

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Swansea City Waste Disposal Company
Limited

Tir John Landfill
Wern Terrace
Off Fabian Way
Swansea
SA7 9XT

Permit number
EPR/TP3935LA

Tir John Landfill

Permit number EPR/TP3935LA

Introductory note

This introductory note does not form a part of the notice.

The main features of the permit are as follows.

The Tir John Landfill Site is situated North of Fabian Way, Port Tennant, Swansea, at National Grid Reference SS 695 936. The whole site comprises an older landfill (Permit Number JP3395FD formerly EAWML 34011) which is situated on the Western portion of the site and referred to as Phase 1. This landfill no longer accepts waste and is moving towards closure and restoration. The Eastern portion of the site adjoining Phase 1 is referred to as Phase 2, incorporating Cells 5 to 17; the site is currently accepting and disposing of non hazardous waste in Cell 15.

This variation application is to vary the construction and design of Cells 16 and 17 within Phase 2. It was originally proposed to excavate Cells 16 and 17 (which contain existing historic municipal wastes that were previously deposited on non-engineered land from the early 1950s through to the mid 1970s) and then to engineer the cells for landfill of non-hazardous wastes under the current permit. However, full excavation of the existing waste deposits and import of engineering fill is not considered to be possible, as it is neither the best practicable environmental option nor a cost effective approach for ongoing landfilling. Furthermore, the historic waste deposits are also producing landfill gas and leachate due to the presence of putrescible waste, consequently, excavation of the material would pose potential risks to site workers as well as having the potential to cause local odour issues during excavation.

The alternative, as proposed and submitted in this variation application, is to retain the historical wastes in-situ and to design and implement a scheme to intercept and manage the impacts from the wastes in order to reduce the impact on any of the identified site receptors. In conjunction with this remediation and management scheme, the new landfill cells will be developed broadly in line with the previous proposals for Cells 16 and 17, to provide a long term repository for non-hazardous waste.

The engineering proposals submitted, supported by appropriate risk assessments, demonstrate that control and management procedures will result in no significant environmental impacts and will continue to improve the environmental setting of the site and its immediate vicinity.

The schedules specify the changes made to the permit.

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

Status log of the permit		
Description	Date	Comments
Application received TP3935LA/A001 (PAS Ref CP3635PQ)	30/04/04	Application for Non Hazardous Landfill
Permit refused	17/01/05	
Appeal lodged	14/07/05	
Permit Issued TP3935LA	12/10/07	Permit Issued to Swansea City Waste Disposal Limited
Variation Application TP3935LA/V002 (PAS Ref WP3433XR)	25/10/07	
Variation determined	09/11/07	
Variation Application (EPR/TP3935LA/V003)	01/11/11	Admin variation to add waste codes
Variation determined	09/01/12	
Application EPR/TP3935LA/V004 (variation and consolidation)	Duly made 22/06/12	Application to vary to change the design of cells 16 and 17, amend leachate heads, update groundwater compliance limits and update the permit to modern conditions.
Variation determined EPR/TP3935LA	02/09/13	Varied and consolidated permit issued in modern condition format.

Other Part A installation permits relating to this installation		
Operator	Permit number	Date of issue
Infinis (Re-Gen) Limited	EPR/BP3738LS	22/12/2006

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
EPR/TP3935LA

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/TP3935LA/V004 authorising,

Swansea City Waste Disposal Company Limited (“the operator”),
whose registered office is

**The Baling Plant
Ferryboat Close
Enterprise Park
Morrison
Swansea
SA8 8QN**

company registration number **02633573**

to operate an installation at

**Wern Terrace
Off Fabian Way
Swansea
SA7 9XT**

to the extent authorised by and subject to the conditions of this permit.

<i>Name</i>	<i>Date</i>
<i>A.M. Lewis</i>	2 September 2013

Anna Lewis
Authorised on behalf of Natural Resources Wales

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

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

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

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

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

1.2 Finance

1.2.1 The financial provision for meeting the obligations under this permit set out in the agreement made between the operator and Natural Resources Wales dated 30/08/2013 shall be maintained by the operator throughout the subsistence of this permit and the operator shall produce evidence of such provision whenever required by Natural Resources Wales.

1.3 Energy efficiency

1.3.1 The operator shall:

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

2 Operations

2.1 Permitted activities

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

2.2 The site

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

2.3 Operating techniques

- 2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by Natural Resources Wales.
- (b) If notified by Natural Resources Wales that the activities are giving rise to pollution, the operator shall submit to Natural Resources Wales for approval within the period specified, a revision of any plan specified in schedule 1, table S1.2 or otherwise required under this permit, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

2.4 Improvement programme

- 2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by Natural Resources Wales.
- 2.4.2 Except in the case of an improvement which consists only of a submission to Natural Resources Wales, the operator shall notify Natural Resources Wales within 14 days of completion of each improvement.

2.5 Pre-operational conditions

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

2.6 Landfill Engineering

- 2.6.1 No construction of any new cell of the landfill shall commence until the operator has submitted construction proposals and Natural Resources Wales has confirmed that it is satisfied with the construction proposals.
- 2.6.2 Where the operator proposes to construct any new cell other than the first cell, but proposes no change from the design of the most recently approved cell which could have any impact on the performance of any element of the design, no construction of the new cell shall commence until the operator has submitted a cell layout drawing and Natural Resources Wales has confirmed that it is satisfied with the cell layout drawing.
- 2.6.3 The construction of a new cell shall take place only in accordance with the approved construction proposals unless:
- (a) any change to the approved construction proposals would have no impact on the performance of any element of the design; or
- (b) a change has otherwise been agreed in writing by Natural Resources Wales.
- 2.6.4 No disposal of waste shall take place in a new cell until the operator has submitted a CQA Validation Report and Natural Resources Wales has confirmed that it is satisfied with the CQA Validation Report.
- 2.6.5 No construction of landfill infrastructure shall commence until the operator has submitted relevant construction proposals or a written request to use previous construction proposals and Natural Resources Wales has confirmed that it is satisfied with the construction proposals.

- 2.6.6 The construction of the landfill infrastructure shall take place only in accordance with the approved construction proposals unless:
- (a) any change to the approved construction proposals would have no impact on the performance of any element of the design; or
 - (b) a change has otherwise been agreed in writing by Natural Resources Wales.
- 2.6.7 The operator shall submit a CQA Validation Report as soon as practicable following the construction of the relevant landfill infrastructure.
- 2.6.8 Where pollution controls are immediately necessary to prevent an incident or accident, then conditions 2.6.5 and 2.6.6 do not apply and the relevant landfill infrastructure may be constructed, provided that the construction proposals are submitted to Natural Resources Wales as soon as practicable.
- 2.6.9 For the purposes of conditions 2.6.1, 2.6.2, 2.6.4 and 2.6.5, Natural Resources Wales shall be deemed to be satisfied where it has not, within the period of four weeks from the date of receipt of the relevant construction proposals or CQA Validation Report, either:
- (a) confirmed whether or not it is satisfied; or
 - (b) informed the operator that it requires further information.
- 2.6.10 Where Natural Resources Wales has required further information under condition 2.6.9(b), Natural Resources Wales shall be deemed to be satisfied where it has not, within the period of four weeks from the date of receipt of the further information, either:
- (a) confirmed whether or not it is satisfied; or
 - (b) informed the operator that it requires further information.

2.7 Waste acceptance

- 2.7.1 Wastes shall only be accepted for disposal if:
- (a) they are listed in schedule 2, and
 - (b) they are non-hazardous 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) they are not liquid waste (including waste waters but excluding sludge), and
 - (f) they are not chemical substances from research and development or teaching activities, for example laboratory residues, which are unidentified and/or which are new and whose effects on man and/or the environment are unknown, and
 - (g) all the relevant waste acceptance procedures have been completed, and
 - (h) they fulfil the relevant waste acceptance criteria, and
 - (i) they have not been diluted or mixed solely to meet the relevant waste acceptance criteria, and

- (j) they are wastes which have been treated, except for: inert wastes for which treatment is not technically feasible; or it is waste other than inert waste and treatment would not reduce its quantity or the hazards which it poses to human health or the environment, and
- (k) where they are wastes with a code beginning with 07 05 and 16 03, they shall exclude waste medicinal products and pharmaceutically active waste materials arising from their manufacture.

2.7.2 The operator shall visually inspect:

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

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

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

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

2.7.5 The total quantity of waste that shall be deposited in the landfill shall be limited by the pre-settlement levels shown on drawing ESID/4b.

