling has taken place on a particular site is likely to be material in determining the suitability of continuing to use that site only insofar as it establishes the presence of hydrocarbon resources.

Can information used in complying with other regulatory regimes be used to inform an environmental statement?

60. Yes, information prepared as part of the high level environmental risk assessment or the preparation of the environmental permit (where required) may be used to inform, or be included as part of the environmental statement.

What is the area that an Environmental Impact Assessment must cover?

61. An Environmental Impact Assessment must cover the geographical area where the impacts occur, both above and below ground. This is likely to be a broader area than the application area.

How can the mineral operator seek advice on what issues should be covered by an Environmental Impact Assessment?

62. The mineral operator can ask the minerals planning authority for its formal opinion (scoping opinion) on the information to be supplied in the Environmental Statement. This allows the planning authority to clarify what it considers the main effects of development are likely to be and, therefore, the aspects on which the applicant's Environmental Statement should focus.

What aspects of the environment need to be considered?

63. The list of aspects of the environment which might be significantly affected by a development is set out in paragraph 3 of Schedule 4 to the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, and includes human beings; flora; fauna; soil; water; air; climate; landscape; material assets, including architectural and archaeological heritage; and the interaction between them. Among other things, consideration should also be given to the likely significant effects of the development on the environment resulting from the use of natural resources, the emission of pollutants, the creation of nuisances and the elimination of waste. In addition to the direct effects of a development, the Environmental Statement should also describe indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects where they are significant. These are comprehensive lists, and a particular project is unlikely give rise to all of these effects,

and should only require full and detailed assessment, of those impacts which are likely to be significant.

What are the legal obligations on minerals planning authorities and operators with regard to European sites designated under the Birds or Habitats Directives and Sites of Special Scientific Interest?

64. Guidance on the law affecting European sites and Sites of Specific Scientific Interest is being prepared by Defra (<http://www.defra.gov.uk/habitats-review/>) and will replace the advice previously set out in Circular 06/05: Biodiversity and Geological Conservation (<https://www.gov.uk/government/publications/biodiversity-and-geological-conservation-circular-06-2005>).

C) Determining the planning application

Do minerals planning authorities need to assess demand for, or consider alternatives to oil and gas resources when determining planning applications?

65. Mineral planning authorities should not consider demand for, or consider alternatives to, oil and gas resources when determining planning applications. Government energy policy makes it clear that energy supplies should come from a variety of sources. This includes onshore oil and gas, as set out in the Government's Annual Energy Statement, which is found at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65633/7086-annual-energy-statement-2012.pdf

What weight should be given to economic need in planning decisions?

66. Mineral extraction is essential to local and national economies. As stated in paragraph 144 of the National Planning Policy Framework, minerals planning authorities should give great weight to the benefits of minerals extraction, including to the economy, when determining planning applications.

How should mineral operators seek to minimise the impact of development upon properties and the local environment in close proximity to mineral workings?

67. Minerals operators should look to agree a programme of work with the minerals planning authority which takes account, as far as is practicable, the potential impacts on the local community and local wildlife, the proximity to occupied properties and legitimate operational considerations over the expected duration of operations.

How should planning authorities seek to mitigate the environmental effects of mineral extraction?

68. Minerals planning authorities should use appropriate planning conditions, having regard to the issues for which they have responsibility, to mitigate against any adverse environmental impact. Some examples of model conditions covering various areas that may be associated with exploration of hydrocarbons are attached at Annex D.

Are separation distances or buffer zones acceptable?

69. Above ground separation distances are acceptable in specific circumstances where it is clear that, based on site specific assessments and other forms of mitigation measures (such as working scheme design and landscaping) a certain distance is required between the boundary of the minerals site and the adjacent development.

70. There is no standard minimum separation distance for proposals for hydrocarbon extraction. Any proposed separation distance should be effective, properly justified but reasonable, taking into account:

- the nature of the mineral extraction activity (including its duration);
- the need to avoid undue sterilisation of mineral resources,
- location and topography;
- the characteristics of the various environmental effects likely to arise; and
- the various mitigation measures that can be applied.

