ATTACHMENTS IN SUPPORT OF AN INDUSTRIAL EMISSIONS ACTIVITIES LICENCE REVIEW APPLICATION FOR POWERSTOWN LANDFILL

CARLOW COUNTY COUNCIL

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CARLOW COUNTY COUNCIL
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Abstract: This report contains Attachments in support of an Industrial Emissions Discharge Licence Review Application for Powerstown Landfill. A review of the existing licence W025-03 is being sought to increase the annual tonnage allowance from 40,000 to 50,000 tonnes per annum in accordance with the planning permission for the facility.

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1 ATTACHMENT A NON-TECHNICAL SUMMARY

There are no proposed changes to Condition 1.5 of the existing IE Licence;

Waste may be accepted at the facility for disposal at the landfill only between the hours of 0800 and 1730 Monday to Friday inclusive (Bank Holidays excepted) and 0800 and 1230 on Saturdays.

The landfill at the facility may be operated only during the hours of 0700 and 1830 Monday to Friday inclusive (Bank Holidays excepted) and 0700 and 1330 on Saturdays. Activities between 0700 and 0800 shall be limited to:

- Visual inspections;
- Use of the civic waste facility;
- Litter patrols; and
- Equipment/plant maintenance.

Treated sewage sludge shall be accepted at the facility only between the hours of 0830 hrs and 1400 hrs Monday to Friday inclusive.

Waste shall be accepted at the Civic Waste Facility only between the hours of 0800 and 1730 Monday to Friday inclusive (Bank Holidays excepted), 0800 and 1630 on Saturdays and 0800 and 1230 on Sundays.

1.1 Relevant Classes of Activity

Table 1.1 lists the relevant activities in the First Schedule of the EPA Act 1992, as amended, to which the activity relates.

Table 1.1: Relevant Classes of Activity

Class	Description
11.1	*The recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.* The recovery of waste at the civic amenity facility on site.
11.5	*Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste.*

1.2 EIS and Planning Permission Documentation

In August 2012, Carlow County Council received approval from An Bord Pleanála to continue landfilling operations until August 2018 and to increase the maximum annual waste input from 40,000 tonnes per annum to 50,000 tonnes per annum. The Board Direction is included in Attachment B.6.

The application to An Bord Pleanála was accompanied by an EIS and an NIS. Those same impact statements are being submitted in respect of this IED licence review application. They are bound as a separate hard copy to this volume and are stored as separate pdf files in the electronic submission. The EIS contains 3 volumes:

- LW1112003_Rpt001_Main EIS Volume 2_Rev 1
- LW1112003_Rpt002_Non-Technical Volume1_Rev 2
- LW11-120-03_Rpt003-0 Appendices

The NIS comprises one volume, the electronic title is LW11-120-03_Appropriate Assessment Powerstown.

1.3 Relevant BAT Guidance Documents or BAT Conclusions Decisions

Table 1.2 lists the relevant BAT guidance documents, BREF documents and other documents deemed relevant. There are no BAT Conclusions for landfilling activities.

Table 1.2: Relevant BAT reference and BAT Guidance

Title of Document
Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011
BREF on Emissions from Storage, European Commission, 2006
BREF on Energy Efficiency, European Commission, 2009
Landfill Directive
Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Waste Transfer and Materials Recovery, EPA 2011.

1.4 Determination of Emission Levels

Powerstown Landfill and Recycling Facility is an existing installation with an IE licence. Emissions are monitored as part of the licence conditions.

1.5 EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2006

The EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2006 do not apply to Powerstown Landfill and Recycling Facility.

1.6 Derogation under Section 86(A)

CCC does not seek a derogation under Section 86(A) of the EPA Act. The facility operates within the BAT ELVs for landfill.

1.7 The Installation and Control Techniques

The applicant is Carlow County Council which is a local authority. The Council has been operating a waste management facility at the Powerstown site and is the holder of an industrial emissions licence for the site issued by the Environmental Protection Agency.

The facility is located just off Junction 6 of the M9 Dublin to Waterford Motorway at Carlow South. The facility comprises of a non-hazardous municipal solid waste landfill and a civic amenity.

The landfill has been developed in three phases; Phase 1 is unlined and operated on the principal of 'dilute and disperse'. Phases 2 and Phase 3 of are made up of 17 cells, all of which are lined. The facility has been in operation since 1975 and is licensed (licence reference number W0025-03) to accept 40,000 tonnes per annum of waste. Phases 1 and 2 of the landfill have been closed and capped, while cells 15 and 16 in Phase 3 are closed and have an intermediate cap. Cell 17 is currently being filled. The last cell, Cell 18 has been constructed but remains unfilled to-date.

The civic amenity is open to the general public and provides for the recovery of glass, paper, cardboard, metal, household hazardous waste amongst others.

Other ancillary infrastructure on-site includes weighbridges, a surface water management system and attenuation pond, leachate lagoon, leachate holding tank, administration office, landfill gas flare and waste inspection/quarantine areas.

The application for a licence review of Powerstown landfill does not require the development of any new infrastructure or cells. This application seeks to obtain permission to increase the annual waste intake from 40,000 tonnes to 50,000 tonnes. Planning permission is in place.

1.7.1 Infrastructure Control

The three phases of landfill development are detailed as follows. The basal lining system and landfill capping system are the key measures to avoid, reduce and if possible offset the major effects on the environment and are BAT. The site infrastructure is shown on Drawing No. LW14-120-02-001 in Attachment D.1.

Phase 1 Landfill Development

Landfilling commenced in Phase 1 in 1975 and finished in 1990. Phase 1 (or the 'old landfill') is located on the south western portion of the site. Phase 1 is an unlined landfill which was developed in a spent sand and gravel quarry and operated as a 'dilute and disperse' type landfill. It has an area of approximately 3.7 hectares (9.2 acres) and contains an estimated 130,000 tonnes of municipal solid waste (MSW).

Phase 1 Landfill Capping

In 2006 the Phase 1 landfill was permanently capped in accordance with the requirements of the waste licence. The specification of the cap used in Phase 1 was as follows:

- 150 mm of topsoil on
- 850 mm of subsoil on
- Drainage geocomposite on
- 1mm fully welded LLDPE geomembrane on
- Geosynthetic clay liner (GCL) on
- Gas collection geocomposite

Phase 2 Landfill Development

Phase 2 of the landfill is located within the northern western portion of the site. It has an area of approximately 4.5 hectares and consists of 13 no engineered landfill cells. Cells 1 -13 were constructed over a number of years each and the engineered basal liner varies from cells 1 -6 and cells 7 – 13 as follows:

Cells 1 – 6

- 500 mm of drainage stone on
- Protective geotextile on
- 2.0 mm fully welded HDPE liner on

Cells 7 -13

- 500 mm of drainage stone on
- Protective geotextile on

- 2.0 mm fully welded HDPE liner on
- 1 m engineered clay layer (1 x 10^{-9} m/s)

Landfilling in Phase 2 took place between 1991 and 2006.
Please note that there is no Cell 14 at Powerstown Landfill.

Phase 2 Landfill Capping

In accordance with the requirements of the waste licence, Phase 2 of the landfill (cells 1 - 13) was permanently capped. This capping work was completed by 2008. The specification of the landfill cap used for Phase 2 was as follows:

- 150 mm of topsoil on
- 850 mm of subsoil on
- Drainage geocomposite on
- 1 mm fully welded LLDPE geomembrane on
- Gas collection geocomposite

Phase 3 involved a major capital investment at Powerstown Facility including the construction of four new landfill cells (cells 15, 16, 17 & 18) with an estimated void space of 240,000 m^3. The Phase 3 development works took place largely in 2006 and in addition to new cells 15-18, development included:

- New facility entrance off a minor road off the old N9 and various site roads
- A split level recycling centre
- Leachate holding tank and installation of floating cover to existing leachate lagoon
- Green waste composting area
- Conversion/renovation of an existing dwelling house into a site office
- Weighbridges and weighbridge office
- Perimeter fencing
- Surface water management infrastructure comprising pipework, settling pond, swales etc.
- Foul drainage system and treatment unit
- Ducts for power, telemetry, CCTV etc.
- Car parking
- Waste quarantine and inspection area
- Wheelwash
- Capping part of the existing landfill
- Landscaping
- Procurement of a new enclosed flare and provision of flare compound

In accordance with the conditions of the waste licence Cells 15, 16, 17 and 18 were constructed in 2006. These cells were developed with a very high specification of basal liner. The basal liner included the following elements (from top down):

- Drainage/protection layer (500 mm of stone on floor and stone/geocomposite on side slopes) on
- Protective geotextiles on
- 2.5mm fully welded HDPE Liner on
- Geocomposite leak detection layer on
- 2.5mm fully welded HDPE Liner on
- 500mm of bentonite enhanced sand (BES) with a maximum permeability of 1 x 10^{-11} m/s

Other infrastructure on site that has a role in controlling emissions include:

- Surface water drainage infrastructure comprising drainage from paved and un-paved areas and an attenuation pond with an automated valve on the outlet which shuts if predetermined surface water trigger levels are detected.
- Landfill gas collection and treatment system comprising vertical and horizontal gas collection wells and pipes in the waste body, controlled though valves at manifolds through which the landfill gas is extracted to an enclosed gas flare.

The flare has a capacity of 1,200 m3/hr and is operated in accordance with licence conditions. Surface emissions of landfill gas through the uncapped areas are managed using passive collection pipework and cover techniques. All of the landfill gas operational controls are detailed in the Odour Management Plan for the site.

- Leachate collection infrastructure comprises a series of leachate wells in the waste body connected via pipework to a leachate lagoon and a leachate tank. Leachate is pumped out of the waste cells at a rate which ensures leachate levels do not exceed 1 m above the liner. Leachate is also pumped from all 'dirty' areas on site such as the lower level of the civic amenity and the waste quarantine area. It is transferred off-site for appropriate treatment at a wastewater treatment plant. Leachate handling procedures are in place on site.

1.7.2 Operational Controls

The following operational procedures are in place at Powerstown Landfill Facility and Recycling Centre:

- Odour Management Plan (includes landfill gas management)
- Surface Water Management Plan
- Waste Acceptance Procedures
- Leachate Handling Procedures
- Leachate Management Plan
- Environmental Management System
- Environmental monitoring of surface water, leachate, groundwater, landfill gas, dust, VOCs, odour, flare emissions and meteorological conditions
- Weekly site walkover to inspect infrastructure

1.8 Materials and Energy

Materials Generated

10,607 t of leachate was transferred off-site in 2013. It is estimated that 60,000 t will be generated in the next 10 years.

Raw Materials and Energy Used

The following fuel and raw materials are used on site on an annual basis:

- Diesel 57 t
- Petrol 0.5 t
- Kerosene 2 t
- Insecticide 0.3 t
- Rat poison 0.2 t
- Surfactant 0.1 t
- Herbicide 0.2 t
- Reagents 0.01 t
- Electricity 86,000 kWh (in 2013)

Landfill gas is generated by the waste body but not in sufficient quantities to be used to generate energy.

1.9 Sources of Emissions

The two emission sources on site are the:

- Landfill gas flare – treated stack emissions to air
- Surface water attenuation pond – surface water discharge to Powerstown Stream

These are shown on Drawing No. LW14-120-02-002 in Attachment E.6.

Other potential fugitive and minor emission sources include:

- Landfill gas migration, landfill gas infrastructure & active landfill face - fugitive or surface landfill gas emissions, i.e. VOCs
- Landfilling activities, vehicle movements, cover/capping stockpiles, capping works/construction - dust
- Waste material and landfill gas - odour
- Site vehicles, recycling centre operations, capping works/construction - noise

There are no direct emissions to groundwater. There are no emissions to sewer. Leachate is transferred off site to a wastewater treatment plant.

1.10 Existing Environment

The existing environment is a landfill and recycling centre.

1.10.1 Air Quality in the Existing Environment

EPA Air Quality Data

The EIS states 'Under the Air Quality Framework Directive (1996/62/EC), Ireland has been divided into four air management areas. Dublin is one zone – Zone A and Cork is defined as Zone B. Zone C consists of 16 towns with a population of greater than 15,000 while Zone D covers the remainder of the country (all towns with a population of less than 15,000 and all rural areas). Powerstown Landfill and Recycling Facility is located in a rural area (Zone D).

The EPA operates a number of fixed and mobile air monitoring stations. As the site is located in a rural Zone D location –2008, 2009 and 2010 EPA air quality data monitored within Zone D, was reviewed and summarised in Table 9.3 of the EIS. An average of the maximum rural location monitoring results can be used as a conservative representation of the air quality in proximity to the existing and proposed facility.

Onsite Air Monitoring Environment

Point source monitoring is carried out at one location on site, at LFGF1, the stack of the landfill gas flare in compliance with the licence, Schedule D.7 and the results are compared to the limits set by the licence, Schedule C.5. Monitoring results from 2006-2013 indicate that the flare is operating within licence limits.

Fugitive emissions monitoring is carried out to measure dust, landfill gas, ambient odour and VOCs.

Dust monitoring results indicate that dust levels have been within EPA limit values for all locations since September 2008. Exceedances prior to September 2008 were attributed to capping works.

Landfill gas is monitored outside the waste body at perimeter monitoring locations and in buildings on site for gas migration. Landfill gas perimeter monitoring results for the year to date, Quarter 1 to Quarter 3 inclusive show that methane levels are within the EPA limit value for all perimeter boreholes outside the waste body and in the main administration building or weighbridge offices. Carbon dioxide levels are within the EPA limit value for most of the perimeter boreholes outside the landfill facility. Carbon dioxide was detected above the limit value at 12 wells mainly located to the south and north of the old unlined landfill (Phase 1).

The site manager keeps records on a continuous basis of observed odours on site by site personnel and off-site by nearby residents. There were three odour complaints received in 2010 and none in 2011 or 2012. There were 2 odour complaints in 2013, one in January and one in September but both were investigated and determined to be from other odour sources not related to the landfill.

VOC monitoring is carried out on the surface of the landfill. It is indicative of surface emissions from the waste body. VOC monitoring commenced in 2008, and since then there has been significant improvements in the release of fugitive landfill gas emissions as site staff have become increasingly experienced in preventing and mitigating surface emissions. Due to the nature of the activity, the active face is constantly moving and so too does VOC monitoring and mitigation works. The last round of VOC monitoring in June 2014 identified 7 spots identified ranging from 210 ppm to 498 ppm. The EPA limits range from 50 ppm to 500 ppm depending on location on site.

1.10.2 Surface Water Quality in the Existing Environment

Powerstown Stream, which is a tributary of the River Barrow, runs along the northern boundary of the site. The water quality of Powerstown stream is monitored on a quarterly basis in accordance with the site's licence. The results of this monitoring indicate that in general, the discharge from the facility is not impacting on the stream.

1.10.3 Noise in the Existing Environment

Baseline noise monitoring is carried out at the site on an annual basis. Results from monitoring undertaken at the site from 2009 - 2013 indicate that the Powerstown site is not impacting on the local noise environment.

1.10.4 Groundwater in the Existing Environment

The groundwater underlying the site is classified as a Regionally Important by the Geological Survey of Ireland. As a consequence extensive consultation took place with the Environmental Protection Agency during the application process for Phase 3 and it was agreed with the Agency that a double lining system be installed under the four new cells in this area. This lining system provides protection levels five times greater than that required by law for non-hazardous landfills.

Rainwater that percolates through waste becomes leachate. Leachate is a potential pollutant of both surface water and groundwater if not managed appropriately. Groundwater quality in and around the site is monitored on a quarterly basis in 12 no. groundwater wells. Results of this monitoring data indicate that the quality of groundwater downgradient of the facility may have been impacted by the unlined landfill (Phase 1) of the landfill. The monitoring results from the two private wells to the north and North West of the site indicate that the landfill is not impacting on the quality of these wells.

The baseline report required as part of this licence review application will examine this topic in more detail.

1.11 Emissions

The purpose of the licence review application is to seek permission to increase the maximum annual waste acceptance for landfilling from 40,000 to 50,000 tonnes per annum. If permitted, it will result in an increased rate of landfilling which will not contribute to the existing impact of the development, but will result in an earlier closure date for the landfill as it will achieve final contours sooner than previously anticipated.

The nature and quantities of existing emissions are discussed in Section 1.10 Existing Environment above.

1.12 Waste Acceptance and Generation

The purpose of this licence review is to increase the maximum allowable tonnage for landfill from 40,000 tonnes per annum to 50,000 tonnes per annum. In addition, CCC seeks to amend the list of allowable waste inputs.

Table A.1 of W0025-03 as amended and approved by the EPA in 2010 (See Table 2.5), lists the licensed waste categories and quantities (tonnes per annum), which are:

- Household (Residual): 30,000 t
- Commercial: 7,000 t
- Treated Sewage Sludge: 500 t
- Construction and demolition: 1,000 t
- Industrial Non-hazardous solids: 1,500 t
- Total 40,000

CCC wishes to change the list of waste inputs to the following format:

- Non-hazardous Household, Commercial and Industrial Solids: 48,500 t
- Treated Sewage Sludge: 500 t
- Construction and Demolition: 1,000 t
- Total 50,000

Leachate is the only waste material generated on site. A leachate balance is performed annually to estimate the quantity of leachate that will be generated by the facility. Based on a leachate balance carried out in respect of this licence review, it is estimated that 10,600 t of leachate will be generated in 2014.

1.13 Waste Prevention, Re-Use, Recycling and Recovery

Leachate is the only waste material generated on site. It is collected and transferred off site for appropriate treatment at a wastewater treatment plant. Surface water is managed as a separate system on site to prevent clean surface water entering the leachate lagoon and tank in order to reduce leachate quantities and prevent surface water being treated as leachate.

There is a recycling facility at the landfill which is open to the public. It offers a wide range of recycling/recovery facilities.

1.14 Appropriate Preventative Measures

Preventative measures against pollution through the application of BAT are summarised in Table 1.3. Measures in accordance with the Council Directive 1999/31/EC on the landfill of waste (Landfill Directive) at Powerstown Landfill and Recycling Facility are summarised in Table 1.4.

Table 1.3: BAT Measures

BAT is financial provision for environmental liabilities (known and unknown) including restoration and aftercare. Reports submitted.
BAT used for landfill design for each type of landfill and operation as per the Landfill Directive including: • Water control; • Leachate management; • An appropriate landfill lining system: • An appropriate landfill capping system • Appropriate measures for the prevention and management of landfill gas
BAT is Construction Quality Assurance for construction of landfill lining systems. Complete,
BAT is the Environmental Management System for the facility.
BAT is appropriate storage and handling of construction materials, consumables and wastes.
BAT in place for all elements regarding discharges to surface water
BAT in place for Phase 2 and 3 of the landfill. Phase 1 was developed in 1975.
BAT in place control of leachate from Phase 1 and Phase 3
BAT in place for collection and treatment of landfill gas
BAT in place for process emissions

BAT in place to manage odour through OMP
BAT is the prevention and reduction of emissions from the leachate tank through tank design, inspection and maintenance.
BAT is the fixed roof on the Leachate tank.
BAT is to have: a) Operational procedures and training b) Instrumentation and automation to prevent overfill c) Soil protection around tanks – containment
The leachate lagoon has a floating cover and is fully lined in accordance with BAT.
There are daily inspections of all leachate pipework and tanks with maintenance as required in line with BAT.
The leachate pipework outside the landfill body has been installed in accordance with BAT.
BAT will be applied to materials storage for Phase 3 capping works.
The transfer and handling of solids is carried out in accordance with BAT.

Table 1.4: Summary of Measures in accordance with the Landfill Directive

BMW diversion	In place - ref Condition 5.6 of the licence
Waste acceptance - banning of certain wastes	In place, ref Condition 5.2 of licence and Waste Acceptance Procedures
Wastes to be accepted in different classes of landfills (Pre-treatment of waste)	In place, ref Condition 5.3.1 of licence and Waste Acceptance Procedures
Application for and issue of a permit	Licence W0025-03 in place
Cost of the landfill of waste	Yes, ref Table 7.2, 5.2 primary requirements / 5.3 Environmental liabilities
Waste acceptance procedures	In place, ref Condition 5.2 of licence and Waste Acceptance Procedures
Control and monitoring procedures	Yes, as per Conditions/Schedules of licence
Closure and after care procedures	Yes, CRAMP submitted to Agency and approved
Water control and leachate management	Yes, Leachate Management Plan in place
Protection of soil and water	Phase 1, no liner in place (pre-directive). Phase 2 and 3, liner in place. Phase 1 and 2 geological barrier in place. Phase 3 geological barrier to be installed following settlement, ref Section 3.3.2 and 3.3.3 of accompanying EIS for specification.
Artificial sealing layer and drainage layer	
Surface sealing layer	
Gas control	Landfill gas collection and treatment system in place
Nuisance and hazards	Yes, ref OMP, EMS, ERP
Stability	Yes, annual slope stability assessments
Barriers	Yes, ref security fencing and gate on Drawing LW14-120-02-001 (Attachment D.1) and Section 3.2.4 of accompanying EIS
Waste Criteria and Procedures	As referenced, Articles 5 & 11 above
Control and Monitoring Procedures in operation and after-care phases	Yes

1.15 Measures under Abnormal Conditions

There are several control systems on site, the most important of which include the barrier system, the surface water management system, the landfill gas management system and the leachate management system. Abnormal conditions including start-up, shutdown, leaks, malfunctions, breakdowns and momentary stoppages could result in potential negative impacts. There is an Emergency Response Plan (ERP) for the site which includes emergency response procedures (ERP). These procedures are activated as a result of abnormal conditions, shut-downs, malfunctions, breakdowns, accidents and emergencies. They define the steps to be taken to mitigate negative impacts as a result of abnormal conditions. There is an emergency back-up generator on site that provides continuous power to the site for the duration of a power supply interruption from the Electricity Supply Board.