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

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

2.8 Leachate levels

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

2.9 Closure and aftercare

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

2.10 Landfill gas management

- 2.10.1 For the following activities referenced in schedule 1, table S1.1, A1 & A5 the operator shall take appropriate measures, including, but not limited to, those specified in any approved landfill gas management plan, to:
- (a) collect landfill gas; and
 - (b) control the migration of landfill gas.
- 2.10.2 The operator shall use the collected landfill gas to produce energy. If the collected landfill gas cannot be used to produce energy, the operator shall flare the gas.
- 2.10.3 The operator shall:
- (b) if notified by Natural Resources Wales, submit to Natural Resources Wales for approval within the period specified, a revised landfill gas management plan;
 - (b) implement the revised landfill gas management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.2, S3.3 and S3.13.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 There shall be no emission from the activities into groundwater of any hazardous substances contrary to the EP Regulations.
- 3.1.4 There shall be no emission from the activities into groundwater of any non-hazardous pollutants so as to cause pollution.
- 3.1.5 The trigger levels for emissions into groundwater for the parameters and monitoring points set out in schedule 3 table S3.5 shall not be exceeded.
- 3.1.6 The operator shall submit to Natural Resources Wales a review of the Hydrogeological Risk Assessment:
- (a) between nine and six months prior to the sixth anniversary of the granting of the permit, and
 - (b) between nine and six months prior to every subsequent six years after the sixth anniversary of the granting of the permit.
- 3.1.7 The limits for landfill gas arising from the installation set out in schedule 3, tables S3.6 and S3.7 shall not be exceeded.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
- (a) if notified by Natural Resources Wales that the activities are giving rise to pollution, submit to Natural Resources Wales for approval within the period specified, an emissions management plan;
 - (b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.
- 3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

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

3.4 Noise and vibration

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

3.5 Monitoring

- 3.5.1 The operator shall, unless otherwise agreed in writing by Natural Resources Wales, undertake the monitoring and any other actions specified in the following tables in schedule 3 to this permit:
- (a) Leachate specified in tables S3.1 and S3.8;
 - (b) Point source emissions specified in table S3.2;
 - (c) Landfill gas specified in tables S3.4; S3.6 and S3.7;
 - (d) Groundwater specified in tables S3.5 and S3.10;
 - (e) Surface water specified in table S3.9;
 - (f) Compaction groundwater monitoring specified in table S3.11;

- (g) Compaction landfill gas monitoring specified in table S3.12;
 - (h) Compaction leachate monitoring specified in table S3.14;
 - (i) In-bog water monitoring specified in table S3.15;
 - (j) Settlement Monitoring specified in table S3.16.
- 3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by Natural Resources Wales.
- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1 – S3.16 unless otherwise agreed in writing by Natural Resources Wales.
- 3.5.5 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 Pests

- 3.6.1 The activities shall not give rise to the presence of pests which are likely to cause pollution, hazard or annoyance outside the boundary of the site. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved pests management plan, have been taken to prevent or where that is not practicable, to minimise the presence of pests on the site.
- 3.6.2 The operator shall:
- (a) if notified by Natural Resources Wales, submit to Natural Resources Wales for approval within the period specified, a pests management plan which identifies and minimises risks of pollution from pests;
 - (b) implement the pests management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

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 Natural Resources Wales, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - i. the results of groundwater monitoring;
 - ii. sub-surface landfill gas monitoring;
 - iii. leachate levels, quality and quantities;
 - iv. landfill gas generation and collection;
 - v. waste types and quantities;
 - vi. the location of hazardous waste deposits;
 - vii. the specification and as built drawings of the basal, sidewall and capping engineering systems;
 - viii. in-bog water transect monitoring; and
 - ix. settlement monitoring.

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

4.2 Reporting

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

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

- (a) a review of the results of the monitoring and assessment carried out in accordance with this permit against the relevant assumptions, parameters and results in the risk assessments submitted in relation to this installation and any agreed amendments thereto;
- (b) the energy consumed at the site, reported in the format set out in schedule 4 table S4.3
- (c) the annual production/treatment set out in schedule 4 table S4.2;
- (d) the topographical surveys required by condition 3.5.4 other than those submitted as part of a CQA validation report;

- (e) the volumetric difference (reported in cubic metres) between the most recent topographical survey and the previous annual topographical survey i.e. the additional volume of the landfill void that is occupied by waste;
 - (f) an assessment of the settlement behavior of the landfill body based on the difference between the most recent topographical survey and previous annual topographical survey for the areas of the landfill which did not receive waste between the surveys;
 - (g) a calculation of the remaining capacity (reported in cubic metres) derived from the pre-settlement contours and the most recent topographical survey;
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by Natural Resources Wales, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 Within one month of the end of each quarter, the operator shall submit to Natural Resources Wales using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.
- 4.2.5 The operator shall, unless notice under this condition has been served within the preceding four years, submit to Natural Resources Wales, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

- 4.3.1 Natural Resources Wales shall be notified without delay following the detection of:
- (a) any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution;
 - (b) the breach of a limit specified in the permit; or
 - (c) any significant adverse environmental effects.
- 4.3.2 (a) In the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
- (i) inform Natural Resources Wales,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
- (b) in the event of a breach of any permit condition the operator must immediately—
- (i) inform Natural Resources Wales, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

- (c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.3 Any information provided under condition 4.3.2 [(a), or 4.3.1 (b) where the information relates to the breach of a limit specified in the permit,] shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.4 Where Natural Resources Wales has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform Natural Resources Wales when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to Natural Resources Wales at least 14 days before the date the monitoring is to be undertaken.
- 4.3.5 Natural Resources Wales shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- Where the operator is a registered company:
- (a) any change in the operator's trading name, registered name or registered office address; and
 - (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.
- Where the operator is a corporate body other than a registered company:
- (a) any change in the operator's name or address; and
 - (b) any steps taken with a view to the dissolution of the operator.
- In any other case:
- (a) the death of any of the named operators (where the operator consists of more than one named individual);
 - (b) any change in the operator's name(s) or address(es); and
- 4.3.6 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:
- (a) Natural Resources Wales shall be notified at least 14 days before making the change; and
 - (b) the notification shall contain a description of the proposed change in operation.

4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.
- 4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities			
Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity	
A1	Section 5.2 Part A(1) (a) , The disposal of waste in a landfill.	Landfill for non-hazardous waste (D5 –Specially engineered landfill)	<p>Receipt, handling, storage and disposal of wastes, consisting of the types and quantities specified in conditions 2.7, as an integral part of landfilling.</p> <p>The barrier system adjacent to cells 16 and 17 as referred to in pre-operational measure number 3 shall remain in place unless it can be demonstrated that there is no adverse effect on the integrity of Crymlyn Bog SAC as agreed in writing with Natural Resources Wales.</p>
Directly Associated			
A2	Leachate Activity management.	Storage of leachate prior to discharge to sewer	Leachate arising from the landfill. There shall be no recirculation of leachate within the landfill.
A3	Landfill gas management.	Extraction of landfill gas prior to combustion in GUP or flare.	To point of discharge to the Infinis Gas Utilisation Plant permit number BP3738LS.
A4	Water discharges to controlled waters.	Discharges of site drainage from the landfill.	From surface water management system to point of entry to controlled waters.
A5	Historic waste management	Management of historic waste in Cells 16 and 17	Leachate and landfill gas arising from the management of Cells 16 and 17 and associated historic waste deposits

Table S1.2 Operating techniques

Description	Parts	Date Received
Application	The response to questions 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 2.8, 2.9, 2.11 and 3.1 in Part B of the Application Form, where relevant as superceded by the Appeal documentation.	30 April 2004
Appeal Documentation	Letter from Jacob Babbie dated 19 April 2006, reference 0007755/SJM/117	19 April 2006
Appeal Documentation	Letter from Jacob Babbie dated 19 April 2006, reference 0007755/SJM/117.	19 April 2006
Improvement Condition submission, (Table 1.3, Ref IC9)	Letter from Jacobs, dated 12 th November 2007 (reference:B0775500/PPC1010/001). - Updated monitoring results records.	2 nd December 2007
Site Protection Monitoring Plan	Jacobs Report and attachments: Design of Site Protection and Monitoring Programme for Tir John Landfill Site, Swansea City Waste Disposal Company Limited Date: December 2007(Document Reference: B0775500/PPC1011/R01)	11 th December 2007
Improvement Condition submission, (Table 1.3, Ref IC5)	Report from Jacobs, Dated February 2008, (Reference B0775500/PPC1005/RevB) – Leachate Management Plan	11 th February 2008 (Approved 19/5/08)
Crymlyn Bog SAC protection plan	Jacobs Report: Crymlyn Bog SAC Protection Plan Dated: February 2008, (Document Reference: B0775500/PPC1013/R01/RevB)	11 th February 2008
Pre- Operational Submission (Table S1.4, Ref 1)	Report from Jacobs, Dated 14 November 2008, (Reference B0775500/PPC1002/R01/RevD – Surface Water Management Plan (Rev D)	14 th November 2008
Improvement Condition submission, (Table S1.3 Ref IC1)	Report from Jacobs, Dated 14 November 2008, (Reference B0775500/PPC1007/R01/RevC – Perimeter Catch Ditch Management and Monitoring Plan (Rev c)	14 th November 2008
Ecological Monitoring Plan	Jacobs Report: Ecological Monitoring Plan: Consultation Draft (Rev A) Date: 10 th July 2009 (Document Reference: B1160000/0P005/R01/RevA)	17 th July 2009
Pre- Operational Submission (Table S1.4, Ref 2)	Letter from Jacobs Table S1.4a Pre-Operational Measure, Reference 2, (Reference B1160000/SJM/61 – Dated 28th August 2009), Including attachments to the letter. Installation of new boreholes	28 th August 2009
Assessment of current leachate management infrastructure Cells 5 to 14	Jacobs Report: Tir John Landfill Site Leachate Management and Collection Infrastructure Inspection Report Dated: May 2009	8 th May 2009

