



ENVIRONMENT
AGENCY

Variation Notice with introductory note

Pollution Prevention and Control (England & Wales) Regulations 2000

Llanddulas Landfill Site

3C Waste Limited
Llanddulas Landfill Site
Abergele Road
Llanddulas
Conwy
North Wales
LL22 8HP

Variation Notice Number
CP3332LG

Permit number
BU0800IZ

Introductory note

This introductory note does not form a part of the permit

The following notice is issued under regulation 17 of The Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I.2000 No. 1973 (as amended) (the Regulations) to vary the conditions of a permit issued under the Regulations to operate part of an installation. The notice comprises schedule 1 containing conditions and schedules to be deleted and schedule 2 containing conditions and schedules to be added.

All of the Conditions in the Permit (BU0800IZ) and Variation (BX7789IS) have been deleted in Schedule 1. Therefore there are no Conditions, which have been amended in Schedule 2. The deleted conditions have been replaced with Conditions from the new Permit Template in Schedule 3 of this Variation Notice.

The installation as shown on Drawing Number LL1 dated December 2003 entitled "Installation Boundaries" is at Llanddulas, Conwy, North Wales. The installation comprises of a biological leachate treatment plant with a treatment capacity greater than 50 cubic metres per day, three gas engines with a total combined thermal input capacity greater than 3 megawatts together with three main areas for landfilling as follows:

Phase 1 and 3 previously operated in accordance with waste management licence CBC06.

Phase 2 previously operated in accordance with waste management licence CBC08.

Phase 3a is included in the Permitted Installation of the site. This area was not previously licensed.

The wastes authorised to be deposited within the installation consist of a specified range of household and non-hazardous industrial and commercial waste with a total quantity of approximately 5.2 million tonnes, including previously deposited waste under the superseded waste management licences. The quantity of waste that is deposited in the landfill in any year shall not exceed 600,000 as detailed in Table S1.5.

The main potential sources of emissions are:

- leachate with the implications of pollution to surface and groundwater and nuisance from malodour and
- migration of landfill gas causing malodorous nuisance and the potential in exceptional circumstances to cause an explosion in an enclosed space and
- fugitive emissions of landfill gas causing a reduction in the local air quality and contributing to greenhouse gases globally and
- point source emissions of exhaust gases from flares and the gas engines produce exhaust gases that have been subject to a risk assessment in accordance with "Horizontal Guidance Note IPPC H1, Integrated Pollution Prevention and Control (IPPC), Environmental Assessment and Appraisal of BAT" and dispersion modelling.

A hydrogeological risk assessment has been completed to assess the risk of polluting substances discharging to groundwater from the waste.

The base of the landfill is above the groundwater table.

The design and standards of construction of the engineered protection measures for the installation are based on the results of this groundwater risk assessment.

The new area for engineering ie: phase 3A will be engineered to encapsulate the waste in low permeability engineered clay and plastic liners on the base and outer sides of the site with additional and engineered fill beneath the lining system. Engineered systems are installed to collect, control and monitor leachate and landfill gas produced by the degradation of the waste. The integrity of the engineered liner and its ability or otherwise to prevent leachate migration into the groundwater, is monitored and assessed by carrying out sampling and chemical testing of groundwater and leachate quality respectively from the external groundwater monitoring boreholes and internal leachate monitoring wells. Gauging of leachate and groundwater heads are also part of the monitoring regime. On site leachate is treated in an on site biological treatment plant prior to disposal to sewer.

Landfill gas is actively controlled by pumping, extraction, flaring and or utilisation by combustion in gas engines. Monitoring boreholes outside the liner systems are sampled and analysed to check for the presence of landfill gas. This enables a check to be kept on the containment / liner integrity and its ability or otherwise to prevent landfill gas migration. Landfill gas is sampled and analysed within the waste mass.

Landfilling significant quantities of waste can cause additional environmental pollution due to the release or escape of dust, odour, litter and noise and other environmental nuisances such as flies, rodents, gulls or other pests. The Permit conditions require specific mitigation measures and monitoring to be carried out which are documented by the Permit holder.

Note that the Permit requires the submission of certain information to the Agency (see Sections 4 and 5). In addition, the Agency has the power to seek further information at any time under regulation 28 to the PPC Regulations provided that it acts reasonably.

Status Log of the Permit		
Detail	Date	Response Date
Application BU2853IS	Received 27/02/2003	Applicant agrees that
Application BU0800IZ	Received 9 June 2003	separate applications should be conjoined – see letter dated 30 January 2004 Ref: 4D-197-126
Permit BU0800IZ determined	6 February 2004	
Variation Application BX7789IS	Received 8 April 2004	
Variation BX7789IS determined	28 April 2004	
Variation CP3332LG determined	30 May 2008	

Other PPC Permits relating to this Installation		
Permit holder	Permit Number	Date of Issue
Not applicable		

Superseded Licences/Authorisations/Consents relating to this Installation		
Holder	Reference Number	Date of Issue
3C Waste Ltd	EAWML/ (CBC06) (Landfill Phases 1 and 3, Landfill Gas Plant and Leachate Plant)	15/01/1992
3C Waste Ltd	EAWML/ (CBC08) (Landfill Phase 2)	03/11/1992
Waste Recycling Group	CG0136801 (surface water discharge consent)	23/11/1992

End of Introductory Note

Variation Notice

Pollution Prevention and Control
(England and Wales) Regulations 2000

Variation Notice

Permit number

BU0800IZ (Variation number BX7789IS)

Variation number

CP3332LG

The Environment Agency (the Agency) in exercise of its powers under Regulation 17 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No 1973) hereby varies the permit held by you

3C Waste Limited ("the operator"),

whose registered office is

Ground Floor West

900 Pavilion Drive

Northampton Business Park

Northampton

NN4 7RG

company registration number 02632581

to operate part of an installation at

Llanddulas Landfill Site

Abergele Road

Llanddulas

Conwy

North Wales

LL22 8HP

to the extent set out in schedules 1, 2 and 3 of this variation notice .