D) Monitoring and Enforcement

Can minerals planning authorities charge for site visits?

71. Minerals planning authorities can charge for a maximum of 8 site visits for monitoring site operations within any 12 month period. Additional site visits may be undertaken but they cannot be charged.

What powers do minerals planning authorities have to enforce mineral permissions?

72. There are a range of powers available to minerals planning authorities to take enforcement action in respect of breaches of planning control. These are set out principally in Part 7 of the Town and Country Planning Act 1990. These powers include the power under section 196A for the minerals planning authority to enter land and buildings in connection with their enforcement functions.

Aftercare and restoration

Who is responsible for restoration and aftercare of hydrocarbon extraction sites?

73. Responsibility for the restoration and aftercare of hydrocarbon extraction sites lies with the operator and, in the case of default, with the landowner.

What are the possible forms of afteruse following hydrocarbon extraction?

74. There are many forms of use of land once minerals extraction is complete and restoration and aftercare of land is complete. These include:

- creation of new habitats and biodiversity;
- use for agriculture;
- forestry; and
- recreational activities.

The most appropriate form of afteruse will depend on a site-by-site basis following discussions between the operator and the minerals planning authority.

When should proposals for land restoration and aftercare be submitted to the mineral planning authority?

75. The operator should submit proposals for restoration and aftercare as part of the planning application.

How will the minerals planning authority ensure that applicants will deliver sound restoration and aftercare proposals?

76. Minerals planning authorities will ensure the proper restoration and aftercare of a site through imposition of suitable planning conditions and, where necessary, through section 106 Agreements. For hydrocarbon extraction sites where expected extraction is likely to last for a short period of time, it is appropriate for the minerals planning authority to impose a detailed set of planning conditions as part of the planning application.

How should minerals planning authorities frame planning conditions for restoration and aftercare?

77. Conditions must be drafted in such a way that, even if the interest of the applicant applying for permission is subsequently disposed of, the requirements for restoration and aftercare can still be fulfilled, whether by a new operator or in the case of default, by the land-owner.

78. The exact planning conditions should be framed with the intended after-use in mind, and will vary according to:

- the characteristics of the individual site;
- the intended after-use;
- the type of mineral to be worked;
- the method of working;
- the timescale of the working;
- the general character of, and planning policies for the area.

When is a financial guarantee justified?

79. A financial guarantee to cover restoration and aftercare costs will normally only be justified in exceptional cases. Such cases include:

- for very long-term new projects where progressive reclamation is not practicable and where incremental payments into a secure fund may be made at appropriate stages in the development of site operations; and
- where there is reliable evidence of the likelihood of either financial or technical failure, but these concerns are not such as to justify refusal of permission.

80. However, where a minerals operator is contributing to an established mutual funding scheme, it should not be necessary for a minerals planning authority to seek a guarantee against possible financial failure, even in such exceptional circumstances.

How and when should mineral planning authorities seek a financial guarantee?

81. Minerals planning authorities should seek to meet any justified and reasonable concerns about financial liabilities relating to the restoration of the site through agreeing a planning obligation or voluntary agreement at the time a planning permission is given.

Annex A: Shale Gas and coalbed methane/coal seam gas

What is shale gas?

82. Shale gas is methane found in rocks deep below the earth's surface which had previously been considered too impermeable ('tight') to allow for economic recovery (See Figure 1).

What is hydraulic fracturing?

83. Hydraulic fracturing is the process of opening and/or extending existing narrow fractures or creating new ones (fractures are typically hairline in width) in gas or oil-bearing rock, which allows gas or oil to flow into wellbores to be captured.

How does the hydraulic fracturing process work?