Table S1.2 Operating techniques

Description	Parts	Date Received
Pre- Operational Submission (Table S1.4, Ref 3) Relating to Cell 15	Letter from Jacobs – Dated 7 th December 2007 (Reference B0775500/SJM/147) – outlining initial proposals to discharge pre-operational condition 3	7 th December 2007
	Jacobs Report: CQA Plan for the Preliminary Development Platform for Cell 15 (Reference B0775500/ENG/R04, dated May 2008).	May 2008
	Letter from Jacobs - Dated 8 th July 2008 (Reference B0775500/SJM/194).	8 th July 2008
	Letter from Jacobs - Dated 23 rd July 2008, (Reference B0775500/SJM/197) – settlement proposals for Cell 15.	23 rd July 2008
	Letter from Jacobs - Dated 8 th August 2008 (Reference B0775500/SJM/202) Cell 15 settlement and undercell groundwater monitoring provisions.	8 th August 2008
	Letter from Jacobs - Dated 27 th January 2009 (Reference B1160000/SJM/02) Preliminary development platform for Cell 15 - settlement.	27 th January 2009 (note: letter was incorrectly dated 2008)
	Email from Jacobs – Dated 10 th March 2009 – Settlement update and attachments.	10 th March 2009
	Jacobs Report: Cell 15 Earthworks Design Ground Settlement Report – Dated May 2009 (Reference: B1160000/CAP004/01Rev0).	May 2009
	Letter from Jacobs - Dated 17 th July 2009 (Reference B1160000/CD/RKS/SJM/052) Cells 12 and 14 – Location of Leachate Extraction Wells (based on settlement calculations). Includes Cell 15 Waste Emplacement Plan	17 th July 2009
	Email from Jacobs – Dated 12 th October 2009 – Decommissioning of settlement monitoring Cell 15 platform.	12 th October 2009
Phase 1 Hydrogeological Risk Assessment Report	All	10 th July 2011
Phase 1 Hydrogeological Risk Assessment: Addendum Report	All	25 th June 2012
Application EPR/TP3435LA/V004	Accident Management Plan, Revision 1, dated March 2012	30 th March 2012
	Closure and Aftercare Plan, Revision 0, dated March 2012	30 th March 2012

Table S1.2 Operating techniques

Description	Parts	Date Received
	Working plan document for site Management and Control, Section 4 – Waste Acceptance and Operational Procedures, Revision 3 dated March 2012	30 th March 2012
	Permit Management System Manual, Revision 2, dated March 2012	30 th March 2012
	Monitoring Management Plan, Revision 1, dated March 2012	30 th March 2012
	Nuisance Risk Assessment and Management Plan, Revision 0, dated March 2012	30 th March 2012
	Gas Management Plan – Infinis Input, dated 12/12/11	30 th March 2012
	Gas Management Plan, Revision 1, dated March 2012	30 th March 2012
	Surface Water Management Plan, Revision 0, dated March 2012	30 th March 2012
	Conceptual Model, Environmental Setting and Installation Design Report	30 th March 2012
	Leachate Management Plan, Revision 0, dated March 2012 (excluding sections: 1.4.1 (iv); 1.5.11 (reference to “recirculation”); 1.8.2 (reference to “recirculation”) & sections 1.5.13 to 1.5.18)	30 th March 2012
	Stability Risk Assessment Cells 16 and 17, dated March 2012	30 th March 2012
	Hydrogeological Risk Assessment for Cells 16 and 17, dated March 2012.	30 th March 2012
	Phase 1 Hydrogeological risk Assessment Addendum Report dated June 2012	25 th June 2012
Not duly made response	Jacobs Letter - Reference B1160001/CAP020/SJM/01 dated 30 th May 2012	31 st May 2012
Not duly made response	Jacobs Letter - Reference B1160001/SJM/005 dated 31 st May 2012	01 st June 2012
Not duly made response	Jacobs Letter - Reference B1160001/SJM/008 dated 22 nd June 2012	25 th June 2012
Schedule 5 notice	Response to Schedule 5 request for further information, dated November 2012 – all parts	30 th November 2012
Schedule 5 notice	Response to Schedule 5 request for further information, dated December 2012 – all parts	28 th December 2012
Pre Settlement Waste Profile	Drawing Reference: B1160001/TP3935LA/EPVA/ESID 1B. Rev2. dated 26 th March 2013, revised 15 th April 2013.	15 April 2013

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
12	<p>The operator shall submit proposals for the capping of the following areas by the timeframes specified:</p> <ul style="list-style-type: none"> • “Temporary Capping Zone” on drawing reference B1160001/TP3935LA/EPV/ESID/14, Rev 1. • “Contingency Capping Zone” (as shown on drawing reference B1160001/TP3935LA/EPV/ESID/14, Rev 1) • “Phase 3” on drawing reference B1160001/TP3935LA/EPV/ESID/14, Rev 1. 	<p>31st March 2014</p> <p>31st January 2015</p> <p>01st November 2014</p>
13	<p>Following approval of the capping proposals outlined in Improvement Condition 12 the Operator shall complete the capping by the timeframes specified:</p> <ul style="list-style-type: none"> • area marked “Temporary Capping Zone” (as shown on drawing reference B1160001/TP3935LA/EPV/ESID/14, Rev 1) shall be completed. • area marked “Contingency Capping Zone” (as shown on drawing reference B1160001/TP3935LA/EPV/ESID/14, Rev 1) • “Phase 3” (as shown on drawing reference B1160001/TP3935LA/EPV/ESID/14, Rev 1) shall be completed. <p>The Operator must implement the capping proposals as approved, and from the date stipulated by Natural Resources Wales.</p>	<p>31st December 2015</p> <p>01st November 2015</p> <p>01st November 2015</p>
14	<p>Upon completion of the compaction trials the Operator shall forward the information obtained by pre-operational measures 2, 3 and 5.</p>	<p>4 months after completion of the compaction trials unless otherwise agreed in writing with Natural Resources Wales.</p>
15	<p>The Operator shall forward to Natural Resources Wales for written approval, a report to show how, in the event that cells 16 and 17 are not built or the compaction does not take place, as per variation application EPR/TP3435LA/V004, the management of the historic waste within the footprint of cells 16 and 17 is to be undertaken. The report shall include the following as a minimum:</p> <ul style="list-style-type: none"> • Extraction measures; • Landfill gas management; • Leachate management; • Groundwater monitoring; • How the site is to be re-profiled; • Surface water control and management; and • Capping measures; <p>Should the cells 16 and 17 not be built, the Operator shall manage the impacts of the historic wastes within the footprint of cells 16 and 17 as per the agreed proposals to a timeframe to be agreed in writing by Natural Resources Wales.</p> <p>The Operator must implement the report as approved, and from the date stipulated by Natural Resources Wales.</p>	<p>Four years from variation issue unless otherwise agreed in writing with Natural Resources Wales.</p>

