creating a better place

Environment Agency

The Company Director and/or Secretary
WRG Waste Services Limited
Ground Floor West
900 Pavilion Drive
Northampton Business Park
Northampton
NN4 7RG

Our ref: LT 2415
Your ref:

Date: 4th June 2010

RECEIVED
07 JUN 2010
124

Dear Sir or Madam

Issue of variation notice

Permit reference: EAEPRBM6093ISV004
Applicant: WRG Waste Services Limited
Facility: Bennett Bank Landfill, Thwaite Flat, Barrow-in-Furness, Cumbria, LA14 4QH

I enclose a variation notice that gives legal information about the variation and shows the changes to your permit.

If you are not already familiar with our document 'How to comply with your environmental permit' please look at it, as this will help you understand how to meet the conditions of the permit. You can find this on our website at http://publications.environment-agency.gov.uk/pdf/GEHO0410BSFX-e-e.pdf
If you do not have internet access please telephone our Customer Contact Centre.

Please look at the table below and note any of the information or actions that apply to your permit.

If...	**then..**
the variation means you now need to submit quarterly waste returns on waste movements	you can get the forms you need from our website http://www.environment-agency.gov.uk/business/topics/waste/32176.aspx If you do not have web access phone our Customer Contact Centre
you need to submit other returns	send these to your area office. Speak to your area officer to check local arrangements.
your variation has added an installation to your permit for the first time	for information on Pollution Inventory (PI) reporting and to download or complete your PI forms online, please visit: http://www.environment-agency.gov.uk/business/topics/pollution/32272.aspx

Permitting Support Centre, Quadrant 2, 99 Parkway Avenue,
Parkway Business Park, Sheffield, S9 4WF
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

INVESTOR IN PEOPLE

Rights of appeal

If you are not happy with any permit condition that has been imposed by the variation you may appeal to the Secretary of State. You must make your appeal by 3rd December 2010.

Further information about making an appeal and the forms you will need are available from the Planning Inspectorate website or from the contact details below.

The Planning Inspectorate, Room 4/04 Kite Wing, Temple Quay House,

2 The Square, Temple Quay, Bristol, BS1 6PN. Phone: 0117 3728726

Email: environment.appeals@pins.gsi.gov.uk

You must send written notice of the appeal and the documents listed below to the Secretary of State and to the respective Planning Inspectorate address above. At the same time you must send us a copy of the notice and documents.

The documents are:

- a statement of the grounds of appeal;
- a copy of any relevant application;
- a copy of any relevant environmental permit;
- a copy of any relevant correspondence between the appellant and the regulator;
- a copy of any decision or notice which is the subject matter of the appeal; and
- a statement indicating whether you wish the appeal to be in the form of a hearing or dealt with by way of written representations.

You may withdraw an appeal by notifying the Secretary of State in writing and sending a copy of that notification to us.

If you have any questions about this permit please phone our Customer Contact Centre on 08708 506 506. They will put you in touch with a local area officer.

Yours sincerely

H Cumber

Hannah Cumber
Permit Support Centre

Environment Agency

Variation notice with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Bennett Bank Landfill

WRG Waste Services Limited
Thwaite Flat
Barrow-in-Furness
Cumbria
LA14 4QH

Variation number

EPR/BM6093IS/V004

Permit number

EPR/BM6093IS

Bennett Bank Landfill
Permit Number EPR/BM6093IS

Introductory note

This introductory note does not form a part of the permit

The following notice, which is issued pursuant to regulation 20 and Part 1 of Schedule 5 of the Environmental Permitting (England and Wales) Regulations S.I.2010 No. 675 (the Regulations), gives notice of the variation of an environmental permit to operate a regulated facility.

Landfill operations have taken place within phase 1 to 5 with the current restoration profile comprising of a small hill with valley features to the north towards Bennett Bank and to the south towards the A590.

This variation approves the extension of the landfill to both the north (phase 6) and south (phase 7) to join the existing hill features. Completion of phase 7 will require the relocation of the site reception/weighbridge arrangements and surface water settlement lagoon. The operator has proposed revised details and has included new landfill gas utilisation and leachate extraction facilities within the new entrance design.

The existing engineered lining system of phases 4 and 5 are to be extended beneath the new phases thus allowing waste to be deposited both above the existing waste and in the new phases. This will result in the further deposit of approximate 460,000 m3 of non-hazardous waste.

Schedule 1 of this notice lists any deleted conditions, Schedule 2 lists any amended conditions, Schedule 3 lists any conditions that have been added.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status Log of the permit		
Detail	**Date**	**Comments**
Application EPR/BM6093IS (reference EPRBM6093IS/A001)	Received 07/05/04	Duly Made 01/06/04
Response to request for information	Request dated 12/08/05	16/09/05
Response to request for information	Request dated 18/10/05	01/11/2005 and 04/11/05
Permit EPR/BM6093IS determined	07/11/05	
Variation application EPR/JP3335MY (reference EPR/BM6093IS/V002)	Received 04/10/06	Duly Made 08/11/06
Variation ERP/JP3335MY determined (reference EPRBM6093IS/A001)	01/01/08	

Status Log of the permit		
Detail	**Date**	**Comments**
Variation application EPR/WP3436XB (reference EPR/BM6093IS/V003)	Received 10/10/07	
Variation EPR/WP3436XB determined (reference EPR/BM6093IS/V003)	30/05/08	
Variation application EPR/BM6093IS/V004 (reference EPR/VP3438GF)	Received 03/12/08	Duly Made 18/12/08
Schedule 5 notice for further information	Request dated 01/07/09	28/07/09
Variation EPR/BM6093IS/V004 determined	03/06/10	

Superseded or Partially Superseded Licences/Authorisations/Consents relating to this installation			
Holder	**Reference Number**	**Date of Issue**	**Fully or Partially Superseded**
Waste Management Licence held by Caird Environmental Ltd	EAWML57025	31/08/1977	Fully Superseded
Waste Management Licence held by Caird Environmental Ltd	EAWML57500	01/05/1998	Fully Superseded
Surface Water Discharge consent held by Caird Environmental Ltd	017490341	26/11/1999	Fully Superseded

Other existing Licences/Authorisations/Registrations relating to this site		
Holder	**Reference Number**	**Date of issue**
Waste Management Licence held by Shanks Waste Services Ltd	EAWML57538	04/04/03
Waste Management Licence held by WRG Waste Services Limited	EAWML57568	27/03/07

End of Introductory Note

Notice of variation

The Environmental Permitting (England and Wales) Regulations 2010

Variation Notice

Permit number
EPR/BM6093IS

The Environment Agency in exercise of its powers under Regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 (SI 2010 No 675) varies the permit as set out below.

WRG Waste Services Limited ("the operator"),

whose registered office is
Ground Floor West
900 Pavilion Drive
Northampton Business Park
Northampton
NN4 7RG

Company registration number 00988844

to operate an installation at
Bennett Bank Landfill
Thwaite Flat
Barrow-in-Furness
Cumbria
LA14 4QH

and that permit is varied to the extent set out in Schedules 1 to 3 of this notice.

The notice shall take effect from 03/06/10.

Name	Date
Mart Jenkins	3rd June 2010

Martin Jenkins, Principal Permitting Team Leader

Authorised on behalf of the Environment Agency

SCHEDULE 1 – CONDITIONS TO BE DELETED

All conditions and schedules of permit EPR/BM6093IS, variation EPR/BM6093IS/V002 and variation EPR/BM6093IS/V003 are deleted.

SCHEDULE 2 – CONDITIONS TO BE AMENDED

None.

SCHEDULE 3 – CONDITIONS TO BE ADDED

The following conditions and schedules are added to the permit.

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.1.4 The operator shall comply with the requirements of an approved competence scheme.

1.2 Finance

1.2.1 The financial provision for meeting the obligations under this Permit shall be as set out in the Deed of Performance dated 17 October 2007 between the Waste Recycling Group Limited and the Agency. The Operator shall accordingly ensure that the permit is and remains throughout its subsistence listed under Schedule 3 of that Deed as being a permit to which the Deed relates.

1.2.2 The operator shall ensure that the charges it makes for the disposal of waste in the landfill cover the cost of operating the landfill, as far as possible the cost of the financial provision required by condition 1.2.1 and the estimated costs for the closure and aftercare of the landfill.

1.3 Energy efficiency

1.3.1 The operator shall:

(a) Review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(b) Implement any appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

(b) If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan specified in schedule 1, table S1.2 or otherwise required under this permit, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.2 The operator shall limit the area of operational tipping phases so that the total 100%ile Maximum Hourly Predicted Environmental Concentration (PEC) of Hydrogen Sulphide beyond the site boundary from all un-capped phases does not exceed 150 $\mu g/m^3$.

2.3.3 The Predicted Environmental Concentrations set out in Table GRA27 of the Revised Landfill Gas Risk Assessment report dated August 2008 shall be referred to in determining which phases may remain concurrently un-capped. PECs from relevant phases shall be summed and the total shall not exceed the 150 $\mu g/m^3$ limit.

2.3.4 Temporary or permanent capping and landfill gas abstraction systems shall be installed on non-operational phases within 3 months of tipping operations moving to another phase. The specification and installation of these capping and landfill gas abstraction systems shall be notified to and approved by the Environment Agency in accordance with the conditions prescribed in Section 2.7 of this Permit.

2.3.5 All potential point sources of fugitive landfill gas emissions shall be sealed so as to minimise such emissions. Point sources may include, but not be limited to, monitoring and abstraction well heads (including leachate management installations), and pipework joints.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.5 Pre-operational conditions

2.5.1 The operations specified in schedule 1 table S1.4 shall not commence the measures specified in that table have been completed.

2.6 Landfill Engineering

2.6.1 No construction of any new cell of the landfill shall commence until the operator has submitted construction proposals and the Environment Agency has confirmed that it is satisfied with the construction proposals.

2.6.2 Where the operator proposes to construct any new cell other than the first cell, but proposes no change from the design of the most recently approved cell which could have any impact on the performance of any element of the design, no construction of the new cell shall commence until operator has submitted a cell layout drawing and the Environment Agency has confirmed that it is satisfied with the cell layout drawing.

2.6.3 The construction of a new cell shall take place only in accordance with the approved construction proposals unless:

(a) any change to the approved construction proposals would have no impact on the performance of any element of the design; or

(b) a change has otherwise been agreed in writing by the Environment Agency.

2.6.4 No disposal of waste shall take place in a new cell until the operator has submitted a CQA Validation Report and the Environment Agency has confirmed that it is satisfied with the CQA Validation Report.

2.6.5 No construction of landfill infrastructure shall commence until the operator has submitted relevant construction proposals or a written request to use previous construction proposals and the Environment Agency has confirmed that it is satisfied with the construction proposals.

2.6.6 The construction of the landfill infrastructure shall take place only in accordance with the approved construction proposals unless:

(a) any change to the approved construction proposals would have no impact on the performance of any element of the design; or

(b) a change has otherwise been agreed in writing by the Environment Agency.

2.6.7 The operator shall submit a CQA Validation Report as soon as practicable following the construction of the relevant landfill infrastructure.

2.6.8 Where pollution controls are immediately necessary to prevent an incident or accident, then conditions 2.6.5 and 2.6.6 do not apply and the relevant landfill infrastructure may be constructed, provided that the construction proposals are submitted to the Environment Agency as soon as practicable.

2.6.9 For the purposes of conditions 2.6.1,2.6.2, 2.6.4 and 2.6.5, the Environment Agency shall be deemed to be satisfied where it has not, within the period of four weeks from the date of receipt of the relevant construction proposals or CQA Validation Report, either:

(a) confirmed whether or not it is satisfied; or

(b) informed the operator that it requires further information.

2.6.10 Where the Environment Agency has required further information under condition 2.6.9(b), the Environment Agency shall be deemed to be satisfied where it has not, within the period of four weeks from the date of receipt of the further information, either:

(a) confirmed whether or not it is satisfied; or

(b) informed the operator that it requires further information.

2.7 Waste acceptance

2.7.1 Wastes shall only be accepted for disposal if:

(a) they are listed in schedule 2, and

(b) they are non- hazardous, and

(c) they are not whole used tyres (other than bicycle tyres and tyres with an outside diameter of more than 1400mm), and

(d) they are not shredded used tyres, and

(e) they are not liquid waste (including waste waters but excluding sludge), and

(f) they are not chemical substances from research and development or teaching activities, for example laboratory residues, which are unidentified and/or which are new and whose effects on man and/or the environment are unknown, and

(g) all the relevant waste acceptance procedures have been completed, and

(h) they fulfil the relevant waste acceptance criteria, and

(i) they have not been diluted or mixed solely to meet the relevant waste acceptance criteria, and

(j) they are wastes which have been treated, except for: inert wastes for which treatment is not technically feasible; or it is waste other than inert waste and treatment would not reduce its quantity or the hazards which it poses to human health or the environment, and

(k) where they are wastes with a code beginning with 07 05 and 16 03, they shall exclude waste medicinal products and pharmaceutically active waste materials arising from their manufacture.

2.7.2 The operator shall visually inspect:

(a) without unloading it, waste that is not in an enclosed container or enclosed vehicle on arrival at the landfill; and

(b) waste at the point of deposit;

and shall satisfy itself that it conforms to the basic characterisation documentation submitted by the holder.

2.7.3 Where the operator has taken samples to establish that the waste is in conformity with the documentation submitted by the holder then the samples taken shall be retained for at least one month and results of any analysis for at least two years.

2.7.4 The operator on accepting each delivery of waste shall provide a receipt to the person delivering it.

2.7.5 The total quantity of waste that shall be deposited in the landfill shall be limited by the pre-settlement levels shown on drawing ESID8 revision 2 dated November 2008.

2.7.6 The quantity of waste that is deposited in the landfill in any year shall not exceed the limits in schedule 1 table S1.5.

2.7.7 The operator shall maintain and implement a system which ensures that a record is made of the quantity, characteristics, date of delivery and, where practicable, origin of any waste that is received for disposal or recovery and of the identity of the producer, or in the case of municipal waste and multiple collection vehicles, of the collector of such waste. Any information regarded by the operator as commercially confidential shall be clearly identified in the record.

2.8 Leachate levels

2.8.1 The limits for the level of leachate listed in schedule 3 table S3.1 shall not be exceeded.

2.9 Closure and aftercare

2.9.1 The operator shall maintain a closure and aftercare management plan.

2.10 Landfill gas management

2.10.1 The operator shall take appropriate measures, including, but not limited to, those specified in any approved landfill gas management plan, to:

(a) collect landfill gas; and

(b) control the migration of landfill gas.

2.10.2 The operator shall use the collected landfill gas to produce energy. If the collected landfill gas cannot be used to produce energy, the operator shall flare the gas.

2.11 Pests

2.11.1 The activities shall not give rise to pollution or hazards from pests. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved pests management plan, have been taken to prevent or where that is not practicable, to minimise the presence of pests on the site.

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.2 and S3.3.

3.1.2 The limits given in that schedule shall not be exceeded, save that compliance with an emission limit shall include incorporation of the uncertainty allowance stated in Environment Agency guidance LFTGN 05 and LFTGN 08.

3.1.3 There shall be no emission from the activities into groundwater of any hazardous substances contrary to the EP Regulations.

3.1.4 There shall be no emission from the activities into groundwater of any non-hazardous pollutants so as to cause pollution.

3.1.5 The trigger levels for emissions into groundwater for the parameter(s) and monitoring point(s) set out in schedule 3 table S3.4 shall not be exceeded.

3.1.6 The operator shall submit to the Environment Agency a review of the Hydrogeological Risk Assessment:

(a) between nine and six months prior to the sixth anniversary of the granting of the permit, and

(b) between nine and six months prior to every subsequent six years after the sixth anniversary of the granting of the permit.

3.1.7 The limits for landfill gas arising from the installation set out in schedule 3, table S3.5 and S3.6 shall not be exceeded.

3.1.8 The limits for particulate matter arising from the installation set out in schedule 3, table S3.11 shall not be exceeded.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring and any other actions specified in the following tables in schedule 3 to this permit:

(a) Leachate specified in tables S3.1 and S3.8;

(b) Point source emissions specified in tables S3.2 and S3.3;

(c) Groundwater specified in tables S3.4 and S3.10;

(d) Landfill gas specified in tables S3.5, S3.6 and S3.7;

(e) Surface water specified in table S3.9; and

(f) Particulate matter specified in table S3.11.

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 A topographical survey of the site referenced to ordnance datum shall be carried out:

(a) annually, and

(b) prior to the disposal of waste in any new cell or new development area of the landfill, and

(c) following closure of the landfill or part of the landfill.

The topographical survey shall be used to produce a plan of a scale adequate to show the surveyed features of the site.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) the results of groundwater monitoring;

(ii) sub-surface landfill gas monitoring;

(iii) leachate levels, quality and quantities;

(iv) landfill gas generation and collection;

(v) waste types and quantities;

(vi) the specification and as built drawings of the basal, sidewall and capping engineering systems.