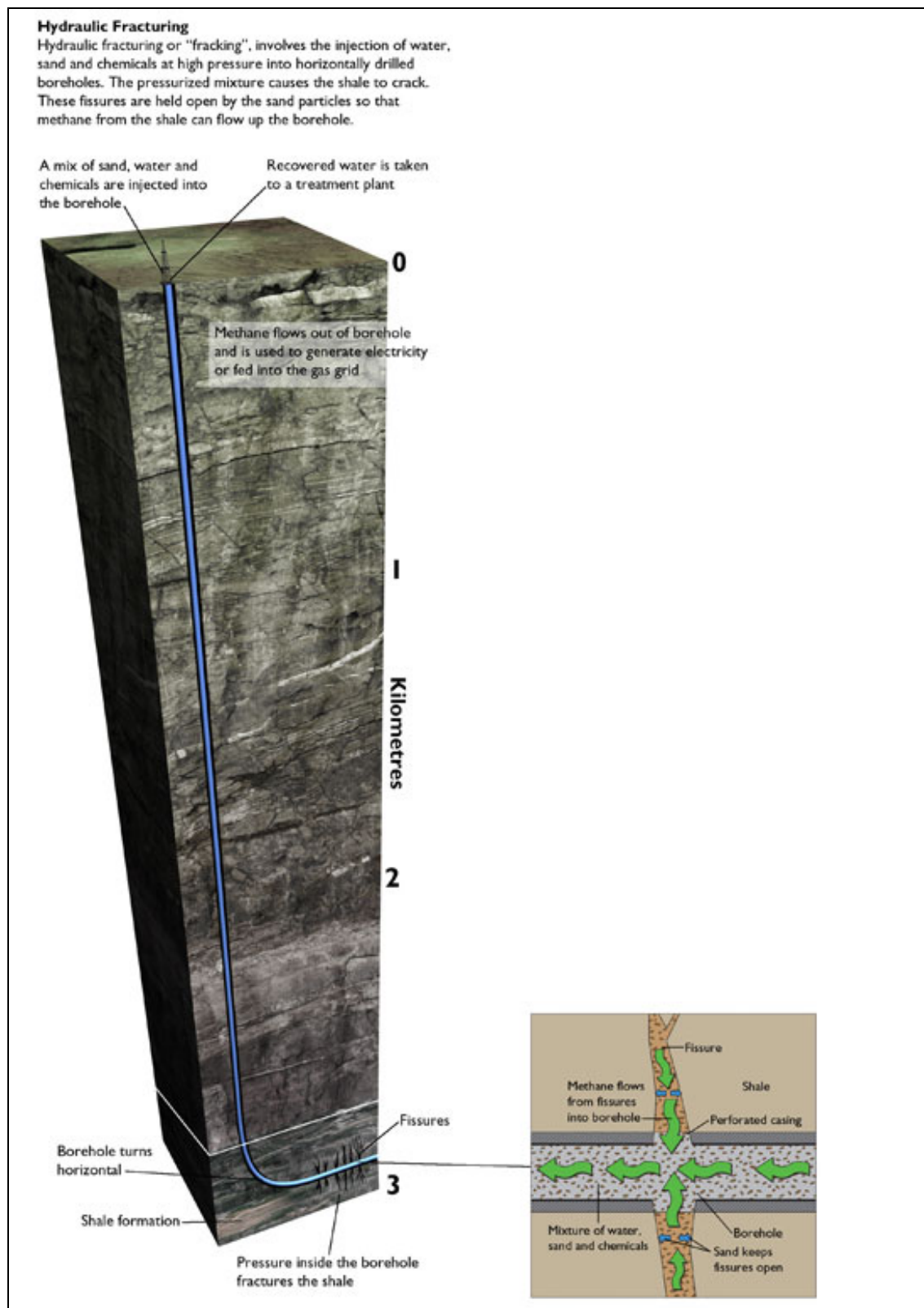
84. During hydraulic fracturing, a mixture of water, sand and possibly some chemical additives is pumped under pressure down a borehole into the rock unit. The sand is used to prop the fractures open to increase gas extraction.

85. The borehole is lined with a steel casing and cement and a "perforating gun" is used to create perforations to allow the hydraulic fracturing fluid to be injected into the rock.