1.16 Measures upon Cessation of Activities

Following the achievement of final profiles, the landfill will be closed to waste acceptance. Thereafter, once settlement has been achieved in the waste body of Phase 3, the final phase of capping will be carried out. Capping design will be subject to SEW and approval by the Agency. The closure, restoration and aftercare plan detail the measures that will be in place to ensure that the site is returned to the state established in baseline conditions. The CRAMP has been submitted to the Agency for approval.

1.17 Main Alternatives

The landfill is an existing facility, and so a discussion of the main alternatives is not applicable in terms of the 'proposed technology'. The purpose of the licence review is to seek to increase the maximum allowable tonnage. There will not be any further development of the site as a result of this, or introduction of any new technology on site.

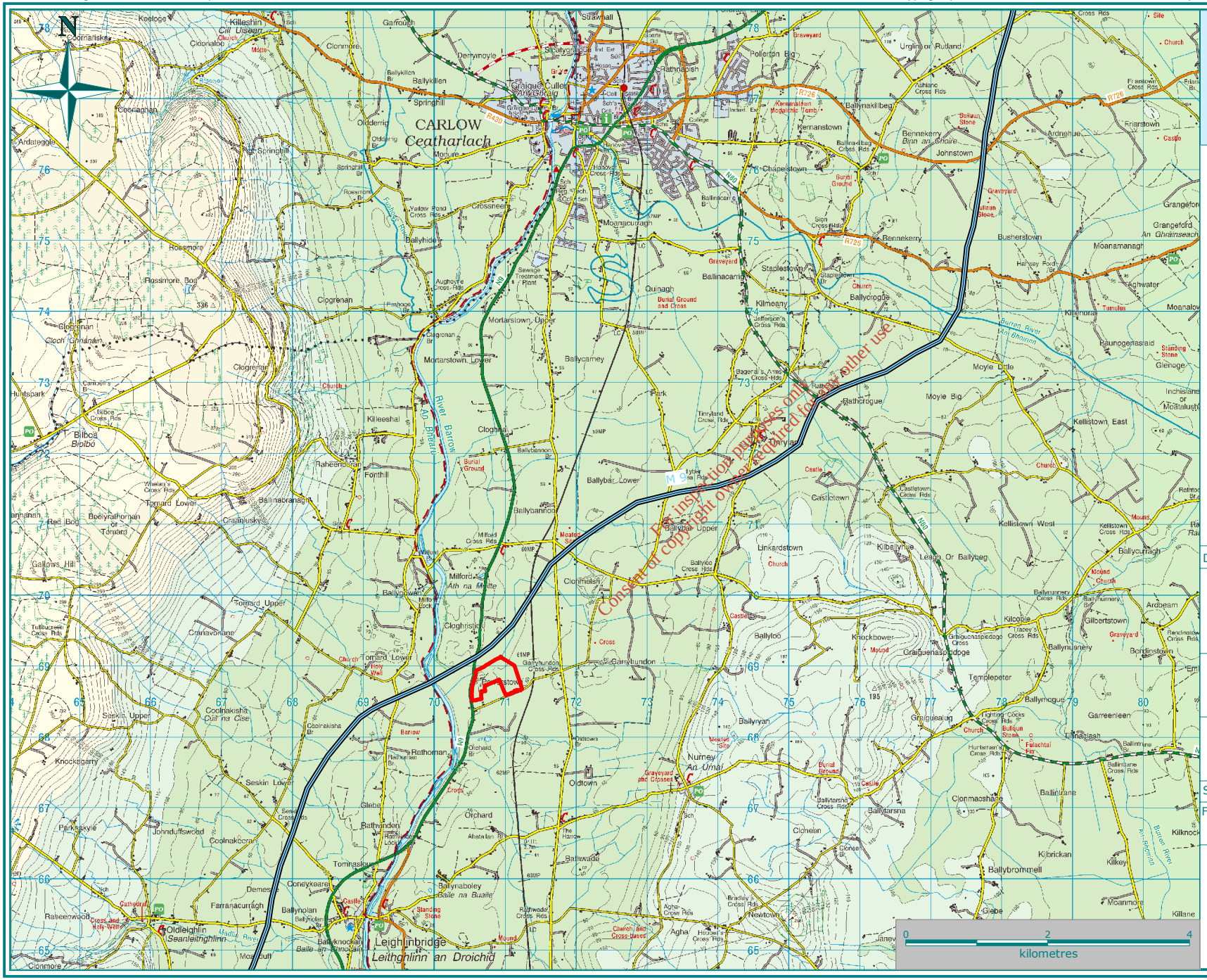
2 ATTACHMENT B

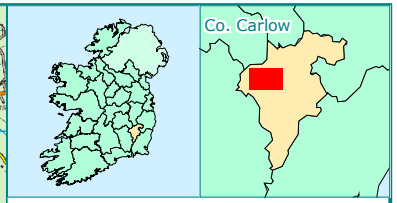
Attachment B.1 is not required as the applicant; Carlow County Council is not a body corporate.

2.1 Attachment B.2 Location Maps

The location of the site is shown on the Site Location Map, included in this Attachment.

R:\Map Production\2011\LW11\120\03\Workspace\
LW11-120-03_Figure 1.1_Site Location Map_Rev A





Legend

site boundary

Date	23/08/2011
Name of Client	Carlow County Council
Name of Job	EIS for Continued Use of Powerstown Landfill
Title of Figure	Site Location Map
Scales Used	1 : 75,000 @ A4
Figure No.	1.1
Rev	A

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There is no Attachments B.3.

Attachment B.4 is not required as the landfill and recycling centre do not fall under the scope of Chapters III, IV, V and/or VI of the Industrial Emissions Directive (1010/75/EU).

There is no Attachment B.5.

2.2 Attachment B.6 Planning Permission

In August 2012, Carlow County Council received approval from An Bord Pleanála to continue landfilling operations until August 2018 and to increase the maximum annual waste input from 40,000 tonnes per annum to 50,000 tonnes per annum. The Board Direction is included in this Attachment.

The application to An Bord Pleanála was accompanied by an EIS and an NIS. Those same impact statements are being submitted in respect of this IED licence review application. They are bound as a separate hard copy to this volume and is stored as a separate pdf file in the electronic submission. The separate hard copy and CD Rom are named LW14-120-02_Appendix B.6.2 EIS. The EIS contains 3 volumes;

- LW1112003_Rpt001_Main EIS Volume 2_Rev 1
- LW1112003_Rpt002_Non-Technical Volume1_Rev 2
- LW11-120-03_Rpt003-0 Appendices

The NIS comprises one volume and is included in Appendix B.6.1 of this document.

In accordance with the 'Instruction for Licence Applications', EPA August 2013, the following number of copies of the EIS are included with this review application.

Document	Hardcopy	Electronic
EIS	1 signed original + 1 copy	2 copies of all files in electronic searchable pdf format on CD-Rom

Table 2.1 contains a summary of all previous planning permissions granted for the site of the activity (Powerstown Landfill). The table is in reverse chronological order.

Table 2.1: Previous Planning Permissions

Planning File Reference Number	Date	Summary
01.JA 0032	10-08-12	An Bord Pleanála approved the continued operation of landfilling activities until August 2018 and increase in waste acceptances from 40,000 tonnes per annum to 50,000 tonnes per annum.
01.EL 2020	21-01-04	An Bord Pleanála approved an extension to the landfill which included the development of a new site entrance, site offices, civic amenity and four engineered cells. A condition of the permission was a time limit of 8 years of landfilling activities to 21st January 2012.

Table 2.2 is a table of references to all licences and permits past and present, including those in force at the time of submission.

Table 2.2: Licence History

Licence Reference	Date	Summary
W0025-03	IE 19-12-13 21-12-09	An IE Amendment was issued on 19-12-13 in accordance with Council Directive 2010/75/EU. A waste licence review was granted in 2009 to allow an increased maximum waste acceptance of 40,000 tonnes per annum. It also set out biodegradable waste diversion plans.
W0025-02	11-04-05	A waste licence review was granted in 2005 for the development of four additional cells, a new entrance, new site office, a civic amenity and a green waste composting area. The facility was limited to accepting 28,500 tonnes per annum.
W0025-01	24-03-00	A waste licence was granted in 2000 to carry on waste activities at Powerstown Landfill.

An Bord Pleanála

Board Direction

Ref: 01. JA 0032

At a meeting held on 8th August, 2012, the Board considered

(a) the objections made to the proposed development,

(b) the report of the Inspector, and

(c) the documents and submissions on file generally.

The Board decided to approve the continued operation of landfilling activities and increase in waste acceptances, subject to condition, generally in accordance with the following Draft Order.

Note: the Board did not include the Inspector's condition regarding the civic amenity site, as the on-going operation of these local recycling facilities was not a substantive issue in the determination of the Environmental Impact Assessment.

The Board did not agree with the Inspector that it was necessary to prohibit landfill associated HGV traffic from travelling along the County Road, L3045 between Garryhundon Crossroads to the east and the landfill facility, due to the level of traffic involved, as the Board considered that the majority of HGV traffic associated with the landfill used the motorway and national route network.

REASONS AND CONSIDERATIONS

The Board had regard to:

(a) national policy in relation to waste management, including policy documents "Waste Management: Taking Stock and Moving Forward" (April 2004) and "A Resource Opportunity: Waste Management Policy in Ireland" (July, 2012);

(b) the provisions of the County Carlow Development Plan 2009-2015 in relation to waste management;

(c) the Joint Waste Management Plan for the South East Region 2006;

(d) the planning history of the site and the nature of the proposed development, which consists of the filling of existing landfill cells;

(e) the character of the landscape and the pattern of development in the surrounding area,

(f) the requirement to obtain and maintain in place a waste licence from the Environmental Protection Agency for the operation of the facility,

(g) the Environmental Impact Statement submitted with the application and the mitigation measures set out in this statement,

(h) the Natura Impact Statement submitted with the application, which found that no mitigation measures, additional to those already in place, are necessary,

(i) the submissions and observations received in connection with the proposed development, and the report of the Board's Inspector.

The Board considered the Environmental Impact Statement submitted with the planning application, the submissions on file, and the Inspector's assessment of environmental impacts. The Board completed an environmental impact assessment and concluded that the proposed development would not have a significant adverse effect on the environment.

The Board had regard to the nature, scale and location of the proposed development, the Natura Impact Statement submitted, and the Inspector's assessment of same. The Board completed an Appropriate Assessment and concluded that the proposed development, would not, by itself or in combination with other projects significantly affect the Conservation Objectives of the nearby European site.

It is considered that, subject to compliance with the conditions set out below and to the facility being constructed and operated in accordance with a waste licence from the Environmental Protection Agency, the continued operation of the existing landfill for a further temporary period and an increase in annual waste acceptance at the facility would not seriously injure the amenities of the area or of property in the vicinity, would be acceptable in terms of traffic safety and convenience, would not be prejudicial to public health, would not be likely to have significant adverse effects on the environment or any designated site and would, therefore, be in accordance with the proper planning and sustainable development of the area.

CONDITIONS

1. The proposed development shall be carried out in accordance with the plans and particulars lodged with the application on the 20th day of February 2012, except as may otherwise be required in order to comply with the following conditions.

   Reason: In the interest of clarity.

2. This approval relates to the continued filling of Phase 3 of the facility only. Landfilling operations shall cease within six years of the date of this order or when

cells numbers 15, 16, 17 and 18 are filled, whichever is the sooner, and the site shall be reinstated in accordance with the requirements of the waste licence.

Reason: In order to clarify the period to which the approval relates and to enable a reassessment of the development in the light of circumstances then prevailing, including the implementation of an integrated waste management strategy for the region, which implementation is considered to be in the interest of the amenities of the area, orderly development and proper planning and sustainable development of the area.

3. The operators shall ensure that an appropriate waste licence from the Environmental Protection Agency for the operation of the facility is maintained in place at all times.

Reason: To ensure that the proposed development is operated in such a manner which would not adversely impact on the surrounding environment.

4. In the next planting season, semi-mature trees shall be planted along the north-western profile of the landfill site.

Reason: In the interest of visual amenity, to reduce the visual impact of the landfill as viewed from the motorway network

Board Member:_____ Date: 10th August, 2012

Mary Mac Mahon

Attachment B.7 is not required, there are no trade effluent discharges to sewer from the site.
There is no Attachment B.8.

2.3 Attachment B.9 Site Notice, Newspaper Advertisement

This attachment contains:

- a copy of the text of the site notice
- a copy of the newspaper advertisement
- a copy of the notice sent to the Planning Authority, Carlow County Council

A map showing the location on site of the site notice is included in Attachment D.1, Drawing LW14-120-02-001 Rev A Site Layout.

Attachment B.10 is not required as the Seveso II Regulations do not apply to this site.

Attachment B.11 is not required as the Mercury Regulations do not apply to this site.

Attachment B.12 is not required as the Regulations controlling fluorinated gases and ozone depleting gases do not apply. There is no equipment or systems on site which contain ODS or F gases.

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR THE REVIEW OF A LICENCE

Notice is hereby given that Carlow County Council, having its principal offices at County Buildings, Athy Road, Carlow, intends to apply to the Environmental Protection Agency for a revision of their Industrial Emissions licence (Reg. No. W0025-03) for their facility, Powerstown Landfill and Recycling Facility, Powerstown, Kilkenny Road, Carlow.

In accordance with the First Schedule of the EPA Act 1992-2013, the following classes of activities apply to the site; Class 11.5 - Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste and Class 11.1 – the recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in the Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.
The application principally relates to an increase in the maximum annual waste input from 40,000 tonnes per annum to 50,000 tonnes per annum as per the planning consent (01.JA.0032).

The application is being accompanied by an Environmental Impact Statement (EIS) and Natura Impact Statement (NIS). The EIS and NIS and any further information relating to the effects on the environment of the emissions from the activity which may be furnished to the Agency in the course of the Agency's consideration of the application, will be available at the headquarters of the Agency. Planning consent has been granted by An Bord Pleanála (01.JA.0032). The application was accompanied by an EIS and a NIS.

A copy of the application for the licence review, EIS and NIS may be inspected on the Agency's website or, inspected at, or obtained from the headquarters of the Agency at PO Box 3000, Johnstown Castle Estate, Co. Wexford as soon as is practicable after the receipt by the Agency of the application for the licence.

Signed: _____
Jerry Crowley
Senior Executive Officer

Date: _____

CARLOW COUNTY COUNCIL

PUBLIC NOTICE
CARLOW COUNTY COUNCIL
LOCAL GOVERNMENT ACTS 2001 - 2014

CORPORATE PLAN 2014 - 2019

Notice is hereby given that Carlow County Council is currently preparing a Corporate Plan for the period 2014 to 2019. Preparation of the Corporate Plan involves consultation with both internal and external stakeholders. Submissions are now being sought from interested individuals or groups on their views on the strategic direction of Carlow County Council over the next five year period. The Corporate Plan will set out the core values of the organisation and its strategic objectives. Submissions should be no longer than one A4 page and should be returned to the **Senior Executive Officer, Corporate Services, Carlow County Council, County Buildings, Athy Road, Carlow or by E mail to mmorgan@carlowcoco.ie, not later than 5pm on Thursday, 27th November, 2014.**

The current Corporate Plan for 2009 – 2014 can be viewed on www.carlow.ie

Bernie O'Brien
Director of Services
Dated this 13th Day of November, 2014

Tel: 059 9136239 or 059 9170345

CARLOW COUNTY COUNCIL

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR THE REVIEW OF A LICENCE

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FEHILY TIMONEY & COMPANY

CONSULTANTS IN ENGINEERING & ENVIRONMENTAL SCIENCES

IRELAND UNITED KINGDOM POLAND SAUDI ARABIA

Our Ref: Q:/2014/LW14/120/02/Let002/TR/MT

Planning Department
Carlow County Council
County Buildings
Athy Road
Carlow

11 November 2014

RE: Notice of Intention to Submit An Industrial Emissions Licence Review Application in respect of Powerstown Landfill

Dear Sir/Madam

Carlow County Council intends to submit an Industrial Emissions (IE) Licence Review Application in respect of Powerstown Landfill to the Environmental Protection Agency. In accordance with the licence application form and the EPA (Industrial Emissions) (Licensing) Regulations 2013, S.I No. 137 of 2013, please find attached a notice regarding the application.

Background

CCC was granted approval from An Bord Pleanala in August 2012 for an extension to the lifetime of the facility from January 2012 to August 2018. Approval was also granted for the increase in maximum annual waste acceptance from 40,000 t to 50,000 t. An EIS and NIS were submitted with the planning application. The existing Industrial Emissions Discharge Licence W0025-03 allows a maximum annual intake of 40,000 t.

The IE licence review application seeks an increase in tonnage from 40,000 tpa to 50,000 tpa. CCC is not seeking to increase the landfill footprint. No new infrastructure or construction is proposed.

Fehily Timoney and Company is preparing the IE licence review application on behalf of Carlow County Council. Please find attached a copy of the newspaper notice, due to be published next week.

Yours faithfully

Tanya Ruddy
for and on behalf of **Fehily Timoney and Company**

Encl.

ACEI Association of Consulting Engineers of Ireland Cumann Innealtóirí Comhairle na hÉireann

ENGINEERS IRELAND cpd ACCREDITED COMPANY

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Directors: Eamon Timoney Bernadette Guinan Clodagh O'Donovan
Company Secretary: Bernadette Guinan Senior Consultants/Technical Directors: Declan O'Sullivan
Gerry O'Sullivan John Nolan Sarah Toal Tina Raleigh
Financial Controller: Colin O'Herlihy

QUALITY ISO 9001:2008 NSAI Certified | ENVIRONMENT ISO 14001:2004 NSAI Certified | HEALTH & SAFETY OHSAS 18001:2007 NSAI Certified

Registered in Ireland, Fehily Timoney & Company Ltd. Number 180497. Registered Office: Core House, Pouladuff Road, Cork. VAT Registration Number: IE6580497D

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR THE REVIEW OF A LICENCE

Notice is hereby given that Carlow County Council, having its principal offices at County Buildings, Athy Road, Carlow, intends to apply to the Environmental Protection Agency for a revision of their Industrial Emissions licence (Reg. No. W0025-03) for their facility, Powerstown Landfill and Recycling Facility, in the townland of Powerstown, Kilkenny Road, Carlow.

In accordance with the First Schedule of the EPA Act 1992-2013, the following classes of activities apply to the site; Class 11.5 - Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste and Class 11.1 – the recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in the Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.

The application principally relates to an increase in the maximum annual waste input from 40,000 tonnes per annum to 50,000 tonnes per annum as per the planning consent (planning reference (01.JA.0032).

The application is being accompanied by an Environmental Impact Statement (EIS) and a Natura Impact Statement (NIS). The EIS and NIS and any further information relating to the effects on the environment of the emissions from the activity which may be furnished to the Agency in the course of the Agency's consideration of the application, will be available at the headquarters of the Agency. Planning consent has been granted by An Bord Pleanála (01.JA.0032). The application was accompanied by an EIS and a NIS.

A copy of the application for the licence review, EIS and NIS may be inspected on the Agency's website or, inspected at, or obtained from the headquarters of the Agency at PO Box 3000, Johnstown Castle Estate, Co. Wexford as soon as is practicable after the receipt by the Agency of the application for the licence.

2.4 Attachment B.13 Review of a Licence

2.4.1 Purpose of the Review

This IED licence review application seeks to increase the maximum annual tonnage allowance from 40,000 tonnes to 50,000 tonnes.

An extension to the lifetime of Powerstown Landfill was sought by CCC in 2012 because the landfill had suffered a marked decline in waste received in the period 2008 to 2010 due to the economic downturn and market forces in the Irish waste industry. By the end of 2011, the landfill had two empty constructed cells. The extension was sought in order to fill those cells and to achieve final restoration contours. The application for approval was made to An Bord Pleanála under the Strategic Infrastructure Act.

CCC was granted approval from An Bord Pleanála in August 2012 for an extension to the lifetime of the facility from January 2012 to August 2018. Approval was also granted for the increase in maximum annual waste acceptance from 40,000 tonnes to 50,000 tonnes.

The existing Industrial Emissions Discharge Licence W0025-03 allows a maximum annual intake of 40,000 t.