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
16	<p>The Operator shall review the leachate management system for cells 5 - 14, the review is to include but not be limited to the following:</p> <ul style="list-style-type: none"> Proposals to reduce leachate heads over an 18 month period so as to achieve compliance with those levels specified within Table S3.1; Proposals to install additional leachate extraction and monitoring wells to ensure a minimum of 1 extraction and 2 monitoring wells per cell. <p>The Operator shall undertake the proposals outlined in the leachate management system review and complete the installation of the monitoring and extraction wells within 6 months of written approval of proposals.</p>	3 months from variation issue unless otherwise agreed in writing with Natural Resources Wales.
17	<p>The Operator shall forward for written approval, an addendum to the landfill gas management plan for the phase 2 landfill, to include the installation of perimeter gas monitoring boreholes. The addendum shall include but not be limited to:</p> <ul style="list-style-type: none"> Assessment of the suitability of current boreholes to monitor potential gas migration; Proposed timeframes and plan of works for the installation of any additional perimeter gas boreholes; Proposed spacing of any additional perimeter gas boreholes to be installed; Monitoring schedules and suites for landfill gas monitoring; and Control limits for perimeter gas boreholes, once approved these control limits are to form part of the operational techniques employed at the site as part of the gas management plan <p>Upon approval of the addendum, the Operator shall install and begin monitoring of the perimeter gas boreholes as per the agreed addendum.</p> <p>The operator shall forward to Natural Resources Wales for written approval an update to the site Monitoring Management Plan which shall include proposed control levels for the Methane and Carbon Dioxide at the perimeter monitoring points identified in Table S3.3. The updated plan shall include an action plan detailing the steps to be taken in the event of a control level exceedance.</p>	3 months from variation issue unless otherwise agreed in writing with Natural Resources Wales.
18	<p>The operator shall undertake a review of the effectiveness of the Cell 16 and 17 Perimeter Gas Collection System. The review shall examine in particular the effectiveness of each individual well's ongoing ability to collect gas. Any proposed improvements shall be identified and shall be in accordance with the Industry Code of Practice for "the management of landfill gas" and submitted to Natural Resources Wales for approval.</p> <p>On approval any improvements identified shall be implemented by a timescale agreed with Natural Resources Wales.</p>	2 years from the installation of the Perimeter Gas Collection system along the Eastern boundary of the site unless otherwise agreed in writing with Natural Resources Wales.

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
19A	<p>As part of the CQA submission for Cell 16 (as required by condition 2.6 of the permit) the operator shall include an addendum providing the details for the construction of:</p> <ol style="list-style-type: none">1. a leachate collection drain along the Eastern flank of Cells 6 to 9, and;2. a minimum of four leachate extraction wells along the Eastern flank of Cells 6 to 9 (as shown on diagram reference B1160001/TP3935LA/EPV/ESID7 as LEW6A, LEW7A, LEW8A and LEW9). <p>On approval of the CQA plan for Cell 16, the installation of the new leachate extraction wells, including the improved drainage collection system will be built as part of the Cell 16 construction programme.</p>	12 months from variation issue or as otherwise agreed in writing
19B	<p>In the event that the construction of Cell 16 does not commence by the specified date, the operator shall submit the following information as an addendum to the CQA Plan for the temporary capping of the Eastern flank of phase 2 (as shown on drawing reference:</p> <ul style="list-style-type: none">• "Temporary Capping Zone" on drawing reference B1160001/TP3935LA/EPV/ ESID/14, Rev 1):• a leachate collection stone drain along the Eastern flank of Cells 6 to 9, and;• at least four new leachate extraction wells along the same flank (as shown on diagram reference B1160001/TP3935LA/EPV/ESID7 as LEW6A, LEW7A, LEW8A and LEW9). <p>On approval of the CQA plan for this temporary capping, the installation of the new leachate extraction wells and including the improved drainage collection system will be built as part of the temporary capping construction programme.</p>	1 st January 2015

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
20	<p>The operator shall provide an updated addendum to the Gas Management Plan to provide assessment parameters and a contingency action plan for in-waste gas monitoring. As a minimum assessment parameters shall be provided for the following:</p> <ul style="list-style-type: none">• Methane [%],• Nitrogen [%],• Oxygen [%],• Hydrogen [ppm],• Hydrogen Sulphide [ppm],• Carbon Monoxide [ppm],• Balance Gas [%],• Ratio Methane : Carbon Monoxide• Ratio Nitrogen : Oxygen• Differential Pressure [millibar]• Atmospheric Pressure [millibar]• Initial assessment of the condition of each abstraction well (for example air leak detected).• Valve position on arrival [% open]• Valve position on departure [% open] <p>The notification requirements of condition 2.4.2 will be deemed to have been complied with on submission of the plan.</p>	3 months from completion of the trial unless otherwise agreed in writing.

Table S1.4 Pre-operational measures

Reference	Pre-operational Measures
1	<p>Prior to undertaking the compaction trial, the Operator shall submit to Natural Resources Wales for written approval a compaction trial design report that shall include:</p> <ul style="list-style-type: none">• the proposed location of the compaction trial, demonstrating that it is at an appropriate distance from potentially sensitive locations and thus mitigating any potential impacts of the trial;• confirmation of trial area size and shape, which will be designed to sample an appropriate range of ground conditions in the historic wastes;• identification and design of temporary pollution control systems to intercept leachate and/or gas generated from the trial and prevent impact outside the site boundary;• identification of instrumentation proposed, to capture data from the trial during and immediately following compaction operations;• confirmation of monitoring provisions for gas, groundwater and leachate in the area surrounding the trial;• management controls to mitigate any impacts from noise, vibration, dust or odours;• a review of the trial proposals against the original habitats assessment made as part of the permit variation application EPR/TP3935LA/V004.
2	<p>Post compaction trial and prior to compaction taking place, the Operator shall review the suitability of the compaction method used in the trial as a method for managing the impacts of the historic waste deposited within the footprint of cells 16 and 17. The revision shall be undertaken using the information obtained during the compaction trial and shall include as a minimum:</p> <ul style="list-style-type: none">• review of the compaction method used in the trial as a suitable mechanism to achieve a stable platform on which to develop cells 16 and 17;• review of the safeguards to be put in place, including a revision of the proposed buffer zones to ensure that compaction will not cause instability within the existing landfill mass;• a review of the suitability of the proposed pollution prevention techniques to be employed in the compaction works and finalise final design proposals for these measures.• updates to any relevant supporting risk assessments pertaining to the compaction work. <p>The revision shall be forwarded to Natural Resources Wales for written approval. Following this the Operator shall implement any measures to agreed timescales.</p>
3	<p>Post compaction trial and prior to the compaction work taking place the Operator shall submit to Natural Resources Wales for written approval the following:</p> <ul style="list-style-type: none">• detailed written design proposals for the installation of a Perimeter Collection System (PCS) cut-off barrier along the Eastern boundary of cells 16 and 17, to a depth and length to be agreed in writing by Natural Resources Wales which ensures that migration of contaminants into the Crymlyn Bog will be minimised during the compaction works of the historic wastes and subsequent landfilling of cells 16 and 17;• detailed written design proposals for the installation of ground water monitoring boreholes along the Perimeter Collection System (PCS) cut-off barrier, the spacing and number and placement of which are to be agreed in writing with Natural Resources Wales but at a minimum there is to be three groundwater monitoring boreholes inside the cut-off wall and three groundwater monitoring boreholes placed outside of the cut-off wall to ensure that any migration of contaminants is detected;• detailed proposals in writing for the installation of a Internal Platform Drainage System (IPDS) in the area of Cells 16 and 17 (and unless otherwise agreed) shall consist of at least three trenches of 5 m depth and shall link to a trench which is to be installed around the outside of the compaction area. The trench system shall be designed to collect any leachate squeezed out of the ground during the compaction works. The spacing of the trenches shall be confirmed to us in writing;• detailed written design proposals for the installation of a Perimeter Gas Collection System to collect and monitor gas from the historic wastes beneath cells 16 and 17.