4.1.2 4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with this permit against the relevant assumptions, parameters and results in the risk assessments submitted in relation to this installation and any agreed amendments thereto;

(b) the energy consumed at the site, reported in the format set out in schedule 4 table S4.3

(c) the annual production/treatment set out in schedule 4 table S4.2;

(d) the topographical surveys required by condition 3.5.3 other than those submitted as part of a CQA validation report;

(e) the volumetric difference (reported in cubic metres) between the most recent topographical survey and the previous annual topographical survey i.e. the additional volume of the landfill void that is occupied by waste;

(f) an assessment of the settlement behavior of the landfill body based on the difference between the most recent topographical survey and previous annual topographical survey for the areas of the landfill which did not receive waste between the surveys;

(g) a calculation of the remaining capacity (reported in cubic metres) derived from the pre-settlement contours and the most recent topographical survey;

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 Within one month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.2.5 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

4.3.1 The Environment Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution;

(b) the breach of a limit specified in the permit;

(c) any significant adverse environmental effects; or

(d) A landfill fire.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 Activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
Section 5.2 Part A(1) (a), The disposal of waste in a landfill.	Landfill for non-hazardous waste (landfill classification under the Landfill Directive 1999) (D5 – Specially engineered landfill).	Receipt, handling, storage and disposal of wastes, consisting of the types and quantities specified in conditions 2.7, as an integral part of landfilling.
Section 1.1, Part A(1)(b)(iii), Burning of waste as a fuel.	Utilisation of landfill gas for energy recovery in an appliance with a rated thermal input of ≥ 3 MW, but <50 MW. (Two engines with exhaust emission height of a minimum of 7m from ground level). (R1 – Use principally as a fuel to generate energy).	Utilisation of the landfill gas will only take place in the landfill gas compound. Landfill gas arising from the landfill. Permission is for the operation of two landfill gas engines.
Directly Associated Activity		
Water discharges to controlled waters.	Storage, handling and discharge of site drainage from installation, surrounding land and restored areas of landfill.	From surface water management system to point of entry to controlled waters.
Leachate management.	Collection, recirculation and storage of landfill leachate pre-disposal.	Permission is for the collection, recirculation and handling of landfill leachate from the Permitted landfill.
Fuel storage.	Storage of fuel for operation of plant and equipment. Storage and handling of utility materials (oil, coolant, waste oil).	From fuel storage tank/bowser to point of discharge/ disposal off site. Receipt of utility materials, storage, transfer to engines and storage of waste materials.
Landfill gas flaring.	Flaring of landfill gas for disposal in an appliance. The Flare stack height shall be a minimum of 9.5m (landfill gas compound) from ground level.	Flaring of landfill gas, in an enclosed flare. Permission is for the operation of one landfill gas flare.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	The response to questions 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 2.8, 2.9, and 2.11 in part B of the Application Form excluding section 2.2.31.	07/05/04
Response to request for further information sent 12/08/05.	The response to questions 1 to 24 inclusive, drawings 1, HRA 1, HRA 2 and revised HRA report excluding the responses: Paragraph 1.3.2.2 in relation to the setting of the EAL at laboratory detection limits; Tables HRA 21, 22 and 23; Paragraph 3.1.2; and Paragraph 3.1.3 in relation to leachate control and trigger values.	19/09/05
Response to request for further information dated 18/10/2005.	The responses dated 01/11/2005 and 04/11/2005.	01/11/05 and 04/11/05

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Variation application JP3335MY	The response to questions within Parts A, C and F of the Variation Application Form including Variation application document 05529660.506 version A.0 dated October 2006 including drawing No. 1 dated 2nd October 2006.	04/10/06
	Drawing 4665/ESID10 revision 2, Drawing 4665/ESID/12 revision 2 dated 21/08/07, Drawing 4665/ESID/13B revision 1 dated 25/09/07. Drawing 4665/ESID/22 revision 2 dated 21/08/07.	14/12/07 14/09/07 28/09/07 14/09/07
Information submitted in accordance with condition 1.4.1.1	Report 05529660.504/A.1 surface water management design and monitoring plan as amended by revision April 2007 and letter dated 11/06/2007 accepted subject to additional reservation in letter dated 22/06/2007 reference. AK/EMSC28/BM6093IS/DO.	26/05/06
Information submitted in accordance with condition 1.4.1.2A	Report reference 05529660.505 Gas Management Plan Version A.1 as amended by revision dated January 2007 and drawing number 4665/ESID/13A revision 1 dated 05/09/2007.	22/03/06
Information submitted in accordance with condition 1.4.1.3A	Report ref 05529660.503 Groundwater Management as amended by revision dated January 2007 and drawing number 4665/ESID/22 revision 2 dated 21/08/07.	06/02/06
Information submitted in accordance with condition 1.4.1.4A	Bennett Bank Leachate Management Plan dated February 2006 as amended by Section 5 progress review dated May 2007.	28/02/06
Information submitted in accordance with condition 1.4.1.5	Report ref 05529660.502/A.0 Particulate Management Plan dated 28 February 2006 accepted subject to monitoring regime set out in letter dated 11/10/06, reference AK/EMSC113/BM6093IS/BR.	07/03/06
Variation Application EPR/BM6093IS/V004	The response to questions 6 in part A of the Application Form and Questions 2, 4, 5 and 7	03/12/08
Response to request for information dated 01/07/2009	Additional information provided in response 404.0197.00559 to schedule 5 notice.	21/07/09

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IP1	a) The Operator shall provide to the Agency for approval a report on the groundwater quality observed in monitoring well reference RH 103. This report shall investigate the source of the elevated concentrations of ammoniacal nitrogen and nickel recorded in samples taken from this borehole since its installation. Additional detailed justification for the Operator's contention that Bennett Bank landfill is not the source of this contamination shall be provided. This justification should include (but not be limited to): i) a report on the construction, condition, and suitability of the borehole to monitor groundwater without undue influence from contamination sources external to the landfill: ii) a comparison with the groundwater quality monitored in adjacent wells RH102 and RH104, their relative hydrogeological setting, and any potential external influences on the groundwater quality in those wells (or lack thereof); b) The Operator shall submit proposals for the minimisation of any identified external influences on the monitored groundwater quality.	03/12/10
IP2	Provide to the Agency for approval a review if the current Odour Management Plan taking into account the operation of Phases 6 and 7 together with the proposed overtipping operations.	03/09/10

Table S1.4 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational Measures**
PO1	Phase 6 containment engineering	The operator shall submit as part of the Construction Quality Assurance Plan for Phase 6 a revised Stability Risk Assessment of the proposed engineered lining system. This risk assessment shall demonstrate acceptable factors of safety or factors of safety against stability and integrity failure of the final design of the Phase as approved by the Environment Agency in accordance with condition 2.7.1.
PO2	Phase 7 containment engineering	The engineered landfill lining system in the western part of the southern extension area (Phase 7) overlying mine workings as shown on drawing 4665/ESID/19 dated 10-01-06 shall incorporate geogrid reinforcement for the prevention of propagation of crown hole effects or differential settlement. The specification of the geogrid, position, extent and deployment methodology shall be supplied to the Agency for approval as part of the construction quality assurance procedures for this phase.
PO3	Phase 7 containment engineering	Prior to the installation of the engineered lining system in the southern extension area (Phase 7) remedial works shall be undertaken to secure and stabilise mineworkings associated with the Oxenclose Trail Pit No. 2. These works shall be undertaken in accordance with the recommendations made in the report 'Bennett Bank Landfill: Southern Extension Report on Ground Investigation' prepared for WRG by Grontmij, 2008. The scope of the works and subsequent reporting on their completion shall be agreed with and verified to the Environment Agency as part of the construction quality assurance procedures for this phase.

Table S1.4 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational Measures**
PO4	Phase 7 landfill gas monitoring	In accordance with the addendum report to the landfill gas risk assessment, document reference 08514290266.501 dated September 2008 (report on perimeter landfill gas monitoring borehole spacing) three gas monitoring boreholes shall be installed at approximately 50m intervals along the southern boundary of the Phase 7 extension area. These boreholes shall be constructed in accordance with the relevant Environment Agency guidance on the monitoring of sub-surface landfill gas. The boreholes shall be installed no later than six months prior to the commencement of waste deposits in Phase 7 in order that pre-operational monitoring data may be obtained. The new boreholes shall be incorporated into the landfill gas monitoring programme. 13 months from the date of installation trigger limits for methane and carbon dioxide shall be proposed based on monthly monitoring of the boreholes for 12 months following their installation. On obtaining the approval of the Environment Agency these trigger limits shall be incorporated into Table S4.5 of the permit.

Table S1.5 Annual waste input limits	
Category	**Limit Tonnes/ Year**
Non-hazardous waste	**300,000**
Inert waste including inert waste imported for restoration	300,000
Total	300,000

Schedule 2 - List of permitted wastes

Table S2.1 Permitted waste types	
Waste code	**Description**
01	**WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING, AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS**
01 01	**wastes from mineral excavation**
01 01 01	wastes from mineral metalliferous excavation
01 01 02	wastes from mineral non-metalliferous excavation
01 03	**wastes from physical and chemical processing of metalliferous minerals**
01 03 06	tailings other than those mentioned in 01 03 04 and 01 03 05
01 03 08	dusty and powdery wastes other than those mentioned in 01 03 07
01 03 09	red mud from alumina production other than the wastes mentioned in 01 03 07
01 04	**wastes from physical and chemical processing of non-metalliferous minerals**
01 04 08	waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	waste sand and clays
01 04 10	dusty and powdery wastes other than those mentioned in 01 04 07
01 04 11	wastes from potash and rock salt processing other than those mentioned in 01 04 07
01 04 12	tailings and other wastes from washing and cleaning of minerals other than those mentioned in 01 04 07 and 01 04 11
01 04 13	wastes from stone cutting and sawing other than those mentioned in 01 04 07
01 05	**drilling muds and other drilling wastes**
01 05 04	freshwater drilling muds and wastes
01 05 07	barite-containing drilling muds and wastes other than those mentioned in 01 05 05 and 01 05 06
01 05 08	chloride-containing drilling muds and wastes other than those mentioned in 01 05 05 and 01 05 06
02	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING**
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 01	sludges from washing and cleaning
02 01 02	animal-tissue waste
02 01 03	plant-tissue waste
02 01 04	waste plastics (except packaging)
02 01 06	animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site
02 01 07	wastes from forestry
02 01 09	agrochemical waste other than those mentioned in 02 01 08
02 01 10	waste metal
02 02	**wastes from the preparation and processing of meat, fish and other foods of animal origin**
02 02 01	sludges from washing and cleaning
02 02 02	animal-tissue waste
02 02 03	materials unsuitable for consumption or processing
02 02 04	sludges from on-site effluent treatment
02 02 99	meat and bone meal wastes from rendering
02 03	**wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**
02 03 01	sludges from washing, cleaning, peeling, centrifuging and separation

Table S2.1 Permitted waste types	
Waste code	**Description**
02 03 02	wastes from preserving agents
02 03 03	wastes from solvent extraction
02 03 04	materials unsuitable for consumption or processing
02 03 05	sludges from on-site effluent treatment
02 04	**wastes from sugar processing**
02 04 01	soil from cleaning and washing beet
02 04 02	off-specification calcium carbonate
02 04 03	sludges from on-site effluent treatment
02 05	**wastes from the dairy products industry**
02 05 01	materials unsuitable for consumption or processing
02 05 02	sludges from on-site effluent treatment
02 06	**wastes from the baking and confectionery industry**
02 06 01	materials unsuitable for consumption or processing
02 06 02	wastes from preserving agents
02 06 03	sludges from on-site effluent treatment
02 07	**wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)**
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials
02 07 02	wastes from spirits distillation
02 07 03	wastes from chemical treatment
02 07 04	materials unsuitable for consumption or processing
02 07 05	sludges from on-site effluent treatment
03	**WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD**
03 01	**wastes from wood processing and the production of panels and furniture**
03 01 01	waste bark and cork
03 01 05	sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04
03 03	**wastes from pulp, paper and cardboard production and processing**
03 03 01	waste bark and wood
03 03 02	green liquor sludge (from recovery of cooking liquor)
03 03 05	de-inking sludges from paper recycling
03 03 07	mechanically separated rejects from pulping of waste paper and cardboard
03 03 08	wastes from sorting of paper and cardboard destined for recycling
03 03 09	lime mud waste
03 03 10	fibre rejects, fibre-, filler- and coating-sludges from mechanical separation
03 03 11	sludges from on-site effluent treatment other than those mentioned in 03 03 10
04	**WASTES FROM THE LEATHER, FUR AND TEXTILE INDUSTRIES**
04 01	**wastes from the leather and fur industry**
04 01 01	fleshings and lime split wastes
04 01 02	liming waste
04 01 06	sludges, in particular from on-site effluent treatment containing chromium
04 01 07	sludges, in particular from on-site effluent treatment free of chromium
04 01 08	waste tanned leather (blue sheetings, shavings, cuttings, buffing dust) containing chromium
04 01 09	wastes from dressing and finishing

Table S2.1 Permitted waste types	
Waste code	**Description**
04 02	**wastes from the textile industry**
04 02 09	wastes from composite materials (impregnated textile, elastomer, plastomer)
04 02 10	organic matter from natural products (for example grease, wax)
04 02 15	wastes from finishing other than those mentioned in 04 02 14
04 02 17	dyestuffs and pigments other than those mentioned in 04 02 16
04 02 20	sludges from on-site effluent treatment other than those mentioned in 04 02 19
04 02 21	wastes from unprocessed textile fibres
04 02 22	wastes from processed textile fibres
05	**WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL**
05 01	**wastes from petroleum refining**
05 01 10	sludges from on-site effluent treatment other than those mentioned in 05 01 09
05 01 13	boiler feedwater sludges
05 01 14	wastes from cooling columns
05 01 16	sulphur-containing wastes from petroleum desulphurisation
05 01 17	bitumen
05 06	**wastes from the pyrolytic treatment of coal**
05 06 04	waste from cooling columns
05 07	**wastes from natural gas purification and transportation**
05 07 02	wastes containing sulphur
06	**WASTES FROM INORGANIC CHEMICAL PROCESSES**
06 03	**wastes from the MFSU of salts and their solutions and metallic oxides**
06 03 14	solid salts and solutions other than those mentioned in 06 03 11 and 06 03 13
06 03 16	metallic oxides other than those mentioned in 06 03 15
06 05	**sludges from on-site effluent treatment**
06 05 03	sludges from on-site effluent treatment other than those mentioned in 06 05 02
06 06	**wastes from the MFSU of sulphur chemicals, sulphur chemical processes and desulphurisation processes**
06 06 03	wastes containing sulphides other than those mentioned in 06 06 02
06 09	**wastes from the MSFU of phosphorous chemicals and phosphorous chemical processes**
06 09 02	phosphorous slag
06 09 04	calcium-based reaction wastes other than those mentioned in 06 09 03
06 11	**wastes from the manufacture of inorganic pigments and opacificiers**
06 11 01	calcium-based reaction wastes from titanium dioxide production
06 13	**wastes from inorganic chemical processes not otherwise specified**
06 13 03	carbon black
07	**WASTES FROM ORGANIC CHEMICAL PROCESSES**
07 01	**wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals**
07 01 12	sludges from on-site effluent treatment other than those mentioned in 07 01 11
07 02	**wastes from the MFSU of plastics, synthetic rubber and man-made fibres**
07 02 12	sludges from on-site effluent treatment other than those mentioned in 07 02 11
07 02 13	waste plastic
07 02 15	wastes from additives other than those mentioned in 07 02 14
07 02 17	wastes containing silicones other than those mentioned in 07 02 16

Table S2.1 Permitted waste types	
Waste code	**Description**
07 03	**wastes from the MFSU of organic dyes and pigments (except 06 11)**
07 03 12	sludges from on-site effluent treatment other than those mentioned in 07 03 11
07 04	**wastes from the MFSU of organic plant protection products (except 02 01 08 and 02 01 09), wood preserving agents (except 03 02) and other biocides**
07 04 12	sludges from on-site effluent treatment other than those mentioned in 07 04 11
07 05	**wastes from the MFSU of pharmaceuticals**
07 05 12	sludges from on-site effluent treatment other than those mentioned in 07 05 11
07 05 14	solid wastes other than those mentioned in 07 05 13
07 06	**wastes from the MFSU of fats, grease, soaps, detergents, disinfectants and cosmetics**
07 06 12	sludges from on-site effluent treatment other than those mentioned in 07 06 11
07 07	**wastes from the MFSU of fine chemicals and chemical products not otherwise specified**
07 07 12	sludges from on-site effluent treatment other than those mentioned in 07 07 11
08	**WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS**
08 01	**wastes from MFSU and removal of paint and varnish**
08 01 12	waste paint and varnish other than those mentioned in 08 01 11
08 01 14	sludges from paint or varnish other than those mentioned in 08 01 13
08 01 16	aqueous sludges containing paint or varnish other than those mentioned in 08 01 15
08 01 18	wastes from paint or varnish removal other than those mentioned in 08 01 17
08 02	**wastes from MFSU of other coatings (including ceramic materials)**
08 02 01	waste coating powders
08 02 02	aqueous sludges containing ceramic materials
08 03	**wastes from MFSU of printing inks**
08 03 07	aqueous sludges containing ink
08 03 13	waste ink other than those mentioned in 08 03 12
08 03 15	ink sludges other than those mentioned in 08 03 14
08 03 18	waste printing toner other than those mentioned in 08 03 17
08 04	**wastes from MFSU of adhesives and sealants (including waterproofing products)**
08 04 10	waste adhesives and sealants other than those mentioned in 08 04 09
08 04 12	adhesive and sealant sludges other than those mentioned in 08 04 11
08 04 14	aqueous sludges containing adhesives or sealants other than those mentioned in 08 04 13
09	**WASTES FROM THE PHOTOGRAPHIC INDUSTRY**
09 01	**wastes from the photographic industry**
09 01 07	photographic film and paper containing silver or silver compounds
09 01 08	photographic film and paper free of silver or silver compounds
09 01 10	single-use cameras without batteries
09 01 12	single-use cameras containing batteries other than those mentioned in 09 01 11
10	**WASTES FROM THERMAL PROCESSES**
10 01	**wastes from power stations and other combustion plants (except 19)**
10 01 01	bottom ash, slag and boiler dust (excluding boiler dust mentioned in 10 01 04)
10 01 02	coal fly ash
10 01 03	fly ash from peat and untreated wood
10 01 05	calcium-based reaction wastes from flue-gas desulphurisation in solid form
10 01 07	calcium-based reaction wastes from flue-gas desulphurisation in sludge form