In May 2014, CCC requested the EPA to carry out a technical review of Condition 1.4 of W0025-03 to increase the maximum annual intake to 50,000 tonnes. A copy of this request is included in this attachment.

In July 2014, the EPA refused that request and advised that 'the proposed increase in waste acceptance to 50,000 tonnes per annum will require a licence review given the:

- Scale of the development
- Potential for environmental impact
- Need for transparency in the decision-making process'

A copy of this response is included in this attachment.

This IED licence review application seeks to increase the maximum annual tonnage allowance from 40,000 tonnes to 50,000 tonnes. CCC is not seeking to increase the landfill footprint. No new infrastructure or construction is proposed. There is demand from the market for void at Powerstown Landfill due to the recent closure of many landfills.

In addition to seeking an increase in the maximum allowable tonnage, CCC is seeking a review of the following Schedules of the licence:

Schedule A.1 Waste Acceptance

Table A.1 of W0025-03, as amended in 2010 (see Table 2.5), lists the licensed waste categories and quantities (tonnes per annum), which are:

- Household (Residual): 30,000 t
- Commercial: 7,000 t
- Treated Sewage Sludge: 500 t
- Construction and demolition: 1,000 t
- Industrial Non-hazardous solids: 1,500 t
- Total 40,000

CCC wishes to change the list of waste inputs to the following format:

- Non-hazardous Household, Commercial and Industrial Solids: 48,500 t
- Treated Sewage Sludge: 500 t
- Construction and Demolition: 1,000 t
- Total 50,000

Schedule D Monitoring

Visual and Odour Inspections of Surface Water - In Schedule D, Table D.5.1, there is a requirement to carry out weekly visual and odour inspections of the surface water monitoring locations. CCC staff carries out daily checks of these locations amongst a host of other checks on the weekly site walkover. CCC is seeking approval in this licence review to continue that inspection regime, but only to document the odour and visual inspection, if there is any odour or a negative visual inspection.

Groundwater Level Monitoring - D.5.1 requires the licensee to carry out monthly level monitoring of all groundwater wells. CCC is seeking approval in this licence review to reduce the frequency of level monitoring to quarterly.

Continuous TOC Monitoring - Condition 6.5.3 of the licence states that CCC shall continuously monitor pH, conductivity and TOC at the inlet to the surface water pond (SWLI). The licence does not set limits for these parameters at the inlet. CCC has set their own trigger limits and there have not been any exceedances of those limits. The majority of surface water on site is from a spring. The continuous monitoring is very costly and CCC is seeking approval in this licence review to carry out monitoring of pH, EC and TOC on a monthly basis at both SWLI and SWLO.

Landfill gas perimeter monitoring boreholes. Wells G11-G21 are in the waste body of Phase 1 and are along the landfill/quarry boundary and CCC proposes to cease monitoring them as landfill gas perimeter monitoring locations. CCC also seeks approval to cease monitoring at TP15. It is believed to be located too close to the percolation area for the wastewater treatment system. There are several other wells in the vicinity which are used to monitor for landfill gas migration.

Noise Monitoring

Since the last licence was issued (2008), the EPA has published NG4 (Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities, EPA 2012). CCC wishes to bring Schedule D.4.1 in line with that guidance whilst ensuring the noise monitoring requirements are suitable for the existing facility.

Noise surveys are undertaken annually as part of the waste licence conditions (D.4.1) for Powerstown Landfill. The purpose of the noise monitoring is to assess noise emissions from the site and to establish the noise environment at potentially sensitive receptors near the site.

To date the noise monitoring has been carried out during the day between the hours of 9:00 and 16:00 for 30 minute intervals at each noise monitoring location. All measurements were taken in accordance with 1:2003 (ISO, 2003)[1] & ISO 1996-2:2007 (ISO, 2007)[2] (*Description and Measurement of Environmental Noise*). Noise emission limits are given in Table C.1 of the licence. Noise levels monitored at the site in the past 3 years, have shown that landfill operations are not audible at the noise sensitive locations.
It is requested as this is an existing landfill, that Schedule D.4.1 is left in place, rather than requiring CCC to increase monitoring in line with the more onerous requirement of NG4 (Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities, EPA 2012). There are no evening or night-time operations at the landfill facility during normal landfilling activities. If in the event that the contractor will operate longer hours during daylight hours during the capping contract(s), CCC will then consider the requirement for evening monitoring.

CCC therefore seeks approval to carry out day-time annual noise monitoring for 15 minute intervals for 3 sample periods as per Table 5 in the FAQs for NG4 (amendment to NG4).

[1] International Organization for Standardization. 2003. ISO 1996-1, Acoustics — Description, measurement and assessment of environmental noise: Part 1: Basic quantities and assessment procedures.
[2] International Organization for Standardization. 2007. ISO 1996-2 , Acoustics — Description, measurement and assessment of environmental noise: Part 2: Determination of environmental noise levels.

CARLOW COUNTY COUNCIL

COMHAIRLE CHONTAE CHEATHARLOCHA

County Buildings, Athy Road, Carlow.
Tel: 059 9170300
Fax: 059 9141503
Email: secretar@carlowcoco.ie
Web: www.carlow.ie

Environmental Licensing Programme,
Environmental Protection Agency,
PO Box 3000,
Johnstown Castle Estate,
Wexford

Re: Waste Licence W0025-03, Powerstown Landfill, Carlow

1. Request to increase waste tonnage

In August 2012 Carlow County Council received approval from An Bord Pleanala for the following proposal

Continued operation of landfilling activities which will allow filling of the remaining constructed void space at the existing non-hazardous waste landfill. Other infrastructure on site includes a civic amenity facility, site offices, leachate and gas management systems, weighbridge and ancillary structures. The application is also for increasing the maximum annual waste input from 40,000 t/a to 50,000 t/a. It is not proposed to develop extra cells or to create extra landfill capacity.

A copy of the approval is attached, which allows for landfill activities until August 2018.

Carlow County Council now wishes to increase the licensed annual waste input from 40,000 t/a to 50,000 t/a and requests the Agency to carry out a Technical Review of Condition 1.4 of the above waste licence.

The increase in annual waste inputs is required in order to allow for increased tonnages as stated in planning approval. This increase will permit filling of void capacity at an earlier date and thus bring forward final capping works.

It is not proposed to carry out any works which will increase the landfill void capacity and therefore the remaining waste capacity will remain the same.

22/5/14
1505

The anticipated impacts of the requested amendment are as follows:

- Leachate generation will decrease due to the shorter fill period and bringing forward of final capping works.
- Landfill gas capture will increase due to the shorter fill period and bringing forward of final capping works.
- There will be no impact on surface water emissions
- There will be no impact on groundwater emissions
- Impacts on noise and dust will be negligible.

As part of planning approval, in 2012, an EIS was prepared by our specialist consultants. This examined the impact of continued operations at the 50,000 t/a waste input. Table 17.1 of the EIS confirmed that the proposal will have a neutral impact for 17 of 24 impacts examined. Any adverse impacts are localised in their extent and their significance can be described as slight. The table also outlines a number of positive impacts. A copy of the EIS is attached with this letter.

2. <u>Request to amend waste acceptance types and tonnages</u>

The existing waste licence allows for the following annual inputs:

- Household: 30,000 t
- Commercial: 7,000 t
- Treated Sewage Sludge: 500 t
- Construction and demolition: 1,000 t
- Industrial Non-hazardous solids: 1,500 t

We also wish to request a Technical Review which will amend the above limits to the following:

- Non-hazardous Household, Commercial and Industrial Solids: 48,500 t
- Treated Sewage Sludge: 500 t
- Construction and Demolition: 1,000 t

Pat Connolly SEE
Landfill Manager
Powerstown Landfill
Powerstown
Carlow
22-5-2014
pconnoll@carlowcoco.ie

This Report has been cleared by Brian Meaney for submission to the Director
Signed: Bea Claydon Dated: 15 July 2014

OFFICE OF CLIMATE, LICENSING & RESOURCE USE

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

ENVIRONMENTAL LICENSING PROGRAMME MEMORANDUM

TO:	DARA LYNOTT, DIRECTOR
C.C:	Frank Clinton, Programme Manager
FROM:	Brian Meaney, Senior Inspector
DATE:	15 July 2014
RE:	Request for Technical Amendment to Industrial Emissions Licence Register Number W0025-03, held by Carlow County Council in relation to the Powerstown Landfill.

Carlow County Council operate a landfill at Powerstown, Co. Carlow. It is authorised to accept up to 40,000 tonnes of non-hazardous waste per annum. A licence was originally granted in March 2000. Revised licences were granted in April 2005 and December 2009. The existing licence was technically amended in June 2010 and amended in December 2013 to bring it into conformance with the Industrial Emissions Directive.

Request for technical amendment under section 96 of the EPA Act 1992 as amended

The licensee has requested amendment of the licence to authorise an increase in waste acceptance from 40,000 tonnes per annum to 50,000 tonnes per annum. An Bord Pleanála granted permission for the increase in August 2012. In granting planning approval, An Bord Pleanála carried out Environmental Impact Assessment and Stage 2 Appropriate Assessment on the proposal. An EIS and NIS were submitted with the planning application. The licensee provided a copy of the EIS with the request for technical amendment.

Recommendation

Given the scale of the development, its potential for environmental impact and the need for transparency in the decision-making process, allied with the need for EIA and AA to be carried out by the Agency as part of the environmental assessment of the proposal, I recommend that:

- the Agency refuse the request for technical amendment of licence register number W0025-03;
- return the EIS to the licensee; and
- advise that the proposed increase in waste acceptance to 50,000 tonnes per annum will require a licence review under section 90 of the EPA Act 1992, as amended.

Signed:

Brian Meaney

2.4.2 Comparison of Monitoring Results with BAT in BAT Conclusions

In the absence of a BAT conclusion for the landfill sector, the Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities, (EPA 2011) gives guidance on BAT emission levels for discharges to water, sewer and air. There is one surface water discharge point, there are fugitive emission monitoring points/areas and there is one direct air emissions point. There are no emissions to sewer.

The guidance states that for emissions to surface water, 'establishing emission limit values within a licence for direct discharges to surface water from wastewater/leachate treatment plant and storm water discharges must ensure that the quality of the receiving water is not impaired and that the current Environmental Quality Standards (EQS) are not exceeded.' The EQS for surface water are defined in Appendix 2 of the above referenced document as the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009).

There is one emission to surface water point at the outlet of the surface water retention pond to the Powerstown Stream, it is called SWLO and is shown on Drawing No. LW14-120-02-002 Rev A in Attachment E.6. Monitoring results are compared to the EQS for surface water as defined in S.I No. 272 of 2009. The results in Table 2.3 show that over the last 12 months, the emission point has been within the limits set by those regulations, i.e. BAT.
The quality of the water at SWLO for all parameters excluding ammonia, indicates a High status. The ammonia levels indicate good status since 2012.

Table 2.3: Comparison of Surface Water Monitoring Results at Emissions Point SWLO to BAT

	Monitoring Results					EQS (S.I. No. 272 of 2009)			
Test Parameter	**Mean 2010**	**Mean 2011**	**Mean 2012**	**Mean 2013**	**Mean of last 12 months**	**High Status**	**Good Status**	**AA**	**Status of SWLO**
Ammonia mg/l N	0.12	0.07	0.02	0.026	0.048	≤0.004	≤0.065		Good 2012-2014
Dissolved Oxygen % Sat	90.75	94.75	94.25	97.65	97.25	95%ile > 80%	95%ile > 120%		High
pH	7.4	7.475	7.55	7.5	7.5	>5<9 soft	>6<9 hard		OK
BOD mg/O_2	<0.5	0.75	<1.0	<1	<1.0	≤1.3	≤1.5		High
	AA 2010	**AA 2011**	**AA 2012**	**AA 2013**	**AA 2014**				
Alkalinity mg/l $CaCO_3$	324	298	309	299	265				hard
Arsenic ug/l	nd	nd	0.9	<0.5	<1			25	OK
Chromium ug/l	<5	<5	0.9	<0.5	nd			3.4	OK
Copper ug/l	<6	<6	0.6	0.5	<1			30	OK
Lead ug/l	<5	<5	<0.5	<0.5	<1			7.2	OK
Nickel ug/l	<5	<5	1.9	<0.5	<1			2.4	OK
Zinc ug/l	<30	<30	<3	10	12			100	OK

Note: Parameters shown are those for which are monitored and listed in the Regulations. AA, annual average is the limit set for metals, however there is only one annual monitoring event for metals at Powerstown as per licence requirements.

In the absence of a BAT conclusion for the landfill sector, the Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities, (EPA 2011) has limits for fugitive emissions and for emissions from landfill gas flares and utilisation plants.

The limits for fugitive emissions are replicated in Table 2.4 below. There is a limit for NOx in enclosed flares of 150 mg/$m^{3.}$ This is as per Schedule C5 of the existing licence. This limit was not exceeded at the last round of flare monitoring for 2013. Flare monitoring results were submitted as part of the AER.

Table 2.4: Fugitive Emission Limits

Constituent Group or Parameter	Concentration / Trigger Levels
Methane	1% v/v or (20% Lower Explosive Limit) Note 1
VOC (surface emissions)	≥50ppmv average over capped area or ≥100ppmv instantaneous reading on open surfaces within the landfill footprint or ≥500ppmv around all identified features
Carbon Dioxide	1.5% v/v
Total Dust Deposition	240 - 350 mg/m^2/day

Note 1: Measured in any monitoring borehole, building on or adjacent to the facility, service duct, or manhole.

Each of these limits for fugitive emissions is present in the licence as per Condition 8.14.6 and Schedules C2 and C3. There are several landfill gas perimeter monitoring boreholes as listed in Table 2.6 of this attachment (B.13). There are 6 no. dust monitoring locations. VOC monitoring is carried out biannually as per the OMP, with the sampling technician walking in a grid pattern across the surface of the landfill.

In the past year 2013/2014, carbon dioxide levels at perimeter monitoring boreholes did exceed the licence limits at certain times. Each of these exceedances was notified to the Agency and was reported as per the quarterly reporting requirements. There were no exceedances of the dust deposition limit of 350 mg/m^2/day.

Section 86(A) 9 of the EPA Act as amended states:

(9) Information to be provided by the applicant or licensee for the purpose of a review of a licence or a revised licence under section 90 and prescribed in regulations under section 89 or, as the case may be, requested and considered necessary by the Agency under section 90(7) shall, for the purposes of this section, include in particular -

a) results of emissions monitoring, and
b) other data that enables the Agency to make a comparison of the operation of the installation concerned with the best available techniques described in the applicable BAT conclusions and with the emission levels associated with the best available techniques.

2.4.3 Details of Variations or Adjustments for Conditions or Schedules of Existing Licence

Table 2.5 includes a list of all variations or adjustments made to the Conditions or Schedules of IE Licence W0025-03. Drawing LW14-120-02-002 Rev A (Attachment E.6) is an updated monitoring and emissions location drawing. Table 2.6 shows the amended Schedule D, Table D1. Table 2.7 lists once-off assessments or reports that were required by the existing licence which have been completed.

There have been two technical amendments to the licence since W0025-03 was issued.

Table2.5: Variations/Adjustments to Existing Licence and Reports Completed

Condition/ Schedule No.	Existing Condition	OEE Agreement Reference	Date	Description
Schedule D, Table D1	Schedule D, Table D1		01-07-08	Email from Pat Connolly to EPA 01-07-08. This amended and clarified a number of monitoring locations. Email is included in this attachment. Table D1 of the existing licence has been updated to reflect these changes along with some other additional changes since 2008. The revised Table D.1 is included in this attachment along with an updated monitoring location drawing (Drawing LW14-120-02-002 Rev A, Attachment E.6).
3.22.1 a) and d)	3.22.1	W0025-02/ap07df	11-06-09	Removal of Condition 3.22.1 a) and 3.22.1 d)
Table A.1	Table A.1	W0025-03/ap07jmc	16-06-10	Amendment of Table A.1 to increase tonnage allowance for sludges from 500 to 1,500 t, with a subsequent corresponding tonnage decrease for household waste.
5.6.11 11.7 Table D.9	-	T.A (A)	28-06-10	Introduction of BMW diversion targets Requirement to maintain records of BMW accepted Waste monitoring of stabilised biowaste
5.6.11	5.6.11	W0025-03/gc10rc(bmw limit)	02-08-12	Revision of BMW diversion targets
8.8.2		T.A (B)	17-01-13	Risk screening and where necessary a technical assessment. Due 17 July 2014. Any recommendations to be implemented by 22 December 2015. EC EO (Groundwater) Regulations 2010.

Table2.6: Amended Table D1 from W0025-03

Landfill Gas within Waste and Boundary Locations	Landfill Gas Flare	Dust Deposition & Odour	Noise	Surface Water	Ground Water	Leachate
Stations		Stations	Stations	Stations	Stations	Stations
Note 1	LFGF1	Dust D2, D4, D5, D6, D7, D8	NSL N5, N6, S1, S2	ST2, ST1	RCA1, RCA2, GW3, GW6	Levels Lagoon(s) Note 3
G1-G8, G22-G39, G41, G43-G46, TP 12- 14, TP16 - 17		Odour Note 2	On-site N4	SWLI, SMLO	GW1, GW2, GW7, GW8, BH1, BH2, BH3, BH4 Note 4	Composition LG, LT

Note 1: Landfill gas extraction wells
Note 2: 3 fixed locations to be chosen from an agreed list of 5 (see Odour Management Plan) and 2 locations to be chosen on the day, upwind and downwind.
Note 3: Leachate levels in cells at the lowest collection points, i.e. at leachate collection sumps or as otherwise agreed with Agency. L1-L4, L7, L10-L13 (manual dips), L15-L18 & LT (on Scada).
Note 4: BH4 is to be installed at a location close to BH1-3.

There was a requirement for leachate composition analysis at 3 locations and CCC has been sampling at L7, LG (lagoon) and LT (leachate tank). However, L7 represents leachate from Cells 7 and 8 and goes directly to the tank. All of the leachate from Phase 3 goes directly to the tank. It is proposed to sample these 2 locations for leachate composition with agreement from the Agency.

BH1-BH4 have been added to the groundwater monitoring regime, BH1-BH3 having been recently installed as part of the Tier 3 risk assessment of the unlined phase 1 landfill.

Office of Environmental Enforcement,
EPA,
PO Box 3000,
Johnstown Castle Estate,
Co. Wexford.

W0025-02, Powerstown Landfill, Monitoring Locations

In April 2008 Carlow County Council advised the Agency that a number of environmental monitoring locations had become unusable due to a number of factors (letter attached). We have now examined the requirement for new monitoring locations and wish to submit the following proposal for approval.

Groundwater

The following are the proposed locations as shown on drg, MON2008GW:

- **RCA1** as existing
- **RCA2** as existing
- **GW1** as existing
- **GW2** as existing
- **GW3** new position as shown (west of weigh bridge) to monitor upstream water quality.
- GW4 not to be replaced, existing location not accessible due to quarry operations.
- GW5 not to be replaced, existing location not accessible due to quarry operations.
- **GW6** new borehole near existing
- **GW7** new borehole near existing
- **GW8** as existing

The above proposal will provide for 3 upstream and 5 downstream boreholes.

Landfill Gas

The following are the proposed locations as shown on drg, MON2008LG1, these boreholes will be used primarily to monitor gas concentrations in the vicinity of dwellings::

- TP3 not to be used, system of perimeter boreholes (drg. MON2008LG2) will provide for landfill gas assessment at this location.
- TP4 , not to be used, system of perimeter boreholes (drg. MON2008LG2) will provide for landfill gas assessment at this location.
- TP6 not to be replaced/used, system of perimeter boreholes (drg. MON2008LG2) will provide for landfill gas assessment at this location
- TP7 not to be replaced/used, system of perimeter boreholes (drg. MON2008LG2) will provide for landfill gas assessment at this location.
- TP8-TP10 not to be replaced, existing location not accessible due to quarry operations.
- **TP11** as existing
- **TP12** as existing
- **TP13** new borehole near existing
- **TP 14** new borehole near administration building
- **TP15** new borehole near Nolan residence.
- **TP16** new borehole near existing
- **TP17** as existing

- TEM1-TEM3 not to be replaced/used, system of perimeter boreholes (drg. MON2008LG2) will provide for landfill gas assessment at this location.

Landfill Gas Perimeter Boreholes

- **G1-G46** as shown on drg. MON2008LG2

Landfill Gas Extraction Boreholes

- **GW1-GW42** as shown on drg. MON2008LG3
- **LFGF1** as shown, new location of flare autumn 2008.

Dust

The following are the proposals as shown on drg. MON2008DONSW:

- D1 not to be used after capping of Cells 6-13.
- **D2** as existing
- **D4** as existing
- **D5** as existing
- **D6** as existing
- **D7** new location as shown, between administration building and Nolan residence.
- **D8** new location as shown, between Civic Amenity Centre and Weighbridge.