The notice shall take effect from 30 May 2008

Signed	Date
	30 th May 2008

Martin Jenkins

Authorised to sign on behalf of the Agency

SCHEDULE 1 – CONDITIONS AND SCHEDULES TO BE DELETED

All the conditions and schedules in the original Permit BU0800IZ and Variation number BX7789IS to be deleted.

SCHEDULE 2 – CONDITIONS AND SCHEDULES TO BE AMENDED

None

SCHEDULE 3 – THE FOLLOWING CONDITIONS AND SCHEDULES ARE ADDED TO THE PERMIT

Conditions

1. Management

1.1 General management

1.1.1 The activities shall be managed and operated:

- (a) in accordance with a management system, which identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents and non-conformances and those drawn to the attention of the operator as a result of complaints; and
- (b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.

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.

1.2 Accidents that may cause pollution

1.2.1 The operator shall:

- (a) maintain and implement an accident management plan;
- (b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;
- (c) make any appropriate changes to the plan identified by a review.

1.3 Finance

1.3.1 The financial provision for meeting the obligations under this permit shall be set out in the Deed of Performance dated 6 February 2004 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 2 of that Deed as being a Permit to which the Deed relates.

1.3.2 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 1.3.1 and thus the estimated costs for the closure and aftercare of the landfill.

1.4 Energy efficiency

1.4.1 The operator shall:

- (a) Review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and
- (b) Implement any appropriate measures identified by a review.

1.5 Site security

1.5.1 Site security measures shall prevent unauthorised access to the site, as far as practicable.

2. Operations

2.1 Permitted activities

2.1.1 The operator is 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 2 to this permit.

2.3 Operating techniques

2.3.1 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 Agency.

2.4 Off-site conditions

There are no conditions in this permit to which regulation 12(12) of the PPC Regulations apply.

2.5 Improvement programme

2.5.1 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 Agency.

2.6 Pre-operational conditions

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

2.7 Engineering

- 2.7.1 No construction of any new cell shall commence until the operator has submitted construction proposals and the Agency has confirmed that it is satisfied with the construction proposals.
- 2.7.2 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 Agency.
- 2.7.3 No disposal of waste shall take place in a new cell until the operator has submitted a CQA Validation Report and the Agency has confirmed that it is satisfied with the CQA Validation Report.
- 2.7.4 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 Agency has confirmed that it is satisfied with the construction proposals.
- 2.7.5 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 Agency.
- 2.7.6 The operator shall submit a CQA Validation Report as soon as practicable following the construction of the relevant landfill Infrastructure.
- 2.7.7 Where pollution controls are immediately necessary to prevent an incident or accident, then conditions 2.7.4 and 2.7.5 do not apply and the relevant landfill Infrastructure may be constructed, provided that the construction proposals are submitted to the Agency as soon as practicable.
- 2.7.8 For the purposes of conditions 2.7.1, 2.7.3 and 2.7.4, the Agency shall be deemed to be satisfied where it has not, within the period of 4 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.

2.8 Waste acceptance

- 2.8.1 Wastes shall only be accepted for disposal if:
- (a) they are listed in schedule 3, and
 - (b) they are non- hazardous waste 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) from 30th October 2007 they are not liquid waste (including waste waters but excluding sludge and excluding liquid waste accepted at a permitted leachate treatment activity), 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 set out in schedule 1 of the Landfill Regulations 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, or liquid waste accepted for treatment at a permitted leachate treatment activity.
- (k) any code beginning with 07 05 and 16 03 shall exclude waste medicinal products and pharmaceutically active waste materials arising from their manufacture.

2.8.5 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.

2.8.6 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.

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

2.8.8 The total quantity of waste that shall be deposited in the landfill shall be limited by the pre-settlement levels shown on drawings ESID4 dated June 2003 and ESID6B dated February 2003.

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

2.8.10 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.

2.9 Leachate levels

2.9.1 The limits for the level of leachate listed in schedule 4 table S4.1 shall not be exceeded.

2.10 Closure, aftercare and decommissioning

- 2.10.1 The operator shall maintain and operate the activities so as to prevent or where that is not practicable, to minimise, any pollution risk on closure and decommissioning.
- 2.10.2 The operator shall maintain a site closure plan which demonstrates how the activities can be decommissioned to avoid any pollution risk and return the site of operation to a satisfactory state.
- 2.10.3 The operator shall carry out and record a review of the site closure plan at least every 4 years.
- 2.10.4 The site closure plan (or relevant part thereof) shall be implemented on final cessation or decommissioning of the activities or part thereof.

2.11 Site protection and monitoring programme

- 2.11.1 The operator shall within 6 months of the issue of this Variation submit a Site Protection and Monitoring Programme.
- 2.11.2 The operator shall implement and maintain the Site Protection and Monitoring Programme in relation to all areas which will not comprise permanent deposits of waste and shall carry out and record a review of it at least every 4 years commencing from the date the Site Protection and Monitoring Programme was received.

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 4 tables S4.2, S4.3 and S4.4.
- 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 Agency guidance LFTGN 05 and LFTGN 08.