Table S2.1 Permitted waste types	
Waste code	**Description**
10 01 15	bottom ash, slag and boiler dust from co-incineration other than those mentioned in 10 01 14
10 01 17	fly ash from co-incineration other than those mentioned in 10 01 16
10 01 19	wastes from gas cleaning other than those mentioned in 10 01 05, 10 01 07 and 10 01 18
10 01 21	sludges from on-site effluent treatment other than those mentioned in 10 01 20
10 01 23	aqueous sludges from boiler cleansing other than those mentioned in 10 01 22
10 01 24	sands from fluidised beds
10 01 25	wastes from fuel storage and preparation of coal-fired power plants
10 01 26	wastes from cooling-water treatment
10 02	**wastes from the iron and steel industry**
10 02 01	wastes from the processing of slag
10 02 02	unprocessed slag
10 02 08	solid wastes from gas treatment other than those mentioned in 10 02 07
10 02 10	mill scales
10 02 12	wastes from cooling-water treatment other than those mentioned in 10 02 11
10 02 14	sludges and filter cakes from gas treatment other than those mentioned in 10 02 13
10 02 15	other sludges and filter cakes
10 03	**wastes from aluminium thermal metallurgy**
10 03 02	anode scraps
10 03 05	waste alumina
10 03 16	skimmings other than those mentioned in 10 03 15
10 03 18	carbon-containing wastes from anode manufacture other than those mentioned in 10 03 17
10 03 20	flue-gas dust other than those mentioned in 10 03 19
10 03 22	other particulates and dust (including ball-mill dust) other than those mentioned in 10 03 21
10 03 24	solid wastes from gas treatment other than those mentioned in 10 03 23
10 03 26	sludges and filter cakes from gas treatment other than those mentioned in 10 03 25
10 03 28	wastes from cooling-water treatment other than those mentioned in 10 03 27
10 03 30	wastes from treatment of salt slags and black drosses other than those mentioned in 10 03 29
10 04	**wastes from lead thermal metallurgy**
10 04 10	wastes from cooling-water treatment other than those mentioned in 10 04 09
10 05	**wastes from zinc thermal metallurgy**
10 05 01	slags from primary and secondary production
10 05 04	other particulates and dust
10 05 09	wastes from cooling-water treatment other than those mentioned in 10 05 08
10 05 11	dross and skimmings other than those mentioned in 10 05 10
10 06	**wastes from copper thermal metallurgy**
10 06 01	slags from primary and secondary production
10 06 02	dross and skimmings from primary and secondary production
10 06 04	other particulates and dust
10 06 10	wastes from cooling-water treatment other than those mentioned in 10 06 09
10 07	**wastes from silver, gold and platinum thermal metallurgy**
10 07 01	slags from primary and secondary production
10 07 02	dross and skimmings from primary and secondary production
10 07 03	solid wastes from gas treatment

Table S2.1 Permitted waste types	
Waste code	**Description**
10 07 04	other particulates and dust
10 07 05	sludges and filter cakes from gas treatment
10 07 08	wastes from cooling-water treatment other than those mentioned in 10 07 07
10 08	**wastes from other non-ferrous thermal metallurgy**
10 08 04	particulates and dust
10 08 09	other slags
10 08 11	dross and skimmings other than those mentioned in 10 08 10
10 08 13	carbon-containing wastes from anode manufacture other than those mentioned in 10 08 12
10 08 14	anode scrap
10 08 16	flue-gas dust other than those mentioned in 10 08 15
10 08 18	sludges and filter cakes from flue-gas treatment other than those mentioned in 10 08 17
10 08 20	wastes from cooling-water treatment other than those mentioned in 10 08 19
10 09	**wastes from casting of ferrous pieces**
10 09 03	furnace slag
10 09 06	casting cores and moulds which have not undergone pouring other than those mentioned in 10 09 05
10 09 08	casting cores and moulds which have undergone pouring other than those mentioned in 10 09 07
10 09 10	flue-gas dust other than those mentioned in 10 09 09
10 09 12	other particulates other than those mentioned in 10 09 11
10 09 14	waste binders other than those mentioned in 10 09 13
10 09 16	waste crack-indicating agent other than those mentioned in 10 09 15
10 10	**wastes from casting of non-ferrous pieces**
10 10 03	furnace slag
10 10 06	casting cores and moulds which have not undergone pouring, other than those mentioned in 10 10 05
10 10 08	casting cores and moulds which have undergone pouring, other than those mentioned in 10 10 07
10 10 10	flue-gas dust other than those mentioned in 10 10 09
10 10 12	other particulates other than those mentioned in 10 10 11
10 10 14	waste binders other than those mentioned in 10 10 13
10 10 16	waste crack-indicating agent other than those mentioned in 10 10 15
10 11	**wastes from manufacture of glass and glass products**
10 11 03	waste glass-based fibrous materials
10 11 05	particulates and dust
10 11 10	waste preparation mixture before thermal processing, other than those mentioned in 10 11 09
10 11 12	waste glass other than those mentioned in 10 11 11
10 11 14	glass-polishing and -grinding sludge other than those mentioned in 10 11 13
10 11 16	solid wastes from flue-gas treatment other than those mentioned in 10 11 15
10 11 18	sludges and filter cakes from flue-gas treatment other than those mentioned in 10 11 17
10 11 20	solid wastes from on-site effluent treatment other than those mentioned in 10 11 19
10 12	**wastes from manufacture of ceramic goods, bricks, tiles and construction products**
10 12 01	waste preparation mixture before thermal processing

Table S2.1 Permitted waste types	
Waste code	**Description**
10 12 03	particulates and dust
10 12 05	sludges and filter cakes from gas treatment
10 12 06	discarded moulds
10 12 08	waste ceramics, bricks, tiles and construction products (after thermal processing)
10 12 10	solid waste from gas treatment other than mentioned in 10 12 09
10 12 12	wastes from glazing other than those mentioned in 10 12 11
10 12 13	sludge from on-site effluent treatment
10 13	**wastes from manufacture of cement, lime and plaster and articles and products made from them**
10 13 01	waste preparation mixture before thermal processing
10 13 04	wastes from calcination and hydration of lime
10 13 06	particulates and dust (except 10 13 12 and 10 13 13)
10 13 07	sludges and filter cakes from gas treatment
10 13 10	wastes from asbestos-cement manufacture other than those mentioned in 10 13 09
10 13 11	wastes from cement-based composite materials other than those mentioned in 10 13 09 and 10 13 10
10 13 13	solid wastes from gas treatment other than those mentioned in 10 13 12
10 13 14	waste concrete and concrete sludge
11	**WASTES FROM CHEMICAL SURFACE TREATMENT AND COATING OF METALS** AND OTHER MATERIALS; NON-FERROUS HYDRO-METALLURGY
11 01	**wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphatising, alkaline degreasing, anodising)**
11 01 10	sludges and filter cakes other than those mentioned in 11 01 09
11 01 14	degreasing wastes other than those mentioned in 11 01 13
11 02	**wastes from non-ferrous hydrometallurgical processes**
11 02 03	wastes from the production of anodes for aqueous electrolytical processes
11 02 06	wastes from copper hydrometallurgical processes other than those mentioned in 11 02 05
11 05	**wastes from hot galvanising processes**
11 05 01	hard zinc
11 05 02	zinc ash
12	**WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS**
12 01	**wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01 01	ferrous metal filings and turnings
12 01 02	ferrous metal dust and particles
12 01 03	non-ferrous metal filings and turnings
12 01 04	non-ferrous metal dust and particles
12 01 05	plastics shavings and turnings
12 01 13	welding wastes
12 01 15	machining sludges other than those mentioned in 12 01 14
12 01 17	waste blasting material other than those mentioned in 12 01 16
12 01 21	spent grinding bodies and grinding materials other than those mentioned in 12 01 20

Table S2.1 Permitted waste types	
Waste code	**Description**
15	**WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED**
15 01	**packaging (including separately collected municipal packaging waste)**
15 01 01	paper and cardboard packaging
15 01 02	plastic packaging
15 01 03	wooden packaging
15 01 04	metallic packaging
15 01 05	composite packaging
15 01 06	mixed packaging
15 01 07	glass packaging
15 01 09	textile packaging
15 02	**absorbents, filter materials, wiping cloths and protective clothing**
15 02 03	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02
16	**WASTES NOT OTHERWISE SPECIFIED IN THE LIST**
16 01	**end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)**
16 01 03	end-of-life tyres
16 01 12	brake pads other than those mentioned in 16 01 11
16 01 17	ferrous metal
16 01 18	non-ferrous metal
16 01 19	plastic
16 01 20	Glass
16 02	**wastes from electrical and electronic equipment**
16 02 14	discarded equipment other than those mentioned in 16 02 09 to 16 02 13
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15
16 03	**off-specification batches and unused products**
16 03 04	inorganic wastes other than those mentioned in 16 03 03
16 03 06	organic wastes other than those mentioned in 16 03 05
16 06	**batteries and accumulators**
16 06 04	alkaline batteries (except 16 06 03)
16 06 05	other batteries and accumulators
16 08	**spent catalysts**
16 08 01	spent catalysts containing gold, silver, rhenium, rhodium, palladium, iridium or platinum (except 16 08 07)
16 08 03	spent catalysts containing transition metals or transition metal compounds not otherwise specified
16 11	**waste linings and refractories**
16 11 02	carbon-based linings and refractories from metallurgical processes others than those mentioned in 16 11 01
16 11 04	other linings and refractories from metallurgical processes other than those mentioned in 16 11 03
16 11 06	linings and refractories from non-metallurgical processes others than those mentioned in 16 11 05

Table S2.1 Permitted waste types	
Waste code	**Description**
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02	**wood, glass and plastic**
17 02 01	wood
17 02 02	glass
17 02 03	plastic
17 03	**bituminous mixtures, coal tar and tarred products**
17 03 02	bituminous mixtures other than those mentioned in 17 03 01
17 04	**metals (including their alloys)**
17 04 01	copper, bronze, brass
17 04 02	aluminium
17 04 03	lead
17 04 04	zinc
17 04 05	iron and steel
17 04 06	tin
17 04 07	mixed metals
17 04 11	cables other than those mentioned in 17 04 10
17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 06	dredging spoil other than those mentioned in 17 05 05
17 05 08	track ballast other than those mentioned in 17 05 07
17 06	**insulation materials and asbestos-containing construction materials**
17 06 04	insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 09	**other construction and demolition wastes**
17 09 04	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
18	**WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)**
18 01	**wastes from natal care, diagnosis, treatment or prevention of disease in humans**
18 01 04	wastes whose collection and disposal is not subject to special requirements in order to prevent infection(for example dressings, plaster casts, linen, disposable clothing, diapers)
18 02	**wastes from research, diagnosis, treatment or prevention of disease involving animals**
18 02 03	wastes whose collection and disposal is not subject to special requirements in order to prevent infection
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 01	**wastes from incineration or pyrolysis of waste**
19 01 02	ferrous materials removed from bottom ash
19 01 12	bottom ash and slag other than those mentioned in 19 01 11

Table S2.1 Permitted waste types	
Waste code	**Description**
19 01 14	fly ash other than those mentioned in 19 01 13
19 01 16	boiler dust other than those mentioned in 19 01 15
19 01 18	pyrolysis wastes other than those mentioned in 19 01 17
19 01 19	sands from fluidised beds
19 02	**wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**
19 02 03	premixed wastes composed only of non-hazardous wastes
19 02 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 03	**stabilised/solidified wastes**
19 03 05	stabilised wastes other than those mentioned in 19 03 04
19 03 07	solidified wastes other than those mentioned in 19 03 06
19 04	**vitrified waste and wastes from vitrification**
19 04 01	vitrified waste
19 05	**wastes from aerobic treatment of solid wastes**
19 05 01	non-composted fraction of municipal and similar wastes
19 05 02	non-composted fraction of animal and vegetable waste
19 05 03	off-specification compost
19 06	**waste from anaerobic treatment of solid wastes**
19 06 04	digestate from anaerobic treatment of municipal waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste
19 08	**wastes from waste water treatment plants not otherwise specified**
19 08 01	screenings
19 08 02	waste from desanding
19 08 05	sludges from treatment of urban waste water
19 08 09	grease and oil mixture from oil/water separation containing only edible oil and fats
19 08 12	sludges from biological treatment of industrial waste water other than those mentioned in 19 08 11
19 08 14	sludges from other treatment of industrial waste water other than those mentioned in 19 08 13
19 09	**wastes from the preparation of water intended for human consumption or water for industrial use**
19 09 01	solid waste from primary filtration and screenings
19 09 02	sludges from water clarification
19 09 03	sludges from decarbonation
19 09 04	spent activated carbon
19 09 05	saturated or spent ion exchange resins
19 09 06	solutions and sludges from regeneration of ion exchangers
19 10	**wastes from shredding of metal-containing wastes**
19 10 01	iron and steel waste
19 10 02	non-ferrous waste
19 10 04	fluff-light fraction and dust other than those mentioned in 19 10 03
19 10 06	other fractions other than those mentioned in 19 10 05
19 11	**wastes from oil regeneration**
19 11 06	sludges from on-site effluent treatment other than those mentioned in 19 11 05
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 01	paper and cardboard

Table S2.1 Permitted waste types	
Waste code	**Description**
19 12 02	ferrous metal
19 12 03	non-ferrous metal
19 12 04	plastic and rubber
19 12 05	glass
19 12 07	wood other than that mentioned in 19 12 06
19 12 08	textiles
19 12 09	minerals (for example sand, stones)
19 12 10	combustible waste (refuse derived fuel)
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
19 13	**wastes from soil and groundwater remediation**
19 13 02	solid wastes from soil remediation other than those mentioned in 19 13 01
19 13 04	sludges from soil remediation other than those mentioned in 19 13 03
19 13 06	sludges from groundwater remediation other than those mentioned in 19 13 05
20	**MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS**
20 01	**separately collected fractions (except 15 01)**
20 01 01	paper and cardboard
20 01 02	glass
20 01 08	biodegradable kitchen and canteen waste
20 01 10	clothes
20 01 11	textiles
20 01 25	edible oil and fat
20 01 28	paint, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 30	detergents other than those mentioned in 20 01 29
20 01 34	batteries and accumulators other than those mentioned in 20 01 33
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 38	wood other than that mentioned in 20 01 37
20 01 39	plastics
20 01 40	metals
20 01 41	wastes from chimney sweeping
20 01 99	feminine hygiene wastes, some group E clinical waste
20 02	**garden and park wastes (including cemetery waste)**
20 02 01	biodegradable waste
20 02 02	soil and stones
20 02 03	other non-biodegradable wastes
20 03	**other municipal wastes**
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 03	street-cleaning residues
20 03 04	septic tank sludge
20 03 06	waste from sewage cleaning
20 03 07	bulky waste

Table S2.2 Permitted waste types for inert wastes accepted for restoration	
Waste code	**Description**
01	**WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING, AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS**
01 04	**wastes from physical and chemical processing of non-metalliferous minerals**
01 04 08	waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	waste sand and clays
02	**wastes from the preparation and processing of meat, fish and other foods of animal origin**
02 04	**wastes from sugar processing**
02 04 01	soil from cleaning and washing beet
03	**WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD**
03 03	**wastes from pulp, paper and cardboard production and processing**
03 03 05	de-inking sludges from paper recycling
03 03 09	lime mud waste
10	**WASTES FROM THERMAL PROCESSES**
10 01	**wastes from power stations and other combustion plants (except 19)**
10 10 01	bottom ash, slag and boiler dust (excluding boiler dust mentioned in 10 01 04)
10 10 02	coal fly ash
10 12	**wastes from manufacture of ceramic goods, bricks, tiles and construction products**
10 12 08	waste ceramics, bricks, tiles and construction products (after thermal processing)
10 13 14	waste concrete and concrete sludge
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**
17 01	**concrete, bricks, tiles and ceramics**
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 06	dredging spoil other than those mentioned in 17 05 05
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 05	**wastes from aerobic treatment of solid wastes**
19 05 03	off-specification compost
19 08	**wastes from waste water treatment plants not otherwise specified**
19 08 05	sludges from treatment of urban waste water
19 09	**wastes from the preparation of water intended for human consumption or water for industrial use**
19 09 02	sludges from water clarification
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 09	minerals (for example sand, stones)
19 13	**wastes from soil and groundwater remediation**
19 13 02	solid wastes from soil remediation other than those mentioned in 19 13 01
19 13 04	sludges from soil remediation other than those mentioned in 19 13 03

Table S2.2 Permitted waste types for inert wastes accepted for restoration	
Waste code	**Description**
20	**MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS**
20 02	**garden and park wastes (including cemetery waste)**
20 02 02	soil and stones

Schedule 3 – Emissions and monitoring

Table S3.1 Leachate level limits and monitoring requirements			
Monitoring point reference/ Description	**Limit**	**Monitoring frequency**	**Monitoring method**
Phase 2 Leachate Monitoring Points – 2/101, 2/102, 2/104, 2/105, 2/109, 2/110, 2/111 and 2/119.	None set	Monthly	-
Phase 3 Leachate Extraction Wells – Cell 1 - 3/1W (1); Cell 2 - 3/2W.	2.0m above base of well casing	Weekly (3)	
Phase 3 Leachate Monitoring Point – 3/2E.	2.0m above base of well casing	Monthly	
Phase 4 Leachate Extraction Well - 4C.	2.5m above base of liner (2)	Weekly (3)	
Phase 5 Leachate Extraction Wells – Cell 1 - 5/1; Cell 2 - 5/2; Cell 3 - 5/3; Cell 4 - 5/4.	2.0m above base of liner (2)	Weekly (3)	
Phase 5 Leachate Extraction Wells – Cell 5 - 5/5.	3.0m above base of liner (2)	Weekly (3)	
Phase 5 Leachate Monitoring Points – Cell 3 - 5/3/A and 5/3/B; Cell 4 - 5/4/A and 5/4/B.	2.0m above base of liner	Monthly	
Phase 5 Leachate Monitoring Points - Cell 5 - 5/5/A (2) and 5/5/B.	3.0m above base of liner	Monthly	
Phase 6 Leachate Monitoring Points - Western monitoring point.	2.5m above base of liner	Monthly	
Phase 6 Leachate Monitoring Points - Eastern monitoring point.	2.0m above base of liner	Monthly	
Phase 7 Leachate Monitoring Points - All monitoring points.	3.0m above base of liner	Monthly	

(1) As detailed on drawing 4665/ESID10 revision 3.