86. Plugs may be used to divide the well into smaller sections (termed stages). Stages are fractured sequentially, beginning with the stage furthest away. After the hydraulic fracturing is done, such plugs can be drilled through and the well is depressurised.

87. In this way, the system is designed to be a closed loop, so that when the high pressure is removed, the hydraulic fracturing fluid returns to the surface for treatment and storage. The flowback water also may contain salts and other dissolved minerals from the shale rock formation. Estimates vary on what percentage of the hydraulic fracturing fluid returns to the surface: from 25-75%. This wide range is explained by differences in the properties of the shale and its response to the hydraulic fracturing.

Figure 1: Shale gas extraction



Source: British Geological Survey (www.bgs.ac.uk)

Coalbed methane

What is coalbed methane?

88. Coalbed methane is methane that is extracted from unworked coal seams. For further information on the location of coalfields in England may be found at: <http://coal.decc.gov.uk/en/coal/cms/publications/data/map/map.aspx>.

How is coalbed methane extracted?

89. Extraction of coalbed methane is usually from one of two sources:

- drilling vertically into a coal seam (making use of pre-existing fracture patterns); or more likely
- directional drilling along a coal seam

In both cases the coals may be fractured to improve flow rates; the well is then pumped to remove water and lower the pressure within the seam to allow release of methane

How does coalbed methane affect the ability to extract the coal?

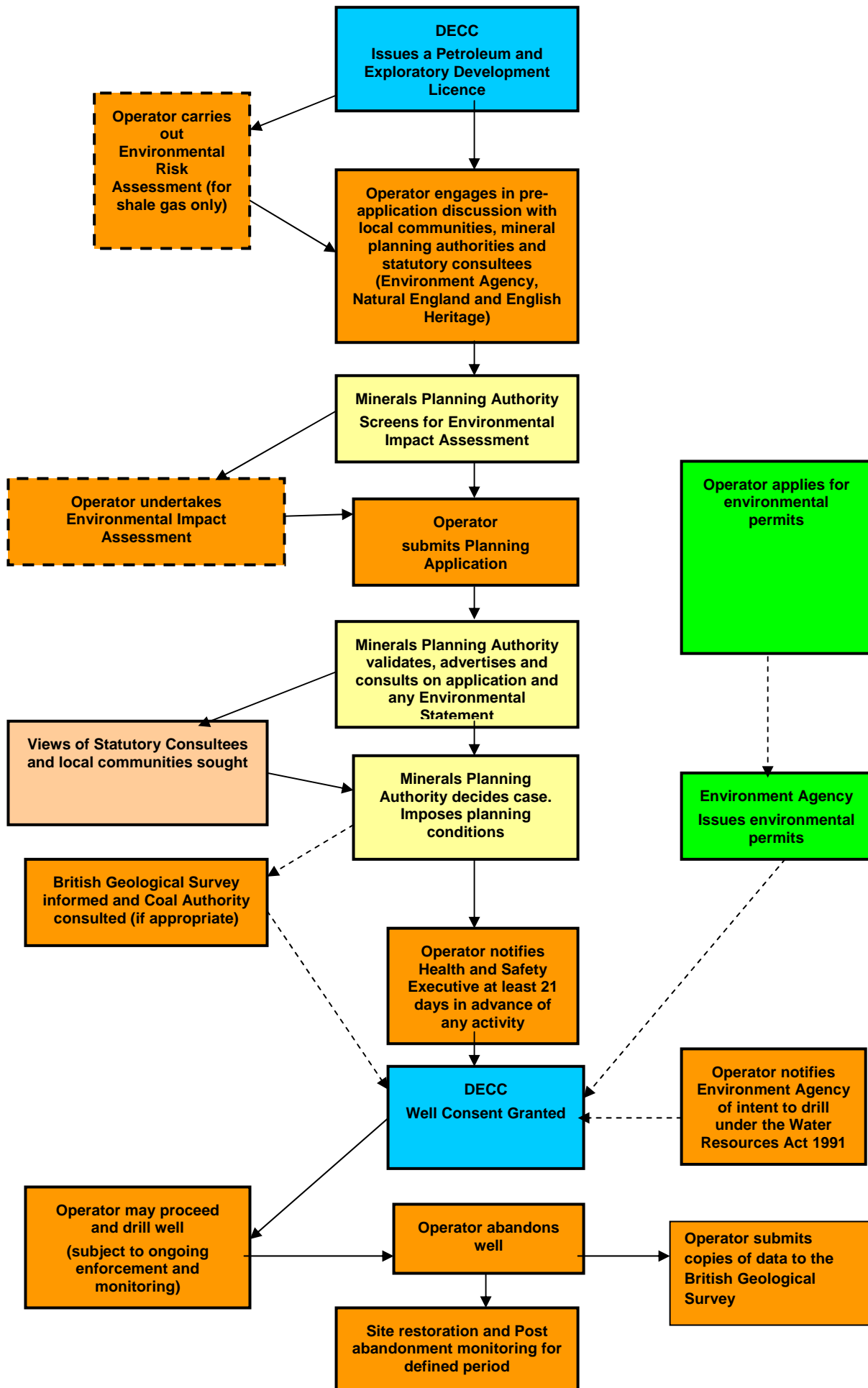
90. Extracting coalbed methane does not detrimentally affect the physical properties of coal, or prevent it from being worked at a later date.