Table S1.4 Pre-operational measures

Reference	Pre-operational Measures
4	<p>Post compaction trial and prior to compaction taking place; the Operator shall undertake a gas pumping trial in order to determine the volume and composition of gas generated during the compaction trials. The trial shall be undertaken in accordance with Environment Agency Operational Instruction "566_08 - Using pumping trials to determine whether a landfill site needs a flaring system" or as otherwise agreed in writing with Natural Resources Wales. On completion of the gas pumping trial the results shall be assessed and proposals for the effective collection and treatment of landfill gas submitted to Natural Resources Wales for approval.</p>
5	<p>Post compaction trial and prior to compaction works taking place, the Operator shall undertake analysis of the leachate generated during the compaction trials and shall forward a report including but not limited to the following;</p> <ul style="list-style-type: none">• proposed monitoring locations, parameters and frequencies of monitoring for inclusion in table S3.10 to monitor leachate generated during the compaction works;• proposed compliance limits for groundwater boreholes which are installed under pre-operational condition 3. <p>The proposed monitoring locations, parameters, frequencies and compliance limits shall be forwarded to Natural Resources Wales for written approval. Upon approval, these proposals shall be incorporated into the site's monitoring and operating schedules.</p>
6	<p>Post compaction trial and prior to the commencement of compaction the operator shall install an additional In-bog water monitoring transect along the Eastern boundary of the landfill site at a location to be agreed with Natural Resources Wales.</p> <p>Once installed, the transect shall be monitored in accordance with the monitoring requirements set out in Table S3.13 of this permit and the Ecological Monitoring Plan: Consultation Draft (Rev A) dated 10 July 2009 should be updated to include the revised locations of the monitoring transects and monitoring procedures.</p>
7	<p>Prior to the deposit of waste in cells 16 and 17, the Operator shall review and where necessary update the Waste Phasing Plan for each respective cell. The Waste Phasing Plan shall ensure that waste placement will be undertaken in a manner that will ensure that the basal gradients in each cell are maintained throughout the lifetime of the cells. Upon submission of the updated Waste Phasing Placement Plan, the document shall be incorporated into the Operating Techniques and Management for the site.</p>

Table S1.4 Pre-operational measures

Reference	Pre-operational Measures
8	<p>Prior to compaction, the Operator shall submit written proposals and procedures for managing noise and vibration. Incorporating a realistic timetable for implementation and ongoing review. There shall be a final completion date whereby this procedure shall have been assessed, evaluated and concluded.</p> <p>The proposals and procedures shall assess the likelihood of adverse environmental impact associated with noise and vibration linked to a proposal to adopt dynamic ground compaction as a means to achieve underlying waste deposit stabilisation via a reengineered load bearing structure. The proposals and procedures will assess the potential environmental impact upon the following nearest sensitive receptors -</p> <ul style="list-style-type: none"> • Habitats; • Occupied residential dwellings; • Utilities and service structures; • Waste management infrastructure - extant and proposed; • Landfill gas management abstraction management and monitoring; • Leachate management abstraction, management and monitoring; • Groundwater and surface water abstraction, management and monitoring; • Waste mass stability including compromised flank, face and capped structures. <p>Monitoring data shall be obtained through a combination of field investigation trial work and literature survey. These proposals and procedures shall incorporate (although not necessarily confined to) the advice contained within the following documents –</p> <p>BRITISH STANDARDS</p> <p>BS4142:1997 Method for rating industrial noise affecting mixed residential and industrial areas. ISBN 0580 28300 3</p> <p>BS6472-1:2008 Guide to the evaluation of human exposure to vibration in buildings (1Hz – 80 Hz). ISBN 978 0580 53027 2</p> <p>CIRIA REPORT C572 London 2002 Treated ground engineering properties and performance. J A Charles and K S Watts. ISBN 0 86017 572 3.</p> <p>If it is concluded that dynamic ground compaction ceases to be a viable engineered solution to waste stabilisation, alternative remediation strategies and operational procedures shall be assessed, evaluated and reported upon.</p>

Table S1.5 Annual waste input limits

Category	Limit Tonnes/ Year
Non-hazardous waste	225,000
Inert waste	135,000

Schedule 2 - List of permitted wastes

Table S2.1 Permitted waste types	
Waste code	Description
01	WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING, AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS
01 01	Wastes from mineral extraction
01 01 02	Wastes from mineral non-metalliferous excavation
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 12	tailings and other wastes from washing and cleaning of minerals other than those mentioned in 01 04 07 and 01 04 11
10	WASTES FROM THERMAL PROCESSES
10 02	wastes from the iron and steel industry
10 02 01	wastes from the processing of slag
10 02 02	unprocessed slag
10 12	wastes from manufacture of ceramic goods, bricks, tiles and construction products
10 12 08	waste ceramics, bricks, tiles and construction products (after thermal processing)
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 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
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE
19 05	wastes from aerobic treatment of solid wastes
19 05 03	off-specification compost
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 09	minerals (for example sand, stones)
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11

Table S2.1 Permitted waste types

Waste code	Description
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 08	biodegradable kitchen and canteen waste
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 38	wood other than that mentioned in 20 01 37
20 01 39	plastics
20 01 40	metals
20 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 3 – Emissions and monitoring

Table S3.1 Leachate level limits and monitoring requirements

Monitoring point reference/ Description	Limit	Monitoring frequency	Monitoring method
LEW5A, LEW6, LEW7, LEW8, LEW9A, LEW10A, LEW11, LEW12A, LEW13, LEW14	1m above well base*.	Fortnightly for wells in uncapped cells and monthly for wells in fully capped cells.	In accordance with Environment Agency document 'Guidance on monitoring of landfill leachate, groundwater and surface water' (LFTGN02), unless otherwise agreed in writing.
Any additional monitoring well installed in accordance with Improvement Condition 16	1m above well base*.		
LEW5, LEW6A, LEW7A, LEW8A, LEW9, LEW10 LEW12, LEW11, LEW 13, LEW14, LEW15, LMP15A, LMP15B, LEW16, LMP16A, LMP16B, LEW17, LMP17A, LMP17B	1m above cell base unless otherwise agreed in writing.		

as shown of drawing reference:
B1160001/TP3935LA/EPVA/ESI
D/15. Rev.0.

* As part of the annual monitoring report the operator shall submit a summary table providing the elevation in (mAOD) of the top of each well, the depth of the well and an elevation value (in mAOD) for each well base. The information shall be based on the previous year's annual well survey. The report should also highlight any structural changes to any of the well's that may affect level assessment (e.g. changes to well height).

Table S3.2 Point source emissions to water (other than sewer) – emission limits and monitoring requirements

Emission point Ref. & Location	Parameter	Source	Limit	Reference Period	Monitoring Frequency	Monitoring Standard or Method
SW1 as shown on Drawing Number B1160001/TP3935 LA/EPVA/ESID/6d. Rev.0.	Flow	Discharge from the	40 l/s	24hr average	Daily	In accordance with Environment Agency document 'Guidance on monitoring of landfill leachate, groundwater and surface water' (LFTGN02), unless otherwise agreed in writing.
	Suspended Solids	surface water lagoon	40 mg/l	Spot Sample	Monthly	
	Biological Oxygen Demand		20 mg/l			
	Ammoniacal Nitrogen		0.5 mg/l			

Table S3.3 Point source emissions to sewer, effluent treatment plant or by tankering or other transfer off-site– emission limits and monitoring requirements

Emission point Ref. & Location	Parameter	Source	Limit (incl unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
Discharge to sewer as per consent to discharge to sewer reference D105/07 as shown on drawing B1160001/TP3935LA /EPVA/ESID/7. Rev.0.	None	Leachate Treatment Lagoon	-	-	-	-

Table S3.4 Landfill gas in external monitoring boreholes – limits and monitoring requirements

Monitoring point Ref. /description	Parameter	Limit (including units)	Monitoring frequency	Monitoring standard or method
Existing monitoring wells and any new monitoring wells identified or installed in accordance with improvement condition 17.	Methane	no limit	Monthly	In accordance with Environment Agency document "Guidance on the management of landfill gas" (LFTGN03).
	Carbon Dioxide	no limit		
	Oxygen	no limit		
	Atmospheric pressure	no limit		
	Differential Pressure	no limit		
	Temperature	no limit		
	Other meteorological data	-		

Table S3.5 Trigger levels for emissions into groundwater and monitoring requirements

Monitoring point reference	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
GDW4, GDW12	Ammoniacal Nitrogen	12 mg/l	Spot Sample	Quarterly	Unless otherwise agreed in writing, as specified in Environment Agency document - TGN02, Monitoring of Landfill Leachate, Groundwater, and Surface Water (February 2003) and
GDW5,		25 mg/l			
GDW6, GDW9		16 mg/l			
GDW7, GDW10, GDW11		15 mg/l			
GDW8		20 mg/l			
GDW16		4 mg/l			
GDW17		10 mg/l			
GDW18		5 mg/l			
GW7,	Chloride	250 mg/l	Spot Sample	Quarterly	
GDW4, GDW5, GDW6, GDW8, GDW9, GDW10, GDW11, GDW12		100 mg/l			
GDW16					
GDW17, GDW18		300 mg/l			

Table S3.5 Trigger levels for emissions into groundwater and monitoring requirements

Monitoring point reference	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
GDW4, GDW5, GDW6, GDW7, GDW8, GDW9, DGW10, GDW11, GDW12, GDW14, GDW15, GDW16, GDW17, GDW18	Atrazine	0.03 µg/l	Spot Sample	Quarterly	Horizontal Guidance Note H1 – Environmental Risk Assessment for permits, Annex J.
	Benzo(a) pyrene	1 µg/l			
	Cadmium	1 µg/l			
	Cis-1,2-dichloroethene	1 µg/l			
	Dichloroprop	0.05 µg/l			
	Reactive Phosphorus	0.05 mg/l			
	Tributyl Phosphate	0.02 µg/l			
	Zinc	75 µg/l			