Odour

The following are the proposals as shown on drg. MON2008DONSW

- **OD1** east of Cell 18.
- **OD2** at old landfill entrance
- **OD3** at new landfill entrance

Noise

The following are the proposals as shown on drg. MON2008DONSW

- **S1** as existing
- **S2** revised location as shown, to west of existing
- **N5** as existing
- **N6** as existing.
- **N4** as existing

Surface Water

The following are the proposals as shown on drg. MON2008DONSW

- SWU change to upstream of surface water outlet.
- SWD no change to existing downstream.
- SWLI inlet to surface water lagoon.

- SWLO outlet from surface water lagoon.

Leachate

The following are the proposals as shown on drg. MON2008L

- LG leachate lagoon (leachate composition)
- LT leachate storage tank (leachate composition)
- L1 borehole, Cell 1, leachate level all below
- L2 borehole, Cell 2
- L3 borehole, Cell 3 (Cell 5 drains into Cell 3)
- L4 borehole, Cell 4 (Cell 6 drains into Cell 4)
- L7 collection sump, Cell 7 (Cell 8 drains into Cell 7)
- L10 borehole, Cell 10 (Cell 9 drains into Cell 10).
- L11 borehole, Cell 11
- L12 borehole, Cell 12
- L13 borehole, Cell 13
- L15 borehole, Cell 15
- L16 borehole, Cell 16

If the Agency is in agreement with the proposal we will proceed to install the new monitoring infrastructure and prepare digital as-constructed drawings with grid references for each location.

.....

Pat Connolly
Senior Executive Engineer
Environment Section
1-7-08

Attachments:

1. MON2008GW: Groundwater monitoring locations.
2. MON2008LG1: Landfill gas monitoring locations
3. MON2008LG2: Landfill gas, perimeter borehole monitoring locations
4. MON2008LG3: Landfill gas, extraction borehole monitoring locations
5. MON2008DONSWL: Dust, Odour, Noise, Surface Water, monitoring locations.
6. MON2008L: Leachate monitoring locations.
7. Letter April 2008.

Table2.7: Once-off Assessments and Reports (Licence and Post Licence Issue)

Condition / EPA Request	Once off Reports / Assessments Requested in Licence	Submitted Y / N	Date of Submission	Comments	Date of Submission	Appended as
Condition 2.3.2.2	LEMP was due 21-12-10. In addition it was to be reviewed annually with amendments to Agency for approval	Y	2010	submitted as part of EMS	regular revisions, latest revision submitted 20-02-14	Appendix C.2 in EMS
Condition 2.5.1	Energy efficiency audit to be completed by 21-12-10.	y			September 2014	Appendix G.2
Condition 3.2.1	Phased construction plan to agency prior to commencement of site development works (phase 3), capping	y	2005			
Condition 3.3.2	SEWs at least 2 months prior to commencement of works	y	2005			
Schedule B	Development of Phase 3 including preparation works and lining	y	2005			
	Installation of Civic Waste Facility					
	Installation of the Compost Facility					
	Installation of Landfill Gas Management Infrastructure					
	Installation of Leachate Management Infrastructure					
	Installation of Surface Water Management Infrastructure					
Condition 3.3.3	Construction quality assurance validation reports for SEWs, to be completed and made available to Agency upon request.	y	2006/7			
Condition 5.2.4	Submit an updated procedure for the acceptance and handling of all wastes. To include methods of characterisation, classification and coding. Due date 21-01-10.	y	2010		regular revisions, latest revision submitted as part of EMS 20-02-14	Included in EMS, Appendix C.2
Condition 6.4.2	Determine and agree groundwater monitoring trigger levels.	y			several updates, latest May 14	Included in Tier 3 report in Appendix E.1

EPA request Reference	Once off Reports / Assessments Requested since 2009	Submitted Y / N	Date of Submission	Comments	Date of Submission	Appended as
Condition 8.11.2	Archaeology report for topsoil stripping prior to development of phase 3.	Y	2005			
Condition 8.14.2	Submit an Odour Management Plan by 21-06-10.	Y	2010		regular revisions, latest revision submitted 19-02-14	Appendix F.1
Condition 11.3.1	Submit leachate Handling Procedures for the handling of leachate on the facility and during removal from the lagoon and subsequent transfer off site. Date before the new leachate storage lagoon is used.	Y			regular revisions, latest revision change was October 2009	Appendix D.1
Condition 12.3.2	ELRA due 21/12/10	Y	28/03/14	Agency rejected ELRA submission	Re-submitted August 2014	Appendix K
EPA Request RFI2122	CRAMP	Y	27/03/14 and amendments 23-09-14			Appendix K
EPA Request	2013 Annual Section 53 Return	y	August 2014			
EPA Request	Detailed Quantitative Risk Assessment (Tier 2 and Tier 3)(focussed on groundwater)	Y	29-05-14			Appendix I.4
EPA Request	Generic Quantitative Risk Assessment (Tier 1 Risk Assessment)	y	2012			

3 ATTACHMENT C – MANAGEMENT OF THE INSTALLATION

3.1 Attachment C.1 Site Management & Control

Powerstown Landfill and Recycling Centre is under the operational control of the Environment Directorate of CCC. The management of the facility is shown in Figure 3.1 below.

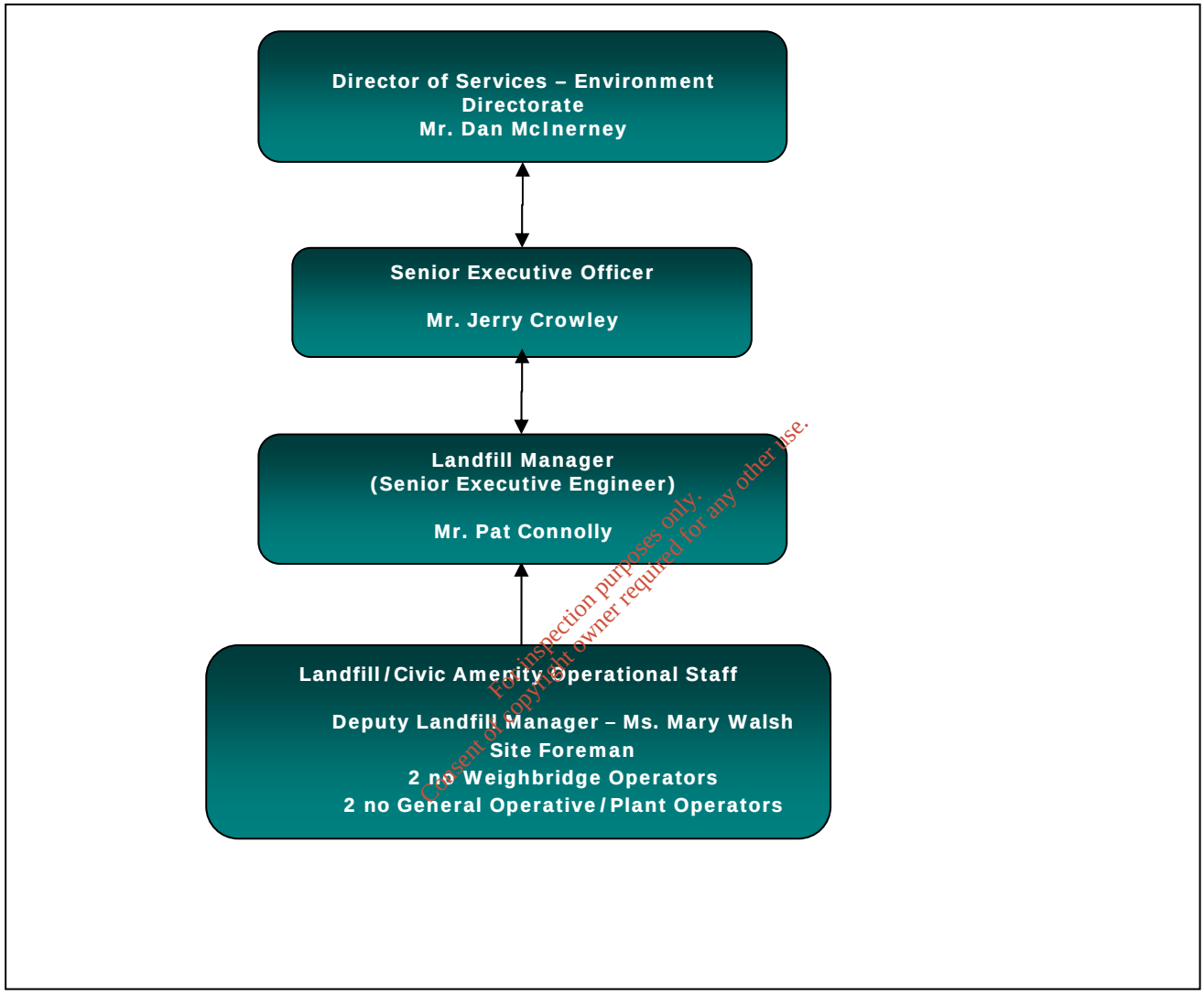


Figure 3.1: Management Structure.

The Senior Executive Office has overall responsibility for the facility, contingency arrangements and the environmental performance. The Landfill Manager is responsible for day-to-day operations, waste acceptance and environmental protection. The Deputy Landfill Manager is responsible for environmental monitoring and the operation of the recycling centre. The Site Foreman is for on-site maintenance and repair and de-watering of the landfill gas collection system. The weighbridge operator is responsible for weighing loads, waste acceptance, record keeping and cash payments.

3.2 Attachment C.2 Environmental Management System (EMS)

The EMS for the facility is updated regularly. The latest version was submitted to the Agency on 20 February 2014. It is appended in Appendix C.2.

3.3 Attachment C.3 Hours of Operation

There are no proposed changes to Condition 1.5 of the existing IE Licence;

1.5. I Landfill

1.5.1.1 Waste may be accepted at the facility for disposal at the landfill only between the hours of 0800 and 1730 Monday to Friday inclusive (Bank Holidays excepted) and 0800 and 1230 on Saturdays.

1.5.1.2 The landfill at the facility may be operated only during the hours of 0700 and 1830 Monday to Friday inclusive (Bank Holidays excepted) and 0700 and 1330 on Saturdays. Activities between 0700 and 0800 shall be limited to:

- Visual inspections;
- Use of the Civic Waste Facility;
- Litter patrols; and
- Equipment/plant maintenance.

1.5.1.3 Treated sewage sludge shall be accepted at the facility only between the hours of 0830 hrs and 1400 hrs Monday to Friday inclusive.

1.5.2 Civic Waste Facility

1.5.2.1 Waste shall be accepted at the Civic Waste Facility only between the hours of 0800 and 1730 Monday to Friday inclusive (Bank Holidays excepted), 0800 and 1630 on Saturdays and 0800 and 1230 on Sundays.

3.4 Attachment C.4 Fit and Proper Person

The landfill and recycling facility is owned and operated by CCC Environment Directorate.

Carlow County Council has not been convicted under:

- the Environmental Protection Agency Act 1992, as amended,
- the Waste Management Act 1996, as amended
- the Local Government (Water Pollution) Acts 1997 and 1990
- the Air Pollution Act 1987 and the Air Pollution Act 1987 (Environmental Specifications for Petrol and Diesel Fuels)(Amendment) Regulations 2004.

There are 3 staff based at the landfill who have specific responsibility for the management of the landfill and for licence compliance. They are the landfill manager, the environmental technician and the site foreman. The Landfill Manager has a Degree in Civil Engineering and has 12 years of relevant waste management experience. The Environmental Technician has a Degree in Environmental Science and has 7 years of relevant waste management experience. The Site Foreman has completed the Fás Waste Management Course and has 9 years of relevant waste management experience.

The financial standing of CCC in respect to the facility is referenced in Attachment D.3.8.

4 ATTACHMENT D – INFRASTRUCTURE & OPERATION

4.1 Attachment D.1 Operational Information Requirements

4.1.1 Development and Operational History of the Site

The landfill has been developed in three phases; Phase 1 is unlined and operated on the principal of dilute and disperse. It was operational from 1975 to 1990. Phase 2 is made up of Cells 1-13. Cells 1-6 are lined with a single HDPE liner and Cells 7-13 are lined with a single HDPE liner and engineered clay. Phase 2 was operational from 1991 to 2006. Phase 3 (cells 15-18) is fully engineered in accordance with the requirements of the Landfill Directive (99/31/EC). It commenced waste acceptance in 2007 and remains active. (There is no Cell 14.)

The facility has been in operation since 1975 and is licensed (W0025-03) to accept 40,000 tonnes per annum of waste. Phases 1 and 2 of the landfill have been permanently capped, Cells 15 and 16 are filled and have an intermediate cap. Cell 17 is being filled and Cell 18 has been constructed but remains unfilled to-date. Drawing No. LW14-120-02-001 Rev A in this Attachment (D.1) shows the site layout and infrastructure.

The recycling centre is open to the general public and provides for the recovery of glass, paper, cardboard, metal and household hazardous waste amongst others.

Other ancillary infrastructure on-site include weighbridges, a surface water management system and attenuation pond, leachate lagoon, leachate holding tank, administration office, landfill gas flare and waste inspection/quarantine areas.

This licence review application seeks to increase the maximum annual tonnage for landfilling from 40,000 tonnes per annum to 50,000 tonnes per annum. Further details regarding the planning and licence history of the site and of the licence review are in Attachments B.6 and B.13 respectively.

The licensed opening and operational hours are defined in Condition 1.5 of the licence, however due to economic circumstances, CCC is currently operating reduced opening hours. As of July 2011, the facility opens from 08:30 to 16:00 on Wednesday, Thursday and Friday and 08:30 to 12:30 on Saturday. The facility is generally closed on Mondays and Tuesdays but sometimes opened to accept occasional loads of waste at the landfill and recycling centre.

The above reduced hours are continually under review by CCC and subject to change within the limitations set out in the waste licence.

The three phases of landfill development are detailed as follows.

Phase 1 Development (old unlined landfill)

Phase 1 Landfill Development

Landfilling commenced in Phase 1 in 1975 and finished in 1990. Phase 1 (or the 'old landfill') is located on the south western portion of the site. Phase 1 is an unlined landfill which was developed in a spent sand and gravel quarry and operated as a 'dilute and disperse' type landfill. It has an area of approximately 3.7 hectares (9.2 acres) and contains an estimated 130,000 tonnes of municipal solid waste (MSW).

Phase 1 Landfill Capping

In 2006 the Phase 1 landfill was permanently capped in accordance with the requirements of the waste licence. The specification of the cap used in Phase 1 was as follows:

- 150 mm of topsoil on
- 850 mm of subsoil on
- Drainage geocomposite on
- 1mm fully welded LLDPE geomembrane on
- Geosynthetic clay liner (GCL) on
- Gas collection geocomposite

Phase 2 Development (lined cells 1-13)

Phase 2 Landfill Development

Phase 2 of the landfill is located within the northern western portion of the site. It has an area of approximately 4.5 hectares and consists of 13 no engineered landfill cells. Cells 1 -13 were constructed over a number of years each and the engineered basal liner varies from cells 1 -6 and cells 7 – 13 as follows:

Cells 1 – 6

- 500 mm of drainage stone on
- Protective geotextile on
- 2.0 mm fully welded HDPE liner on

Cells 7 -13

- 500 mm of drainage stone on
- Protective geotextile on
- 2.0 mm fully welded HDPE liner on
- 1 m engineered clay layer (1 x 10^{-9} m/s)

Landfilling in Phase 2 took place between 1991 and 2006.

Phase 2 Landfill Capping

In accordance with the requirements of the waste licence, Phase 2 of the landfill (cells 1 - 13) was permanently capped. This capping work was complete by 2008. The specification of the landfill cap used for Phase 2 was as follows:

- 150 mm of topsoil on
- 850 mm of subsoil on
- Drainage geocomposite on
- 1 mm fully welded LLDPE geomembrane on
- Gas collection geocomposite

Phase 3 Development (General overview)

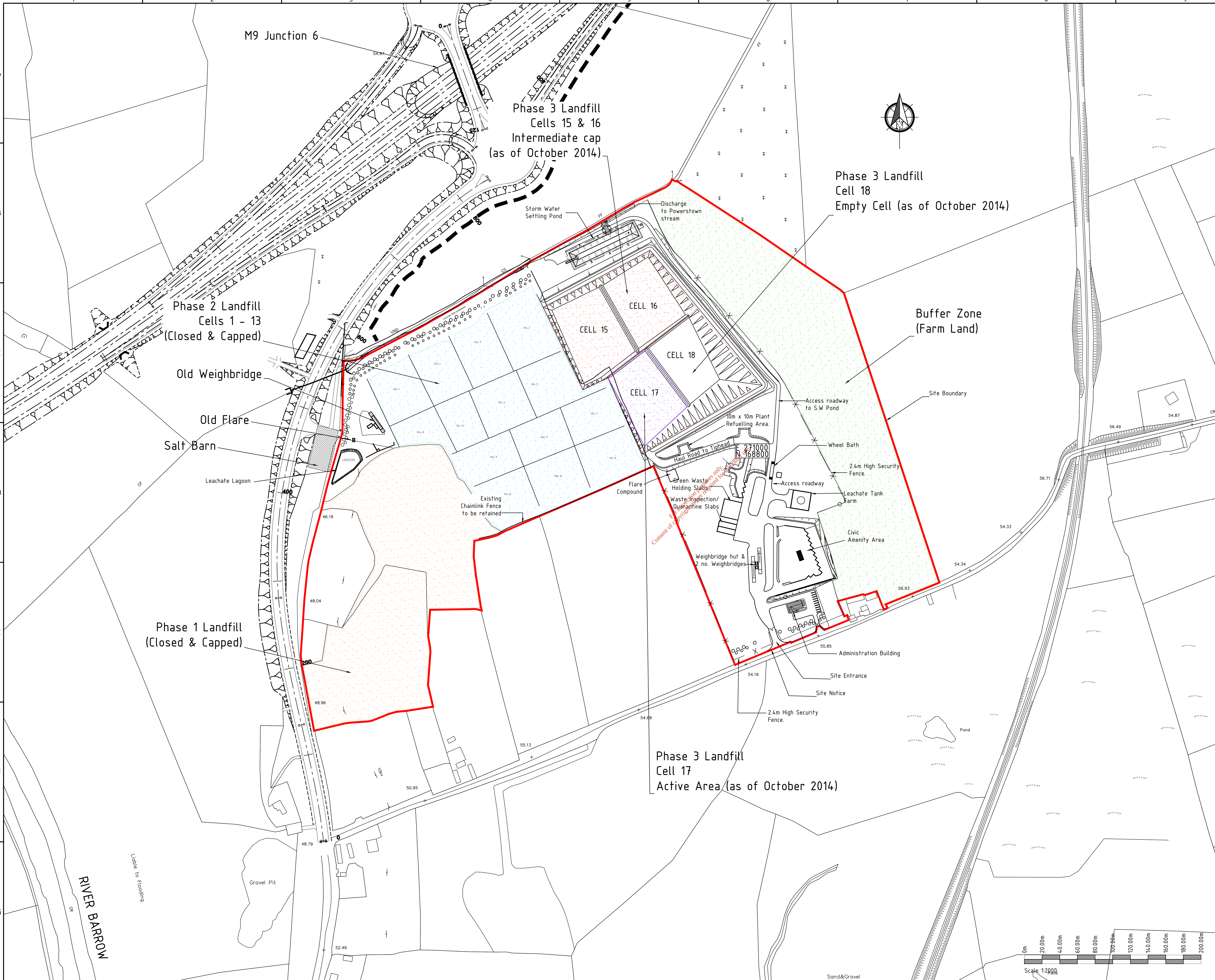
Phase 3 involved a major capital investment at Powerstown Facility including the construction of four new landfill cells (cells 15, 16, 17 & 18) with an estimated void space of 240,000 m^3. The Phase 3 development works took place largely in 2006 and in addition to new cells 15-18, development included:

- New facility entrance off a minor road off the old N9 and various site roads
- A split level recycling centre
- Leachate holding tank and installation of floating cover to existing leachate lagoon
- Green waste composting area
- Conversion/renovation of an existing dwelling house into a site office
- Weighbridges and weighbridge office
- Perimeter fencing
- Surface water management infrastructure comprising pipework, settling pond, swales etc.
- Foul drainage system and treatment unit
- Ducts for power, telemetry, CCTV etc.
- Car parking
- Waste quarantine and inspection area
- Wheelwash
- Capping part of the existing landfill
- Landscaping
- Installation of flare and flare compound

Development of Cells 15-18 including Liner Specification

In accordance with the conditions of the waste licence Cells 15, 16, 17 and 18 were constructed in 2006. These cells were developed with a very high specification of basal liner. The basal liner included the following elements (from top down):

- Drainage/protection layer (500 mm of stone on floor and stone/geocomposite on side slopes) on
- Protective geotextiles on
- 2.5mm fully welded HDPE Liner on
- Geocomposite leak detection layer on
- 2.5mm fully welded HDPE Liner on
- 500mm of bentonite enhanced sand (BES) with a maximum permeability of 1 x 10^{-11} m/s


M9 Junction 6
Phase 3 Landfill
Cells 15 & 16
Intermediate cap
(as of October 2014)
Phase 3 Landfill
Cell 18
Empty Cell (as of October 2014)
Storm Water
Settling Pond
Discharge
to Powerstown
stream
Phase 2 Landfill
Cells 1 - 13
(Closed & Capped)
CELL 15
CELL 16
CELL 18
CELL 17
Buffer Zone
(Farm Land)
Old Weighbridge
Old Flare
Salt Barn
Leachate Lagoon
Site Boundary
Access roadway
to S.W Pond
10m x 10m Plant
Refuelling Area.
Haul Road to Tiphead
E 271000
N 168800
Wheel Bath
2.4m High Security
Fence.
Flare
Compound
Green Waste
Holding Slabs
Waste Inspection/
Quarantine Slabs
Access roadway
Leachate Tank
Farm
Existing
Chainlink Fence
to be retained
Civic
Amenity Area
Weighbridge hut &
2 no. Weighbridges
Phase 1 Landfill
(Closed & Capped)
Administration Building
Site Entrance
Site Notice
2.4m High Security
Fence.
Phase 3 Landfill
Cell 17
Active Area (as of October 2014)
Pond
Gravel Pit
Liable to Flooding
RIVER BARROW
Sand&Gravel
Scale 1:2000

Rev.	Drawn	Chk'd	App'd	Rev Origin / Date	Description
A				Cork 20.11.14	ISSUE FOR LICENCE REVIEW

Revision History A

Name of Client

CARLOW COUNTY COUNCIL

Name of Job

POWERSTOWN LANDFILL
IE LICENCE REVIEW

Title of Drawing

EXISTING SITE LAYOUT

Scales Used: A1 1:2000 A3 1:4000

This Drawing was printed to A1-

Dwg. No. LW14-120-02-001

Rev. A

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ORIGINAL DRAWING SIZE A1 - (841 x 594)

4.1.2 Existing Operations

Powerstown Landfill and Recycling Centre operates as a landfill and civic amenity in accordance with the conditions of Industrial Emissions Licence Register No W0025-03.