(2) Measured from the liner level at the lip of the sump.

(3) Monthly once agreed in writing with the Agency that stable leachate head conditions exist within these phases.

Table S3.2 Point source emissions to air – emission limits and monitoring requirements						
Emission point Ref. & Location	**Parameter**	**Source**	**Limit (including unit)**	**Reference Period**	**Monitoring Frequency**	**Monitoring Standard or Method**
Landfill Gas Engine No. G1 – located nearest the flare as shown on drawing number 4665/ESID/12 revision 2 dated 21/08/2007	Oxides of Nitrogen, expressed as NO_2	Exhaust of Gas Engine No G1	650 mg/m^3	Hourly mean	Annual	In accordance with that described in the Agency's Technical Guidance Note M2 "Monitoring of stack emissions to air".
	Carbon Monoxide		1500 mg/m^3		Annual	
	Total volatile organic compounds (VOC), expressed as Carbon		1750 mg/m^3		Annual	
	Total non-methane volatile organic compounds (NMVOC)		150 mg/m^3		Annual	
	Oxides of sulphur		No limit set		Annual	
Landfill Gas Engine No. G2 – located furthest from the flare as shown on drawing number 4665/ESID/12 revision 2 dated 21/08/2007.	Oxides of Nitrogen, expressed as NO_2	Exhaust of Gas Engine No G2	650 mg/m^3	Hourly mean	Annual	In accordance with that described in the Agency's Technical Guidance Note M2 "Monitoring of stack emissions to air".
	Carbon Monoxide		1500 mg/m^3		Annual	
	Total volatile organic compounds (VOC), expressed as Carbon		1750 mg/m^3		Annual	
	Total non-methane volatile organic compounds (NMVOC)		150 mg/m^3		Annual	
	Oxides of sulphur		No limit set		Annual	
Enclosed Flare Stack - located in the waste to energy gas generation compound.	Oxides of Nitrogen, expressed as NO_2	Landfill Gas Flare	150 mg/m^3	Hourly Mean	Annual (1)	In accordance with that described in the Agency's Technical Guidance Note M2 "Monitoring of stack emissions to air".
	Carbon Monoxide		50 mg/m^3		Annual (1)	
	Total volatile organic compounds (VOC), expressed as Carbon		10 mg/m^3		Annual (1)	
	Total non-methane volatile organic compounds (NMVOC)		5 mg/m^3		Annual (1)	
	Operational Temperature		>1000°C	Instantaneous reading (2)	Weekly while flare operational	

(1) Annual monitoring is only required when flares operate in excess of 10% of the time, taken on an annual assessment period.

(2) This is an indicative performance limit. An alternative minimum temperature may be acceptable providing the Operator can demonstrate that the other emission limit values are met at this lower temperature in accordance with Environment Agency Guidance on Flaring Nov 2002.

Table S3.3 Point source emissions to water (other than sewer) – emission limits and monitoring requirements

Emission point Ref. & Location	Parameter	Source	Limit (incl unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
DC2 Located at national grid map reference SD 2159074829 and as shown on Drawing No. 1 dated 2nd October 2006. To Goldmire Beck	Ammoniacal Nitrogen	Site Drainage via Lagoons	1 mg/l	Spot sample	During discharge	Monitoring to be carried out in accordance with Environment Agency Document 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN02), unless otherwise agreed in writing with the Agency..
	Electrical Conductivity		900 µS/cm	Spot sample		
	pH		>6 and <9 pH units	Instantaneous		
	Suspended Solids		75 mg/l	Spot sample		Measured after drying at 105 degrees Celsius
	Oil and Grease		None visible	Instantaneous		Observation

Table S3.4 Trigger levels for emissions into groundwater and monitoring requirements

Monitoring point reference	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
RH5R, RH6R, RH12R, RH101, RH102, RH104. as shown on drawing ESID 32 dated September 2008.	Ammoniacal Nitrogen	0.5 mg/l	Spot sample	Monthly	Monitoring to be carried out in accordance with Environment Agency Guidance Document 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN02), unless otherwise agreed in writing with the Agency. Hazardous substances monitoring methods in accordance with the Agency's guidance 'Hydrogeological Risk Assessment for Landfills' (LFTGN01).
	Chloride	250 mg/l		Monthly	
	Nickel	0.02 mg/l		Quarterly	
	Cadmium	0.001 mg/l		Quarterly	
	Mecoprop	0.0001 mg/l		6 Monthly	
	Toluene	0.004 mg/l		6 Monthly	
RH8 as shown on drawing ESID 32 dated September 2008.	Ammoniacal Nitrogen	1.0 mg/l	Spot sample	Monthly	
	Chloride	250 mg/l		Monthly	
	Nickel	0.02 mg/l		Quarterly	
	Cadmium	0.001 mg/l		Quarterly	
	Mecoprop	0.0001 mg/l		6 Monthly	
	Toluene	0.004 mg/l		6 Monthly	

Table S3.4 Trigger levels for emissions into groundwater and monitoring requirements					
Monitoring point reference	**Parameter**	**Limit (including unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
RH13. as shown on drawing ESID 32 dated September 2008.	Ammoniacal Nitrogen	1.19 mg/l	Spot sample	Monthly	Monitoring to be carried out in accordance with Environment Agency Guidance Document 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN02), unless otherwise agreed in writing with the Agency. Hazardous substances monitoring methods in accordance with the Agency's guidance 'Hydrogeological Risk Assessment for Landfills' (LFTGN01).
	Chloride	250 mg/l		Monthly	
	Nickel	0.02 mg/l		Quarterly	
	Cadmium	0.001 mg/l		Quarterly	
	Mecoprop	0.0001 mg/l		6 Monthly	
	Toluene	0.004 mg/l		6 Monthly	
RH103. as shown on drawing ESID 32 dated September 2008.	Ammoniacal Nitrogen	11.38 mg/l	Spot sample	Monthly	
	Chloride	250 mg/l		Monthly	
	Nickel	0.035 mg/l		Quarterly	
	Cadmium	0.001 mg/l		Quarterly	
	Mecoprop	0.0001 mg/l		6 Monthly	
	Toluene	0.004 mg/l		6 Monthly	

Table S3.5 Landfill gas in external monitoring boreholes – limits and monitoring requirements				
Monitoring point Ref. /description	**Parameter**	**Limit (including units) ***	**Monitoring frequency**	**Monitoring standard or method**
BH3, BH5, BH6R, BH7, BH8, BH9, BH10, BH11, BH12R, BH13, RH14R, BH15, BH16, RH6R, RH12R and RH101.	Methane	1 %v/v	Monthly	Monitoring to be carried out in accordance with Environment Agency - Landfill Technical Guidance Note (LFTGN) 03: 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency..
	Oxygen	No limit		
	Atmospheric pressure	No limit		
	Differential Pressure	No limit		
	Meteorological data	No limit		
BH3, BH5, BH7, BH8, BH9, BH10, BH11, BH13, BH15, RH6R and RH12R.	Carbon Dioxide	5.0 %v/v		
BH6R.	Carbon Dioxide	4.0 %v/v		
BH12R.	Carbon Dioxide	2.2 %v/v		
RH14R.	Carbon Dioxide	1.5 %v/v		

Table S3.5 Landfill gas in external monitoring boreholes – limits and monitoring requirements				
Monitoring point Ref. /description	**Parameter**	**Limit (including units) ***	**Monitoring frequency**	**Monitoring standard or method**
BH16.	Carbon Dioxide	2.5 %v/v	Monthly	Monitoring to be carried out in accordance with Environment Agency - Landfill Technical Guidance Note (LFTGN) 03: 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency.
BH101.	Carbon Dioxide	2.5 %v/v		
New boreholes installed in accordance with pre-operational condition PO1.	Methane	(2)		
	Carbon Dioxide	(2)		
	Oxygen	No limit		
	Atmospheric pressure	No limit		
	Differential Pressure	No limit		
	Meteorological data	No limit		

(1) As shown on drawing number 4665/ESID/13A revision 1 dated 05/09/2007.

(2) Trigger limits to be set in accordance with pre-operational condition PO4.

Table S3.6 Landfill gas from capped surfaces - monitoring requirements				
Monitoring point Ref. /description	**Parameter**	**Monitoring frequency**	**Emission Limit**	**Monitoring Standard or method**
Permanently capped zone	Average methane flux and total methane emission	Annually*	Where the average zone emission rate of 0.001 mg/m2/second	As per LFTGN 07 or as otherwise agreed in writing by the Agency.
Temporarily capped zone	Average methane flux and total methane emission	Annually*	Where the average zone emission rate of 0.1 mg/m2/second	As per LFTGN 07 or as otherwise agreed in writing by the Agency.
	Methane	Quarterly	Where the survey identifies methane concentrations in excess of 100ppmv remedial action shall be taken within 3 working days to reduce the emission concentration to below the specified limit.	

Footnote * If a cap has previously been shown compliant and there have been no significant physical changes in the gas management during the year, a detailed walkover survey can be used to demonstrate that the surface emissions are under control. If this survey shows no change in the pattern of methane emission, it may be used as the annual survey and the values for average methane flux and total methane emissions measured in the previous year may be reported. A quantitative survey is not necessary. If the zone remains stable, the results of a detailed walkover survey will be acceptable for the annual report for a period of four years before a further quantitative survey is required.

Table S3.7 Landfill gas – other monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
WL101, WL102, WL103, WL104, WL105, WL106, WL107, WL 108, WL109, WL110, WL201, WL202 and WL203 as shown on drawing 4665/ESID/13B revision 1 dated 25/09/2007.	Methane Carbon Dioxide Oxygen Atmospheric pressure Differential Pressure Meteorological data	Monthly	Monitoring to be carried out in accordance with Agency - Landfill Technical Guidance Note (LFTGN03): 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency.	-
Inlet and outlet from gas extraction manifolds on extraction lines.	Methane Carbon Dioxide Oxygen Carbon Monoxide Atmospheric pressure Differential pressure Gas flow rate % Balance Gas (calculated as the difference between the sum of measured gases and 100%)	At frequencies specified in table 5.4 of LFTGN 03	Monitoring to be carried out in accordance with Agency - Landfill Technical Guidance Note (LFTGN03): 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency.	Where the Oxygen level exceeds 5% or where the addition of the Carbon Dioxide and Methane percentages is less than 80%, an assessment of air ingress into the system shall be undertaken.
Manifold on main line carrying the landfill gas to the gas utilisation plant.	Trace gas analysis	Annually	Monitoring to be carried out in accordance with Agency Landfill Technical Guidance Note (LFTGN 04) Monitoring of trace components in landfill gas	-
Input to Landfill Gas Engines G1, G2 and flare.	Methane Carbon Dioxide Oxygen Gas flow rate % Balance Gas (calculated as the difference between the sum of measured gases and 100%)	Continuous	As set out in the application or otherwise as agreed with the Agency.	Where the Oxygen level exceeds 5% or where the addition of the Carbon Dioxide and Methane percentages is less than 80%, an assessment of air ingress into the system shall be undertaken.

Table S3.7 Landfill gas – other monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Potential point sources. (Point sources may include, but not be limited to, monitoring and abstraction well heads (including leachate management installations), and pipework joints.)).	Methane	Quarterly	Flame Ionisation Detector (FID).	Where the survey identifies methane concentrations in excess of 1000 PPMV remedial action shall be taken within 3 working days to reduce the emission concentration to below the specified limit.

Table S3.8 Leachate– other monitoring requirements				
Emission point reference or source or description of point of measurement (1)	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications –**
Leachate monitoring point Phase 2 – 2/104 as detailed on drawing 4665/ESID10 revision 2	Electrical conductivity, Chloride, Ammoniacal – N, pH, Temperature. Total alkalinity, Magnesium, Potassium, Total sulphates, Calcium, Sodium, BOD and COD, TOC, TON, Manganese, Iron, Chromium, Copper, Lead, Zinc, Nickel	Quarterly	Monitoring to be carried out in accordance with Environment Agency Guidance Document 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN02), unless otherwise agreed in writing with the Agency. Hazardous substances monitoring methods in accordance with the Agency's guidance 'Hydrogeological Risk Assessment for Landfills' (LFTGN01).	Limit of detection for naphthalene – 0.05 µg/l.
	Mercury, Mecoprop, Toluene, Naphthalene and Cadmium.	Annually		
	Screen of hazardous substances and non-hazardous pollutants	Annually		

Table S3.8 Leachate– other monitoring requirements				
Emission point reference or source or description of point of measurement (1)	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications –**
Leachate extraction wells Phase 3 – 3/1W (2) and 3/2W Leachate extraction well Phase 4 - 4C Leachate extraction wells Phase 5 – Cell 1 – 5/1; Cell 2 – 5/2; Cell 3 - 5/3; Cell 4 - 5/4. Leachate extraction well Phase 5 - Cell 5 – 5/5 Leachate extraction well Phase 6 Leachate extraction well Phase 7	Volume discharged, Electrical conductivity, Chloride, Ammoniacal – N, pH and Temperature.	Monthly	Monitoring to be carried out in accordance with Environment Agency Guidance Document 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN02), unless otherwise agreed in writing with the Agency. Hazardous substances monitoring methods in accordance with the Agency's guidance 'Hydrogeological Risk Assessment for Landfills' (LFTGN01).	Limit of detection for naphthalene – 0.05 µg/l.
	Total alkalinity, Magnesium, Potassium, Total sulphates, Calcium, Sodium, BOD and COD, TOC, TON, Manganese, Iron, Chromium, Copper, Lead, Zinc, Nickel, Mercury, Mecoprop, Naphthalene, Cadmium and Toluene	Quarterly		
	Monitoring point base.	Annually		
	Screen of .hazardous substances and non-hazardous pollutants	Annually		
Leachate monitoring points Phase 2 – 2/101, 2/102, 2/104, 2/105, 2/109, 2/110, 2/111 and 2/119 Phase 3 – 3/2E Phase 5 – Cell 3 - 5/3/A and 5/3/B; Cell 4 - 5/4/A and 5/4/B; Cell 5 - 5/5/A and 5/5/B Phase 6 and 7	Monitoring point base.	Annually		

(1) as detailed on drawing 4665/ESID10 revision 3.

Table S3.9 Surface water – other monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
DC2 - Discharge point; SW1 - Upstream monitoring point; SW2 - Downstream monitoring point; SW3 - Downstream monitoring point; SW4 - Downstream pond on Goldmire Beck as shown on Drawing No. 1 dated 2nd October 2006; and Lagoons A, C and D (1)	pH Suspended solids Electrical conductivity Chloride Ammoniacal nitrogen	Monthly	Monitoring to be carried out in accordance with Environment Agency Guidance Document 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN02), unless otherwise agreed in writing with the Agency.	
Lagoons A, C and D	Oil and grease	Daily		
Un-named pond south west of phase 5 (SD 210 747) Pond A (SD 210 752), Pond B (SD 210 751), Pond C (SD 210 749), Burlington Lake (SD 211 754) and Un-named pond west of Pond B (SD 207 751). (3)	Level mAOD	6 monthly (2) for a period of 24 months.	-	

(1) before discharge pumping operations are carried out.
(2) monitoring should be carried out during summer and winter months.
(3) as shown on Golders Drawing 1.

Table S3.10 Groundwater – other monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Groundwater monitoring boreholes WB1, WB2, WB3, RH5R, RH6R, RH8, RH12R, RH13, RH101, RH102, RH103 and RH104 as shown on drawing ESID 32 dated September 2008.	Water level, Electrical conductivity, Chloride, Ammoniacal – N, pH, Temperature and Dissolved Oxygen	Monthly	Monitoring to be carried out in accordance with Environment Agency Guidance Document 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN02), unless otherwise agreed in writing with the Agency. Hazardous substances monitoring methods in accordance with the Agency's guidance 'Hydrogeological Risk Assessment for Landfills' (LFTGN01). Limit of detection for naphthalene – 0.05 µg/l.	
	COD, TOC, Total alkalinity, Magnesium, Potassium, Total sulphates, Calcium, Sodium, Nitrates, Nitrites, TON, Manganese, Iron, Chromium, Copper, Lead, Zinc, Nickel and Cadmium	Quarterly		
	Mecoprop, Naphthalene and Toluene	6 Monthly		
	Monitoring point base	Annually		
	Screen of Hazardous substances			

(1) Based upon a monthly moving average over 3 consecutive monthly reporting periods.