Table S3.6 Landfill gas from capped surfaces – limits and monitoring requirements

Monitoring point Ref. /description	Parameter	Limit (including unit)	Monitoring frequency	Monitoring Standard or method
Permanently capped zone	Average methane flux and total methane emission	Average zone emission rate of 0.001 mg/m ² /second	Annually	In accordance with Environment Agency document “Guidance on monitoring of landfill gas emissions (LFTGN07) unless otherwise agreed in writing.
Temporarily capped zone	Average methane flux and total methane emission	Average zone emission rate of 0.1 mg/m ² /second	Annually	

Table S3.7 Landfill gas – other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
All gas collection wells and any other (in-waste) monitoring points	Methane	Monthly unless otherwise agreed in writing with Natural Resources Wales	Unless otherwise agreed in writing, monitoring methods used shall be in accordance with Environment Agency document “Guidance on the management of landfill gas” (LFTGN03).	On an annual basis the operator shall submit an up to date scale plan detailing the locations of all in-waste monitoring/ extraction points installed at the installation. Each borehole shall be referenced with a unique identifier
	Carbon Dioxide			
	Oxygen			
	Balance Gas			
	Carbon Monoxide			
	Atmospheric pressure			
	Differential pressure			
Meteorological Data				
	Hydrogen sulphide	Six Monthly		
	Water level			

Table S3.7 Landfill gas – other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Gas inlet from Phase 2 to gas utilisation plant (TIRS1400).	Trace Gas Analysis	Annually	Unless otherwise agreed in writing, monitoring methods used shall be in accordance with Environment Agency document "Guidance for monitoring trace components in landfill gas" (LFTGN04).	
Gas inlet from Phase 2 to gas utilisation plant (TIRS1400).	Methane Carbon Dioxide Oxygen Carbon Monoxide Balance Gas Gas Flow Atmospheric pressure Differential pressure Hydrogen sulphide	Monthly unless otherwise agreed in writing with Natural Resources Wales. Six Monthly	Unless otherwise agreed in writing, monitoring methods used shall be in accordance with Environment Agency document "Guidance on the management of landfill gas" (LFTGN03).	

Table S3.8 Leachate– other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
LEW5, LEW6, LEW7, LEW8, LEW9A, LEW10, LEW11, LEW12A, LEW13, LEW14A, LEW15, LEW16, LEW17 IPDS-1,	BOD COD Conductivity DO pH Temperature	Quarterly	Spot Sample	

Table S3.8 Leachate– other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
IPDS-2, IPDS-3	Ammoniacal Nitrogen as N,	Annually	Spot Sample	
	Cadmium (dissolved),			
	Chloride,			
	Mecoprop,			
	Reactive Phosphorus,			
	Zinc (dissolved),			
	Benzo(a) pyrene,			
	Atrazine,			
	Cis-1,2-dichloroethene,			
	Dichloroprop			
	Tributyl Phosphate,			
	1,2,4-trimethylbenzene,			
	2,3,4-trichlorophenol,			
	Lead,			
	Phenol (Monohydric),			
	Sodium,			
	1,2-dichloroethane,			
	1,3,5-trimethylbenzene,			
	2,3,6-trichlorophenol,			
	2,4,5- trichlorophenol,			
	2,4,6- trichlorophenol,			
	2,3,4- trichlorophenol,			
	Arsenic,			
	Benzene,			
	Benzo(b)fluroanthene,			
	Benzo(ghi)perylene			
	Benzo(k)fluroanthene			
	Boron			
Chlorobenzene,				
Chloromethane				
Chromium				
Copper				
Dichloromethane				
Ethyl benzene				
Fluoride				
Indeno(1,2,3cd) pyrene,				
m,p-xylene				
Mercury				

Table S3.8 Leachate– other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
	Molybdenum			
	Naphthalene			
	Nickel			
	Nitrate			
	o-xylene			
	Pentachlorophenol			
	p-isopropyltoluene			
	Potassium			
	Selenium			
	Toluene			
	Tributyltin			
	Triphenyl			
	Phosphate			
	Vanadium			
	Depth to base of each well			

Table S3.9 Surface water – other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
SW1, SW2, SW3, SW4 as shown on Drawing Number B1160001/TP3935LA/EPVA/ESID/6d. Rev.0.	Visual Inspection for evidence of Contamination	Weekly	Unless otherwise agreed in writing, monitoring methods used shall be in accordance with Environment Agency document 'Guidance on monitoring of landfill leachate, groundwater and surface water' (LFTGN02).	See the Approved Surface Water Management Plan (dated 14 th November 2009) for applicable Control Levels.
	Temperature	Monthly		
	pH			
	Dissolved Oxygen			
	Ammoniacal Nitrogen			
	Chloride			
	Chemical Oxygen Demand			
	Biological Oxygen Demand			
	Total Organic Carbon			
	Total Phosphate			
	Nitrate			
	Nitrite			
	Organic Nitrogen as N Total			
	Oxidised Nitrogen as N			
	DAIN*			
	DAIP**			
Suspended Solids				

Table S3.9 Surface water – other monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
SW1, SW2, SW3, SW4 as shown on Drawing Number B1160001/TP3935LA/EPVA/ESID/6d. Rev.0.	Zinc	Annually		
	Lead			
	Nickel			
	Copper			
	Chromium			
	Cadmium			
	Manganese			
	Iron			
	Sulphate			
	Alkalinity			
	Potassium			
Sodium				

*DAIN – Dissolved Available Inorganic Nitrogen shall be reported and is a sum of the ammonium, nitrate and nitrite value.

** DAIP – Dissolved Available Inorganic Phosphorous shall be reported and is measured as orthophosphate (dissolved)

Table S3.10 Groundwater – other monitoring requirements

Emission point reference or source or description of point of measurement	Emission point reference or source or description of point of measurement	Emission point reference or source or description of point of measurement	Emission point reference or source or description of point of measurement	Emission point reference or source or description of point of measurement	
Upgradient monitoring points: GDW1(S), GDW1(D), GDW2(S), GDW2(D), GDW3(S), GDW3(D), Downgradient Monitoring Points: GDW4, GDW5, GDW6, GDW7, GDW8, GDW9, GDW10, GDW11, GDW12, GDW13, GDW14(R), GDW15(R), GDW16, GDW17, GDW18	pH,	Quarterly	Unless otherwise agreed in writing, as specified in Environment Agency document - TGN02, Monitoring of Landfill Leachate, Groundwater, and Surface Water (February 2003) and Horizontal Guidance Note H1 – Environmental Risk Assessment for permits, Annex J.		
	Ammoniacal Nitrogen as N,				
	Chloride,				
	Nitrate,				
	Nitrite,				
	Total Organic Carbon,				
	Arsenic,				
	Lead,				
	Zinc,				
	Orthophosphate reactive as P/ Phosphate,				
	Redox Potential,				
	Dissolved Oxygen,				
	Water Level.				
	Cadmium				
	Chromium				
	Copper				
	Atrazine				
	Benzo (a) pyrene				
	Cis-1,2-dichloroethene				
	Mecoprop				
	Tributylphosphate				
	Malathion				
	Boron			Annually	
	Mercury				
	Molybdenum				
	Nickel				
	Potassium				
Selenium					
Sodium					
Vanadium					
1,2,4-trimethybenzene,					
1,2-dichloroethane,					
1,3,5-trichlorophenol,					
2,3,6- trichlorophenol,					
2,4,5- trichlorophenol,					
2,4,6- trichlorophenol,					
Benzene,					
Benzo(b)fluoranthene,					
Benzo(ghi)perylene,					

Table S3.10 Groundwater – other monitoring requirements

Emission point reference or source or description of point of measurement	Emission point reference or source or description of point of measurement	Emission point reference or source or description of point of measurement	Emission point reference or source or description of point of measurement	Emission point reference or source or description of point of measurement
	Benzo(k)fluoranthene, , Chlorobenzene Chloromethane, Ethyl benzene, indeno(1,2,3-cd) pyrene, m,p-xylene, naphthalene, o-xylene, Pentachlorophenol, p-isopropyltoluene, Toluene, Tributyltin, Triphenylphosphate, Phenol (monohydric), Fluoride, Ionic Balance (%),			
All groundwater monitoring points	Depth to base of each well	Annually		
Vibrating Wire Piezometers trenches B, C & D as shown on drawing reference B116001/OP021/AP R2011/06	Under Cell Pore water pressure (Cell 15)	Daily	-	-
Any future sub-cell groundwater monitoring systems installed during construction of Cell 16 & 17 platform.				