3.2 Emissions to groundwater

- 3.2.1 There shall be no emission from the activities into groundwater of any substance in List I (as defined by the Groundwater Regulations) contrary to those regulations.
- 3.2.2 There shall be no emission from the activities into groundwater of any substance in List II (as defined in the Groundwater Regulations) so as to cause pollution (as defined in those regulations).
- 3.2.3 The trigger levels for emissions into groundwater for the parameters and monitoring points set out in schedule 4 Table S4.4 shall not be exceeded.
- 3.2.4 The operator shall submit to the Agency a review of the Hydrogeological Risk Assessment:
 - (a) between 9 and 6 months prior to the fourth anniversary of the granting of the permit, and
 - (b) between 9 and 6 months prior to every subsequent 4 years after the fourth anniversary of the granting of the permit.

3.3 Fugitive emissions of substances

- 3.3.1 Fugitive emissions of substances (excluding odour, noise and vibration) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.3.2 Litter or mud arising from the activities shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures have been used to prevent or where that is not practicable to minimise, the litter and mud.
- 3.3.3 Litter or mud arising from the activities shall be cleared from affected areas outside the site as soon as practicable.
- 3.3.4 All liquids, 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.
- 3.3.5 The limits for landfill gas arising from the installation set out in schedule 4, tables S4.6 and S4.11, shall not be exceeded.

3.4 Odour

- 3.4.1 Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures to prevent or where that is not practicable to minimise the odour.

3.5 Noise and vibration

- 3.5.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures to prevent or where that is not practicable to minimise the noise and vibration.

3.6 Monitoring

- 3.6.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the monitoring specified in the following tables in schedule 4 to this permit:
 - (a) Leachate specified in tables S4.1 and S4.8;
 - (b) Point source emissions specified in tables S4.2 and S4.3;
 - (c) Groundwater specified in tables S4.4 and S4.10;
 - (d) Landfill gas specified in tables S4.5, S4.6, S4.7 and S4.11;
 - (e) Surface water specified in table S4.9.

3.6.2 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.

3.6.3 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.

3.6.4 Within 10 months of the issue of this permit (unless otherwise agreed in writing by the Agency) the site reference data identified in the Site Protection and Monitoring Programme shall be collected and submitted to the Agency.

3.7 Transfers off-site

3.7.1 Records of all the wastes sent off site from the activities, for either disposal or recovery, shall be maintained.

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 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) the Site Protection and Monitoring Programme;
 - (iii) ambient air monitoring for landfill gas;
 - (iv) sub-surface landfill gas monitoring;
 - (v) leachate levels, quality and quantities;
 - (vi) landfill gas generation and collection;
 - (vii) waste types and quantities;
 - (viii) topographical surveys; and

- (ix) the specification and as built drawings of the basal, sidewall and capping engineering systems
- 4.1.2. Any records required to be made by this permit shall be supplied to the Agency within 14 days where the records have been requested in writing by the Agency.
- 4.1.3. All records to be held by this permit shall be available for inspection by the Agency at any reasonable time.
- 4.1.3 All records required to be held by this permit shall be held on site or at the Lavister Office, Barton House, Darland Lane, Lavister, Wrexham, LL12 OEL and shall be available for inspection by the Agency at any reasonable time. Records shall be available for inspection on site on the next working day following a request by Agency.

4.2 Reporting

- 4.2.1 A report or reports on the performance of the activities over the previous year shall be submitted to the Agency by 31 January (or other date agreed in writing by the 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 with the application;
 - (b) where the operator's management system encompasses annual improvement targets, a summary report of the previous year's progress against such targets;
 - (c) the energy consumed at the site, reported in the format set out in schedule 5 table S5.3
 - (d) the water consumed at the site, reported in the format set out in schedule 5 table S5.3;
 - (e) the annual production/treatment set out in schedule 5 table S5.2;
 - (f) details of any contamination or decontamination of the site which has occurred;
 - (g) the topographical surveys required by condition 3.6.3 other than those submitted as part of a CQA validation report;
 - (h) 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;
 - (i) 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;
 - (j) a calculation of the remaining capacity (reported in cubic metres) derived from the pre-settlement contours and the most recent topographical survey;
 - (k) the compliance testing undertaken in the period;

- 4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the 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 5 Table S5.1;
 - (b) for the reporting periods specified in schedule 5 Table S5.1 and using the forms specified in schedule 5 Table S5.4; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.3 A summary report of the waste types and quantities accepted and removed from the site shall be made for each quarter. It shall be submitted to the Agency within one month of the end of the quarter and shall be in the format required by the Agency.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding 4 years, submit to the Agency, within 6 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.
- 4.2.5 All reports and notifications required by the permit shall be sent to the Agency using the contact details supplied in writing by the Agency
- 4.2.6 The results of reviews and any changes made to the Site Protection and Monitoring Programme shall be reported to the Agency, within 1 month of the review or change.

4.3 Notifications

- 4.3.1 The Agency shall be notified without delay following the detection of:
- (a) any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission 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.
- 4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 6 to this permit within the time period specified in that schedule.
- 4.3.3. Prior written notification shall be given to the Agency of the following events and in the specified timescales:
- (a) as soon as practicable prior to the permanent cessation of any of the permitted activities;
 - (b) as soon as practicable prior to the cessation of the landfill disposal activities, for a period likely to exceed 1 month; and
 - (c) at least 7 days prior to the resumption of the landfill disposal activities after a cessation notified under (b) above.
- 4.3.4 The Agency shall be given at least 14 days notice before implementation of any part of the site closure plan in respect of any activities other than the disposal of waste in the landfill.