Table S3.11 Particulate matter in ambient air - limits and monitoring requirements					
Monitoring Point Ref. /Description	**Parameter**	**Limit (Including Unit)**	**Reference Period**	**Monitoring Frequency**	**Monitoring Standard or Method**
EMP1 as shown on drawing number 1 of report 05529660.502/A.0 dated 28/02/2006.	Deposited dust	None set	-	Daily	(1) As set out in report 05529660.502/A.0 dated 28/02/2006 as amended by letter reference AK/EMSC113/BM6093IS/BR.
EMP2, EMP3 and EMP4 as shown on drawing number1 of report 05529660.502/A.0 dated 28/02/2006.				Daily (1)	
Meteorological assessment				Daily	

Schedule 4 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Leachate levels As required by condition 3.6.1	Phase 2 - 2/101, 2/102, 2/104, 2/105, 2/109, 2/110, 2/111 and 2/119 Phase 3 - Cell 1 - 3/1W, Cell 2 - 3/2W, and 3/2E Phase 4 - 4C Phase 5 – Cell 1 - 5/1; Cell 2 - 5/2; Cell 3 - 5/3, 5/3/A and 5/3/B; Cell 4 - 5/4, 5/4/A and 5/4/B; Cell 5 - 5/5, 5/5/A and 5/5/B. Phase 6 and Phase 7.	Quarterly	07/11/05 Date of installation
Emissions to air Parameters as required by condition 3.6.1	G1, G2 and Flare	Annually	07/11/05
Emissions to water Parameters as required by condition 3.6.1	DC2	Quarterly	07/11/05
Groundwater Parameters as required by condition 3.6.1 Mecoprop and Toluene Screen of hazardous substances and monitoring point base	WB1, WB2, WB3, RH5R, RH6R, RH8, RH12R, RH13, RH101, RH102, RH103 and RH104.	Quarterly for monthly and quarterly parameters 6 Monthly Annually	07/11/05
Landfill gas surface emissions Parameters as required by condition 3.6.1 Average methane flux and total methane emission Methane	Permanently and temporarily capped zones Temporarily capped zones	Annually Quarterly	07/11/05 Date of issue of Variation
Particulate matter Parameters as required by condition 3.6.1	EMP1, EMP2, EMP3 and EMP4.	Quarterly	07/11/05

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Landfill gas lateral migration Parameters as required by condition 3.6.1	BH3, BH5, BH6R, BH7, BH8, BH9, BH10, BH11, BH12R, BH13, RH14R, BH15, BH16, RH6R, RH12R and RH101 New boreholes installed in accordance with pre-operational condition PO1.	Quarterly	07/11/05 Date of installation
Other Landfill gas monitoring Parameters as required by condition 3.6.1	Manifold on main line carrying the landfill gas to the gas utilisation plant..	Annually	07/11/05
Trace gas analysis	Potential point sources e.g. leachate and landfill gas infrastructure.	Quarterly	03/06/10
Other leachate monitoring: Parameters as required by condition 3.6.1 Screen of hazardous substances and non-hazardous pollutants Monitoring point base	Phase 2 - 2/104. Phase 3 - Cell 1 - 3/1W and Cell 2 - 3/2W. Phase 4 - 4C. Phase 5 – Cell 1 - 5/1; Cell 2 - 5/2; Cell 3 - 5/3; Cell 4 - 5/4; Cell 5 - 5/5.	Quarterly reporting for monthly and quarterly parameters	07/11/05
	Phase 6 - extraction well Phase 7 - extraction well	Annually	Date of installation
Other leachate monitoring cont: Parameters as required by condition 3.6.1 Monitoring point base only	Phase 2 - 2/101, 2/102, 2/105, 2/109, 2/110, 2/111 and 2/119. Phase 3 – 3/2E. Phase 5 – Cell 3 - 5/3/A and 5/3/B; Cell 4 - 5/4/A and 5/4/B; Cell 5 - 5/5/A and 5/5/B.	Annually	07/11/05
	Phase 6 and Phase 7 - extraction well and monitoring points		Date of installation
Other surface water monitoring Parameters as required by condition 3.6.1	DC2, SW1, SW2, SW3, SW4 and site collection lagoons A, C, and D.	Quarterly	07/11/05
Level mAOD	Un-named pond south west of phase 5 (SD 210 747),Pond A (SD 210 752), Pond B (SD 210 751), Pond C (SD 210 749), Burlington Lake (SD 211 754) and Un-named pond west of Pond B (SD 207 751).	Every 6 months for a period of 24 months.	03/06/10

Table S4.2: Annual production/treatment	
Leachate: Disposed of off site; Disposed of to any onsite effluent treatment plant; Recirculated into the waste mass.	Cubic metres/year
Surface water and/ or groundwater: Disposed of off site; Disposed of to any onsite effluent treatment plant.	Cubic metres/year
Landfill gas: combustion in flares; combustion in gas engines; Other methods of gas utilisation.	Normalised cubic metres/year

Table S4.3 Performance Parameters			
Parameter	**Frequency of assessment**	**Annual total**	**Unit**
Energy used (including for leachate treatment)	Annually		MWh of electricity

Table S4.4 Reporting Forms		
Media/parameter	**Reporting Format**	**Date of Form**
Leachate	Form leachate 1 or other reporting format to be agreed in writing with the Agency	01/01/2008
Air	Form Air 1 or other reporting format to be agreed in writing with the Agency	01/01/2008
Controlled water	Form Water 1 or other reporting format to be agreed in writing with the Agency	01/01/2008
Groundwater	Form Groundwater 1 or other reporting format to be agreed in writing with the Agency	01/01/2008
Landfill gas	Form LFG 1 or other reporting format to be agreed in writing with the Agency	01/01/2008
Particulate matter	Form Particulate 1 or other reporting format to be agreed in writing with the Agency	01/01/2008
Waste Return	Waste Return Form RATS2E	01/01/2008
Landfill topographical surveys and interpretation	Reporting format to be agreed in writing with the Environment Agency	

Schedule 5 - Notification

This page outlines the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	**EPR/BM6093IS**
Name of operator	**WRG Waste Services Limited**
Location of Facility	**Bennett Bank Landfill** **Thwaite Flat** **Barrow-in-Furness** **Cumbria** LA14 4QH
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and Time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	

Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B to be supplied as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of ***WRG Waste Services Limited.***

Schedule 6 - Interpretation

"authorised officer" means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

"Background concentration" means such concentration of that substance as is present in:

- For emissions to surface water, the surface water quality up-gradient of the site; or
- For emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge; or
- For emissions of landfill gas, the ground or air outside the site and not attributable to the site.

"Cell layout drawing" means:

(a) A drawing or drawings of the proposed new cell that illustrate(s) in sufficient detail:

i. the location of the new cell on the site;

ii. the proposed level (Above Ordnance Datum) of the base of the excavation;

iii. the proposed finished levels of all containment and leachate drainage layers;

iv. the positions of leachate management infrastructure; and

v. the positions of landfill gas infrastructure (if appropriate).

(b) A detailed written explanation of any minor design changes from the most recently approved cell that result from the new cell layout. This would include, for example:

i. changes to slope length and gradient within the cell;

ii. new leachate or landfill gas infrastructure construction design;

iii. slope stability issues such as new basal excavation level; and/or

iv. depth of waste.

"Construction Proposals" means written information, at a level of detail appropriate to the complexity and pollution risk, on the design, specifications of materials selected, stability assessment (where relevant) and the construction quality assurance (CQA) programme in relation to the New Cell or Landfill Infrastructure.

"CQA Validation Report" means the final "as built" construction and engineering details of the New Cell or of the Landfill Infrastructure. It must provide a comprehensive record of the construction and must include, where relevant:

- The results of all testing required by the CQA programme - this must include the records of any failed tests with a written explanation, details of the remedial action taken, referenced to the appropriate secondary testing;
- Plans showing the location of all tests;
- "As-built" plans and sections of the works;
- Copies of the site engineer's daily records;
- Records of any problems or non-compliances and the solution applied;
- Any other site specific information considered relevant to proving the integrity of the New Cell or Landfill Infrastructure;
- Validation by a qualified person that all of the construction has been carried out in accordance with the

Construction Proposals.

"Landfill Infrastructure" means any specified element of the:

- permanent capping;
- temporary capping (i.e. engineered temporary caps not cover materials);
- leachate abstraction systems;
- leachate transfer, treatment and storage systems;
- surface water drainage systems;
- leachate monitoring wells;
- groundwater monitoring boreholes;
- landfill gas monitoring boreholes;
- landfill gas management systems;
- lining within the installation.

within the site.

"Liquids" means any liquid other than leachate within the engineered landfill containment system.

"LFTGN 05" means Environment Agency Guidance for monitoring enclosed landfill gas flares, September 2004.

"LFTGN 08" means Environment Agency Guidance for monitoring landfill gas engines, September 2004.

"New Cell" means any new cell, part of a cell or other similar new area of the site where waste deposit is to commence after issue of this permit and can comprise:

- groundwater under-drainage system;
- permanent geophysical leak location system;
- leak detection layer;
- sub-grade;
- barriers;
- liners;
- leachate collection system;
- leachate abstraction system;
- separation bund/layer;
- cell or area surface water drainage system;
- side wall subgrade and containment systems;

for the New Cell.

"No impact" means that the change made to the construction process will not affect the agreed design criteria, specification or performance in a way that has a negative effect.

"Medicinal product" means any medicine licensed by the Medicines and Healthcare products Regulatory Agency (MHRA) of their predecessors under the Medicines Act 1968, section 130.

"Pests" means Birds, Vermin and Insects.

"Review of the Hydrogeological Risk Assessment" means a written review of the hydrogeological risk assessment included in the Application, together with any other parts of the Application that addressed the requirements of the EP Regulations. The review shall assess whether the activities of disposal or tipping for the purpose of disposal of waste authorised by the permit continue to meet the requirements of the EP Regulations.

"Waste code" means the six digit code referable to a type of waste in accordance with the List of Wastes (England)Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means the standards included in Environment Agency Guidance for Monitoring Enclosed Landfill Gas Flares LFTGN 05 or Guidance for Monitoring Landfill Gas Engine Emissions LFTGN 08.

Schedule 7 - Site plan

END OF PERMIT

Environment Agency Permitting decisions

We have decided to vary the permit for Bennett Bank Landfill operated by WRG Waste Services Limited to extend the area available for landfilling and to allow relocation of the most of the sites operational infrastructure.

The permit number is EPR/BM6093IS

The variation number is EPR/BM6093IS/V004

The operator is WRG Waste Services Limited

The facility is located at: Bennett Bank Landfill
Thwaite Flat
Barrow-in-Furness
Cumbria
LA14 4QH

The decision was effective from 03/06/2010.

Summary of the decision

We have decided to grant a vary the permit for the operator, subject to the conditions in the permit to extension of the landfill to both the north (phase 6) and south (phase 7) to join the existing hill features. Completion of phase 7 will require the relocation of the site reception/weighbridge arrangements and surface water settlement lagoon. The operator has proposed revised details and has included new landfill gas utilisation and leachate storage facilities within the new entrance design.

The existing engineered lining system of phases 4 and 5 are to be extended beneath the new phases thus allowing waste to be deposited both above the existing waste and in the new phases. This will result in the further deposit of approximate 460,000 m3 of non–hazardous waste.

Changes to the operational infill operations necessitate the relocation most of the sites operational infrastructure, including:

- Site offices, parking and weighbridge;
- Gas utilisation plant; and
- Leachate storage facilities.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environment protection is provided.

Purpose of this document

This decision document:

- explains how the applicant's application has been determined;
- provides a record of the decision-making process;
- shows how all relevant factors have been taken into account.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key Issues of the decision;
- Annex 1 the decision check list;.

KEY ISSUES OF THE DECISION

The area of the landfill has been varied, this has resulted in the need for the relocation of and the introduction of new monitoring points for:

- Groundwater;
- Leachate;
- Perimeter landfill gas; and
- Surface water.

Justification for the inclusion of emission limits associated with these changes can be found under the individual topic headings below:

Stability and landfill engineering

The proposed landfill engineering design for Phases 6 and 7, detailed in Section 2.2. of the ESID, comprises for the base and sideslopes:

- 300mm thick leachate drainage layer of non-calcareous granular material
- Non-woven geotextile protector
- 2mm HDPE Artificial Sealing Liner (ASL)
- 1m thick geological barrier 1m thick of maximum permeability of 1x10-9 m/s

The preliminary review of the variation Hydrogeological Risk Assessment (HRA) indicated that the assumed pathway characteristics below Phase 6 were not justified by the referenced site investigation information. In our Schedule 5 notice dated May 2009 we suggested that due to contradictory information provided in the application we may require the engineered geological barrier to be increased in thickness from that proposed. Further information on the pathway characteristics was provided by the applicant in their Schedule 5 response dated July 2009 and we have agreed that the liner specification may remain as originally proposed. See discussion on groundwater below for further details.

The proposed capping system for restoration slope inclinations of less than 1V:4H (referred to as Capping Option 1) will comprise (from top to bottom):

- 1m restoration soils (placed in two 450mm thick lifts of restoration soils and one 100mm lift of topsoil).
- Geotextile protector.
- 1mm VLDPE textured geomembrane
- 0.3 metre stabilisation/blinding layer.

To the west of the site overlying phases 5/2 and 5/3 where the restoration slope inclinations exceed 1V:4H (maximum slope inclinations of 1V:3H) an alternative capping system is proposed (referred to as Capping Option 2):

- 1m restoration soils (including 0.3 metre sand protection/drainage layer, and 600mm thick lifts of restoration soils and one 100mm lift of topsoil).
- 1mm VLDPE textured geomembrane.
- 0.3 metre sand stabilisation/blinding layer.

The critical unconfined mineral liner slope configurations analysed in the risk assessment are located in Phase 7 and are as follows:

- Case A2-1 - 1m thick compacted mineral liner placed against the critical areas of the northern and western side slopes of the Southern Extension (12m high 1V:2H inclination).
- Case A2-2 - 1m thick compacted mineral liner placed against the critical areas of the southern and eastern side slopes of the Southern Extension (21m high 1V:3H inclination).

The assessment concludes that these slopes must incorporate 1m benches every 5m of vertical lift in order to remain stable.

The risk assessment assumes that temporary waste slopes will have a maximum inclination of 1V: 2.5H to a maximum height of 25m.

Above the rim of the void, the waste shall be placed in line with the pre-settlement restoration contours at a maximum gradient of 1V:3H to a maximum height of 18m.

In our May 2009 Schedule 5 noticed we queried the geometry of the landfill sideslope in Phase 6 presented in the application, and asked for confirmation of the stability and integrity of the Phase 6 slope geometry as follows:

> The worst case slopes assessed in the variation Stability Risk Assessment (SRA) occur in the Phase 7 southern extension. The assessed slopes are 12m high at 1V:2H and 21m high at 1V:3H inclination. The unconfined liner stability analyses for these slopes derived unacceptable Factors of Safety (1.073 and 0.981 respectively) (FoS). The SRA therefore concludes that it is necessary to key the sideslope clay liner into the underlying subgrade via a series of benches.
>
> The worst-case slope in Phase 6 has not been assessed for unconfined liner stability; cross-sections on Drawing ESID 10 Rev2 indicate that this is a slope approximately 12m high at 1V:3H. It is necessary to demonstrate that the worst case Phase 6 slope achieves an acceptable FoS in order to determine whether it is necessary for this liner to be keyed into the subgrade in the manner suggested for the Phase 7 sideslope liner.
>
> The numerical integrity analyses also focus on Phase 7 and no assessment of Phase 6 is made. The geometry of Phase 6 differs significantly from that of Phase 7 therefore the integrity of this phase must also be demonstrated.

A Construction Quality Assurance Plan has been submitted to the Agency for the proposed Phase 6 liner. The proposed slope gradients are significantly steeper than those presented in the SRA.

The Agency served a schedule 5 notice for further information on the following:

a) Analyse the worst-case Phase 6 side slope liner for unconfined stability. Revise the design of this sideslope as required in order to obtain an acceptable factor of safety against slope failure.

b) Provide an integrity analysis of the worst case Phase 6 liner configuration.

c) The proposed Phase 6 design should be amended to reflect the modelled geometry, or the SRA should be revised so as to demonstrate acceptable factors of safety against stability and integrity failure of the proposed design.

The operator responded to these queries in their letter dated 21 July 2009 reference 404.0197.00559.

We are not satisfied that the unconfined stability risk assessment submitted in the application and augmented in the Schedule 5 response accurately represents the currently proposed design. Furthermore we have identified that a Phase 6 sideslope design which has been submitted to us since the application was made includes steeper slopes than those considered in the risk assessment. With regard to item a) above, a stability analysis was presented confirming an acceptable factor of safety against unconfined slope failure of 1.449. We note that the model represents in idealised slope which differs in gradient from that which has subsequently been proposed to be built. In particular, there are areas near the toe of the slope which are steeper than those modelled.

We have therefore decided that changes to the design will be required and these are to be agreed following the issue of the Variation when the Phase Construction Quality Assurance Plan is submitted to us for approval. The response to questions a), b) and c) above are therefore moot, and we have included pre-operational condition **PO1** in the permit to ensure the eventual final design is re-assessed for stability and integrity:

It is apparent from Drawing ESID5 that the western extremity of Phase 7 overlies former mineral vein mineworkings trending N-S and NW-SE associated with the California – Woodhead Vein. An assessment of the likelihood of structural collapse of the basal liner subgrade in Phase 5/5 above these workings was made when the permit to be varied was originally issued. Although significant settlements of the subgrade were ruled out the assessment recommended that a geogrid reinforcement be included in the basal liner design to accommodate minor settlements. We deem a similar approach in Phase 7 to be prudent and have included pre-operational condition **PO2** to ensure that appropriate measures are taken to reinforce the liner where necessary.

The southern extension area forming Phase 7 overlies mine workings known as Oxenclose Trail Pit No. 2. The operator commissioned the consultants

Grontmij to investigate these workings and they reported their findings in the document 'Bennett Bank Landfill: Southern Extension Report on Ground Investigation' dated 2008. This report recommends that prior to the development of Phase 7 the workings are grouted up and stabilised. We have included pre-operation condition **PO3** to ensure that the recommendations in the Grontmij report are implemented in order to ensure the stability of the Phase 7 basal subgrade.