Cells 15 – 18 were constructed under a single construction contract in 2005/2006. This generated a void space of approximately 240,000 m^3. When the cells were fully constructed and tested, CCC proceeded to place waste in Cells 15 and 16. A portion of the waste filled in Cells 15 and 16 has been temporarily capped and will in time receive a permanent landfill cap in accordance with the requirements of the waste licence.

At time of writing, October 2014, Cell 17 has been active since September 2012. No waste has been placed in Cell 18.

4.1.3 Plant

Mobile Items of Plant

The existing facility has several items of plant which are required to operate the facility effectively. These items of plant include for example:

- 1 no 360° tracked excavator
- 37 t compactor
- 1 no tractor and trailer
- 1 no forklift

From time to time additional items of plant are brought to site to operate and maintain the facility. These items of plant include, for example, road sweepers, grass mowing equipment, mini diggers, and water tanker/bowsers. A leachate tanker (road going truck) also visits site on a daily basis to remove leachate from the site.

When landfill capping works are being carried out as required by the waste licence, construction plant will be brought to site by the contractor responsible for the works.

Fixed Items of Plant

Fixed items of plant on site include:

- 3 no. weighbridges, one at old entrance, 2 at new existing entrance
- 2 no. landfill gas flares and associated equipment, an old decommissioned flare and the existing operational enclosed flare.

4.1.4 Method and Processes/Unit Operations

Recycling Centre – Existing Operations

The recycling centre at Powerstown serves the general public. It offers a wide range of recycling/recovery facilities in accordance with the waste licence for the facility. Table 4.1 below details the tonnages of waste accepted at the recycling centre from 2006 to 2013 (excluding the re-use of clay and rubble on-site for construction activities).

Table 4.1: Tonnages accepted at the recycling centre

Year	Materials Accepted (tonnes)
2006	896
2007	1,040
2008	1,215
2009	1,408
2010	1,736
2011	1,533
2012	1,262
2013	1,146

The recycling centre is operated and managed by CCC. In April 2011, the South East Waste Management Region (of which CCC was part of) entered into a regional contract with a private waste contractor for the provision and emptying of receptacles at all recycling centres in the region. This contract is still operational.

Under this contract, the contractor is responsible for the collection of the bulk of material with the exception of 4 waste streams which are contracted out to 4 specialist collectors:

- Waste Electrical and Electronic Equipment (WEEE) & batteries
- brown waste
- polystyrene
- fluorescent light bulbs
- glass bottles

Textile collection is not subject to a contract. They are collected by various charities.

Description of Existing Landfilling Operations

Landfilling at Powerstown is carried out in accordance with the conditions of the Industrial Emissions Licence Register No W0025-03. Waste enters the facility in a variety of vehicles including refuse collection vehicles (RCVs), heavy goods vehicles (HGVs), trucks carrying skips and smaller trucks/trailers.

Waste is inspected and accepted at the facility in accordance with written waste acceptance procedures which have been approved by the EPA. These are included in Appendix D.1 as part of the EMS.

Typically the landfilling operations on site involve the following:

- Waste is inspected/accepted in accordance with requirement of the licence. All loads are passed over the weighbridge on site and recorded appropriately.
- In accordance with written procedures waste may be sent to the dedicated waste inspection and/or quarantine area on site for further inspection and/or quarantine.
- If suitable, waste is directed to the active face of the landfill and tipped. The location of the active face moves as the waste is placed. When waste is tipped the vehicle/truck moves off and is weighed again over the weighbridge. Vehicles pass over a wheelwash when required or when directed by site personnel.
- Waste is placed and compacted in a systematic planned manner at the active waste face using special waste compactors and/or bull dozers.
- At the end of each day the waste receives a 'daily cover' of soil (or proprietary biodegradable roll out cover) to prevent windblown litter, bird scavenging and malodours.

- When waste has reached predetermined levels/contours a temporary soil cap (generally between 300 mm and 500 mm deep) is placed over the waste.
- A permanent landfill cap is later constructed in accordance with the requirements of the licence.

Table 4.2 overleaf shows the quantity of waste landfilled. At the end of 2013, approximately 800,000 t of waste had been landfilled at the facility over its lifetime.

Table 4.2: Tonnages Landfilled at the Facility

Year	Landfilled (tonnes)
1977-2005	~587,364
2006	38,091
2007	43,130
2008	36,177
2009	21,684
2010	13,697
2011	10,145
2012	5,665*
2013	22,314
Jan to Jun 2014	21,423

*The facility did not accept waste material for landfilling for several months in 2012.

Biodegradable Municipal Waste (BMW)

In April 2010, the EPA initiated reviews of all landfill waste licences to restrict the quantity of biodegradable municipal waste going to landfill. As a result of these reviews, limits and dates have been set for the acceptance of BMW at Powerstown as per Condition 5.6.1 of IE licence W0025-03.

A total of 10,505 tonnes of BMW was landfilled at Powerstown in 2013, which represented 55.15% of the total municipal solid waste accepted.

CCC submitted revised waste acceptance procedures to the EPA in September 2010 setting out steps to minimise the quantities of biodegradable waste being accepted at the site.

Existing Surface Water Drainage Infrastructure

Surface water is generated on site from paved areas, handstanding areas, roofs of buildings, empty landfill cells and run off from other areas (grassed/ungreased). Surface water arising from the site is directed, using open swales, towards the surface water settling pond at the north of the site.

The floor level of the surface water pond is approximately 1 m below the outlet level. This allows for suspended solids and grit to settle in the pond. The rate of discharge from the pond is controlled by a floating arm device at maximum rate of 15.9 L/sec. The average flow rate is 8 L /sec The outflow from the pond discharges to the Powerstown stream which in turn discharges to the River Barrow.

The pond inlet is equipped with instrumentation to detect TOC, conductivity and pH. An actuated penstock/valve is located on the outlet from the pond which will shut should predetermined levels of pH, conductivity or TOC be exceeded. All of the above instrumentation is connected to the SCADA system on site and is maintained regularly. CCC is seeking to amend the monitoring frequency of TOC, pH and conductivity at the inlet to the pond as part of this licence review. Please refer to Attachment B.13.

There is further detail on the surface water management system in Chapter 12 of the accompanying EIS.

Existing Landfill Gas Infrastructure

Landfill gas (LFG) is extracted from the waste using a combination of vertical and horizontal gas wells. Gas wells are constructed from the cell floor upwards as waste is placed in each cell. Further gas wells are installed as part of the landfill capping works by drilling into the waste body upon reaching a predetermined filling height. This drilling is typically carried out by a specialist drilling subcontractor. Gas extraction commences from each cell once sufficient waste has been placed to prevent air infiltration into the gas extraction system.

A vacuum pump (known as a 'blower') is located at the gas flare compound. This blower develops a negative pressure gradient within the gas collection pipe work and essentially 'sucks' the gas from the landfill though the pipe work.

At Powerstown landfill, gas is flared off in an enclosed landfill gas flare in accordance with the requirements of the waste licence. The flare has a capacity of 1,200 m^3/hour. There is a second flare onsite near the old entrance to the site however, this flare has been decommissioned. Landfill gas management protocols are included in the Odour Management Plan (latest revision to EPA, 19-02-14). The OMP is included in Attachment F.

Leachate Infrastructure

Leachate is generated on-site from the waste mass itself and also from potential runoff from the waste quarantine/inspection area. Leachate is directed from these areas to either the covered leachate lagoon or to a leachate holding tank located near the recycling centre.

Leachate is collected from the leachate lagoon and leachate holding tank at Powerstown Landfill and is transported off site using road going tankers. Leachate is brought for treatment to Mortarstown WWTP. Powerstown has also used Tullow and Bagnelstown WWTPs in the past.

The frequency of leachate truck movements depends on the weather and time of year. Typically, leachate tankering takes place 3 days a week with approximately 6 loads a day being removed. Table 4.3 below shows the amount of leachate removed off site from 2006 to 2013. There is a Leachate Handling Procedure for the site. A Leachate Management Plan has been formulated in support of this licence review application. Both the Leachate Management Plan and the Leachate Handling Procedure are included in Appendix D.1.

Table 4.3: Volume of leachate tankered off site 2006 to 2013

Leachate (m^3)							
2006	2007	2008	2009	2010	2011	2012	2013
11,467	15,251	14,754.3	13,274	25,194	16,676	13,414	10,607

Existing Road Infrastructure

Powerstown Landfill is located approximately 200 m (on plan) from the M9 Motorway. The entrance to Powerstown Landfill is located approximately 1,400 m from Junction No 6 on the M9.

The access to the site is off a local road – L3045 which is in turn located off the R448 (part of the old N9). Approximately 500m of the L3045 from the site entrance to the R448/old N9 was upgraded in circa 2006 in line with the requirement of the An Bord Pleanála planning conditions relating to the landfill expansion (dated 21 January 2004).

All vehicles access the site via the main site entrance. Vehicles typically approach the site from the R448 located to the west of the facility.

4.1.5 Emissions to Environment, Abatement, Treatment and Recovery Systems

Table 4.4 outlines the emissions from facility operations and provides a brief description of abatement treatment and recovery systems associated with it.

Table 4.4: Emissions, Abatement, Treatment and Recovery Systems

Emission Origin	Control / Abatement of Emission
Landfill Gas Flare Emissions (LFGF1)	Flaring (landfill gas collection, Odour Management Plan)
Surface water pond (SWLO)	Surface Water Management System. Exceedance of trigger at inlet, causes shut down at outlet.

4.1.6 Operational Procedures

The following operational procedures are in place at Powerstown Landfill Facility and Recycling Centre:

- Odour Management Plan (includes landfill gas management)
- Waste Acceptance Procedures
- Leachate Handling Procedures
- Leachate Management Plan
- Environmental Management System
- Environmental monitoring of surface water, leachate, groundwater, landfill gas, noise, dust, VOCs, odour, flare emissions and meteorological conditions
- Weekly site walkover to inspect infrastructure
- Daily odour patrols

4.2 Attachment D.2.1 Wastes to be Accepted

Table 4.5 is a copy of Table D.2.(i) from the licence application form. It shows the type and quantities of waste that are to be accepted at the facility.

Table 4.5: Table D.2.(i) Wastes Acceptance (Type and Quantities)

EWC Code	Waste description (the actual description of the waste, not the text accompanying the EWC code)	Tonnes per annum (existing)	Tonnes per annum (proposed)
Recycling Centre			
13 02 05	waste oils at recycling centre		
15 01 02	plastics (packaging including polystyrene)		
15 01 04	metallic packaging, aluminium and steel cans/tins		
15 01 05	composite packaging, e.g. tetrapak		
15 01 07	glass bottles and jars at civic amenity		
16 01 03	tyre		
16 01 07	oil filters at civic amenity		
16 06 01	lead batteries at recycling centre		
16 06 04	alkaline batteries at recycling centre		
17 08 02	gypsum C&D at recycling centre		
20 01 01	paper and cardboard at recycling centre		
20 01 02	flat glass at recycling centre		
20 01 08	separately collected organic waste		
20 01 11	textiles at recycling centre		
20 01 21	fluorescent tubes at recycling centre		
20 01 25	edible waste oils at recycling centre		
20 01 27	waste paint at recycling centre		
20 01 35	WEEE containing hazardous substance at recycling centre		
20 01 36	WEEE non- hazardous at recycling centre		
20 01 38	waste wood at recycling centre		
20 01 40	waste metals at recycling centre		
20 02 01	green waste at recycling centre		
20 01 23	waste white goods at recycling centre		
Sub-total at recycling centre		**1,159**	**1,350**
Cover and Restoration Materials			
10 01 01	bottom ash	2,731	2500
17 01 07	rubble for internal roads	3,786	3,500
17 05 04	clay, soil and stones for cover material	7,452	10,000
17 09 04	construction and demolition wastes		
19 05 01	Compost		
19 12 09	Inorganic fines from the mechanical treatment of wastes, minerals, e.g. soil and stones		
20 02 02	soil and stone from garden and parks	1,073	1,000
17 02 01	Wood		500
20 01 38	Wood		400
Sub-total restoration materials		**15,042**	**18,000**

EWC Code	Waste description (the actual description of the waste, not the text accompanying the EWC code)	Tonnes per annum (existing)	Tonnes per annum (proposed)
Recycling Centre			
Waste materials for disposal			
19 05 03	off-spec compost		
19 08 01	waste from wastewater plants - screenings (industrial non-hazardous)	920	47,150
19 08 02	waste from wastewater plants -from desanding (industrial non-hazardous)		
19 09 02	sludge's from water treatment (industrial non-hazardous)		
19 12 10	refuse derived fuel		
19 12 12	wastes from the mechanical treatment of waste, i.e. tromelled MSW		
20 02 01	green waste	21,113	
20 02 03	non-biodegradable garden and park waste		
20 03 01	mixed MSW		
20 03 02	wastes from markets		
20 03 03	street sweepings		
20 03 07	bulky waste		
17 01 07	Concrete and bricks		1,000
19 08 05	treated sewage sludge	280	500
Sub-total materials for deposition		**22,313**	**48,650**
Total Waste Acceptance		**23,472**	**50,000**

Note 1: 2010, saw the highest tonnages collected at the recycling centre. Those tonnages are used as a guide to estimate future tonnages along with other indicators.

4.3 Attachment D.2.2 Waste Acceptance Procedures

The waste acceptance procedures for Powerstown Landfill and Recycling Centre are regularly updated. The latest update was submitted to the Agency as part of the update of the EMS on 20th February 2014. The EMS is included in Appendix C.2.

4.4 Attachment D.2.3 Waste and Material Outputs from Waste Activities

There is no waste treatment at Powerstown Landfill and Recycling Centre. Leachate is generated on site as described in Section 4.1.4 above. 10,607 tonnes of leachate was transferred off-site in 2013, please refer to Table 4.3 for historic leachate generation. A water balance was carried out and the estimated annual leachate generation is shown in Table 4.6. The EWC code for leachate is 19 07 03. A water balance was carried out for both tonnage intakes of 40,000 tonnes per annum and 50,000 tonnes per annum. The volume of leachate produced varies in the next 4 years but averages as equal. The leachate balance differs to that in Section 3.4.5 of the EIS because actual waste inputs in 2012 and 2013 were much lower than the maximum licence limit. Therefore, intermediate and final capping dates have been pushed out.

Table 4.6: Estimated Annual Leachate Generation

Year	Total Leachate @ intake of 50,000t/yr
2014	10,600
2015	10,600
2016	10,600
2017	8170
2018	8170
2019	2,428
2020	2,428
2021	2,428
2022	2,428
2023	2,428
Total 2014-2023	**60,280**

4.5 Attachment D.2.4 Principles of Self-sufficiency and Proximity

Powerstown Landfill is the only active landfill in the Southern Region. All of the waste currently being accepted at the facility is generated in the Southern Region. The majority of waste currently being landfilled in Powerstown is mixed municipal waste, similar in composition to bulky waste with the recoverable fractions removed. It is an operational facility and this review application seeks to increase the maximum allowable tonnage by 10,000 tonnes per annum. There remains one empty cell and once that is filled, the waste will be allowed to settle before final capping and restoration of the site. As witnessed by the increased export of MSW for recovery abroad, and the small number of operational landfills in Ireland, there is a requirement, certainly in the short term for landfill capacity. By increasing the annual capacity of Powerstown, it will contribute in the short term to the achievement of self-sufficiency for Ireland and satisfies the proximity principle.

The latest waste management policy document was published by the Department of the Environment, Community and Local Government (DoECLG) national waste management policy document "A Resource Opportunity" in July 2012. The key objective of this policy document is the focussed intention to develop a sustainable and self-sufficient approach to the management of waste in accordance with the proximity principle.

As a result of this policy document, the waste management regions in Ireland were re-organised from the previous 10 waste management regions to 3 larger consolidated regions. CCC was in the South East Waste Management Region and is now part of the larger Southern Region. The process for the preparation of the waste management plans for the 3 regions has commenced. A key objective of those management plans is to ensure a sufficiency of waste management infrastructure within the state to manage municipal waste.

The reduction in number of the regions will allow waste management to be viewed in the context of the whole state, in a cohesive manner, rather than individual, distinct regions. It is understood that draft waste management plans for each region will be prepared by Q3/Q4 2014, so that public consultation can be undertaken.

As of mid-2014, there were 5 no. active landfill facilities (accepting waste) in the country, these being:

- Knockharley Landfill (albeit not accepting waste at time of writing), Meath
- Drehid Landfill, Kildare
- Ballynagran Landfill, Wicklow
- Powerstown Landfill, Carlow
- Rathroeen Landfill, Donegal
- Scotch Corner Landfill, Monaghan

Powerstown is the only operational landfill in the Southern Region.

The most recent data from the NTFSO (2013) indicates that 247,000 t of recovered fuel was exported to the Continent, and 110,000 t of unsorted MSW (20 03 01) was exported for incineration. The EU proximity principle (Article 16 of the WFD 98/2008/EC) applies to waste destined for disposal and for mixed (unsorted) municipal waste destined for recovery. The export of 110,000 t MSW contravenes the proximity principle. The most likely reason for this activity is that there is not sufficient treatment or disposal capacity in the Irish market and in addition there are economic forces driving this. Additional short term landfill capacity is required until alternative options are available in Ireland.

4.6 Attachment D.3.1 Class of Landfill

Table 4.7 is a copy of Table D.3(i) from the application form, included in this attachment as required. The class of landfill is a non-hazardous landfill.

Table 4.7: Table D.3(i) Class of landfill

(a) landfill for hazardous waste	☐
(b) landfill for non-hazardous waste	☒
(c) landfill for inert waste	☐

4.7 Attachment D.3.2 Scale of Waste Deposition

Table 4.8 is a copy of Table D.3(ii) from the application form, included in this attachment as required. It shows the volume and tonnage of waste deposition to date, and the expected total tonnage and volume at maximum void.

Table 4.8: Table D.3(ii) Scale of waste deposition at the landfill

Total quantity of waste to be deposited at the landfill	Tonnes*	Void in cubic metres (m^3)
(a) Waste deposited to date	800,000	680,000
(b) Total waste to be deposited over the lifetime of the development (including deposited to date)	962,270	817,929

* Explain any conversion/density factors used in calculating the tonnage from the void, or vice versa.
Approximately 800,000 tonnes placed 1975 to 2013. The remaining void at end of 2013, is estimated to be 162,270 tonnes.
Current density factors are estimated to be approximately 0.85 tonnes per cubic meter.

4.8 Attachment D.3.3 Liner System

This licence review application is in respect of an increase in the maximum allowable tonnage per annum. There is no proposed development. The landfill cells are constructed. The last phase of development on the site was Phase 3. It consisted of the development of 4 no. landfill cells and ancillary infrastructure. Details of the liner system for Phase 3, Cells 15-18 was included in the licence review application of licence no. W0025-01 in 2003 which was issued in 2005. A summary of the development and operational history of the site is included in Attachment D.1 (Section 4.1.1).