- 4.3.5 Where the 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 Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.6 The Agency shall be notified within 7 days of any changes in technically competent management and the name of any incoming person together with evidence that such person has the required technical competence.
- 4.3.7 The Agency shall be provided, within 14 days of the operator or any relevant person being convicted of a relevant offence, (unless such information has already been notified to the Agency), with details of the nature of the offence, the place and date of conviction, and the sentence imposed.
- 4.3.8 The Agency shall be notified within 14 days of the operator and/or any relevant person lodging an appeal against a conviction for any relevant offence and of the outcome when the appeal is decided.
- 4.3.9 The Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- (a) any change in the operator's trading name, registered name or registered office address;
 - (b) any change to particulars of the operator's ultimate holding company (including details of an ultimate holding company where an operator has become a subsidiary); and
 - (c) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 7 shall have the meaning given in that schedule.

Schedule 1 - Operations

Table S1.1 Activities

Activity listed in Schedule 1 of the PPC 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 Regulations 2002)	Receipt, handling, storage and disposal of wastes, consisting of the types and quantities specified in conditions 2.8, as an integral part of landfilling.
Section 5.3, Part A(1)(c)(i), Biological treatment	Storage and treatment of leachate in a facility with a capacity of >50 Tonnes/ day	Leachate arising from the landfill.
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.	Landfill gas arising from the landfill.
Directly Associated Activity		
Leachate management	Leachate collection and extraction, storage on-site, tankering off-site, re-circulation in accordance with pre-operational condition 3 in Table S1.4	Leachate arising from the landfill.
Leachate discharges to foul sewer	Discharge of treated and untreated leachate from the site	Leachate arising from the landfill.
Landfill gas management	Landfill Gas collection and monitoring	Landfill gas arising from the landfill.
Landfill gas flaring	Flaring of landfill gas for disposal in an appliance.	Landfill gas arising from the landfill.
Water discharges to controlled waters.	Discharges of site drainage from the landfill.	From surface water management system to point of entry to controlled waters.
Fuel storage.	Storage of fuel for operation of plant and equipment.	Fuel storage tank.

Table S1.2: Operating techniques

Description	Parts	Date Received
Application.	The response to questions 1.2, 2.1, 2.2, 2.3, 2.4 and 2.5 in part B of the Application Forms for Llanddulas Landfill Phases 2 & 3a (Reference BU2853IS) and response to questions 3.1.1 in Part B application form reference BU2853IS. The technical details and standards contained within these documents shall apply to Phases 2 & 3a, unless standards are prescribed in other conditions of this permit.	27 February 2003

Table S1.2: Operating techniques

Description	Parts	Date Received
	The response to questions 1.2, 2.1, 2.2, 2.3, 2.4 and 2.5 in part B of the Application Forms for Llanddulas Landfill Phases 1 & 3 (Reference BU0800IZ). The technical details and standards contained within these documents shall apply to Phases 1 & 3, unless standards are prescribed in other conditions of this permit.	9 June 2003
	Letter reference: 4D-197-126/187: Revised list of non-hazardous wastes to be accepted at Llanddulas Landfill, excluding the acceptance of stabilised hazardous waste.	9 December 2003
	Letter reference: 4D-197-126: Conformation that Application references BU0800IZ and BU2853IS have been conjoined	30 January 2004
Submission in relation to Improvement Condition 1 of original Permit (BU0800IZ)	Egniol CQA report ref. DPM/1612/DW	4 May 2005
Submission in relation to Improvement Condition 2 of original Permit (BU0800IZ)	SLR Report ref. 4D-197-263	July 2004
Submission in relation to Improvement Condition 4 of original Permit (BU0800IZ)	Landfill Gas Emergency Action Plan	April 2004
Submission in relation to Improvement Condition 7 of original Permit (BU0800IZ)	SLR Report ref. 4D-197-262	July 2004
Submission in relation to Improvement Condition 8 of original Permit (BU0800IZ)	Drawing ref. MH/PG/acj/LET0117	5 May 2004

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
5a	Unless otherwise agreed with the Agency in writing - the operator shall install a minimum of 3 landfill gas monitoring boreholes within each of the designated phases 1A, 1B, 1C, 2, 3, and 3A. These boreholes shall be installed to a depth to ensure that the concentration and pressure of landfill gas within the waste body can be determined whilst not affecting the integrity of the containment within those phases. Each borehole shall be located in a position as far as practically possible from the installed landfill gas collection wells to minimise the effect from those wells, and incorporated in to the monitoring programme once installed.	2 March 2009
5b	Following installation of the boreholes installed in accordance with Improvement Condition 5a above as approved by the Agency the operator shall undertake monitoring in accordance with Table S4.8 from the date of that approval.	Within 1 month following approval of the monitoring borehole installed in accordance with Condition 5a above.

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
6	<p>The operator shall carry out an air quality monitoring survey at the site and provide a report containing the results obtained and the interpretation to the Agency. The survey shall determine the ground level concentrations of NO₂ at the sensitive receptors identified within table LFGRA 1 of the Landfill Gas Risk Assessment in application No BU2853IS dated February 2003.</p> <p>The survey shall be carried out at a time and at the locations, which are likely to result in a conservative worst case scenario. The interpretation shall consider the results in comparison to the relevant air quality standards both in the short and the long term. The details of the method for carrying out the survey shall be agreed in writing with the Agency prior to the commencement of the survey.</p>	2 March 2009
7	<p>The Landfill Gas Emergency Action Plan covering Phases 1, 2, 3 & 3a, in accordance with the Environment Agency guidance, shall be reviewed and then submitted to the Environment Agency for approval.</p> <p>The action plan shall identify the actions that shall be taken and the timescales to complete them to ensure that the following emissions from the Landfill are controlled:</p> <ul style="list-style-type: none"> Sub-surface emission of landfill gas to the surrounding land; Fugitive emissions of landfill gas from the landfill to the surrounding air; Emission of combustion products from the landfill gas flare and utilisation scheme; <p>The action plan shall also consider the measures that shall be put in place to deal with:</p> <ul style="list-style-type: none"> Ingress of oxygen into the landfill; and Inadequate disposal capacity for the gas generated at the site. <p>The action plan should be implemented by the operator from the date of approval in writing by the Agency.</p>	30 December 2008
8	<p>The operator shall submit to the Agency for approval an up to date consolidated version of the site plans (ESID1, ESID2, ESID3, ESID4, ESID5, ESID6a, ESID6b, ESID7, ESID8, ESID9a, ESID10, ESID11, ESID12, ESID13, ESID13b.); consolidated monitoring schedules to cover phases 1, 2, 3 and 3a.</p>	30 November 2008
9	<p>The operator shall submit to the Agency for approval an updated odour management plan to include the measures currently used onsite.</p> <p>The proposals shall be implemented by the operator from the date of approval in writing by the Agency.</p>	30 August 2008