Table S3.11 Compaction Groundwater Monitoring Requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Monitoring locations to be determined under pre-operational condition No 5	BOD	Fortnightly during compaction works.	Spot Sample	
	COD			
	Conductivity			
	DO			
	pH			
	Temperature			
	Ammoniacal Nitrogen as N,			
	Arsenic (dissolved),			
	Cadmium (dissolved),			
	Chloride,			
	Mecoprop,			
	Naphthalene,			
	Zinc (dissolved),			
	Benzo(a) pyrene,			
	Atrazine,			
	Cis-1,2-dichloroethene,			
	Dichloroprop			
	Reactive Phosphorous,			
	Tributyl Phosphate,			
	1,2,4-trimethylbenzene,			
	2,3,4-trichlorophenol,			
Lead,				
Phenol (Monohydric),				
Sodium,				
1,2-dichloroethane,				
1,3,5-trimethylbenzene,				
2,3,6-trichlorophenol,				
2,4,5- trichlorophenol,				
2,4,6- trichlorophenol,				
2,3,4- trichlorophenol,				
Arsenic,				
Benzene,				
Benzo(b)fluroranthene,				
Benzo(ghi)perylene				

Table S3.11 Compaction Groundwater Monitoring Requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
	Benzo(k)fluroranthene			
	Boron			
	Chlorobenzene,			
	Chloromethane			
	Chromium			
	Copper			
	Dichloromethane			
	Ethyl benzene			
	Fluoride			
	Indeno(1,2,3cd) pyrene,			
	m,p-xylene			
	Mercury			
	Molybdenum			
	Naphthalene			
	Nickel			
	Nitrate			
	o-xylene			
	Pentachlorophenol			
	p-isopropyltoluene			
	Potassium			
	Selenium			
	Toluene			
	Tributyltin			
	Triphenyl			
	Phosphate			
	Vanadium			
	Depth to base of each well			

Table S3.12 Compaction landfill gas monitoring requirements

Monitoring point Ref. /description	Parameter	Limit (including units)	Monitoring frequency	Monitoring standard or method
IPDS-1, IPDS-2, IPDS-3 as shown on drawing reference B1160001/TP3935LA/EP VA/ESID/6CRev.0	Methane	no limit	Monthly	
	Carbon Dioxide	no limit		
	Oxygen	no limit		
Gas monitoring wells installed as part of Perimeter Gas Collection system in accordance with pre-operational condition 3.	Atmospheric pressure	no limit		
	Differential Pressure	no limit		
	Temperature	no limit		
	Meteorological data			
	Flow	no limit		

Table S3.13 Compaction 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
Mobile Flare (if required)	None	Landfill Gas Flares	None	-	-	As per M2 Version 9, January 2013.

Table S3.14 Compaction leachate monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
LEW17 IPDS-1, IPDS-2, IPDS-3	BOD	Monthly	Spot Sample	
	COD			
	Conductivity			
	DO			
	pH			
	Temperature			
	Ammoniacal Nitrogen as N,			
	Arsenic (dissolved),			
	Cadmium (dissolved),			
	Chloride,			
	Mecoprop,			
	Naphthalene,			
	Zinc (dissolved),			
	Benzo(a) pyrene,			
	Atrazine,			
	Cis-1,2-dichloroethene,			
	Dichloroprop			
	Reactive Phosphorous,			
	Tributyl Phosphate,			
	1,2,4-trimethylbenzene,			
	2,3,4-trichlorophenol,			
	Lead,			
	Phenol (Monohydric),			
	Sodium,			
	1,2-dichloroethane,			
	1,3,5-trimethylbenzene,			
	2,3,6-trichlorophenol,			

Table S3.14 Compaction leachate monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
	2,4,5- trichlorophenol,			
	2,4,6- trichlorophenol,			
	2,3,4- trichlorophenol,			
	Arsenic,			
	Benzene,			
	Benzo(b)fluroranthene,			
	Benzo(ghi)perylene			
	Benzo(k)fluroranthene			
	Boron			
	Chlorobenzene,			
	Chloromethane			
	Chromium			
	Copper			
	Dichloromethane			
	Ethyl benzene			
	Fluoride			
	Indeno(1,2,3cd) pyrene,			
	m,p-xylene			
	Mercury			
	Molybdenum			
	Naphthalene			
	Nickel			
	Nitrate			
	o-xylene			
	Pentachlorophenol			
	p-isopropyltoluene			
	Potassium			
	Selenium			
	Toluene			
	Tributyltin			
	Triphenyl			
	Phosphate			
	Vanadium			
	Depth to base of each well		Annually	

Table S3.15 In-Bog Groundwater Monitoring Requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method
Ecological Monitoring Transect, EMT2N, , EMT6 and EMT7 as shown on Drawing Reference TP3935LA/SMS/18.	Ground level (mOD)	Quarterly for first 12 months reverting to annually thereafter.	Unless otherwise agreed in writing, the monitoring shall be undertaken in accordance with the Jacobs document "Ecological Monitoring Plan: Consultation Draft (Rev A), dated July 2009".
	Water Level (mOD)		
	Ammoniacal Nitrogen		
	Nitrate		
	Nitrite		
	Chloride		
	Phosphorus (Total)		
	Orthophosphate (dissolved)		
	pH		
	Dissolved Oxygen		
	Biological Oxygen Demand		
	Sulphate		
DAIN*			
DAIP**			

*DAIN – Dissolved Available Inorganic Nitrogen shall be reported and is a sum of the ammonium, nitrate and nitrite value.

** DAIP – Dissolved Available Inorganic Phosphorous shall be reported and is measured as orthophosphate (dissolved)

Table 3.16 Settlement monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method
Cell 15: Vibrating Wire settlement gauges as shown on drawing reference B116001/OP021/APR2011/06	Settlement monitoring	Daily	-
<ul style="list-style-type: none"> • Trench A, Brown, Red, Orange, Yellow gauges • Trench C, Red, Yellow, Brown, Orange, Blue gauges • Trench D, Red, Yellow, Brown, Orange, Blue gauges. 			
Any future settlement monitoring systems installed during construction of Cell 16 & 17 formation.			

Schedule 4 - Reporting

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

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Leachate levels As required by condition 3.5.1	LEW5, LEW5A, LEW6, LEW7A, LEW7, LEW8, LEW8A, LEW9, LEW9A, LEW10, LEW10A, LEW11, LEW11A, LEW13, LEW12, LEW12A, LEW13A, LEW14, LEW14A, LEW15, LMP15A, LMP15B, LEW16, LMP16A, LMP16B, LEW17, LMP17A, LMP17B Plus any additional monitoring points installed	Every 3 months	1 January, 1 April, 1 July, 1 October
Emissions to water Parameters as required by condition 3.5.1	SW1	Every 6 months	1 January, 1 July
Groundwater Parameters as required by condition 3.5.1	GDW4, GDW5, GDW6, GDW7, GDW8, GDW9, GDW10, GDW11, GDW12, GDW13, GDW14, GDW15, GDW16, GDW17, GDW18 Plus any additional monitoring points installed	Every 3 Months	1 January, 1 April, 1 July, 1 October
Landfill gas surface emissions Parameters as required by condition 3.5.1	Permanently and Temporarily capped zones	Every 12 months	1 January
Other leachate monitoring Parameters as required by condition 3.5.1	LEW5, LEW6, LEW7, LEW8, LEW9A, LEW10, LEW11, LEW12A, LEW13, LEW14A, LEW15, LEW16 Plus any additional monitoring points installed	Every 3 months	1 January, 1 April, 1 July, 1 October

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Hazardous substances Screen	LEW5, LEW6, LEW7, LEW8, LEW9A, LEW10, LEW11, LEW12A, LEW13, LEW14A, LEW15, LEW16 Plus any additional monitoring points installed	Every 12 months	1 January
Other surface water monitoring Parameters as required by condition 3.5.1	SW1, SW2, SW3, SW4 Plus any additional monitoring points installed	Every 3 months	1 January, 1 April, 1 July, 1 October
Other groundwater monitoring Parameters as required by condition 3.5.1	GDW1(S), GDW1(D), GDW2(S), GDW2(D), GDW3(S), GDW3(D), GDW4, GDW5, GDW6, GDW7, GDW8, GDW9, GDW10, GDW11, GDW12, GDW13, GDW14(R), GDW15(R), GDW16, GDW17, GDW18 Plus any additional monitoring points installed	Every 3 months	1 January, 1 April, 1 July, 1 October
Compaction groundwater monitoring parameters as required by condition 3.5.1	Boreholes required under pre-operational conditions.	Every 3 months	1 January, 1 April, 1 July, 1 October
Compaction landfill gas monitoring parameters as required by condition 3.5.1	IPDS-1, IPDS-2, IPDS-3	Every 3 months	1 January, 1 April, 1 July, 1 October
Compaction leachate monitoring parameters as required by condition 3.5.1	LEW17 IPDS-1, IPDS-2, IPDS-3	Every 3 months	1 January, 1 April, 1 July, 1 October
In-bog water monitoring parameters as required by condition 3.5.1	EMT2N, EMT6 and EMT7 plus additional transect required under pre-operational condition no 6.	Every 12 months	1 January
Settlement monitoring parameters as required by condition 3.5.1	Trench A, Brown, Red, Orange, Yellow gauges Trench C, Red, Yellow, Brown, Orange, Blue gauges Trench D, Red, Yellow, Brown, Orange, Blue gauges plus additional gauges for cells 16 and 17.	Every 3 months	1 January, 1 April, 1 July, 1 October