In accordance with the conditions of the waste licence Cells 15, 16, 17 and 18 were constructed in 2006. These cells were developed with a very high specification of basal liner. The basal liner included the following elements (from top down):

- Drainage/protection layer (500 mm of stone on floor and stone/geocomposite on side slopes) on
- Protective geotextiles on
- 2.5mm fully welded HDPE Liner on
- Geocomposite leak detection layer on
- 2.5mm fully welded HDPE Liner on
- 500mm of bentonite enhanced sand (BES) with a maximum permeability of 1 x 10^{-11} m/s

The lining system was approved by the EPA.

Table 4.9 is a copy of Table D.3(iii) from the application form, included in this attachment as required.

Table 4.9: Table D.3(iii) Liner System

	y/n
Provide information in Attachment D.3 to fulfil Annex 1 of the Landfill Directive	Y
Is the type of liner system specified?	Y
Has a Quality Control Plan been specified?	Y
Has a Quality Assurance Plan been specified?	Y
Has independent, third-party supervision, testing and controls been specified?	Y
Have basal gradients for all cells and access ramps to the cells been designed?	Y
Has a leak detection system been specified?	Y

4.9 Attachment D.3.4 Leachate Management

This licence review application is in respect of an increase in the maximum allowable tonnage per annum. There is no proposed development. There is a Leachate Management Plan (Appendix D.1). There is a summary of the leachate management system in Attachment D.1 (Section 4.1.4). Table 4.10 is a copy of Table D.3(iv) from the application form, included in this attachment as required.

Table 4.10: Table D.3(iv) Leachate Management Arrangements

	y/n
Is there a Leachate Management Plan?	Y
Have annual quantities of leachate been calculated?	Y
Has the total quantity of leachate been calculated?	Y
Has the size of the cells been specified taking account of the water balance calculations?	Y
Has a leachate collection system been specified?	Y
Has a leachate storage system been specified?	Y
Has a system for monitoring the level of leachate in the waste been designed?	Y
Is leachate recirculation proposed/practised?	N
Has leachate treatment on-site been specified?	N
Has leachate removal been specified?	Y

4.10 Attachment D.3.5 Landfill Gas Management

There is a landfill gas management system at Powerstown Landfill and Recycling Centre. There is a summary of the landfill gas management system in Attachment D.1 (Section 4.1.4). The final phase of the landfill gas collection system will be put in place during final capping of Cells 15-18. The design of that system will be submitted to the Agency for approval as part of the Capping SEW. There is an Odour Management Plan for Powerstown Landfill and Recycling Centre. Many elements of that plan relate to landfill gas management. The Odour Management Plan has been approved by the Agency and has been used on site since 2010. It is reviewed annually and any changes are submitted as part of the AER. Table 4.11 is a copy of Table D.3(v)a from the application form, included in this attachment as required.

Table 4.11: Table D.3(v)a. Landfill Gas Management

	y/n
Is there a Landfill Gas Management Plan?	Y
Is there a passive venting system?	N
Does the passive system cover all of the filled area?	N/A
Have gas alarm systems been installed in the site buildings?	Y
Have measures been installed to prevent landfill gas migration (e.g. barriers)?	Y
Has a time-scale been proposed for the installation of landfill gas infrastructure?	Y
Is gas flaring undertaken at the site?	Y

Is there an active (i.e., pumped) landfill gas extraction system?	Y
Does the active system cover all of the filled area?	Y
Is landfill gas used to generate energy at the site?	N
Have emissions from the flarestack and utilisation plant been assessed for source, composition, quantity and level and rate? See section F of the application form for requirements.	Y
Has a maintenance programme for the control system been specified?	Y
Has a condensate removal system been designed?	Y

CCC does not propose any changes to the licence schedule D.7 (monitoring of Landfill Gas Flare). Table D.3(v)b Landfill Gas Monitoring for existing landfill gas flares and utilisation plants in Annex 1 of the licence application will remain as per Schedule D. 7 of licence W0025-03. Monitoring results for 2013 have been included. This table has been copied from the licence application form as required. Some amendments were made to the table as per Note 1 below.

Table D.3(v)b Landfill Gas Monitoring for existing landfill gas flares and utilisation plants

Parameter	Concentration (mg/Nm^3)	Frequency of Analysis	Method of Analysis
Inlet			
Methane (CH_4) % v/v	29	Continuous	Infrared analyser/flame ionisation detector
Carbon dioxide (CO_2) %v/v	30.1	Continuous	Flue gas analyser
Oxygen (O_2) % v/v	2	Continuous	Flue gas analyser
Total Sulphur Note 1	6	Annually	Ion chromatography
Total Chlorine Note 1	5 (Total chloride)	Annually	Ion chromatography
Total Fluorine Note 1	<3 (Total Fluoride)	Annually	Ion Selective Electrode
Outlet			
Volumetric Flow Rate	144.96	Note 2	Pitot
SO_2	32.7	Annually	Flue gas analyser
NOx	67.21	Annually	Flue gas analyser
CO	6.58	Continuous	Flue gas analyser
Particulates	Not Applicable	Not Applicable	Not Applicable
TA Luft Class I, II, III organics	Not Applicable	Not Applicable	Not Applicable

Parameter	Concentration (mg/Nm^3)	Frequency of Analysis	Method of Analysis
Hydrochloric acid	0.2 (Av Hydrogen Chloride)	Annually	Impinger
Hydrogen Fluoride	2.6	Annually	Impinger
TOC Note 1	3.33	Annually	TOC Analyser

Note 1: An additional row has been added to this table as it appeared in the licence application form, as additional parameters are included in the licence.
Note 2: This parameter is not included in the licence, but is monitored continuously.

CCC does not propose any changes to the licence schedule D.2 (monitoring of Landfill Gas). Table D.3.(v)c Landfill Gas Monitoring on Annex 1 of the licence application form will remain as per Schedule D.2 of licence W0025-03. This table has been copied from the licence application form as required.

Table D.3(v)c Landfill Gas Monitoring

Parameter	Proposed Frequency of Analysis		Method of Analysis
	Gas boreholes, vents, wells and perimeter locations	Installation Office	
Methane (CH_4) % v/v	Monthly	Weekly	Infrared/Flame ionisation detector
Carbon Dioxide (CO_2) % v/v	Monthly	Weekly	Infrared/ Flame ionisation detector
Oxygen (O_2) % v/v	Monthly	Weekly	Electrochemical cell
Atmospheric Pressure	Monthly	Weekly	Standard
Temperature	Monthly	Weekly	Standard

Table 4.12 is a copy of Table D.3(v)d from the application form, included in this attachment as required. The information has been taken from the Odour Management Plan (latest revision, 11-02-14), Section 8.

Table 4.12: Table D.3(v)d Landfill Gas Infrastructure

Equipment	Monitoring Frequency	Monitoring Action
Gas Collection System	Weekly As required	Dip liquid levels in condensate pots Dewatering will be carried out as required
	Monthly	Landfill gas field balancing as per OMP. Visual audit of manifolds and wells heads to check to check state of repair
	Annual	Independent audit of gas collection system
Gas Control System	Daily	Visual inspection of flare Check gas quality, flow rate & temperature at flare
	Weekly	Review flare data from SCADA

4.10.1 Estimate of Landfill Gas Volume Generation 2014-2034

An estimate of landfill gas generation for the next 20 years has been made based on existing and predicted quantities and types of waste to landfill using the LandGem modelling tool as developed for the US EPA. It assumes a tonnage allowance of 50,000 tonnes per annum from 2015. The estimate of landfill gas volumes is shown in Table 4.13. When compared with a prediction model a maximum input of 40,000 tonnes per annum until closure, there are only negligible differences in the landfill gas curve. An increase of 10,000 tonnes per annum in 2015 will result in a slightly higher secondary peak in 2016.

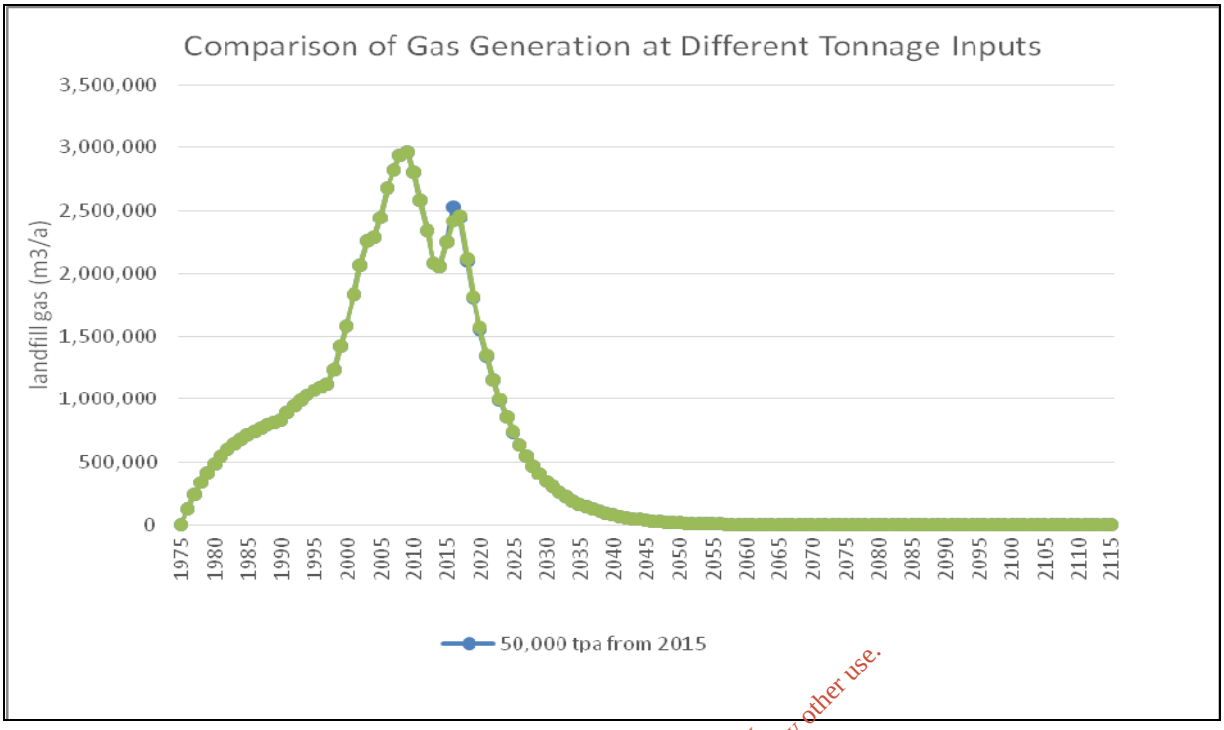
This is shown in Figure 4.1. To put the predicted gas volumes in context, it is estimated that the landfill will produce approximately 290 m^3/hr of landfill gas in 2016 at an intake rate of 50,000 tonnes from 2015. If the intake rate were to remain at a maximum of 40,000 tonnes per annum, the model predicts a generation rate of 276 m^3/hr.

The difference in landfill gas generation for the different tonnages is very low for two reasons. Landfilling rates have been low over the past 5 years and the proposed increase in tonnage is only for one year as if the landfill was to accept 50,000 tonnes in 2015, final contours will be achieved during 2016.

Table 4.13: Predicted Landfill Gas Generation 2014-2034

Year	LFG (m^3/yr)	Year	LFG (m^3/yr)	Year	LFG (m^3/yr)
1975	0	1995	1,066,873	2015	2,250,061
1976	128,832	1996	1,096,734	2016	2,533,088
1977	239,718	1997	1,122,435	2017	2,442,684
1978	335,159	1998	1,233,784	2018	2,102,437
1979	417,305	1999	1,418,862	2019	1,809,584
1980	488,009	2000	1,578,161	2020	1,557,524
1981	548,865	2001	1,840,189	2021	1,340,573
1982	601,244	2002	2,065,719	2022	1,153,842
1983	646,327	2003	2,259,835	2023	993,121
1984	685,130	2004	2,282,728	2024	854,787
1985	718,529	2005	2,440,162	2025	735,722
1986	747,275	2006	2,684,899	2026	633,242
1987	772,017	2007	2,819,536	2027	545,036
1988	793,313	2008	2,941,288	2028	469,117
1989	811,642	2009	2,963,140	2029	403,773
1990	827,418	2010	2,809,063	2030	347,531
1991	890,633	2011	2,581,173	2031	299,122
1992	945,042	2012	2,342,654	2032	257,457
1993	991,873	2013	2,083,918	2033	221,595
1994	1,032,180	2014	2,059,825	2034	190,729

Figure 4.1: Landfill Gas Prediction Model Comparison



4.11 Attachment D.3.6 Capping System

The licence review application is in respect of an increase in maximum allowable tonnage. There is no new proposed development. There is a final cap on Phase 1 and Phase 2 of the landfill. Details of those capping specifications are summarised in Attachment D.1 (Section 4.1.1 Development and Operational History of the Site). Filling is currently taking place in Phase 3. Capping will commence once the void has been filled and settlement has been achieved. The detailed design of the Phase 3 capping works will take place prior to the procurement of a contractor and a Capping SEW will be submitted to the Agency for approval. The specification of the cap will likely be the same as that for the Phase 2 cap (or as specified in the revised licence):

- 150 mm of topsoil on
- 850 mm of subsoil on
- Drainage geocomposite on
- 1 mm fully welded LLDPE geomembrane on
- Gas collection geocomposite

The cap will include a leachate collection system, a landfill gas collection system and a surface water collection system. CCC has sought and obtained approval for the use of ash, woodchip and C&D fines as daily cover material. A low grade plastic overlain by clay is used as intermediate cover. Cell 15 and 16 in Phase 3 have an intermediate cap. Table 4.14 is a copy of Table D.3(vi) from the application form, included in this attachment as required.

Table 4.14: Table D.3(vi) Capping System

	y/n
Has the daily cover been specified?	Y
Has the intermediate cover been specified?	N
Has the temporary capping been specified?	N
Has the Capping System been designed and does it meet the requirements of the Landfill Directive Annex 1 (3.3)?	N/A
Does the Capping System include a flexible membrane liner?	N/A
Have all capping materials been specified?	N/A
Has a Method Statement for construction been produced?	N/A
Has a Quality Control Plan been produced?	N/A
Has a Quality Assurance Plan been produced?	N/A
Has a programme for monitoring landfill stability been developed?	Y
Has a programme for monitoring landfill settlement been developed?	Y

4.12 Attachment D.3.7 Meteorological Data

Meteorological data is and will continue to be measured in accordance with Schedule D.6 of licence no. W0025-03. The location of the meteorological mast is shown on Drawing LW14-120-02-002 Rev A (Attachment E.6).

4.13 Attachment D.3.8 Cost of the Landfill of Waste

CCC has submitted an ELRA, a CRAMP and a Section 53a report to the Agency in August and September 2014. The CRAMP is included in Appendix K, it was recently approved by the EPA. The Agency requested a revision of the ELRA, this has been submitted to the Agency. It is included in Appendix K.

5 ATTACHMENT E – EMISSIONS

5.1 Attachment E.1 Emissions to Atmosphere

There is one point source to atmosphere at Powerstown Landfill and Recycling Centre at the landfill gas flare stack. The landfill gas flare has been in place on site since 2008 and previous to that, there was an older flare model on site. Monitoring of the flare emissions to atmosphere is carried out in compliance with the licence, Schedule D.7. (Please refer to Table 5.2 of this attachment.) The results are compared to the limits set by the licence, Schedule C.5. There is no proposed development on site and the proposed changes to tonnages will not impact on predicted landfill gas generation as discussed in Attachment D.3.5. CCC does not propose any changes to the monitoring of the landfill gas flare (LFGF1). Monitoring results 2008 -2013 indicate that the flare is within the limits set the EPA. Results for stack emissions monitoring carried out in 2013 are included in Table E.1(iii) of the application form. Attachment B.13 includes a comparison of monitoring of emissions to BAT. There is one appropriate emission limit of 150 mg/m^3 of NOx. This limit is also included in the licence and monitoring shows the flare at Powerstown to be within that limit.

Potential fugitive emissions to atmosphere are dust, odour, landfill gas and VOCs. Monitoring of fugitive emissions is carried out in accordance with the conditions and schedules of the licence as listed in Table 5.1.

Table 5.1: Potential Fugitive Emissions Monitoring

Potential Emission	Schedule / Condition		
	Location	Frequency	Limit
Dust	D.1	D.3.1	C.3
Odour	D.1	D.10	Odour present
Landfill Gas	D.1	D.2.1	C.2
VOCs	Landfill surface	D.3.1	8.14.6

Attachment I.1 is a discussion of the impact of emissions to atmosphere.

5.2 Attachment E.2 Emissions to Surface Waters

Clean surface water is collected on site by the surface water management system and is directed to the surface water attenuation pond. The attenuation pond discharges to Powerstown Stream which runs along the Northern boundary of the site. There is no proposed development, and as such the management of the surface water system will not be altered by this licence review. The emissions point SWLO will continue to be monitored as per Schedule D.5.1 of the licence (please refer to Table 5.1 of this attachment) and will be subject to the limits as set out in Schedule C.4.

A comparison of the surface water monitoring results with the limits set by BAT was carried out in Attachment B.13. It shows that the emission at SWLO is achieving a Good to High status in accordance with the Environmental Objectives (Surface Water) Regulations, 2009 (S.I. No. 272 of 2009).

Attachment I.2 is a discussion of the impact of emissions to surface water.

5.3 Attachment E.3 Emissions to Sewer

There are no emissions to sewer from Powerstown Landfill and Recycling Facility.

5.4 Attachment E.4 Emissions to Ground

There are no direct emissions to ground from Powerstown Landfill and Recycling Facility. However due to the nature of landfilling, groundwater is monitored to determine any potential emissions. There are 12 groundwater wells (2 upgradient, 2 background and 8 downgradient). Monitoring is carried out in compliance with Schedule D.5.1 of the licence.

5.5 Attachment E.5 Noise Emissions

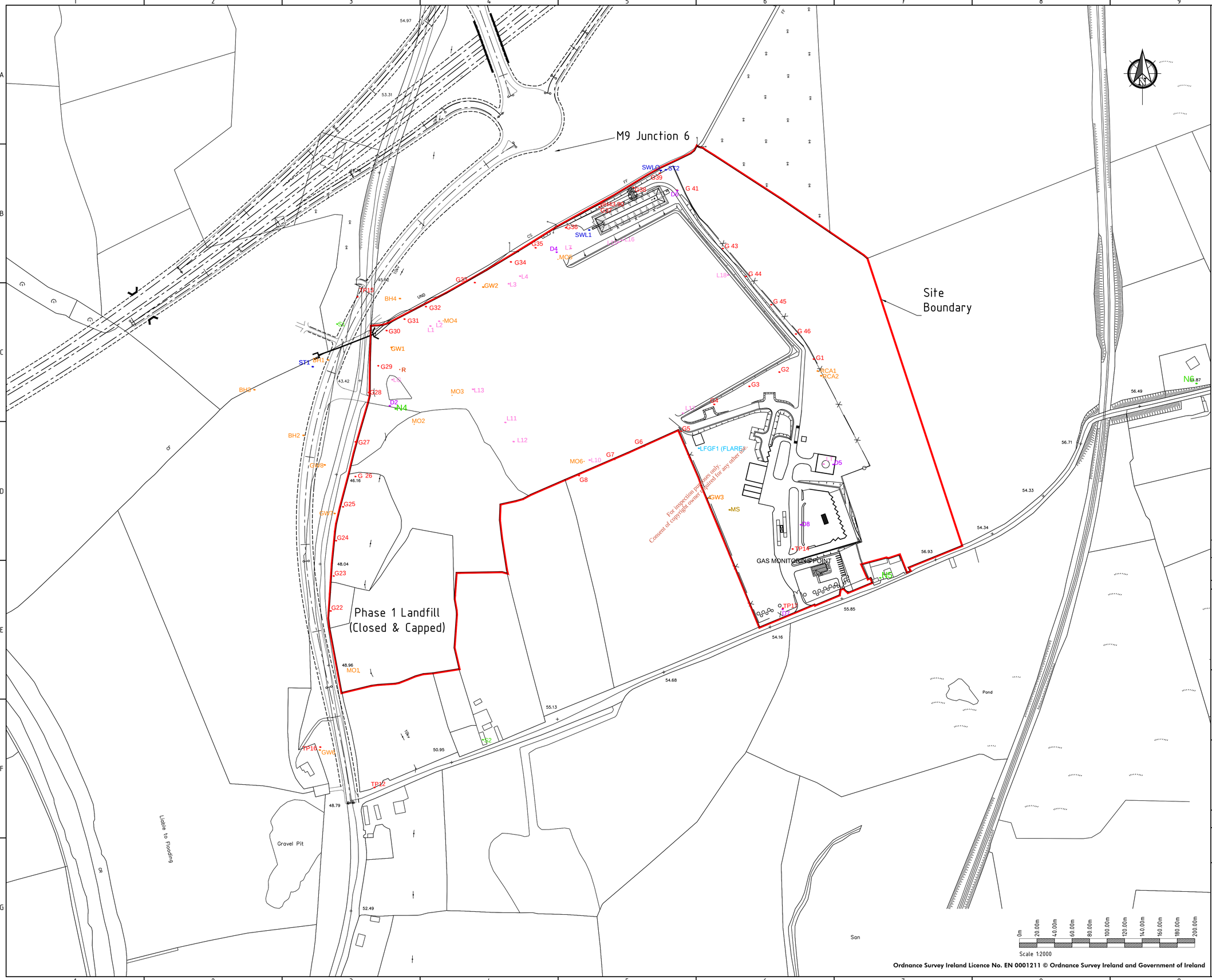
There are no specific noise sources on site. Monitoring of noise levels is carried out at points around the facility and at noise sensitive locations in accordance with Schedule D.4.1 and the limits set in Schedule C.1.