What are the key factors to consider when considering coalbed methane exploration/production?

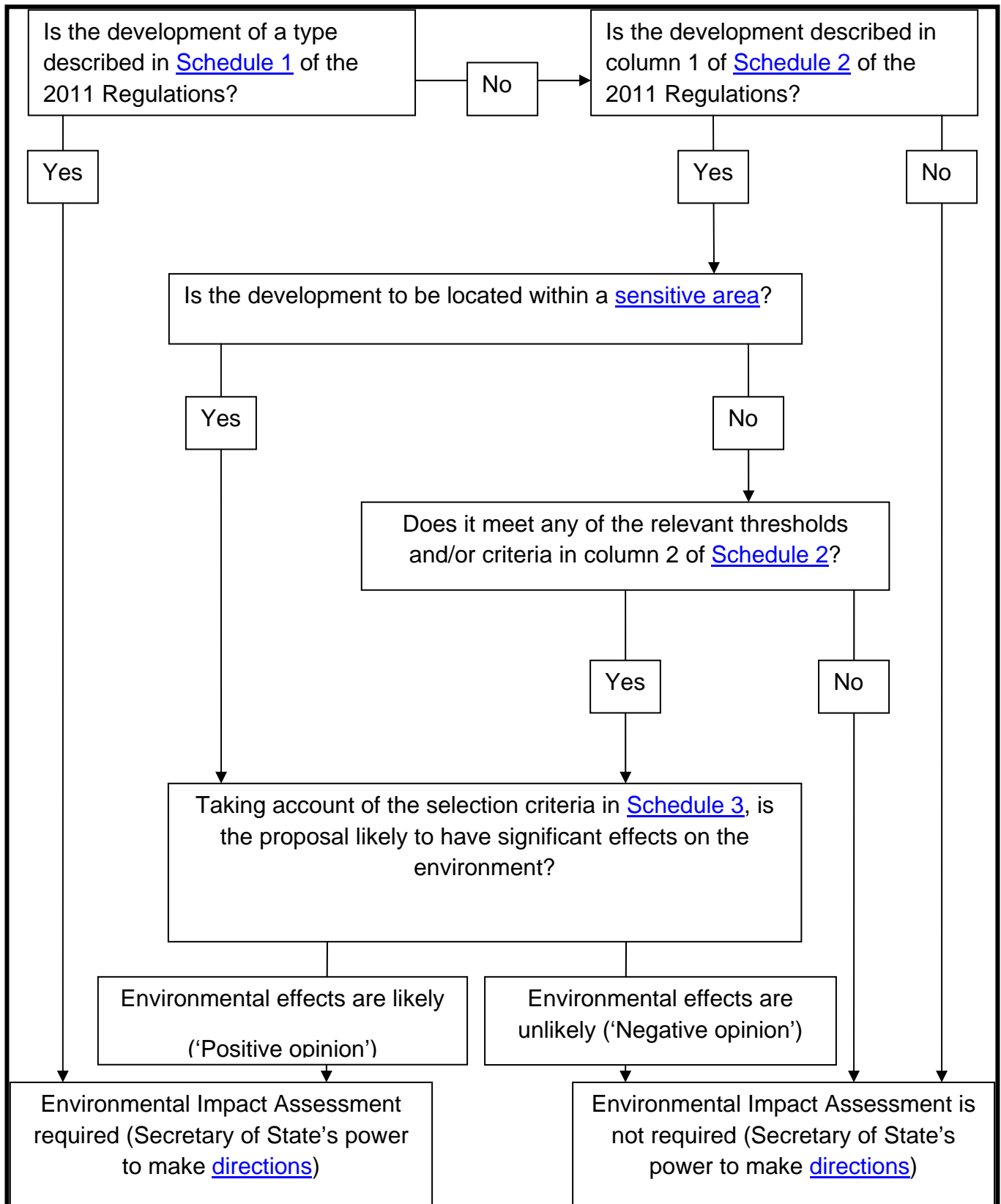
91. There are two main factors to consider:

- unlike underground coal mining, extraction of coalbed methane does not cause subsidence of the land surface;
- removing the water is commonly required to initiate gas production. Such de-watering can take an extended period of time.

Annex B: Outline of process for drilling an exploratory well



Annex C: Establishing whether a proposed development requires an Environmental Impact Assessment



Annex D: Model planning conditions

Ground and Surface water

The boreholes must be constructed so as to prevent uncontrolled discharge of artesian groundwater to surface, and to prevent uncontrolled discharge of water or contamination into or between individual aquifers or different geological formations.

Any oils, fuels, lubricants or other liquid materials shall be located on an impervious base and/or within an impervious bunded area or purpose made self-bunding tanks so as to prevent any discharge or spillage into any watercourse, land or underground strata. Spill kits shall also be located in appropriate locations around the Site and utilised in the event of any accidental discharge/spillages.

No ground or surface water contaminated by oil, grease or other pollutants used on or in connection with the site operations shall be discharged into any ditch or watercourse.

Visual intrusion and landscaping

No development shall be commenced until a scheme providing full details of site landscaping works has been submitted to, and approved in writing, by the Local Planning Authority. Such a scheme shall include a planting plan and schedule of plants noting species, plant sizes and proposed numbers/densities. Thereafter the approved landscaping scheme shall be implemented in full.

Any trees or shrubs planted or retained in accordance with this condition which are removed, uprooted, destroyed, die or become severely damaged or diseased within 5 years of planting shall be replaced within the next planting season.

Noise control and monitoring

Prior to the commencement of the drilling operations hereby permitted, a detailed noise monitoring scheme shall be submitted to, and approved in writing by the Mineral Planning Authority. The scheme shall include the locations and times for noise monitoring to be carried out commencing from the start of drilling operations.

Noise monitoring shall thereafter be carried out in accordance with the approved Noise Monitoring scheme and the results of the each noise monitoring exercise shall be submitted to the Minerals Planning Authority within 7 days of the monitoring being carried out. Noise monitoring shall commence within 12 hours of drilling commencing.

In the event that noise monitoring indicates that noise levels have exceeded the maximum permitted noise level, drilling operations shall cease within [x] hours and until such time that further noise mitigation measures which shall be firstly approved in writing by the Minerals Planning Authority have been installed and employed within the site.

All plant and machinery shall be adequately maintained and silenced in accordance with the manufacturer's recommendations at all times.

Dust and air quality

Prior to the commencement of the drilling operations hereby permitted, a detailed dust management plan shall be submitted to, and approved in writing by the Minerals Planning Authority.