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
10	<p>The operator shall undertake an assessment of the impact on the water environment from current emissions of effluent to sewer. The operator shall use the methodology prescribed in the Agency's guidance 'Environmental Assessment and Appraisal of BAT' (Ref. IPPC H1) in making this assessment. The operator shall identify substances present in the effluent that are considered significant, and submit proposed emission limit values for these substances in the form of a report. Flow rate must also be considered as part of this assessment. The report shall also include an effluent monitoring plan for any key substances identified and an action plan to reduce releases of those substances that are considered significant as part of the H1 Assessment. The operator shall implement any improvements or measures as agreed in writing with the Environment Agency.</p> <p>The proposals shall be implemented by the operator from the date of approval in writing by the Agency.</p>	30 December 2008
11	<p>The operator shall review their landfill gas risk assessment and data from the landfill gas collection system. Based on this review the operator shall assess whether fluctuations in the flow or composition of landfill gas in the collection system present a risk to controlling emissions to air or other environmental impact. The operator shall provide the results of the review to the Agency.</p>	30 November 2008
12	<p>The operator shall provide an updated drawing detailing the locations of the monitoring points A1 for the Flare and A2, A3 and A4 for each of the Gas Engines.</p>	30 August 2008
13	<p>The operator shall submit to the Agency for approval a report summarising background concentrations of methane and carbon dioxide for each perimeter landfill gas monitoring borehole specified in Table S4.5.</p>	30 November 2008
14	<p>The operator shall review the design of the capping layer for this Phase 3A, to incorporate a leachate drainage layer and system below the flexible membrane liner along the northern flank adjacent to the Lysfaran Fault. The system should be designed to a capacity and extent sufficient to ensure that leachate within this area will not build up below the Flexible Membrane Liner.</p>	30 November 2008

Table S1.4 Pre-operational measures for future development

Reference	Operation	Pre-operational Measures
1	Prior to the recirculation of leachate	Prior to the recirculation of leachate taking place, the operator shall submit to the Agency for approval a detailed method statement for the subsurface recirculation of leachate.
2	Prior to use of the groundwater soakaways	<p>The operator shall submit to the Agency for approval:</p> <p>a) proposals for the installation of a specific means of sampling at groundwater soakaway monitoring points W2, W3 and W4.</p> <p>Following approval of the proposals required a) above, the operator shall install the means of sampling for monitoring points W2, W3 and W4.</p>

Table S1.4 Pre-operational measures for future development

Reference	Operation	Pre-operational Measures
3	Prior to use of the groundwater soakaways	The Operator shall submit to the Agency for approval a monitoring programme detailing: a) The determinands to be monitored at the soakaway discharge monitoring points W2, W3 and W4; b) The frequency of monitoring of the determinands detailed in a) above; c) Control and trigger levels for appropriate determinands specified in condition a) above which shall not be exceeded.
4	Prior to the use of surface water discharge point W1	The operator shall install, operate and maintain a means of surface water flow measuring to a specification required by the Agency at location W1, shown on Drawing No. ESID13B entitled "Monitoring Points", to enable the daily volume and instantaneous flow of the surface water discharge to be recorded. The operator shall calibrate, operate and maintain the flow monitoring and recording system to a standard agreed or specified by the Agency.

Table S1.5 Annual waste input limits

Category	Limit Tonnes/ Year
Non-hazardous waste	600,000
Inert waste	

Schedule 2 - Site plan



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Schedule 3 - List of permitted wastes

Code	Waste Type 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 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
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

Code	Waste Type Description
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
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

Code	Waste Type Description
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 (solids only)
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 MFSU 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 opacifiers
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
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 (solids only)
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)

Code	Waste Type Description
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 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
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

Code	Waste Type Description
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
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

Code	Waste Type Description
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
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 wastes from gas treatment other than those 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
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

Code	Waste Type Description
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 06	end-of-life vehicles, containing neither liquids nor other hazardous components
16 01 12	brake pads other than those mentioned in 16 01 11
16 01 15	antifreeze fluids other than those mentioned in 16 01 14
16 01 16	tanks for liquefied gas
16 01 17	ferrous metal
16 01 18	non-ferrous metal
16 01 19	plastic
16 01 20	glass
16 01 22	Components not otherwise specified
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 05	gases in pressure containers and discarded chemicals
16 05 09	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08
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 08 04	spent fluid catalytic cracking catalysts (except 16 08 07)
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
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

Code	Waste Type Description
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 01	sharps (except 18 01 03)
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 01 07	chemicals other than those mentioned in 18 01 06
18 02	wastes from the research, diagnosis, treatment or prevention of disease involving animals
18 02 01	sharps (except 18 02 02)
18 02 06	chemicals other than those mentioned in 18 02 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 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
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

Code	Waste Type Description
19 05 03	off-specification compost
19 06	wastes from anaerobic treatment of waste
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 (sludges only)
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
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