5.6 Attachment E.6 Tabular Data on Emissions Points

There are two point source emissions points on site, one for the discharge of surface water to Powerstown Stream and one for the emissions to atmosphere from the landfill gas flare. These are tabulated in Table 5.2, the table has also been copied to CD Rom. All other monitoring points on site are shown in Table 6.1 in Attachment F.3. All emission points and monitoring points are shown on Drawing No. LW14-120-02-002 Rev A in this attachment.

Table 5.2: Tabular Data on Emissions Points

Point Code	Point Type	Easting	Northing	Verified	Emission
SWLO	Surface Emission	270894	169094	N	Ref Table D.5.1; (Ammoniacal N, COD, BOD, Cl, TSS, metals/non-metals, Hg, S04, Alkalinity, Total P, TON, DO, Temperature, Biological Assessment, and continuous TOC, pH and EC
LFGF1	Atmospheric	270937	168777	N	Ref Table D.7 of licence (CH_4, CO_2, S, Cl, Fl, CO, NOx, SO_2, Particulates, TOC, HCL, HF, Temp, O2)



Note:
1. This Drawing Is Based On Dwg 2005-120-01-012 Proposed Final Contours As Referenced In Condition 4.3.1 Of Waste License Register No 25-3

2. LFG1 and SWL0 are both emission points. The remaining locations are all monitoring points.

LEGEND

TP & G = PERIMETER GAS WELLS

SW = SURFACE WATER

LFG1 = LANDFILL GAS FLARE

GW+RCA+BH = GROUNDWATER WELLS

N1+S1 = NOISE MONITORING LOCATIONS

D1 - D6 = DUST MONITORING LOCATIONS

L1 - L17 = LEACHATE MONITORING LOCATIONS

MS = MET STATION

Rev.	Drawn	Chkd	App'd	Date	Description
A	CW		DR	20.11.14	ISSUE FOR LICENCE REVIEW
			DG	Cork	Rev Origin

Revision History: A

Name of Client

CARLOW COUNTY COUNCIL

Name of Job

POWERSTOWN LANDFILL
IE LICENCE REVIEW

Title of Drawing

ENVIRONMENTAL MONITORING LOCATIONS
&
EMISSION POINTS

Scales Used	This Drawing was printed to
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Dwg. No.	Rev.
LW14-120-02-002	A

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SCALE - VERTICAL 1 2 5 10 20 50 100

SCALE HORIZ. 1 2 5 10 20 50 100

ORIGINAL DRAWING SIZE A1 - (841 x 594)

6 ATTACHMENT F – CONTROL & MONITORING

The control and monitoring of the landfill is as was described in the last licence application. There are no proposed changes to that system as there is no development proposed on foot of this application. There have been some updates and improvements to the control and monitoring system, all of which have been submitted and approved by the Agency. The treatment, abatement and control systems on site are summarised in the following section.

6.1 Attachment F.1 Treatment, Abatement and Control Systems

This attachment describes the technology and other techniques for preventing, or where this is not possible, reducing emissions from the facility. It describes the measures to be taken under abnormal conditions, including start-up, shutdowns, leaks, malfunctions, breakdowns and momentary stoppages. It describes the measures taken to prevent or eliminate emissions and/or avoid pollution.

There is an Emergency Response Plan (ERP) for the site which includes the following emergency response procedures (ERP):

- ERP - 001 Response to Electrical Power Failure.
- ERP - 002 Response to Mechanical Plant Failure
- ERP - 003 Response to Fire
- ERP - 004 Response to Explosion
- ERP - 005 Response to Adverse Weather Conditions or Industrial Disputes
- ERP - 006 Procedure for Dealing with Hot or Burning Loads
- ERP - 007 Exposure to Hazardous Substances
- ERP - 008 Response to Landfill Gas
- ERP - 009 Response to Accidents and Notifiable Injury
- ERP - 010 Procedure for Dealing with Uncontained Spillage/Leakage
- ERP - 011 Flooding
- ERP - 012 Exceedance of Emission Limit Values (ELV)
- ERP - 013 Response to Gas Flare Equipment Cut-Out
- ERP - 014 Response to Potential Slope Collapse

These procedures are activated as a result of abnormal conditions, shut-downs, malfunctions, breakdowns, accidents and emergencies. They define the steps to be taken to mitigate negative impacts as a result of abnormal conditions. There is an emergency back-up generator on site that provides continuous power to the site for the duration of a power supply interruption from the Electricity Supply Board. The ERP is included in Appendix J.

6.1.1 Barrier System

The most significant abatement systems on site are the basal lining and capping systems. They are detailed in Attachment D.1. Their function is to contain leachate and landfill gas generated by the waste body, to minimise rainfall percolation and to facilitate control for appropriate treatment. No further development is planned on foot of this licence review. All cells have been constructed and Phase 3 capping will be completed once settlement has been achieved.

6.1.2 Landfill Gas Management and Treatment System

Attachment D.3.5 includes a section on estimates of landfill gas generation. Landfill gas prediction modelling was carried out to compare differences in the predicted landfill gas generation at 40,000 tonnes per annum and at 50,000 tonnes per annum. The difference is negligible in 2016. Therefore no changes to the existing landfill gas management and treatment system are proposed or necessary on foot of this licence review. The intensification of landfilling will not impact on the control or treatment of landfill gas. Management of landfill gas is necessary to prevent greenhouse gas emissions, prevent fires and to manage odour on site. A new enclosed landfill gas flare was installed on site and commenced operations in the 3rd quarter of 2008.

Details of the landfill gas captured and treated are updated annually to the EPA as part of the AER, PRTR and landfill gas survey.

The nature of a landfill gas collection system is such that it requires constant maintenance. CCC conducts regular inspections, de-watering and monitoring of the system to keep the system running as efficiently as possible. However, where it is not possible to maintain suction, in the event of a power failure, landfill gas will be retained in the waste body. There is a flare maintenance and servicing contract in place with AFS Ltd., who provide a service technician within a maximum of 3 working days. There would be potential impacts of odour and surface emissions from the uncapped areas. In the event that the enclosed gas flare was out of operation for any considerable length of time resulting in negative impacts, a temporary system could be set up using the existing open flare on site.

6.1.3 Surface Water Management

The surface water and leachate management systems are as described in Attachment D.1. There are no proposed changes to the system on foot of this licence review. The surface water management system is an abatement and control system. It directs clean surface water to an attenuation pond which is continuously monitored, any exceedance of predetermined limits causes the closure of the automated valve on the outlet to Powerstown Stream. As stated in Chapter 12 of the EIS, a full hydrological review was carried out for the EIS. The surface water attenuation pond is adequate to attenuate the surface water run-off from the site.

In the event that the continuous monitoring system at the inlet of the pond shut down, CCC will receive instant feedback via the SCADA and can implement a non-continuous manual sampling strategy. There are daily visual inspections of the pond. In the event of a major accident on site, such as fire, where the surface water became contaminated, the outlet valve on the pond will automatically shut and the contaminated surface water would be tankered off-site for appropriate treatment. There is a maintenance contract in place for the continuous monitoring analyser.

The leachate management system is also an abatement and control system. It directs leachate to a leachate lagoon and a leachate tank for transfer off site for appropriate treatment. In the event of a malfunction of one or more of the leachate pumps, leachate will be retained in the waste body until the pumps are operational. In the event of a significant pumping system failure, and where leachate levels exceeded the licence limit of 1 m above the liner, CCC would identify an alternative solution such as hire pumps, pumping to bowser etc. Please refer to the ERP.

6.1.4 Environmental Nuisance

The following sections describe the environmental controls that are currently in operation and will continue as under the proposed development.

Litter

Litter netting is erected on site along the perimeter of the active cells and is located in such a manner so as to capture the maximum amount of windblown litter. The placement of daily cover material also helps in controlling litter. In addition, patrols/inspections are carried out on a weekly basis to establish if any incidents are arising. At least one staff member is assigned to litter picking duties on a weekly basis.

Odour Control

A number of changes have been made at Powerstown landfill since the 2004 application which has resulted in a significant reduction in the number of odour complaints. This is reflected in the fact that only 3 odour complaints were received in 2010 and none in 2011 or 2012. 2 complaints were received in 2013 but upon investigation were not deemed to be landfill sourced. This is in contrast to some 19 odour complaints in 2009, 29 in 2008 and over 300 in 2006.

An Odour Management Plan (OMP) was prepared for the site in March 2010 to ensure that best practice is implemented on a continued basis in the management of odour emissions at Powerstown Landfill. It is included in Appendix F.1.

The completed final capping of cells 6-13, the installation of a new gas collection system and the continuous operation of the new flare all helped to improve odour control and reduce odour emanating from the landfill. Other mitigation measures include the careful scrutiny and screening of waste intake to prevent particularly odorous material being accepted at the landfill for disposal in addition to daily odour patrols at off-site locations to examine for any odour problems.

In addition, Odour Monitoring Ireland (OMI) was retained to carry out volatile organic compounds (VOCs) surveys in 2009 which identified a number of zones of surface landfill gas emissions from flanked and open areas and a number of wellheads that exceeded recommended limits (as per condition 8.14.6 of the waste licence). These were mainly associated with inadequate landfill gas extraction from the active cells (Cells 15 and 16). A number of mitigation measures were recommended by OMI which included:

- Partial permanent capping on the northern and eastern flanks of Cells 15 and 16
- Extension of the temporary capping on some flanks
- Installation of vertical extraction wells and pipework.

All of these recommendations were implemented by CCC.

On a day-to day basis the primary odour control from waste tipping is the use of daily cover in accordance with the provisions of the waste licence and the OMP. Daily cover comprises a minimum of 150 mm soil-like material. Before being covered the waste is compacted. The immediate compaction of the waste within a small controlled area serves to minimise the available area for odours to escape from the daily tipping area.

The progressive development of the landfill gas collection and treatment infrastructure enhances odour control as landfill gas combustion effectively destroys its odorous compounds. All landfill gas extraction points are connected to an enclosed flare.

Additional odour controls include the daily removal of leachate by a licensed waste contractor thus minimising the potential for odours which can form as a result of leachate stagnating and becoming anaerobic. The leachate lagoon on the western boundary of the site is covered with a floating cover, while the new holding tank located in the eastern extension is fully enclosed. Leachate is loaded from both these areas to tankers via a carbon filter to prevent odorous emissions.

Pest Control

In general, landfills have the potential to attract vermin such as rats and flies and can lead to an increase in local populations of vermin in the vicinity of the landfill. These pests are controlled on site by the confinement of the active area within the landfill through the efficient placement and compaction of waste and the daily covering and phased capping of cells.

A pest control firm is employed to control rodent and flying insect infestations. The site is visited on a monthly basis. There are approximately 50 rodent bait stations located around the site, all clearly identifiable. Each box is monitored and re-baited during monthly site inspections. The risk of fly infestations is kept to a minimum by good operating practices which include efficient compaction of waste, restricting the size of the tipping area and covering of waste at the end of each day.

Rodent infestations or flies are not currently a problem at the site.

Precaution is taken to avoid non-target species from coming in contact with vermin bait, e.g. Rodenticides. These precautions include:

- laying bait in areas not accessible to non-target species;
- strict control of the vermin population level; and
- where possible, the removal of any dead or dying vermin which may act as a food source for non-target species.

The current controls, on the whole, are effective and will be continued. Over the past two years, there has been significant investment into fly control equipment. During the summer months, the active area is sprayed daily to prevent fly infestations.

Scavenging Birds Control

Scavenging birds are a common source of nuisance at many landfills which accept household waste. They disturb compacted and partially covered waste whilst searching for food and may lead to complaints regarding food scraps, excreta and other waste dropped outside the facility boundary.

Good site management, including good compaction and efficient covering of the waste mass is considered the best method of minimising nuisance from birds. Carlow County Council employs good landfill practice in order to reduce nuisances as required by the Waste Licence.

Control of this nuisance is provided using the following control techniques:

- the application of daily cover in a restricted working area;
- the compaction of waste;
- the provision of netting around the working area restricts bird access, thereby discouraging scavenging; and
- the utilisation of birds of prey; falcons are used on a weekly basis
- the utilisation of kites, a distress caller and a pistol on a daily basis

Where certain waste loads from particular companies attract an increased number of birds, these companies shall be requested to alter the waste composition where possible.

The bird species that scavenge at Powerstown facility are mainly the corvid (crow) family, which include rooks and occasionally hooded crows and jackdaws. A falconry consultant is contracted to visit the site twice per week at varying times both during and outside operating hours. Only trained birds of prey are used which include the harris hawk and peregrine falcon. There are also visual and acoustic deterrents used on site such as an automated bird scarer, a hand pistol and kites. In general, scavenger birds numbers in the area are low and do not present many problems. This is due to the success of the falconry method of control, operational practices and restricting the size of the tipping area.

Noise

All machinery is maintained to good mechanical order. Machines that may be in intermittent use are shut down between work periods or are throttled down to a minimum. A speed restriction of 15 mph on the internal side roads minimises the noise generated by vehicles travelling within the site.

Vehicles

All traffic coming from the main landfill are pass through a wheel-wash prior to exiting the site. The wheel-wash consists of a combination of a dry shakeout and an underbody wheel-wash. All contaminated run-off arising from the wheel wash is collected and pumped to the leachate tank at the facility. In the event that mud and debris is carried from the site onto the public road, the landfill manager will arrange for the road to be cleaned. The wheel-wash is cleaned out and de-sludge as required.

Dust

During dry weather, the following measures are undertaken to ensure dust from the landfill and associated operations does not become a nuisance:

- water bowser used to spray roads;
- road sweeper machinery;
- wheelwash; and
- seeding of capped areas to establish vegetation cover.

The internal site roads are constructed of free draining material graded to a fall and maintained in a satisfactory condition at all times. The primary access road is cleaned at intervals consistent with preventing the deposition of mud on the local road network and minimising the generation of dust.

Secondary internal access roads in the landfill area are constructed from suitable inert materials. Mud control on roads forms part of the routine site inspection programme.

In the event that mud and debris is carried off the site onto the public road due to inclement weather, the landfill manager shall arrange to have the road cleaned.

During future capping works, additional dust control measures will be employed as per BAT. Please refer to Attachment I.8.

6.2 Attachment F.2 Emissions Monitoring and Sampling Points

All emissions monitoring and sampling is carried out in accordance with the licence and as described in Attachment E. There is also a summary of monitoring included in this attachment, in Table 6.1

6.3 Attachment F.3 Tabular Data on Monitoring and Sampling Points

Table 6.1 shows the required tabular data on monitoring and sampling points. The table has been copied to CD Rom.

Table 6.1:Tabular Data on Monitoring and Sampling Points

Point Code	Point Type	Easting	Northing	Verified	Pollutant	Non-Pollutant Parameters
G1	LFG	271069	168879	N	CH_4, CO_2	O_2, Atmospheric Pressure, Temperature
G2	LFG	271030	168864	N		
G3	LFG	270996	168848	N		
G4	LFG	270955	168827	N		
G5	LFG	270918	168792	N		
G6	LFG	270875	168780	N		
G7	LFG	270842	168765	N		
G8	LFG	270801	168746	N		
G22	LFG	270518	168592	N		
G23	LFG	270521	168632	N		
G24	LFG	270524	168672	N		
G25	LFG	270532	168711	N		
G26	LFG	270546	168745	N		
G27	LFG	270546	168785	N		
G28	LFG	270561	168841	N		
G29	LFG	270572	168871	N		
G30	LFG	270582	168912	N		
G31	LFG	270602	168925	N		
G32	LFG	270627	168939	N		
G33	LFG	270682	168966	N		
G34	LFG	270724	168990	N		
G35	LFG	270752	169006	N		

Point Code	Point Type	Easting	Northing	Verified	Pollutant	Non-Pollutant Parameters
G36	LFG	270786	169029	N		
G37	LFG	270825	169052	N		
G38	LFG	270863	169075	N		
G39	LFG	270893	169091	N		
G41	LFG	270913	169072	N		
G43	LFG	270965	169005	N		
G44	LFG	270991	168973	N		
G45	LFG	271020	168941	N		
G46	LFG	271049	168908	N		
TP12	LFG	270568	168390	N		
TP13	LFG	270549	168950	N		
TP14	LFG	271045	168662	N		
TP16	LFG	270506	168436	N		
TP17	LFG	271034	168595	N		
LFGF1	Landfill Gas Flare Emissions	270938	168777	N	Ref Table D.7 of licence (CH_4, CO_2, S, Cl, Fl, CO, NOx, SO_2, Particulates, TOC, HCL, HF)	Temp, O_2
L1	Leachate	270632	168917	N		leachate level
L2	Leachate	270642	168922	N		
L3	Leachate	270721	168965	N		
L4	Leachate	270734	168974	N		
L7	Leachate	270792	169005	N		
L10	Leachate	270813	168764	N		
L11	Leachate	270717	168807	N		
L12	Leachate	270727	168785	N		
L13	Leachate	270680	168845	N		
L15	Leachate	270846	169012	N		
L16	Leachate	270850	169015	N		
L17	Leachate	270920	168817	N		
L18	Leachate	270971	168975	N		
LT	Leachate	271083	168763	N	Ref Table D.5.1 of licence (Ammoniacal N, BOD, COD, Cl, metals/non-metals, Cn, Fl, Hg, $S0_4$, Total P, TON)	leachate level, visual and odour inspection, pH, EC, Temperature
LG	Leachate	270588	168856	N		
GW1	Groundwater	270587	168892	N	Ref Table D.5.1 of licence (Ammoniacal N, Cl, metals/non-metals, Cn, Fl, List I/II, Hg, $S0_4$, Alkalinity, Total P, TON, TOC, Residue on Evap)	groundwater level, visual and odour inspections, pH, EC, DO, Temperature
GW2	Groundwater	270692	168961	N		
GW3	Groundwater	270949	168721	N		
GW6	Groundwater	270506	168433	N		
GW7	Groundwater	270522	168703	N		

Point Code	Point Type	Easting	Northing	Verified	Pollutant	Non-Pollutant Parameters
GW8	Groundwater	270511	168758	N		
RCA1	Groundwater	271073	168865	N		
RCA2	Groundwater	271077	168860	N		
BH1	Groundwater	270515	168878	N		
BH2	Groundwater	270487	168792	N		
BH3	Groundwater	270431	168844	N		
BH4	Groundwater	270597	168948	N		
D2	Dust	270585	168826	N	Total dust deposition	
D4	Dust	270776	169001	N		
D5	Dust	271091	168759	N		
D6	Dust	270913	169071	N		
D7	Dust	271033	168593	N		
D8	Dust	271054	168690	N		
SWLO	Surface Water	270895	169094	N	Ref Table D.5.1; (Ammoniacal N, COD, BOD, Cl, TSS, metals/non-metals, Hg, S04, Alkalinity, Total P, TON) and continuous TOC	pH, EC, DO, Temperature, Biological Assessment
SWLI	Surface Water	270813	169026	N	Ref Table D.5.1; (Ammoniacal N, COD, BOD, Cl, TSS, metals/non-metals, Hg, S04, Alkalinity, Total P, TON)	
ST2	Surface Water	270900	169095	N		
ST1	Surface Water	270498	168870	N		
S1	Noise	270525	168919	N	Ref Table D.4.1 of licence (Noise levels:(LA_{eq}, LA_{10}, LA_{90}, Frequency Analysis))	
S2	Noise	270692	168445	N		
N4	Noise	270592	168822	N		
N5	Noise	271145	168629	N		
N6	Noise	271505	168851	N		
MS	Meteorological	270973	168707	N		Ref Table D.6 of licence: precipitation, wind force/direction, evaporation, humidity, atmospheric pressure

7 ATTACHMENT G – RESOURSE USE AND ENERGY EFFICIENCY

7.1 Attachment G.1 Raw Materials, Intermediates and Products

Please refer to Tables G.1.i and G.1ii in Annex 1 of the licence application form.

7.2 Attachment G.2 Energy Efficiency

The Sustainable Energy Authority of Ireland (SEAI) conducted an Energy Efficiency Audit on behalf of CCC at Powerstown Landfill and Recycling Centre in January 2014. It was submitted to the Agency for approval in September 2014. That audit details the energy uses on site and makes recommendations for improvements in energy efficiency. Is included in Appendix G.2.

Since the audit was conducted, CCC has adjusted the MIC for the site for a more appropriate tariff and has placed a dehumidifier in the file storage area. Both of these were recommendations of the audit.

Powerstown Landfill and Recycling Centre achieves BAT for many aspect of energy efficiency management. There are further details in relation to this in Attachment I.8.