The geotechnical parameters used in the risk assessment models are presented in Tables SRA 2/7 and SRA 2/8. These are reproduced below

Table SRA 2/7 Geotechnical Design Parameters (Stability)

Material	Bulk Unit Weight γ (kN/m³)	Undrained Shear Strength s_u (kPa)	Effective cohesion c' (kPa)	Angle of Shearing Resistance ø' (°)	Bulk Modulus K (MPa)	Shear Modulus S (MPa)	Typical Description
Restoration/ top soil	18	-	0 (0)	26 (24)	-	-	Organic rich loosely placed soils. No compaction.
Restoration soils (sand)	18	-	0 (0)	32 (30)	-	-	Sand
Granular protection / drainage layer	18	-	0 (0)	32	-	-	Free draining granular material.
Waste	11	-	5	26	0.2	0.1	Elastic parameters selected for 20% waste settlement.
Compacted mineral liner	18	50	0	-	12.5	5.77	Re-compacted site derived.

Note: Figures in parenthesis denote conservative softened values

Table SRA 2/8 Interface Design Parameters

Interface	Peak		Post Peak Strength	
	c' (kPa)	ø'	c' (kPa)	ø'
Leachate drainage blanket / geotextile	0	32	-	-
Geotextile / textured HDPE geomembrane	6.7	26	3.6	13
Textured HDPE geomembrane / mineral liner	0	22	0	18
Mineral liner / sub-grade	0	20	-	-
Restoration soil / Geotextile	0	20	0	17
Geomembrane / Sand restoration soil	0	30	0	28
Geocomposite drainage layer / VLDPE geomembrane	6.7	26	3.6	13
VLDPE geomembrane / waste regulation layer	0	22	0	18
VLDPE Geomembrane / Sand regulation layer	0	30	0	28

Justifications for the parameters selected are given in Section 2.6 of the SRA report. We note that the geotechnical parameters selected are largely assumed values – these must be confirmed via the Construction Quality Assurance process.

Section 2.8 of the SRA report summarises the findings of the stability risk assessment and makes recommendations to ensure that the as-built containment system performs as assessed. Specifically these recommendations are :

1. Investigation and treatment of the Oxenclose Trail Pit No. 2 shaft and associated workings within the Phase 7 footprint.
2. Remedial works to drain any areas of cut slope subgrade which encounter perched groundwater
3. Keying the Phase 7 mineral liner into the underlying subgrade (1m benches every 5m vertical height) such that no continuous low shear strength interface occurs between the mineral liner and the sub-grade.
4. Capping Option 1 (see above) to be placed against slope inclinations less than 1V:4H.
5. Capping Option 2 (see above) to be placed against slope inclinations less than 1V:3H.
6. It is recommended that at an appropriate stage of detailed design, testing is undertaken on representative samples of the drift deposits forming the side slope subgrade to determine effective shear strength parameter values for comparison to the design chart. Should parameter values be below the acceptability criterion (see Chart A1-1 below) redesign of slope inclinations will be necessary.

Waste Recycling Group
Barnett Bank Landfill

Chart A1-1

SLR Ref.:403.0197.05581
September 2008

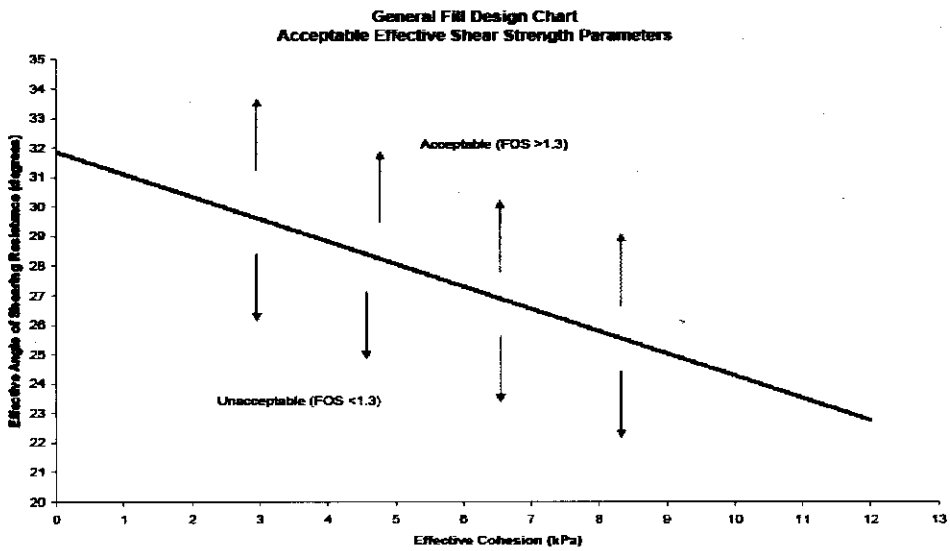

Table S1.4 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational Measures**
PO1	Phase 6 containment engineering	The operator shall submit as part of the Construction Quality Assurance Plan for Phase 6 a revised Stability Risk Assessment of the proposed engineered lining system. This risk assessment shall demonstrate acceptable factors of safety or factors of safety against stability and integrity failure of the final design of the Phase as approved by the Environment Agency in accordance with condition 2.7.1.
PO2	Phase 7 containment engineering	The engineered landfill lining system in the western part of the southern extension area (Phase 7) overlying mine workings as shown on drawing 4665/ESID/19 dated 10-01-06 shall incorporate geogrid reinforcement for the prevention of propagation of crown hole effects or differential settlement. The specification of the geogrid, position, extent and deployment methodology shall be supplied to the Agency for approval as part of the construction quality assurance procedures for this phase.
PO3	Phase 7 containment engineering	Prior to the installation of the engineered lining system in the southern extension area (Phase 7) remedial works shall be undertaken to secure and stabilise mine workings associated with the Oxenclose Trail Pit No. 2. These works shall be undertaken in accordance with the recommendations made in the report 'Bennett Bank Landfill: Southern Extension Report on Ground Investigation' prepared for WRG by Grontmij, 2008. The scope of the works and subsequent reporting on their completion shall be agreed with and verified to the Environment Agency as part of the construction quality assurance procedures for this phase.

GROUNDWATER AND SURFACE WATER

Legislative Overview

Regulation 11 of the Groundwater Regulations 2009 (GWR 09) states that

(1) When the Agency receives an application for a permit that might lead to the discharge of a pollutant, it must ensure that all necessary investigations have been carried out to ensure that it grants any permit in accordance with regulation 8 or 9.

(2) If it grants a permit, it must include conditions requiring all necessary technical precautions to be observed to ensure the objectives of regulations 8 and 9 are achieved.

(3) A permit may not be granted without examination of—

(a) the hydrogeological conditions of the area concerned,

(b) the possible purifying powers of the soil and subsoil, and

(c) the risk of pollution and alteration of the quality of the groundwater from the discharge,

and without establishing whether the input of pollutants into groundwater is a satisfactory solution from the point of view of the environment.

(4) A permit may only be granted if the Agency has checked that the groundwater (and, in particular, its quality) will undergo the requisite surveillance.

Regulation 8 of GWR 2009 states that

> The Agency must, in granting a permit, take all necessary measures to prevent the input of any hazardous substance into groundwater.

Regulation 8 of GWR 2009 states that

> The Agency must, in granting a permit, take all necessary measures to limit the input of non-hazardous pollutants into groundwater so as to ensure that such inputs do not cause pollution in groundwater.

Regulation 8(3)(i) and 8(3)(a)(vii) Landfill Regulations require that appropriate conditions are included in the permit to ensure compliance with Schedule 2 (landfill engineering) and Regulation 14 (the control and monitoring of operational landfill sites). In respect of groundwater, the appropriate requirements are found in:

a) Schedule 2, paragraph 2(1)(b) – make appropriate arrangements to prevent groundwater from entering into landfilled waste

Regulation 14 and Schedule 3 – monitoring of groundwater

a) Schedule 3, paragraph 3(1) – provides for at least one sampling measurement point in the groundwater inflow region and two in the outflow region

b) Schedule 3, paragraph 3(3) – Samples to be taken from a least three locations before filling operations to establish reference values for later sampling

c) Schedule 3, paragraph 4(1), (2), (3) and (4) – monitoring to be carried out in accordance with Table 2, with parameters for analysis to be identified applying criteria in the sub paragraphs.

d) Schedule 3, paragraph 5 – provides that significant adverse environmental effects should be considered to have occurred in the case of groundwater where an analysis of a groundwater sample shows a significant change in water quality. The level at which those effects are considered to have occurred will be by reference to 'the trigger level' to be set in the permit.

e) Regulation 14(2) and (3) provide for the operator to carry out the control and monitoring procedures and to notify the Agency in the event that the results of the monitoring procedures reveal any significant adverse environmental effects.

The Agency has therefore reviewed the application HRA, ESID, and supporting documents in order to comply with these legislative requirements by setting appropriate permit conditions.

Overview

The applicant submitted a Hydrogeological Risk Assessment (HRA) addendum report to assess the risk of discharges from the extension cells Phases 6 and 7. The methodology follows that which was used in the original permit application, using LandSim to model the environmental fate of

discharges to groundwater from both the existing cells and the new cells. This decision document does not repeat the detailed assessment we made in our original permit application decision document. It does however record our assessment of the risk from additional phases, and our decision on the applicant's request to increase leachate head compliance limits in the existing phases.

The addition of the northern and southern extension areas i.e. Phases 6 and 7 has necessitated the revision of the hydrogeological site conceptual model. This is presented in graphical form in drawing HRA1.

Leachate Source term

An updated review of the leachate quality data is presented within Section 2.1.2 of the Environmental Setting and Installation Design Report. Following this review of the monitoring information, the fate of the following contaminants was modelled in the HRA:

List I Substances

- Mecoprop;
- Cadmium;
- Naphthalene; and
- Toluene.

These are the most commonly detected List I Substances in leachate at Bennett Bank Landfill. It is noted that dichlorprop is also detected at a high frequency but, owing to its chemical similarity to mecoprop, it was not included it in the modelled source term.

List II Substances

- Ammoniacal-nitrogen;
- Chloride;
- Nickel; and
- Phenol.

Ammoniacal nitrogen and phenol exhibit the highest risk factors with regard to the current leachate quality. Chloride has been incorporated owing to its conservative nature and nickel has been included as a representative, mobile, metal cation with a relatively high risk factor.

Unsaturated zone pathway

The unsaturated zone pathway length beneath Phase 6 is described in the Landsim model as Boulder Clay and ascribed a uniform distribution of between 11m and 16.5m. The hydraulic conductivity of this pathway is given a distribution of between 1x10E-7 and 1x10E-9 m/s. Retardation parameters are defined for ammoniacal nitrogen in clay. The assumption therefore is that up to 16.5m of low permeability clay-type material lies beneath the phase.

The site investigation data referred to in Section 3.2 of the ESID (in particular the 2003 geotechnical investigation undertaken by Encia Consulting) concludes that the Urswick Limestone bedrock is encountered at depths of

between 0.2mbgl and 3.0mbgl in the northern extension area and that this unit comprises the remainder of the unsaturated pathway. It was therefore apparent that the modelled unsaturated zone properties did not reflect the ground conditions beneath Cell 6 and that the pathway length, hydraulic properties and retardation characteristics were all incorrect.

In our May 2009 Schedule 5 RFI we requested from the operator confirmation of the trial pit locations referred to in the Encia report with the aim of confirming the drift thickness under Phase 6. Section 2.2 of the July 2009 Schedule 5 response confirmed that the boulder clay thickness was in places thinner than originally assumed in the HRA. As a conservative approach Phase 6 was re-modelled with boulder clay unsaturated zone. The unsaturated zone was assumed to be entirely limestone with unretarded contaminant travel, and hydraulic conductivity was increased above that originally assumed. We have accepted this modelling approach.

The boulder clay unsaturated pathway beneath Phase 7 in the Landsim model is ascribed a pathway length of between 3m to 8.5m. According to the logs for the three boreholes advanced by Grontmij in 2008 (boreholes BHA, BH14R and RH105) there is an initial boulder clay thickness of between 7m and 13.5m underlying this phase. This boulder clay is underlain in turn by impersistent sand and gravel horizons interspersed with further clay layers until the Gleason Formation limestone bedrock is encountered at between 16.5 and 29mbgl. No groundwater was encountered in any of the three boreholes, implying an unsaturated zone thickness in excess of 20m. It was therefore unclear to us where the modelled Phase 7 unsaturated pathway length had been derived from. We requested clarification in our May 2009 RFI.

Section 2.2. of the July 2009 Schedule 5 response provided further analysis of borehole and trial pit data within the Phase 7 footprint. As a result of this information the modelled boulder clay thickness for this phase was revised to a distribution of zero to 11.5m. The underlying unsaturated sand and gravel horizons interspersed with further clay layers and the Gleason Formation limestone bedrock were disregarded in the model as a conservative assumption.

Groundwater flow and surface water receptors

Drawing ESID 32 shows inferred groundwater contours from the March 2007 monitoring data. As discussed in ESID Section 3.6.3 the contours inferred from monitoring boreholes WB1, WB2, and WB3 indicate a seasonal change in the groundwater gradient towards the north and north-west. The potential for such periodic flow reversal to pose a risk to the surface water sops to the north and west is discussed in part in this section. Contradictory statements are made in an attempt to exclude Burlington Lake as a receptor even during these periods of flow gradient reversal: first it is stated that a recharge-driven groundwater divide is likely to exist from time to time as shown by the contours indicating flow towards the lake. Then it is stated that as levels in WB2 and WB3 remain above those in wells to the south-west of the site at all times, 'groundwater flow beneath the site remains to the south west' i.e. against the indicated gradient. This contradicts both the concept of a groundwater divide and the observed level data and inferred gradient.

The Agency takes the precautionary view that Burlington Lake, which is in hydraulic continuity with the groundwater beneath the site, may comprise a receptor of contaminant discharges from the site during periods when the flow gradient is reversed. Phase 6 in particular will lie in the vicinity of the potential groundwater divide. This is of particular concern due to the lack of certainty regarding the nature and thickness of any natural geological barrier under Phase 6, and the potential for preferential groundwater flow through fissures and karstic voids in the Urswick and Park limestone's.

In our May 2009 Schedule 5 RFI we put these concerns to the applicant, who in their July 2009 response modelled the potential impact on groundwater in continuity with Burlington Lake. In this assessment a highly conservative assumption was made that groundwater flow direction was permanently from the landfill toward the lake to the north-west, rather than for a few months in wet winters as is the case in actuality. The results of this model showed that there would no discharges of hazardous (List I) or non-hazardous (List II) substances above the relevant Environmental assessment Limits (EALs) at the north-western site boundary. We consider this assessment to be acceptable.

Monitoring the level of all ponds including Burlington Lake and Pond A is to be included in the varied permit requisite surveillance monitoring programme. We require monitoring for an initial 5-year period in order to obtain a statistically robust set of level data to confirm the potential for surface water bodies adjacent to the landfill to comprise receptors.

Leachate levels

The compliance limit for leachate head levels in the existing phases of the landfill were set at 1m in the original permit, excepting Phase 2 for which no limit was set. In the variation application the operator has requested an increase in the leachate head compliance limit to 2.5m above base level for Phase 4, 3.5m for Phase 6 and 3m for all other Phases. These heads have been used in the variation HRA Landsim model. We have partially accepted these proposed increases as there are no predicted non-compliant discharges resulting. We have however limited the permitted head in some cells to maintain hydraulic separation by preventing overtopping of the cell separation bunds. Table S4.1 in the permit details the levels we have set: this is reproduced below.

The operator requested monthly monitoring for Phases 3, 4, and 5 without any formal justification for the change. The Agency considers that monthly monitoring is acceptable once stable leachate head conditions are established. However, this may not be for some time as the site has also experienced extraction difficulties in the past and there are proposals to temporarily remove the cap of these cells to allow the deposit of more waste which may affect the sites infiltration rate.

A footnote has been added to table S3.1 to allow local agreement of a monthly period once stable leachate head conditions prevail at the site.

Table S4.1 Leachate level limits and monitoring requirements			
Monitoring point reference/ Description (1)	**Limit**	**Monitoring frequency**	**Monitoring method**
Phase 2 Leachate Monitoring Points – 2/101, 2/102, 2/104, 2/105, 2/109, 2/110, 2/111 and 2/119.	None set	Monthly	Monitoring to be carried out in accordance with Environment Agency Document 'Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water (LFTGN02), unless otherwise agreed in writing with the Agency.
Phase 3 Leachate Extraction Wells – Cell 1 - 3/1W (1); Cell 2 - 3/2W.	2.0m above base of well casing	Weekly (3)	
Phase 3 Leachate Monitoring Point – 3/1E and 3/2E.	2.0m above base of well casing	Monthly	
Phase 4 Leachate Extraction Well - 4C.	2.5m above base of liner (2)	Weekly (3)	
Phase 5 Leachate Extraction Wells – Cell 1 - 5/1; Cell 2 - 5/2; Cell 3 - 5/3; Cell 4 - 5/4.	2.0m above base of liner (2)	Weekly (3)	
Phase 5 Leachate Extraction Wells – Cell 5 - 5/5.	3.0m above base of liner (2)	Weekly (3)	
Phase 5 Leachate Monitoring Points – Cell 3 - 5/3/A and 5/3/B; Cell 4 - 5/4/A and 5/4/B.	2.0m above base of liner	Monthly	
Phase 5 Leachate Monitoring Points - Cell 5 - 5/5/A (2) and 5/5/B.	3.0m above base of liner	Monthly	
Phase 6 Leachate Monitoring Points - Western monitoring point.	2.5m above base of liner	Monthly	
Phase 6 Leachate Monitoring Points - Eastern monitoring point.	2.0m above base of liner	Monthly	
Phase 7 Leachate Monitoring Points - All monitoring points.	3.0m above base of liner	Monthly	

(1) As detailed on drawing 4665/ESID10 revision 3.