Code	Waste Type Description
20 01 28	paint, inks, adhesives and resins other than those mentioned in 20 01 27 (solids and sludges only)
20 01 30	detergents other than those mentioned in 20 01 29
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 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

Schedule 4 – Emissions and monitoring

Table S4.1 Leachate level limits and monitoring requirements

Monitoring point reference/ Description	Limit	Monitoring frequency	Monitoring method
Phase 1A and Phase 1B - LCP1AR, LMP1, LMP2 Phase 1C – LCP1C, LMP3 Phase 2a - LCP2A, LMP4 Phase 2b - LCP2B, Phase 2c - LCP2C1, LMP5 Phase 3(1)+Extension – LCP3, LMP3/1 Phase3A – LCP3A, LMP3/2	2m above cell base	Weekly	In accordance with the Agency's "Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water" (LFTGN02)

Table S4.2 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
A1 as shown on Drawing ESID8 for Phases 1 and 3 part of the Application	Oxides of Nitrogen	Landfill Gas Flares	150 mg/m ³	Hourly mean	Annually	ISO 10849
	CO	Landfill Gas Flares	50 mg/m ³	Hourly mean	Annually	ISO 12039
	Total VOCs	Landfill Gas Flares	10 mg/m ³	Hourly mean	Annually	BS EN 12619 or BS EN 13526
	NMVOCs	Landfill Gas Flares	5 mg/m ³	Hourly mean	Annually	BS EN 13649
A2, A3 and A4 Extraction stack for each of the 3 gas engines as shown on Drawing ESID8 for Phases 1 and 3 part of the Application	Oxides of Nitrogen	Gas utilisation plant	650 mg/m ³	Hourly mean	Annually	ISO 10849: 1996
	CO	Gas utilisation plant	1500mg/ m ³	Hourly mean	Annually	ISO 12039: 2001
	Total VOCs	Gas utilisation plant	1750 mg/m ³	Hourly mean	Annually	BS EN 12619: 1999 or BS EN 13526: 2002
	NMVOC's	Gas utilisation plant	150mg/m 3	Hourly mean	Annually	BSEN1649:20 02

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

Table S4.3 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
W1 on Drawing ESID 13B for Phases 1 and 3 part of the Application	Biochemical Oxygen Demand (BOD)	Site drainage from surface water management system	15mg/l	Spot sample	Monthly	In accordance with the Agency's "Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water" (LFTGN02)
	Ammoniacal Nitrogen		5mg/l		Monthly	
	Suspended solids		50mg/l		Monthly	
	pH		>6 and <9 pH units			
	Oil or grease		None visible			

Table S4.4 Trigger levels for emissions into groundwater and monitoring requirements

Monitoring point reference	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
BH4, BH7, BH23, BH25, BH34, BH35, BH36 as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application	Ammoniacal Nitrogen	1mg/l	Spot Sample	Monthly	In accordance with the Agency's "Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water" (LFTGN02)
	Chloride	250mg/l	Spot Sample	Monthly	
	Mercury	0.01µg/l	Spot Sample	Monthly	
	Mecoprop	0.04 µg/l	Spot Sample	Monthly	
	Potassium	12mg/l	Spot Sample	Quarterly	
	Phenols	0.5µ/l	Spot Sample	Quarterly	
	Tributyl Tin	0.001µg/l	Spot Sample	Quarterly	
Trifuralin	0.01 µg/l	Spot Sample	Quarterly		

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

Monitoring point Ref. /description	Parameter	Limit (including units)	Monitoring frequency	Monitoring standard or method
BH01 – 30, BH40 – 42 and BH100-120 as shown on the 2 drawings referenced ESID8 for Phases 1, 2, 3 and 3a parts of the Application	Methane	0.5% v/v above agreed background levels	Weekly	Portable infra Red detector
	Carbon Dioxide	1.5% v/v above agreed background levels		
	Oxygen	no limit		
	Atmospheric Pressure	no limit		

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

Monitoring point Ref. /description	Parameter	Limit (including units)	Monitoring frequency	Monitoring standard or method
BH31-39, BH47 – 57, BH2003/1 and BH2003/2 as shown on the 2 drawings referenced ESID8 for Phases 1, 2, 3 and 3a parts of the Application	Methane	0.5% v/v above agreed background levels	Monthly	Portable infra Red detector
	Carbon Dioxide	1.5% v/v above agreed background levels		
	Oxygen	no limit		
	Atmospheric Pressure	no 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	Annually	Where a rate of 0.001 mg/m ² /second is exceeded appropriate measures must be taken to reduce the rate.	Flame ionisation detector walkover, flux box or as otherwise agreed in writing by the Agency*.
Temporarily capped zone	Average Methane flux	Annually	Where a rate of 0.1 mg/m ² /second is exceeded appropriate measures must be taken to reduce the rate.	Flame ionisation detector walkover, flux box or as otherwise agreed in writing by the Agency*.