Table S4.2: Annual production/treatment

Leachate: Disposed of off site; Disposed of to any onsite effluent treatment plant.	Cubic metres/year
Surface water and/ or groundwater: Disposed of off site; Disposed of to any onsite effluent treatment plant.	Cubic metres/year
Landfill gas: combustion in flares; combustion in gas engines; Other methods of gas utilisation.	Normalised cubic metres/year

Table S4.3 Performance Parameters

Parameter	Frequency of assessment	Annual total	Unit
Energy used (including for leachate treatment)	Annually		MWh of electricity

Table S4.4 Reporting Forms

Media/parameter	Reporting Format	Date of Form
Leachate	Form leachate 1 or other reporting format to be agreed in writing with Natural Resources Wales	29/08/13
Air	Form Air 1 or other reporting format to be agreed in writing with Natural Resources Wales	29/08/13
Controlled water	Form Water 1 or other reporting format to be agreed in writing with Natural Resources Wales	29/08/13
Groundwater	Form Groundwater 1 or other reporting format to be agreed in writing with Natural Resources Wales	29/08/13
Landfill gas	Form LFG 1 or other reporting format to be agreed in writing with Natural Resources Wales	29/08/13
Waste Return	Waste Return Form WMSW1	29/08/13
Landfill topographical surveys and interpretation	Reporting format to be agreed in writing with Natural Resources Wales	29/08/13

Schedule 5 - Notification

This page outlines the information that the operator must provide.

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

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

Part A

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

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

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

The time periods for notification should be based on the site specific risk and deviations from 24 hours should be justified.

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

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

Part B to be supplied as soon as practicable

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

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - 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 5 to the EP Regulations.

“authorised officer” means any person authorised by Natural Resources Wales 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.

“Barrier System” means the Perimeter Collection System as referred to in drawing ESID/6c or a modified version as agreed in writing with Natural Resources Wales.

“Cell layout drawing” means:

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

- i. the location of the new cell on the site;
- ii. the proposed level (Above Ordnance Datum) of the base of the excavation;
- iii. the proposed finished levels of all containment and leachate drainage layers;
- iv. the positions of leachate management infrastructure; and
- v. the positions of landfill gas infrastructure (if appropriate).

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

- i. changes to slope length and gradient within the cell;
- ii. new leachate or landfill gas infrastructure construction design;
- iii. slope stability issues such as new basal excavation level; and/or
- iv. depth of waste.

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

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

- The results of all testing required by the CQA programme - this must include the records of any

failed tests with a written explanation, details of the remedial action taken, referenced to the appropriate secondary testing;

- Plans showing the location of all tests;
- “As-built” plans and sections of the works;
- Copies of the site engineer’s daily records;
- Records of any problems or non-compliances and the solution applied;
- Any other site specific information considered relevant to proving the integrity of the New Cell or Landfill Infrastructure;
- Validation by a qualified person that all of the construction has been carried out in accordance with the Construction Proposals.

“*Compaction Works*” means the compaction of historic waste situated along the Eastern boundary of phase 2 through a process of repetitive dropping of a solid steel weight resulting in enforced settlement.
Note Alternative methods may yet be employed following agreement with Natural Resources Wales.

“*emissions to land*” includes emissions to groundwater.

“*EP Regulations*” means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“*emissions of substances not controlled by emission limits*” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit.

“*groundwater*” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“*Internal Platform Drainage System (IPDS)*” means the 5 metre deep drains installed across the footprint of cells 16 and 17 for the purpose of leachate collection or an alternative system as agreed in writing with Natural Resources Wales.

“*Landfill Infrastructure*” means any specified element of the:

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

within the site.

“*Liquids*” means any liquid other than leachate within the engineered landfill containment system.

“*LFTGN 05*” means Natural Resources Wales Guidance for monitoring enclosed landfill gas flares.

“LFTGN 07” means Natural Resources Wales Guidance on monitoring landfill gas surface emissions.

“LFTGN 08” means Natural Resources Wales Guidance for monitoring landfill gas engines.

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

“M2” means Environment Agency Guidance Monitoring of stack emissions to air.

“*Natural Resources Wales*” means the Natural Resources Body for Wales established by article 3 of the Natural Resources Body for Wales (Establishment) Order 2012.

The Natural Resources Body for Wales (Functions) Order 2013 transferred the relevant functions of the Countryside Council for Wales, and functions of the Environment Agency and the Forestry Commission in Wales to the Natural Resources Body for Wales.

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

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

for the New Cell.

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

“*Pests*” means Birds, Vermin and Insects.

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

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

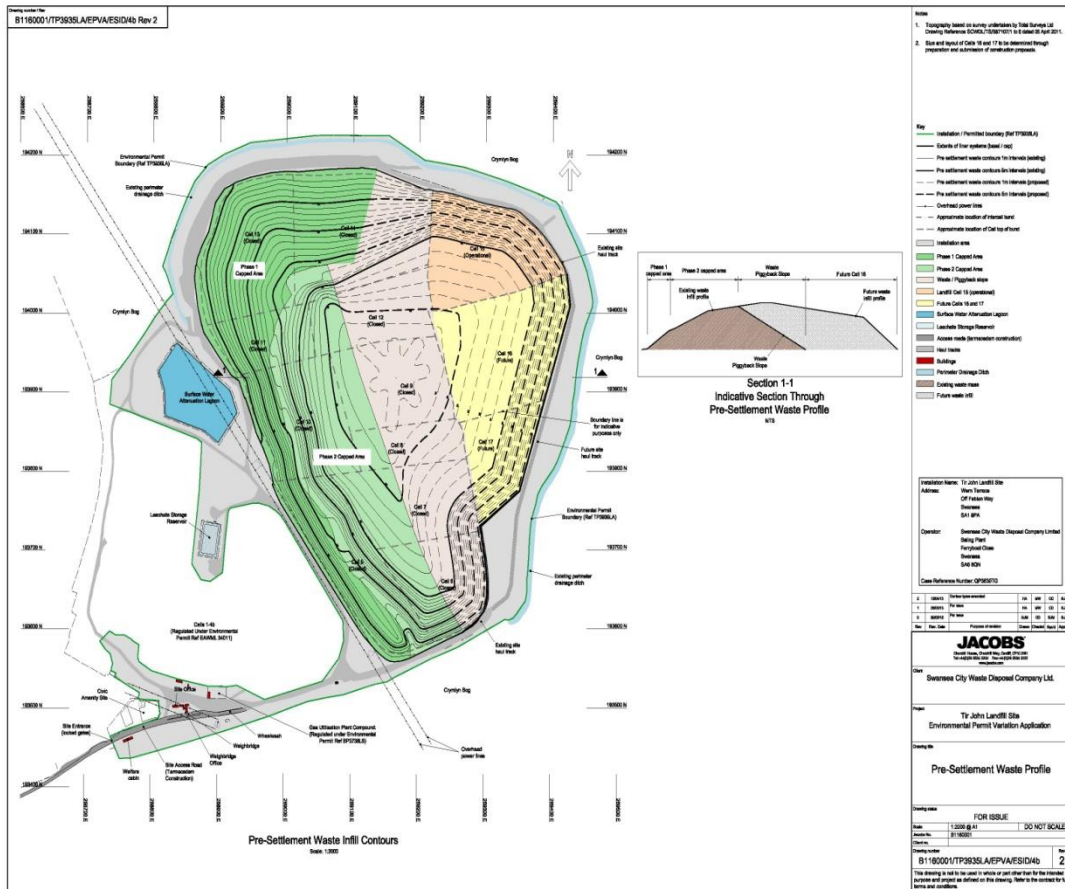
“*Waste code*” means the six digit code referable to a type of waste in accordance with the List of Wastes (England) Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

“*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.

Schedule 7 - Site plan



END OF PERMIT