No activity hereby permitted shall cause dust to be emitted so as to adversely affect adjacent residential properties and/ or other sensitive uses and/ or local environment. Should such an emission occur, the activity shall be suspended until a revised dust management plan is submitted and approved by the Minerals Planning Authority.

Lighting

Prior to the commencement of development, details of proposed lighting, including siting, height, design and position of floodlights, shall be submitted to and approved in writing to the Local Planning Authority. The lighting shall be implemented in accordance with these details and no other form of floodlighting shall be implemented on the application site without the prior written approval of the Local Planning Authority.

Soils

Prior to the construction of the drilling pad all available topsoil shall be stripped from the site and shall be stored in separate mounds within the site for use in the restoration of the site. The soils shall only be stripped when they are in a dry and friable condition.

All topsoil and subsoil mounds shall be graded and grass seeded within one month of the first planting season and thereafter retained in a grassed, weed free condition throughout the duration of the development pending their use in the restoration of the site.

Protected species and wildlife habitats

Prior to the commencement of development, a method statement for the protection of wildlife, flora and fauna during construction and during operation of the facility shall be submitted to and approved in writing by the Minerals Planning Authority.

No later than one year before the decommissioning of the site, an ecological survey shall take place to establish the presence, or otherwise, of any protected species on the site within the site boundary and immediately outside. The survey and measures for the protection of and minimisation of disturbance during the decommissioning phase shall be submitted to the Minerals Planning Authority for approval in writing. The development shall be implemented strictly in accordance with approved details of protection.

Restoration and after care

Within (time to be specified) months of the certification in writing by the Local Planning Authority of the completion of restoration, as defined in this permission, a scheme and programme for the aftercare of the site shall be submitted to the Local Planning Authority for approval in writing.

The scheme and programme shall contain details of the following:

- a) Maintenance and management of the restored site to promote its agricultural use.
- b) Weed control where necessary.
- c) Measures to relieve compaction or improve drainage.
- d) An annual inspection to be undertaken in conjunction with representatives of the Minerals Planning Authority to assess the aftercare works that are required in the following year.

or

Within 3 months of the date of this permission a detailed restoration and year aftercare scheme shall be submitted for the written approval of the Minerals Planning Authority. The scheme shall include details of the following:

- a) treatment of the borehole;
- b) soil remediation and reinstatement measures along with details of proposed grass seed mixes;
- c) the removal of all building, plant, equipment, machinery, fencing, temporary surfacing materials from the Site and access track not required for the purpose of restoration and aftercare;
- d) a 5 year aftercare programme.

The Site shall be restored in accordance with the approved restoration scheme and the Site thereafter managed in accordance with the approved 5 year aftercare programme. The aftercare period shall commence from the date that the Local Planning Authority confirms that the restoration works have been carried out and fully implemented in accordance with approved details.

Glossary

Aftercare - operations necessary to maintain restored land in a condition necessary for an agreed afteruse to continue.

Afteruse - the use that land, used for minerals working, is put to after restoration.

Conventional hydrocarbons are oil and gas where the reservoir is sandstone or limestone.

Directional drilling – non-vertical wells which begin with slanted but straight holes often used for mineral exploration and to avoid surface obstacles. Wells may also begin vertically but progressively build angle to intercept the hydrocarbon reservoir in a longer section than can be achieved by vertical drilling. Such non-vertical wells can be deployed radially from a single well pad.

Flow-testing – various tests to determine the hydrocarbon flow potential from the well, the reservoir characteristics and the nature of the hydrocarbons and other fluids present, often performed at different levels in a well.

Restoration - the return of land following mineral extraction to an acceptable condition, whether for resumption of the former land use or for a new use.

Sensitive Areas are Sites of Special Scientific Interest and European sites; National Parks, the Broads and Areas of Outstanding Natural Beauty; and World Heritage Sites and scheduled monuments.

Unconventional hydrocarbons refers to oil and gas which comes from sources such as shale or coal seams which act as the reservoirs.

Well pad - A pad is a location for siting the wellheads for a number of horizontal or vertically drilled wells.