(2) Measured from the liner level at the lip of the sump.

(3) Monthly once agreed in writing with the Agency that stable leachate head conditions exist within these phases.

Landsim Model Predicted Discharges

The Landsim model submitted with the original application has been updated to incorporate the addition of Phases 6 and 7 and revised parameters such as increased leachate concentrations and heads. The results of the modelling are reported in Tables HRA5 and HRA6. These models were revised again in order to address the issues we raised in our May 2009 Schedule 5 RFI. The results of these revised models are reported in Table 7 and Table 8 of the July 2009 Schedule 5 response. The models predict that there will be no discernable discharge to groundwater of hazardous (List I) substances and no polluting discharges of non-hazardous (List II) substances at the relevant compliance points.

We have accepted the conclusions of these revised models and are thus able to issue a permit with appropriate conditions in accordance with the requirements of the Groundwater Regulations 2009.

Requisite Surveillance

Compliance limits for hazardous substances in groundwater were proposed in the variation HRA and revised in the July 2009 schedule 5 RFI response. The operator proposes that the limits for hazardous (List I) substances are set at the Minimum reporting Value (MRV) – this is acceptable. The limits for non-hazardous substances in groundwater are proposed in Table 9 of the Schedule 5 response.

We do not consider the proposed limit for ammoniacal nitrogen of 1.19mg/l in all boreholes bar RH103 to be supported by the historical monitoring data. We have reviewed the groundwater quality chemograph supplied in ESID Appendix 9 and reproduced in the July 2009 Schedule 5 response. In doing so we have re-assessed the compliance limits in the light of the Agency's interpretation of the 2006 EU Groundwater Daughter Directive. This places a duty upon us to maintain and where possible improve existing groundwater quality.

Where a compliance limit of 1.19mg/l is justified, as at RH13, this has been set in the permit as proposed.

The down-gradient monitoring boreholes RH5R, RH6R, RH101, RH102, and RH104 show no significant exceedences of the Drinking Water Standard for ammoniacal nitrogen throughout the monitoring period 2002 to 2008. We have therefore set the compliance limit at these locations at the Drinking Water Standard (DWS) i.e. 0.5 mg/l.

Concentrations of ammoniacal nitrogen in Borehole RH8 have been recorded above the DWS but not above 1mg/l since 2006. We have therefore set the compliance limit at this borehole at 1mg/l.

Improvement Programme

Elevated concentrations of ammoniacal nitrogen and nickel have been consistently recorded in borehole RH103 on the Phase 3 boundary. We have set an improvement condition requiring the source of this groundwater contamination to be investigated.

Table S1.3 Improvement programme requirements

Requirement	Date
a) The Operator shall provide to the Agency for approval a report on the groundwater quality observed in monitoring well reference RH 103. This report shall investigate the source of the elevated concentrations of ammoniacal nitrogen and nickel recorded in samples taken from this borehole since its installation. Additional detailed justification for the Operator's contention that Bennett Bank landfill is not the source of this contamination shall be provided. This justification should include (but not be limited to): i) a report on the construction, condition, and suitability of the borehole to monitor groundwater without undue influence from contamination sources external to the landfill, ii) a comparison with the groundwater quality monitored in adjacent wells RH102 and RH104, their relative hydrogeological setting, and any potential external influences on the groundwater quality in those wells (or lack thereof), b) The Operator shall submit proposals for the minimisation of any identified external influences on the monitored groundwater quality.	3 months from the issue of the permit

LANDFILL GAS

The creation of phase 7 has brought the landfill area closer to the golf driving range. We consider that the spacing of perimeter LFG monitoring boreholes given proximity of the range buildings needs decreasing to approximately 50 metres.

The pre-operational condition PO4 (see also table S4.5 below) ensures that additional landfill gas monitoring boreholes are installed in accordance with the recommendations in the application Landfill Gas Risk Assessment Addendum Report by Golder Associates. The condition further requires these boreholes to be included in the landfill gas monitoring programme and that trigger limits are proposed for Environment Agency approval and incorporated into the permit.

Table S1.4 Pre-operational measures for future development

Reference	Operation	Pre-operational Measures
PO4	Phase 7 landfill gas monitoring	In accordance with the addendum report to the landfill gas risk assessment, document reference 08514290266.501 dated September 2008 (report on perimeter landfill gas monitoring borehole spacing) three gas monitoring boreholes shall be installed at approximately 50m intervals along the southern boundary of the Phase 7 extension area. These boreholes shall be constructed in accordance with the relevant Environment Agency guidance on the monitoring of sub-surface landfill gas. The boreholes shall be installed no later than six months prior to the commencement of waste deposits in Phase 7 in order that pre-operational monitoring data may be obtained. The new boreholes shall be incorporated into the landfill gas monitoring programme. 13 months from the date of installation trigger limits for methane and carbon dioxide shall be proposed based on monthly monitoring of the boreholes for 12 months following their installation. On obtaining the approval of the Environment Agency these trigger limits shall be incorporated into Table S4.5 of the permit.

The Agency has concerns regarding the potential for Hydrogen sulphide emissions should the operations require more than one cell to be open at any one time. We consider that the operator should limit the area of operational tipping phases so that the total 100%ile Maximum Hourly Predicted Environmental Concentration (PEC) of Hydrogen Sulphide beyond the site boundary from all un-capped phases does not exceed 150 $\mu g/m^3$. This operationally can be achieved in three ways.

1. The operator should refer to the PEC's set out in Table GRA27 of the Revised Landfill Gas Risk Assessment report dated August 2008 in determining which phases may remain concurrently un-capped. PECs from relevant phases shall be summed and the total shall not exceed the 150 $\mu g/m^3$ limit. The operator should also ensure that temporary or permanent capping and landfill gas abstraction systems shall be installed on non-operational phases within 3 months of tipping operations moving to another phase (see condition 2.3.2 of the variation).

   The specification and installation of these capping and landfill gas abstraction systems shall be notified to and approved by the Environment Agency in accordance with the conditions prescribed in Section 2.7 of this Permit.

The operator has expressed concern that temporary and permanent capping must be placed within 3 months of tipping being complete and considers that it is unrealistic to assume that a construction quality assured capping layer can be delivered within the 3 month period. In that prior to mobilising plant onsite there will need to be a period raising capital expenditure and tendering work where a suitably qualified contractor will be appointed.

WRG requested that the period be extended to 6 months or a period to be agreed with the Agency thus providing time to address all tendering, contractual requirements and health and safety considerations. Adequate daily cover will be applied, and where feasible a blinding layer, will be emplaced to ensure that there is no uncontrolled releases ahead of temporary/ permanent capping.

The Agency considered this request and decided that the condition should remain unaltered as there is an overriding need to prevent odourous emissions emanating from the site and given that it should be possible for an operator to predict the closure of the phase sufficiently in advance to ensure this condition is met. However, it should be recognised that the Agency provided that the overriding need is met some small delay may be acceptable in meeting this condition, this would be decided at a local area level taking into account the operational practices an site specific issues at the time of completion of the phase.

2. The Agency considers that all potential point sources of fugitive landfill gas emissions shall be sealed so as to minimise such emissions and has introduced condition 2.3.3 to ensure that this is undertaken by the operator. Point sources may include, but not be limited to, monitoring and abstraction well heads (including leachate management installations), and pipework joints.

   A further control has been introduced in table S4.7 to ensure that the point sources identified are checked on a quarterly basis.

3 The operator shall conduct a walkover survey of methane emissions from all temporarily capped areas and potential point sources using a suitable detector e.g. hand-held Flame Ionisation Detector (FID). The walkover survey shall be conducted in accordance with the guidance set out in 'LFTGN07 - Guidance on monitoring landfill gas surface emissions' (Environment Agency 2004).

   Where the survey identifies methane concentrations in excess of the control levels set out in Tables S4.6 and S4.7 below, remedial action shall be taken to reduce the emission concentration to below the specified limit.

Table S4.6 Landfill gas from capped surfaces - monitoring requirements				
Monitoring point Ref. /description	**Parameter**	**Monitoring frequency**	**Other specifications**	**Monitoring Standard or method**
Permanently capped zone	Average methane flux and total methane emission	Annually*	Where the average zone emission rate of 0.001 $mg/m^2/second$ is exceeded appropriate measures must be taken to reduce the rate.	As per LFTGN 07 or as otherwise agreed in writing by the Agency.
Temporarily capped zone	Average methane flux and total methane emission	Annually*	Where the average zone emission rate of 0.1 $mg/m^2/second$ is exceeded appropriate measures must be taken to reduce the rate.	As per LFTGN 07 or as otherwise agreed in writing by the Agency.
	Methane	Quarterly	Where the survey identifies methane concentrations in excess of 100ppmv remedial action shall be taken within 3 working days to reduce the emission concentration to below the specified limit.	

Footnote * If a cap has previously been shown compliant and there have been no significant physical changes in the gas management during the year, a detailed walkover survey can be used to demonstrate that the surface emissions are under control. If this survey shows no change in the pattern of methane emission, it may be used as the annual survey. The values for flux and total methane emissions measured in the previous year may be reported and a fresh flux box survey is not necessary. If the zone remains stable, the results of a full walkover survey may be accepted as the site report for a period of four years before a further quantitative flux box survey is required.

Table S4.7 Landfill gas – other monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
WL101, WL102, WL103, WL104, WL105, WL106, WL107, WL 108, WL109, WL110, WL201, WL202 and WL203 as shown on drawing 4665/ESID/13B revision 1 dated 25/09/2007.	*Methane* *Carbon Dioxide* *Oxygen* *Atmospheric pressure* *Differential Pressure* Meteorological data	Monthly	Monitoring to be carried out in accordance with Environment Agency - Landfill Technical Guidance Note (LFTGN) 03: 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency.	-
Gas collection system at well control valve and manifolds on gas system on permanent and temporarily capped areas.	Methane Carbon Dioxide Oxygen Carbon Monoxide Atmospheric pressure Differential pressure Gas flow rate % Balance Gas (calculated as the difference between the sum of measured gases and 100%)	At frequencies specified in table 5.4 of LFTGN 03	Monitoring to be carried out in accordance with Environment Agency - Landfill Technical Guidance Note (LFTGN) 03: 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency.	Where the Oxygen level exceeds 5% or where the addition of the Carbon Dioxide and Methane percentages is less than 80%, an assessment of air ingress into the system shall be undertaken.
Manifold on main line carrying the landfill gas to the gas utilisation plant.	Trace gas analysis	Annually	Agency guidance not LFTGN04 monitoring of trace components in landfill gas	-
Input to Landfill Gas Engines G1, G2 and flare.	Methane Carbon Dioxide Oxygen Gas flow rate % Balance Gas (calculated as the difference between the sum of measured gases and 100%)	Continuous	As set out in the application or otherwise as agreed with the Agency.	Where the Oxygen level exceeds 5% or where the addition of the Carbon Dioxide and Methane percentages is less than 80%, an assessment of air ingress into the system shall be undertaken.
Potential point sources. (Point sources may include, but not be limited to, monitoring and abstraction well heads (including leachate management installations), and pipework joints.)).	Methane	Quarterly	Flame Ionisation Detector (FID).	Where the survey identifies methane concentrations in excess of 1000 PPMV remedial action shall be taken within 3 working days to reduce the emission concentration to below the specified limit.

Perimeter LFG monitoring

Improvement condition IP1 of the variation JP3335MY dated 01/01/08 concerned the establishment of replacement perimeter borehole BH14R and the determination of control and trigger levels for methane and carbon dioxide.

The report submitted byt eh operator in respect of IP1B proposed a trigger level of 1.00%v/v for methane and 1.50%v/v with respect to carbon dioxide be assigned to BH14R. No Control Levels were proposed in the Report - Stuart Males (WRG) e-mail dated 03 June 2009 explained that LFTGN03 does not make reference to the application of control levels to gas monitoring boreholes external to waste and as the trigger levels proposed are industry standard then the setting of control levels below the proposed trigger levels would provide no additional benefit in the detection of laterally migrating landfill gas - the Agency accepts this statement. As a result no Control Level needs to be provided in the report submitted by WRG to satisfy the requirements of IP1B.

The Agency accepts the trigger levels proposed as they have been set (see table S4.5) in accordance with Agency guidance which states that emission limits should be set at 1.00%v/v and 1.50%v/v above background concentration for methane and carbon dioxide respectively.

Table S4.5 Landfill gas in external monitoring boreholes – limits and monitoring requirements

Monitoring point Ref. /description (1)	Parameter	Limit (including units)	Monitoring frequency	Monitoring standard or method
BH3, BH5, BH6R, BH7, BH8, BH9, BH10, BH11, BH12R, BH13, RH14R, BH15, BH16, RH6R, RH12R and RH101.	Methane Oxygen Atmospheric pressure Differential Pressure Meteorological data	1 %v/v No limit No limit No limit No limit	Monthly	Monitoring to be carried out in accordance with Environment Agency - Landfill Technical Guidance Note (LFTGN) 03: 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency.
BH3, BH5, BH7, BH8, BH9, BH10, BH11, BH13, BH15, RH6R and RH12R.	Carbon Dioxide	5.0 %v/v		
BH6R.	Carbon Dioxide	4.0 %v/v	Monthly	Monitoring to be carried out in accordance with Environment Agency - Landfill Technical Guidance Note (LFTGN) 03: 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency.
BH12R.	Carbon Dioxide	2.2 %v/v		
RH14R.	Carbon Dioxide	1.5 %v/v		
BH16.	Carbon Dioxide	2.5 %v/v		
BH101.	Carbon Dioxide	2.5 %v/v		

Table S4.5 Landfill gas in external monitoring boreholes – limits and monitoring requirements				
Monitoring point Ref. /description (1)	**Parameter**	**Limit (including units)**	**Monitoring frequency**	**Monitoring standard or method**
New boreholes installed in accordance with pre-operational condition PO1.	Methane Carbon Dioxide Oxygen Atmospheric pressure Differential Pressure Meteorological data	(2) (2) No limit No limit No limit No limit	Monthly	Monitoring to be carried out in accordance with Environment Agency Landfill Technical Guidance Note (LFTGN) 03: 'Guidance on the management of landfill gas,' unless otherwise agreed in writing with the Agency.

(1) As shown on drawing number 4665/ESID/13A revision 1 dated 05/09/2007.

(2) Trigger limits to be set in accordance with pre-operational condition PO4.

Operational techniques

The Agency has concerns regarding the potential for the increase in odour from the site created moving the deposit of waste closer to receptors, cap removal from the old waste deposit areas and the over tipping of this area with new waste deposits. These are not considered to be within the remit of the approved odour management plan.

The Agency has there set improvement condition IP2 to ensure that the operator provides for the approval of the Agency a revised Odour Management Plan.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IP2	Provide to the Agency for approval an Odour Management Plan taking into account the operation of Phases 6 and 7 together with the proposed overtipping operations.	2 months

The list of approved wastes contains references to liquid wastes in the form of "solutions" which fall within the list of waste banned from landfills. Reference to this form of waste, 06 03 14 and 19 09 06, in Schedule 3 has been struck through to show that it is not now considered to be a permitted waste.

Conservation

The following habitats assessment showed that It is possible to conclude that there would be no likely significant effect either alone or in combination with any other permission plan or project.

The assessment was sent to Natural England for information.

APPENDIX 11

Form HR01: Proforma for new applications within Stage 2 criteria.

ENVIRONMENT AGENCY

Environment Agency Record of Assessment of Likely Significant Effect On A European Site (Stage 2)

The new application for a **Waste Licence (PPC or other)** *detailed below is within the Stage 1 criteria of* **2km (SAC) and 5km (SPA/Ramsar)**, *and in order to progress the application a Stage 2 assessment is required.*
For Information Only

1.	**Type of permission/activity:**	**Waste Licence (EPR)**
2.	**Agency reference no:**	VP3438GF
3.	**National Grid reference:**	SD2150075000
4.	**Site reference:**	***Bennett Bank Landfill***
5.	**Brief description of proposal:**	This variation is for an extension of the existing landfill to both the north (phase 6) and south (phase 7) to join the existing hill features (see plan at end of assessment). Completion of phase 7 will require the relocation of the site reception/weighbridge arrangements and surface water settlement lagoon. The operator has proposed revised details and has included new landfill gas utilisation and leachate extraction facilities within the new entrance design. The existing engineered lining system of phases 4 and 5 are to be extended beneath the new phases thus allowing waste to be deposited both above the existing waste and in the new phases. This will result in the further deposit of approximate 460,000 m^3 of non-hazardous waste. The original PPC permit was issued in 2005, Natural England were able to agree with the conclusion of no likely significant effect (02/11/05). The potential risks, and operational controls are consistent with those in the original assessment.
6.	**European site name(s) and status:**	**Duddon Estuary Ramsar** **Duddon Estuary SPA** **Morecambe Bay SAC**
7.	**List of interest features:**	Duddon Estuary 2.10 Amphibia (Natterjack Toad 3.4 Birds of lowland wet grasslands (Knot (3.4), Redshank (3.4) 3.6 Birds of lowland freshwaters and their margins (Pintail (3.6), Waterfowl(>20, 000) (3.6) 3.7 Birds of farmland (Knot (3.7), Redshank (3.7) 3.8 Birds of coastal habitats (Knot (3.8), Pintail (3.8), Redshank (3.8), Ringed plover (3.8), Sanderling (3.8), Sandwich tern (3.8), Waterfowl(>20, 000) (3.8) 3.9 Birds of estuarine habitats (Curlew (3.9), Dunlin (3.9), Knot (3.9), Oystercatcher (3.9), Pintail (3.9), Redshank (3.9), Ringed plover (3.9), Sanderling (3.9), Sandwich tern (3.9), Shelduck (3.9), Waterfowl(>20, 000) (3.9)) Morecambe Bay 1.10 Coastal Habitats (Embryonic shifting dunes, Eu-atlantic decalcified fixed dunes (Priority Feature), Fixed dunes with herbaceous vegetation (grey dunes) (Priority Feature), Perennial vegetation of stony banks, Shifting dunes along the shoreline with Ammophila arenaria (white dunes) 1.11 Coastal habitats (sensitive to abstraction) (Coastal Lagoons (Priority Feature), Dunes with Salix arenaria, Humid dune slacks 1.12 Estuarine & intertidal habitats (Atlantic salt meadows, Estuaries, Large shallow inlets and bays, Mudflats and sandflats not covered by seawater at low tide, Reefs, Salicornia and other annuals colonising mud and sand 1.13 Submerged marine habitats (Reefs, Sandbanks that are slightly covered by sea water all the time. 2.10 Amphibia (Great crested newt)

8.	**Is the proposal directly connected with or necessary to the management of the site for nature conservation?**	No

9. **What potential hazards are likely to affect the interest features?** (Refer to relevant sensitivity matrix and only include those to which the interest features are sensitive). **Are the interest features potentially exposed to the hazard?**

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Duddon Estuary		
2.10 Amphibia (Natterjack Toad)	Disturbance (e.g Access, Noise, Gulls)	No increase in risk from existing installation. NOISE A report undertaken in July 2003 found that at five monitoring sites the average ambient noise did not exceed 62dB. Noises produced by normal working practices are likely to be insignificant when compared to noise from the traffic on the nearby roads. It is considered that the effects of noise disturbance resulting from landfilling activities at this site are not likely to cause any significant effects to any designated sites in the vicinity of the site. ACCESS None required
	Habitat Loss	No increase in risk from existing installation SURFACE WATER Surface water quality is monitored either on site or in close proximity of the site, no habitat loss on a European Site is likely as there is no direct connectivity. It is concluded that there is no likely significant effect arising from this hazard. PHYSICAL ACCESS Again, as all monitoring and activities are undertaken either on site or in close proximity of the site and any emergency measures and plans do not require staff to enter any adjacent land, effects of human activity via physical access to designated areas is deemed to cause no likely significant effect.