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 with an FID 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
In- waste landfill gas monitoring boreholes installed in accordance with Improvement Conditions 5a and 5b.	Methane	Every 2 weeks	In accordance with the Agency's guidance on the Management of Landfill	None specified
	Carbon Dioxide			
	Oxygen			
	Carbon Monoxide			
	Atmospheric pressure			
	Differential pressure			
	Meteorological Data			

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
Landfill gas collection system at well control valve of gas collection wells (GCW) 1, 1A to 28 (Phase 1) 1 – 39 (Phase 2) as shown on the 2 Drawings referenced ESID 8 for Phases 1, 2, 3 and 3a parts of the Application	Methane	At	Gas (LFTGN03)	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 Where the concentration of carbon monoxide exceeds 100ppm then further investigation shall be undertaken.
	Carbon Dioxide	frequencies specified		
	Oxygen	in table 5.4 of		
	Carbon Monoxide	LFTGN03		
	Atmospheric pressure			
	Differential pressure			
Input to LFG Utilisation	Trace gas analysis	Annually		
	Input to LFG Utilisation Compound	Methane Carbon Dioxide Oxygen Gas flow rate	Weekly until review under Improvement Condition Ref 7 is completed	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 S4.8 Leachate– other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Phase1A and Phase 1B - LCP1AR	Temperature	Monthly	In accordance with the Agency's "Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water" (LFTGN02)	
	Electrical Conductivity	Monthly		
Phase 1C – LCP1C	pH	Monthly		
Phase 2a – LCP2A	Ammoniacal Nitrogen (NH4-N)	Quarterly		
Phase 2b – LCP2B	Chloride (Cl)	Quarterly		
Phase 2c – LCP2C1	Total alkalinity (CaCO3) (tot alk)	Quarterly		
Phase 3(1)+extension – LCP3	Magnesium (Mg)	Quarterly		
Phase 3A – LCP3A	Potassium (K)	Quarterly		
	Total sulphates (SO4)	Quarterly		
	Calcium (Ca)	Quarterly		
	Sodium (Na)	Quarterly		
	BOD	Quarterly		
	COD	Quarterly		
	TOC	Quarterly		
	TON	Quarterly		
	Mecoprop	Quarterly		

Table S4.8 Leachate– other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
	Mercury (Hg)	Quarterly		
	Lead (Pb)	Quarterly		
	Zinc (Zn)	Annually		
	Copper (Cu)	Annually		
	Cadmium (Cd)	Annually		
	Nickel (Ni)	Annually		
	Iron (Fe)	Annually		
	Chromium (Cr)	Annually		
	Manganese (Mn)	Annually		

Table S4.9 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
Dulas Spring	Flow	Weekly	In accordance with the Agency's "Guidance on Monitoring of Landfill Leachate",	None specified
	Ammoniacal Nitrogen	Weekly	Groundwater and Surface Water" (LFTGN02)	
	Electrical Conductivity	Weekly		
	Temperature	Weekly		
	Chloride	Weekly		
	pH	Weekly		
	Lead	Monthly		
	Mecoprop	Monthly		
	Mercury	Monthly		
	List 1 Leachate screen	Every 12 months		
W1 as shown on ESID13B for Phases 1 and 3 part of the Application	Volume	Monthly		
Afon Dulas – upstream	Temperature	Monthly		
Afon Dulas – downstream as shown on ESID13B for Phases 1 and 3 part of the Application	Electrical Conductivity	Monthly		
	pH	Monthly		
	Ammoniacal Nitrogen	Monthly		
	Chloride	Monthly		
	Lead	Quarterly		
	Mecoprop	Quarterly		
	Mercury	Quarterly		
	COD	Quarterly		

Table S4.10 Groundwater – other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Upstream BH32, GW1, BH33, BH34, GW2, BH35	Water level	Monthly	In accordance with the Agency's "Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water" (LFTGN02)	None specified
	Electrical Conductivity (EC)	Monthly		
	pH	Monthly		
Downstream BH25, BH26, BH27B, BH06R, BH36, BH28, BH24, BH22, BH23, BH07, BH04	Ammoniacal Nitrogen (NH4-N)	Monthly		
	Chloride (Cl)	Monthly		
as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application				
BH27B, BH36	Lead (Pb)	Monthly		
	Mecoprop	Monthly		
	Mercury (Hg)	Monthly		
as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application				
Upstream BH32, GW1, BH33, BH34, GW2, BH35	Total alkalinity (CaCO3) (tot alk)	Quarterly		
	Magnesium (Mg)	Quarterly		
	Potassium (K)	Quarterly		
Downstream BH25, BH26, BH27B, BH06R, BH36, BH28, BH24, BH22, BH23, BH07, BH04	Zinc (Zn)	Quarterly		
	Copper (Cu)	Quarterly		
	Cadmium (Cd)	Quarterly		
	Nickel (Ni)	Quarterly		
	Iron (Fe)	Quarterly		
	Chromium (Cr)	Quarterly		
as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application				
BH27B, BH36	Total sulphates (SO4)	Quarterly		
	Calcium (Ca)	Quarterly		
	Manganese (Mn)	Quarterly		
	Sodium (Na)	Quarterly		
	TOC	Quarterly		
	TON	Quarterly		
	Dissolved Methane	Quarterly		
as shown on the 2 drawings referenced ESID11 for Phases 1, 2, 3 and 3a parts of the Application				
BH27B, BH36	List I Leachate Screen	Annually		

Table S4.11 Landfill gas in ambient air - limits and monitoring requirements

Monitoring point Ref. /Description	Parameter	Limit (including unit) *	Reference Period	Monitoring Frequency	Monitoring Standard or Method
A full sweep of the site boundary at any points on the immediate site boundary and boundary of the gas plant	Methane in ambient air	10ppmv		Monthly	Flame Ionisation Detector
In the immediate vicinity of the gas and leachate well heads and monitoring points.	Methane in ambient air	1000ppmv		Monthly	Flame Ionisation Detector