	Nutrient Enrichment	No increase in risk from existing installation DUST The haul road is found to be the most significant dust generating source at this site and appropriate mitigation measures are in place to minimise any releases to the environment. Also, as a result of a dust deposition monitoring exercise carried out over a three month period between September and November 2003, it was found that natural rainfall in the area was a useful aid in dust suppression. It is concluded that there is no likely significant effect arising from this hazard. SURFACE WATER Surface water quality is monitored either on site or in close proximity of the site, no habitat loss on a European Site is likely as there is no direct connectivity. It is concluded that there is no likely significant effect arising from this hazard. LEACHATE There are no anticipated significant effects from leachate contamination in the form of nutrient enrichment within this site as all leachate is removed via road tanker for treatment off site. The existing engineered lining system of phases 4 and 5 are to be extended beneath the new phases. A hydrogeological assessment has been undertaken for this variation and extension of the lining system, any emissions to groundwater are unlikely to impact the European site given its distance from the site boundary. It is concluded that there is no likely significant effect arising from this hazard. LANDFILL GAS The existing Gas Utilisation Plant is to be moved as part of the variation, but the thermal input remains the same (5-20MW). It is not relevant for assessment as the European sites are located >0.5km (Waste TAG 15: Guidance on identifying '*relevance*' for assessment under the Habitats Regulations for landfill Gas Utililisation Plants and Flares

	Siltation	No increase in risk from existing installation SURFACE WATER Surface water quality is monitored either on site or in close proximity of the site, no habitat loss on a European Site is likely as there is no direct connectivity. It is concluded that there is no likely significant effect arising from this hazard.
	Smothering	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above
3.4 Birds of lowland wet grasslands (Knot (3.4), Redshank (3.4))	Disturbance (e.g Access, Noise, Gulls)	No increase in risk from existing installation ACCESS as above NOISE as above GULLS Gulls can be a threat to other birds in the area due to predation on eggs and young nesting birds. At this site, the daily coverage of exposed wastes and good landfilling practices are discouraging birds from scavenging at the working face with a view to discouraging them from the area altogether. This will also cover the proposed cells. Also, a randomly set bird scarer and the use of a licensed marksman within the site boundary three times a week are used. It is concluded that there is no likely significant effect arising from this hazard.
	Habitat Loss	No increase in risk from existing installation as above
	Predation	No increase in risk from existing installation as above
	Siltation	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above
3.6 Birds of lowland freshwaters and their margins (Pintail (3.6), Waterfowl(>20, 000) (3.6))	Disturbance (e.g Access, Noise, Gulls)	No increase in risk from existing installation as above
	Habitat Loss	No increase in risk from existing installation as above
	Nutrient Enrichment	No increase in risk from existing installation as above
	Predation	No increase in risk from existing installation as above
	Siltation	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above
3.7 Birds of farmland (Knot (3.7), Redshank (3.7))	Disturbance (e.g Access, Noise, Gulls)	No increase in risk from existing installation as above
	Habitat Loss	No increase in risk from existing installation as above

	Predation	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
3.8 Birds of coastal habitats (Knot (3.8), Pintail (3.8), Redshank (3.8), Ringed plover (3.8), Sanderling (3.8), Sandwich tern (3.8), Waterfowl(>20, 000) (3.8))	Disturbance (e.g Access, Noise, Gulls)	No increase in risk from existing installation as above
	Habitat Loss	No increase in risk from existing installation as above
	Nutrient Enrichment	No increase in risk from existing installation as above
	Predation	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above
3.9 Birds of estuarine habitats (Curlew (3.9), Dunlin (3.9), Knot (3.9), Oystercatcher (3.9), Pintail (3.9), Redshank (3.9), Ringed plover (3.9), Sanderling (3.9), Sandwich tern (3.9), Shelduck (3.9), Waterfowl(>20, 000) (3.9))	Disturbance (e.g Access, Noise, Gulls)	No increase in risk from existing installation as above
	Habitat Loss	No increase in risk from existing installation as above
	Nutrient Enrichment	No increase in risk from existing installation as above
	Predation	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above
Morecambe Bay		
1.10 Coastal Habitats (Embryonic shifting dunes, Eu-atlantic decalcified fixed dunes (Priority Feature), Fixed dunes with herbaceous vegetation (grey dunes) (Priority Feature), Perennial vegetation of stony banks, Shifting dunes along the shoreline with Ammophila arenaria (white dunes))	Habitat Loss	No increase in risk from existing installation as above
	Nutrient Enrichment	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
1.11 Coastal habitats (sensitive to abstraction) (Coastal Lagoons (Priority Feature), Dunes with Salix arenaria, Humid dune slacks)	Habitat Loss	No increase in risk from existing installation as above
	Nutrient Enrichment	No increase in risk from existing installation as above
	Siltation	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above
1.12 Estuarine & intertidal habitats (Atlantic salt meadows, Estuaries, Large shallow inlets and bays, Mudflats and sandflats not covered by seawater at low tide, Reefs, Salicornia and other annuals colonising mud and sand)	Habitat Loss	No increase in risk from existing installation as above
	Nutrient Enrichment	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above
1.13 Submerged marine habitats (Reefs, Sandbanks that are slightly covered by sea water all the time.)	Nutrient Enrichment	No increase in risk from existing installation as above
	Siltation	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above
2.10 Amphibia (Great crested newt)	Disturbance (e.g Access, Noise, Gulls)	No increase in risk from existing installation as above
	Habitat Loss	No increase in risk from existing installation as above

	Nutrient Enrichment	No increase in risk from existing installation as above
	Siltation	No increase in risk from existing installation as above
	Smothering	No increase in risk from existing installation as above
	Toxic contamination	No increase in risk from existing installation as above

10. Is the potential scale or magnitude of any effect likely to be significant?	
a) Alone? (explain conclusion, e.g. in relation to de minimis criteria)	No This application is for a variation to an existing permit for Bennet Bank landfill to include 2 new cells and the relocation of the Gas Utilisation Plant. This application does not increase the risk to the Duddon Estuary SPA/Ramsar or Morecambe Bay SAC. The operational controls and landfill engineering will ensure that there are no pathways between the landfill and the European sites. It is possible to conclude no likely significant effect alone.
b) In combination with other Environment Agency permissions and/or other plans or projects? (Explain conclusion and which plans/projects have been included, including those associated with other functions).	No This application for a variation to the existing permit does not have the potential for an in combination effect with other Environment Agency permissions. The operational controls and landfill engineering will ensure that there are no pathways between the landfill and the European sites. It is possible to conclude no likely significant effect in combination
c) In combination with permissions and/or plans/projects of other Competent Authorities? **(Explain conclusion and which plans/projects have been included. See <u>Appendix 23</u> for further information).** **Include list of other Competent Authorities that have been consulted and what their comments were in relation to the decision on likely significant effect.**	As a result of its risk assessment, the Agency can conclude that this application could not act in combination with permissions and/or plans/projects of other competent authorities, consultation has not been necessary. The operational controls and landfill engineering will ensure that there are no pathways between the landfill and the European sites.
11. Conclusion: **Is the proposal likely to have a significant effect 'alone or in combination' on a European site?** (Justification – attach any relevant supporting information and the reasons for coming to the particular conclusion)	No It has been possible to conclude no likely significant effect both alone and in combination with Environment Agency and other competent authority's permissions.
12. Justification for Reduced Consultation review process : A brief justification should be written outlining why each application is thought to be minor or large/complex, and thus why you are sending to Natural England for either information or consultation.	**This application is for a variation to an existing permit for landfilling in two extra cells (see map below). The existing landfill liner will be extended into these cells, and current operational controls will be extended to these areas.** **There will be no increase in risk to the European sites as a result of this variation. Natural England agree with the conclusion of no likely significant for the existing landfill.**
13. Name of EA Officer:	**Date:**

14. Natural England/CCW comment on assessment: (If the NE/CCW officer disagrees with the conclusion of 10c, please include details of the other Competent Authorities which should be consulted).	For use when the Appendix 11 is to be sent to Natural England /CCW **for consultation**. N/A	
15. Name of NE/CCW Officer:		**Date:**

Part B - SUGGESTED SCOPE OF THE APPROPRIATE ASSESSMENT: (see also NE and CCW Habitats Regulations Guidance Notes HRGN1 and OH 99/01) (Water Resources, please see note in Appendix 4 of the guidance for assessing new permissions) *(add details to following framework)* • Other competent authorities involved (the scope of the appropriate assessment must be agreed with them). • Characterise the site in relation to the qualifying features and their conservation objectives; - Existing information - Additional surveys - Management/ unauthorised impacts • Detailed description of plan/project • Assess each likely impact on the interest features; - Compare with historical data - predict impacts - compare with impact from management/unauthorised activities • Determine the extent to which each possible impact can be avoided.
15. NE/CCW Comment on scope of appropriate assessment: Mainly for use when the Appendix 11 is sent to Natural England /CCW **for consultation.** Natural England/CCW may still choose to send comments on the scope of the forthcoming appropriate assessment (if one is required) even if the Appendix 11 was sent for information only. See Appendix 11 Work Instruction 276_05.

16. Name of NE/CCW Officer:		**Date:**

PROPOSED CELL 8
EXISTING PHASES 4&5
PROPOSED CELL 7

Annex 1: decision checklist

Activity	Justification / Detail	Determination criteria met	
		No	Yes
Receipt of submission			
Application fee	The application fee is correct		✓
Commercial confidentiality	The operator has not made a claim for commercial confidentiality. We have not received any information in relation to this application that appears to be confidential in relation to any party.		✓
Consultation			
Scope of consultation	The application identified the statutory consultees.		✓
Operator			
Control of the facility	We are satisfied that the operator is the still the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator		✓
European Directives			
Applicable Directives	The European Directives that apply to the regulated facility are as follows:: • Landfill Directive 1999/31/EC, and • Council Decision 2003/33/EC.		
The site			
Extent of the site of the facility	The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility. A plan is included in the permit at Schedule 2, and the operator is required to carry on the permitted activities within the site boundary.		✓
Planning permission	Planning permission is in place to allow the development of the approved areas.		✓
Site condition report	The operator has provided a description of the condition of the site which we consider is satisfactory. The decision was taken in accordance with our guidance The decision was taken in accordance with our guidance on site condition reports – guidance and templates TGN5.		✓
Environmental Risk Assessment and operating techniques			
Environmental risk	We have reviewed the operator's assessment of the environmental risk from the facility as changed by the proposed variation. The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment all emissions may be categorised as environmentally insignificant.		✓
Operating techniques	We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. It should be noted that a revised odour management plan is required to be submitted once approved the proposed techniques are in line with those contained in the TGN and we consider them to represent appropriate techniques for the facility, as amended by this variation application.		✓
The permit conditions			
Use of conditions other than those from the template	The permit contains many conditions taken from our EPR permit template. We developed these conditions in consultation with industry having regard to the relevant legislation. This decision document does not include an explanation for these usual conditions. Where such conditions are imposed we have considered the application and accepted the details are sufficient and satisfactory to control that aspect of the operation.		✓

Activity	Justification / Detail	Determination criteria met	
		No	Yes
Waste types	We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility in schedule 3. We are satisfied that the operator can accept these waste for the following reasons as non-hazardous waste. We have excluded the following wastes for the following reasons, that the are solutions and fall within the description of waste which are banned from landfill		✓
Pre-operational conditions	See comments on Stability and LFG.		✓
Conditions where the consent of another person is needed	There are no conditions where the consent of another person is needed in the permit		✓
Incorporating the application	We have specified that the applicant must operate his installation in accordance with the descriptions in his application.		✓
Emission limits	It is considered that the ELVs or technical measures described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured.		✓
Monitoring	We have decided that monitoring should be carried out for the parameters listed in Schedule 4 of the permit using the methods and to the frequencies specified in those tables. These monitoring requirements have been imposed in order to comply with LFTGN 01, 02, 03, 04, 05, 07 and 08. We made these decisions based on the information in the application we are satisfied that the where appropriate the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate or their methods are to be agreed with the Agency.		✓
Reporting	We have specified reporting as specified in Schedule 5 having regard to the potential risks to the environment from the parameters referred to in Schedule 4. We made these decisions in accordance with LFTGN 01, 02, 03, 04, 05, 07 and 08.		✓
Operator Competence			
Technical competence	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.		✓
Relevant Convictions	The National Enforcement Database has been checked to ensure that all relevant convictions have been declared. The operator satisfies the criteria in RGN 5 on Operator Competence.		✓
Financial provision	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.		✓
OPRA			
Opra Score	The OPRA score has not changed from that set out in the application.		

Annex 2: consultation responses

Advertising and consultation

The following is a summary of responses to advertising and consultation and the way in which we have taken these into account in the determination process:

Response received from
Food Standards Agency
Brief summary of issues raised
There are a number of possible routes whereby the operations on a non-hazardous landfill might present a potential risk to the safety of the food chain. These routes are discussion in more details below. However, well managed landfill should have sufficient control measures in place to minimise these risks. **Emissions to air** It is important to minimise the risk of contaminated dust (for example, wastes from thermal processes, which are likely to contain environmentally persistent pollutants such as heavy metals and dioxins) being deposited on any surrounding agricultural land. Re-circulation of leachate could lead to aerosol emissions. Localised deposition of potentially harmful substances, such as dioxins and PAH's generated during flaring/utilisation of landfill gas. Untreated gas may contain trace levels of contaminants, which could impact on the safety of the food chain. **Emissions to water** There is a potential risk to the safety of the food chain if groundwater is contaminated by leachate, especially if groundwater and surface water abstraction for agricultural use exist in the vicinity of the landfill. **Site closure/Restoration** Concern over possible damage and erosion of the cap. Therefore, provided that the operator complies with the relevant parts of the following Guidance Notes: • Technical guidance Note IPPC S5.02 (landfill sector); • Monitoring of Particulate Matter in Ambient Air around Waste Facilities; • Monitoring Trace Gas components in Landfill Gas; • Landfill Gas Flaring; • Monitoring Landfill Gas Engine Emissions; • Monitoring of landfill Leachate, Groundwater and Surface Water. It is unlikely that there will be any unacceptable effects on the human food chain.
Summary of actions taken or show how this has been covered
In relation to the issues raised by the Food Standard Agency the Agency has included emission limits and monitoring requirements for air in relation to: There have been no complaints in regard to dust nuisance and particulate PM_{10} and although the operational areas have moved closer to sensitive receptors the Agency

considers that its standard fugitive emissions conditions are still appropriate for this site. Conditions have been included for the monitoring of landfill gas emissions. Emission limits have been set having regard to guidance issued by the Agency in respect of: • Monitoring Trace Gas components in Landfill Gas • Landfill Gas Flaring; and • Monitoring Landfill Gas Engine Emissions To ensure compliance with the UK Air Quality Objectives. Conditions have been included for monitoring of emissions to ground and surface water. Emission limits have been set having regard to guidance issued by the Agency in respect of: Monitoring of landfill Leachate, Groundwater and Surface Water. The proposed application complies with the requirements of the landfill directive. The permit contains requirements for monitoring and remedial actions to be taken should any significant escape of leachate be detected in groundwater and surface water. The application also includes appropriate measures for monitoring and maintaining the cap and restoration proposals.

Response received from
Barrow in Furness District Council
Brief summary of issues raised
Responded saying that the County Council deal with planning issues. They considered that questions 1 to 5a were not applicable to their authority and therefore did not respond. On the issues where they did respond they informed us that no complaints had been received in the last three years alleging a noise nuisance.
Summary of actions taken or show how this has been covered
The Agency's standard conditions have been included in the variation and it is not considered that noise is a significant issue during normal site operations although there may be some disturbance around the gold driving range during the development of the new site infrastructure.