Schedule 5 - Reporting

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

Table S5.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Leachate levels As required by condition 3.6.1	Phase 1A and Phase1B – LCP1AR, LMP1, LMP2 Phase 1C – LCP1C, LMP3 Phase 2a – LCP2A, LMP4 Phase 2b – LCP2B Phase 2c – LCP2C1, LMP5 Phase 3(1)+Extension – LCP3, LMP3/1 Phase 3A – LCP3A, LMP3/2	Every 3 months	06/02/04
Emissions to air Parameters as required by condition 3.6.1	A1, A2, A3, A4	Every 12 months	06/02/04
Emissions to water Parameters as required by condition 3.6.1	W1	Every 3 months	06/02/04
Groundwater Parameters as required by condition 3.6.1	Upstream BH32, GW1, BH33, BH34, GW2, BH35 Downstream BH25, BH26, BH27B, BH06R, BH36, BH28, BH24, BH22, BH23, BH07, BH04	Every 3 Months	06/02/04
List 1 Screen	BH27B, BH36	Every 12 months	
Ambient air monitoring Parameters as required by condition 3.6.1	A full sweep of the site boundary at any points on the immediate site boundary and boundary of the gas plant. In the immediate vicinity of the gas and leachate well heads and monitoring points.	Every 3 months	06/02/04
Landfill gas surface emissions Parameters as required by condition 3.6.1	Permanently capped zone Temporarily capped zone	Every 12 months	06/02/04
Landfill gas lateral migration Parameters as required by condition 3.6.1	BH01 – 30, BH40 – 42, BH100-120 BH31-39, BH47-57, BH2003/1 and BH2003/2	Every 3 months Every 3 months	06/02/04

Table S5.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Other Landfill gas monitoring Parameters as required by condition 3.6.1	In-waste landfill gas monitoring boreholes installed in accordance with Improvement Conditions 5a and 5b.	Every 3 months	06/02/04
	Landfill gas collection system at well control valve of gas collection wells (GCW) 1 – 1A to 28 (Phase 1) 1 – 39 (Phase 2)	Every 3 months	30/05/08
Trace gas analysis	Input to the LFG Utilisation Compound	Every 12 months	30/05/08
	Input to LFG Utilisation Compound	Every 3 months	30/05/08
Other leachate monitoring Parameters as required by condition 3.6.1 For Zn, Cu, Cd, Ni, Fe, Cr, Mn	Phase 1A and Phase 1B – LCP1AR	Every 3 months	06/02/04
	Phase 1C – LCP1C Phase 2a – LCP2A Phase 2b – LCP2B Phase 2c – LCP2C1 Phase 3(1)+Extension – LCP3 Phase 3A – LCP3A	Every 12 months	
Other surface water monitoring Parameters as required by condition 3.6.1 List 1 Screen	Dulas Groundwater Spring, W1	Every 3 months	06/02/04
	Afon Dulas – upstream Afon Dulas - downstream	Every 12 Months	

Table S5.2: 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 S5.3 Performance Parameters

Parameter	Frequency of assessment	Annual total	Unit
Potable water use	Annually		Cubic metres
Energy used (including for leachate treatment)	Annually		MWh of electricity

Table S5.3 Performance Parameters

Parameter	Frequency of assessment	Annual total	Unit
Non potable water use	Annually		Cubic metres

Table S5.4 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	
Air	Form Air 1 or other reporting format to be agreed in writing with the Agency	
Controlled water	Form Water 1 or other reporting format to be agreed in writing with the Agency	
Groundwater	Form Groundwater 1 or other reporting format to be agreed in writing with the Agency	
Sewer	Form Sewer 1 or other reporting format to be agreed in writing with the Agency	
Landfill gas	Form LFG 1 or other reporting format to be agreed in writing with the Agency	
Particulate matter	Form Particulate 1 or other reporting format to be agreed in writing with the Agency	
Waste Return	Waste Return Form RATS2E	
Landfill topographical surveys and interpretation	Reporting format to be agreed in writing with the Agency	

Schedule 6 - 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 PPC Regulations.

Part A

Permit Number	
Name of operator	
Location of Installation	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission 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 installation in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of 3C Waste Limited

Schedule 7 - Interpretation

“*Accident*” means an accident that may result in pollution.

“*Annually*” means once every Year.

“*Application*” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 4 to the PPC Regulations

“*Authorised Officer*” means any person authorised by the 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.

“*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.

“*Fugitive emission*” means an emission to air, water or land from the activities which is not controlled by an emission or background concentration limit.

“*Groundwater Regulations*” means the Groundwater Regulations SI 1998 No. 2746, and words and expressions used in this permit which are also used in the Regulations shall have the same meanings as in those Regulations.

“*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;

within the site.

“*Landfill Regulations*” means the Landfill (England and Wales) Regulations SI 2002 No. 1559, and words and expressions used in this permit which are also used in the Regulations shall have the same meanings as in those Regulations.

“*Land Protection Guidance*” means Agency guidance “H7 - Guidance on the protection of land under the PPC Regime: Application site report and site protection monitoring programme”.

“*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 alter the agreed design criteria, specification or performance.

"notify without delay" and "notified without delay" means that a telephone call can be used, whereas all other reports and notifications must be supplied in writing, either electronically or on paper.

"*PPC Regulations*" means the Pollution, Prevention and Control (England and Wales) Regulations SI 2000 No.1973 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"*Quarter*" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"*Relevant person*" and "*relevant conviction*" shall have the meanings given to them in the Environmental Protection Act 1990

"*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 Groundwater 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 Groundwater Regulations

"*Site Protection and Monitoring Programme*" means a document which meets the requirements for Site Protection and Monitoring Programmes described in the Land Protection Guidance.

"*Technically competent management*" and "*technical competence*" shall have the meanings given to them in the Environmental Protection Act 1990.

"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, List of Wastes (Northern Ireland) Regulations 2005 (as amended), or The Special Waste Amendment (Scotland) Regulations 2004 as appropriate, and in relation to hazardous waste, includes the asterisk

"*Year*" means calendar year ending 31 December.

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.

END OF PERMIT