8 ATTACHMENT H – MATERIALS HANDLING

8.1 Attachment H.1 Raw Materials, Intermediates and Product Handing

Table 8.1 gives information on the storage and handling systems used at Powerstown Landfill and Recycling Facility of raw materials and intermediates.

Table 8.1: Raw Materials, Intermediates and Product Handling

	Substance[1]	Storage Condition / Location	Segregation System	Transport System Used on Site
1	Diesel (Plant)	Not stored on site. Diesel tanker comes to site to fill plant machinery on refuelling area. Refuelling area drains to leachate collection system.	Yes	Diesel tanker
2	Diesel (Generator)	Small diesel tank/drums stored on site in a bunded area in administration car park.	Yes	Drums not transported. Diesel drums topped up site staff using jerry cans.
3	Petrol	Stored in portable petrol container in storage (shipping) container.	Yes	Petrol container transported by vehicle.
4	Kerosene Heating Oil	Bunded Oil tank	Yes	Delivered by oil tanker, conveyed by pipe to administration building.
5	Leachate	Lined Leachate Lagoon & Bunded Leachate Storage Tank	Yes Refer Attachment F.1, Section 6.1.1 for details on the leachate management system	HDPE pipe to lagoon and tank, tanker from tank to gate.
6	K-Othrine	These substances are stored on site in very low volumes, in a storage (shipping container). Staff decant substances as required on slab (with drainage to leachate system).	Yes, all substances are stored in the containers in which they are purchased.	Deliveries by vehicle. Transfer around site, on foot or by vehicle as required.
7	Raco Grain			
8	Raco Paste			
9	BioKill			
10	Ambush			
11	Defy			
12	Roundup			
13	Nitric Acid			
14	Sodium Persulphate			

All tank and lagoon storage areas are impervious to the materials stored within them and are bunded to an appropriate volume (as per Condition 3.11.2 of the licence). The leachate tank bund is designed having regard to Agency guidelines, Storage and Transfer of Materials for Scheduled Activities, 2004. The leachate tank and lagoon are testing for integrity every 3 years as per Condition 3.11.5 of the licence, and the findings are reported to the Agency. The most recent integrity test was carried out in December 2013 and the findings were summarised in Table B.1 of the 2013 AER. Both structures passed.

No development is proposed under this licence review, and as such no changes are proposed to raw materials handling.

8.2 Attachment H.2 Waste Prevention

Surface water is managed as a separate system on site to prevent clean surface water entering the leachate lagoon and tank in order to reduce leachate quantities and prevent surface water being treated as leachate. Details of surface water and leachate management are included in Attachment D.1, Section 4.1.4.

8.3 Attachment H.3 Recovery or Disposal of Wastes Generated

Leachate is the most significant waste material generated on site.

As this licence review is in respect of a waste activity (Class 11 of the First Schedule of the EPA Acts 1992, as amended), please refer to Attachment D.2.3 for details of leachate generation on site.

Minor volumes of waste are generated on sit by staff.

8.4 Attachment H.4 Waste Hierarchy

Leachate is the only waste material generated on site. It is transferred off-site for treatment at a wastewater treatment plant. This is the only economically and practically feasible option for leachate at this time at this site. Leachate is managed separately on site as described in Attachment D.1, Section 4.1.4. In addition there are Leachate Handling Procedures.

8.5 Attachment H.5 Waste Recycling and Recovery

There is a recycling centre at the facility which provides for the recovery of materials for recycling. Details of materials and quantities recovered are included in Attachment D.1, Section 4.1.4.

Licence conditions 5.6 and 5.7 set the allowable quantities of biodegradable municipal waste (BMW) that can be accepted for landfilling. This contributes to the national BMW diversion targets.

Landfill gas is generated as a by-product of landfilling and is treated on site in a landfill gas flare. Methane generated by the breakdown of waste is collected and treated in the flare, converting most of the methane to carbon dioxide.

9 ATTACHMENT I – EXISTING ENVIRONMENT & IMPACT OF THE ACTIVITY

9.1 Attachment I.1 Assessment of Atmospheric Emissions

Point source monitoring of the landfill gas flare emissions, 2008-2013 show all results to be within the licence limit values.

Dust is monitored at 6 locations, 3 times a year and are compared to a licence limit of 350 mg/m^2/day. Results of dust monitoring have been below this limit at every monitoring event since September 2008. Prior to that, capping works were attributed to dust levels in exceedance of the limit.

Ambient odour is monitored in accordance with the OMP and includes daily site walkovers along with odour checks at specified locations. The site manager keeps records of observed odours on site by site personnel and off-site by nearby residents. There were three odour complaints received in 2010 and none in 2011 or 2012. There were 2 odour complaints in 2013, one in January and one in September but both were investigated and determined to be from other odour sources not related to the landfill.

Landfill gas is monitored outside the waste body at perimeter monitoring locations and in buildings on site for gas migration. The licence has set landfill gas concentration limits for onsite buildings and perimeter Boreholes. These limit values are:

- Methane (CH_4) - 20 % LEL (1% v/v)
- Carbon Dioxide (CO_2) - 1.5 % v/v

Perimeter boreholes are monitored monthly, the results of which are submitted to the EPA. The current monitoring locations are as per Table 2.6 in Attachment B.13 and as shown on Drawing LW14-120-02-002 in this attachment. Landfill gas perimeter monitoring results for the year to date, Quarter 1 to Quarter 3 inclusive show that methane levels are within the EPA limit value for all perimeter boreholes outside the waste body, both outside and within the landfill facility. There were no incidents of methane levels greater than the limit of 1% v/v in the main administration building or weighbridge offices. Carbon dioxide levels are within the EPA limit value for most of the perimeter boreholes outside the landfill facility. Carbon dioxide was detected above the limit value at 12 wells.

Carbon Dioxide may be elevated naturally in soils as high concentrations can occur at shallow depths of up to 2 m due to microbiological activity associated with the roots of many types of vegetation. However, Carbon Dioxide also has the potential to migrate from an unlined landfill body through the subsoil. The locations of the majority of elevated concentrations are found to occur to the south and north of the old unlined landfill (Phase 1). In addition, it is noted that the underlying bedrock at the site is predominantly limestone and it is possible that the reaction of limestone with slightly acidic groundwater, caused by the seepage of leachate from the uncontained site, will release carbon dioxide. So rather than gases migrating laterally from the site, carbon dioxide may be generated at the groundwater table beneath and downgradient of the site. Elevated carbon dioxide levels therefore may also be attributed to the unlined portion of the old landfill (Phase 1).

VOC monitoring is carried out on the surface of the landfill. It is indicative of surface emissions from the waste body. VOC monitoring commenced in 2008, and since then there has been significant improvements in the release of fugitive landfill gas emissions as site staff have become increasingly experienced in preventing and mitigating surface emissions. Due to the nature of the activity, the active face is constantly moving and so too does VOC monitoring and mitigation works. The last round of VOC monitoring in June 2014 identified 7 spots identified ranging from 210 ppm to 498 ppm. The EPA limits range from 50 ppm to 500 ppm depending on location on site.

An assessment of atmospheric emissions was carried out as part of the EIS which accompanies this licence review application. Chapter 9 of the EIS addresses air quality. Section 9.8 of the EIS concludes that:

Potential impacts associated with the proposed development on climate and air quality are dust emissions, vehicle emissions and landfill gas emissions. The proposed development does not require the construction of new landfill cells or other infrastructure. Therefore, there will be no construction impacts associated with this development.

Operational emissions include dust, vehicle and flare emissions. Due to a separation distance between activities onsite and the nearest sensitive receptor, dust emissions will not significantly affect the surrounding environment and predominantly remain within the site boundary. Traffic pollutants of most concern were also examined using a basic air quality prediction screening model and predicted traffic emissions from existing and proposed traffic flows are within the relevant air quality guidelines and therefore will not impact on ambient air quality.

On examining the landfill gas prediction curves for the permitted and proposed development it is evident that the proposed development will not increase the total or peak quantity of landfill gas produced onsite. The proposed development will not modify the operational efficiency of the existing flare onsite.

Please note that an assessment of traffic emissions was carried out as appropriate for the assessment of the planning application.

9.2 Attachment I.2 Assessment of Impact on Receiving Surface Water

Powerstown Stream, which is a tributary of the River Barrow, runs along the northern boundary of the site. Surface water from the site is discharged to Powerstown Stream via the attenuation pond. The quality of the discharge is monitored at the point SWLO. Surface water is monitored at the inlet to the attenuation pond (SWLI) and both upstream and downstream of the discharge points at SWU and SWD. These two points are being renamed in this licence review from previous labels of ST2 and ST1. This is detailed in Attachment B.13.

The water quality of Powerstown stream is monitored on a quarterly basis in accordance with the site's licence. Table I.2(i) has been completed for a surface water point upstream and downstream of the outlet point for the past 4 years. The samples were analysed by the EPA Laboratory, Kilkenny. Information regarding their methods of analysis in included at the end of this Attachment I.2.

The results of monitoring of the discharge at SWLO indicate that the water quality status is 'Good' to 'High' in accordance with the Environmental Objectives (Surface Water) Regulations, 2009 (S.I No. 272 of 2009). Powerstown Stream is also the receiving water for the quarry when it is operational.

Figure no. 12.2 of the accompanying EIS shows the Waterbody Catchment and Hydrological Features Map.

An assessment of the impact on receiving surface water was carried out as part of the EIS which accompanies this licence review application. Chapter 12 of the EIS addresses hydrology. Section 12.7 of the EIS concludes that:

The Powerstown Stream is a tributary of the River Barrow and runs along the northern boundary of the site. The existing surface water management system is designed to minimise the possibility of accidental spillage by the diversion of leachate to a leachate holding tank and leachate lagoon. Clean surface water from capped areas is currently drained to soakaways and to the Powerstown Stream.

Surface water run-off from Phase 3 is collected in a drainage system which drains into the surface water attenuation pond.

Biological monitoring of the River Barrow and the Powerstown steam illustrate similar results with biological water quality status of slightly polluted (Q rating of 3-4). Physico -chemical monitoring illustrates that in general, concentrations of ammonia and chloride in the Powerstown Stream are slightly elevated relative to the upstream site, however the levels are below the discharge trigger levels.

There are no hydrological impacts from the proposed development in terms of either an increase in run-off or an increase in suspended solids in the surface water run-off from this site.

There will be no construction-related impacts on water quality and there will be no decrease in water quality in the receiving waters of the River Barrow catchment as a result of the continued operation of landfilling activities if current management practices are continued.

EPA method W07 based on the following standard methods:

- Methods for the Examination of Waters and Associated Materials, Ammonia in Waters 1981,
- HMSO 0117516139.
- Methods for the Examination of Waters and Associated Materials, Phosphorus in Waters, Effluents, Sewages, 1980, HMSO 0117515825.
- USEPA Method 365.1 Determination of Phosphorus by Semi-Automated Colorimetry 1993.
- Methods for the Examination of Waters and Associated Materials, Oxidised Nitrogen in Waters, 1981, HMSO 0117515930.
- USEPA Method 353.1 Nitrogen, Nitrate-Nitrite (Colorimetric, Automated, Hydrazine Reduction).
- Methods for the Examination of Waters and Associated Materials, Chloride in Waters, Sewage and Effluents 1981, HMSO 0117516260.
- USEPA Method 325.1 Chloride (Colorimetric, Automated Ferricyanide, Automated Analyser I).
- USEPA Method 354.1 Nitrogen, Nitrite, spectrophotometric.
- Standard Methods for the Examination of Water and Wastewater, 22nd Edition, 2012, American Public Health Association, American Water Works Association, Water Environment Federation, sections: 4500-Cl E (chloride), 4500-NO3 H (T.O.N.), 4500-P E (o-phosphate) and 4500-NO2- B (nitrite).
- Standard Methods for the Examination of Water and Wastewater, 22nd Edition, 2012, American Public Health Association, American Water Works Association, Water Environment Federation, section 1060.
- COD
  - EPA method W01 – based on ISO 15705:2002 Water Quality – Determination of COD
- Suspended Solids
  - EPA method W03 – based on IS EN 872:2005 Water Quality – Determination of Suspended Solids
- BOD
  - EPA method W04 – based on ISO5815-1:2003 Water Quality – Determination of BOD after 5 days
- Metals
  - EPA method W05 – based on BS EN ISO 17294-1:2006 Water Quality – Application of ICPMS Part 1 – General Guidelines and BS EN ISO 17294-2:2004 Water Quality – Application of ICPMS Part 2 Determination of 62 elements

9.3 Attachment I.3 Assessment of Impact of Sewage Discharge

There is no discharge to sewer.

9.4 Attachment I.4 Assessment of Impact of Ground/Groundwater Emissions

A baseline report is being prepared as a separate report to this document. In accordance with the European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions, Steps 1 to 3 have been completed and indicate that a baseline report is required for Powerstown Landfill on foot of leachate migration from the unlined portion of the landfill. This topic has previously been subject to a Tier 3 Assessment but soil samples were not collected. The Tier 3 Environmental Risk Assessment is included in Appendix I.4. A driller is being procured to facilitate soil sampling and the completed baseline report will be forwarded to the Agency as an addendum to this licence review application. The baseline report Stages 1 to 5 are included as Appendix I.4.

9.5 Attachment I.5 Ground and/or Groundwater Contamination

Results of groundwater monitoring are compared to trigger levels which have been set for each monitoring well and also relative to the quality standards in the European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010). Monitoring results indicate that groundwater may have been impacted by leachate from the unlined portion of the landfill. This impact has been the subject of an Environmental Risk Assessment report which was submitted to the Agency on 29 May 2014. It also triggers the requirement for a Baseline Report, refer to Attachment I.4.

There is no evidence of other ground and/or groundwater contamination, historical or current, on or under the site. There are no records of accidents, incidents, spills or fires.

Table I.4(i) of the application form contains groundwater monitoring results for 4 years at a groundwater well upgradient of the facility (RCA2) and at a groundwater well downgradient of the landfill (GW8). Groundwater is monitored on a quarterly basis at 11 groundwater wells in accordance with the licence and those results are submitted on a quarterly basis to the EPA.

9.6 Attachment I.6 Assessment of Environmental Impact of On-site Waste Recovery and/or Disposal

Leachate is the only waste material generated on site by the activity (landfilling). Please refer to Attachment D.2.3. There is no on-site recovery of leachate.

9.7 Attachment I.7 Assessment of Noise Impact

Baseline noise monitoring results 2006-2013 show that the facility has had no impact on the environment.

An assessment of noise impact was carried out for the EIS which accompanies this licence review application. Chapter 8 of the EIS addresses noise impact. Section 8.6 of the EIS concludes that:

Noise emissions from the continued operation of landfilling activities at Powerstown have been assessed. The existing noise environment on-site will not change as a result of the proposed continuation of the landfill. Additionally it is noted that no construction phase is required to continue operations.

The only identified potential impact would be an increase in the number of vehicle movements to the site to increase the waste landfilling activities. However, when the noise impact from this increase is compared to the existing baseline noise levels influenced by the local road network in the area, it is considered that the predicted increase in traffic levels will have an imperceptible impact on noise emissions.

Table I.7(i) of the application form include noise monitoring results for 2013. There were no exceedances of the noise licence limits from landfilling activities.

9.8 Attachment I.8 Environmental Considerations, Main Alternatives and BAT

9.8.1 1.8a Main Alternatives

The landfill is an existing facility, and so a discussion of the main alternatives is not applicable in terms of the 'proposed technology'. The purpose of the licence review is to seek to increase the maximum allowable tonnage. There will not be any further development of the site as a result of this, or introduction of any new technology on site.

9.8.2 I.8b Relevant Decisions

All relevant decisions on BAT Conclusions, BAT reference document(s) (BREFs) and BAT guidance document(s) are listed in Table 9.1 below.

Table 9.1: Emissions, Abatement, Treatment and Recovery Systems

Title of Document
Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011
BREF on Emissions from Storage, European Commission, 2006
BREF on Energy Efficiency, European Commission, 2009
Landfill Directive
Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Waste Transfer and Materials Recovery, EPA 2011. A separate table has not been created for this document as, upon review, all of the applicable BAT are listed in Table 7.2.

9.8.3 I.8c BAT Measures

The following tables, Tables 9.2 to 9.5 are a review of each of the relevant documents identified in Table 9.1.

Table 9.2: Table I.8(i) Conclusions on BAT

Title of Document Final Draft BAT Guidance Note on the Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011			
BAT reference Number	**BAT Statement**	**Applicability to installation**	**Proposed / in place**
5.2 Primary requirements/5.3 Environmental liabilities	Financial provision for environmental liabilities (known and unknown) including restoration and aftercare	Applicable	ELRA and CRAMP submitted to Agency for approval
5.2 Primary requirements	Landfill design for each type of landfill and operation as per the Landfill Directive including: • Water control; • Leachate management; • An appropriate landfill lining system: • An appropriate landfill capping system • Appropriate measures for the prevention and management of landfill gas	Applicable	Surface water control system in place. Leachate management system in place. Phase 2 and 3 lined in accordance with Landfill Directive and approved by Agency. Phase 1 and 2 capped in accordance with Landfill Directive and approved by Agency. Phase 3 cap will be designed and constructed in accordance with Landfill Directive subject to approval by Agency. Landfill collection and flaring system in place.
5.2 Primary requirements	Construction Quality Assurance for construction of landfill lining systems	Not applicable to this review application. CQAs were submitted for Phase 2 and Phase 3 lining systems	
5.2 Primary requirements	An Environmental Management System that incorporates a list of features.	Applicable	EMS in place for facility, updated annually.
5.2 Primary requirements	Appropriate storage and handling of construction materials, consumables and wastes.	Applicable	Following in place: Waste Acceptance Procedure Leachate Handling Procedure Waste quarantine area
5.4.1 BAT for discharges to surface water	Only roof-water and water from undisturbed unpaved areas (not in landfill footprint and not used for the handling or storage of waste) are appropriate for direct discharge to surface waters. No untreated trade effluent shall be discharged direct to surface water. Other surface water discharges must as a minimum be	Applicable	a) Only water from undisturbed unpaved areas and capped area are discharged to Powerstown Stream via a surface water retention pond with continuous monitoring at the inlet. b) All leachate and surface water collected from the waste handling areas are

Title of Document Final Draft BAT Guidance Note on the Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011			
BAT reference Number	**BAT Statement**	**Applicability to installation**	**Proposed / in place**
	passed through an interceptor (I.S. EN 858-2:2003 Part 2), or in the case of construction areas where solids can build up in storm water runoff, they may be discharged through settlement lagoons or reed bed systems. The provision of infrastructure to allow for isolation and monitoring of surface water discharges. The management and control techniques listed in Section 4.4.4. The appropriate Inland Fisheries Ireland (IFI) office should be consulted in relation to the fisheries status of local waters or where in-stream works have to be carried out.		directed to the leachate pond and leachate tank for transfer off-site for treatment. c) All storm water is attenuated in a surface water retention pond prior to discharge. There is a silt on the pond. d) The inlet to the surface water retention pond has continuous monitoring of pH, conductivity and TOC. The licensee has set trigger levels for these parameters, an exceedance of which causes a shutdown of the outlet. Further details of this system –see Section 12.3.1 of the accompanying EIS. In a change from the 2004 content of the EIS, as of 2014, the surface water collected in empty Cell 18 is being directed to the leachate tank. e) The surface water management system was designed in accordance with the Agency's' Landfill Manual: Landfill Site Design. Management and control techniques on site include: Capping of phase 1 and 2 Surface water monitoring at the inlet and outlet of the pond and up and down stream of the discharge with SCADA operated cut-off valve. There is no proposed development as a result of this licence review application. IFI was consulted during the preparation of the EIS.
5.4.3 BAT for discharges to groundwater	a) Prohibit direct emissions to groundwater of effluents containing certain hazardous substances (List I), and to apply strict controls to prevent indirect emissions of substances scheduled in List II of the Directive.	There are no direct discharges to groundwater at Powerstown Landfill.	a) Prohibited b) Not Applicable c) Not Applicable d) Applicable – Accident and Emergency

Title of Document Final Draft BAT Guidance Note on the Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011			
BAT reference Number	**BAT Statement**	**Applicability to installation**	**Proposed / in place**
	b) Subject to prior assessment, any proposal for placing of waste on ground that may lead to a discharge of specific listed substances to groundwater. c) Maintain an inventory of authorisations given for direct discharge of List II substances to groundwater. d) Remove risks of emissions to groundwater through appropriate controls such as containment, bunding, etc., as described in Sections 4.4.2, 4.4.3 and 4.4.4. e) Provide groundwater monitoring to enable early detection of any contamination of groundwater that may arise from the facility and the setting of trigger values and upper limits.	BAT for protection of groundwater from indirect emissions is applicable.	Plan in place, Bund tests every 3 years, Leachate head as per licence, groundwater triggers set. e) Applicable, groundwater monitoring is carried out in compliance with the licence at points up and down gradient. Trigger levels are in place.
5.5.4 BAT is to control leachate effluent using management and control techniques	Management Techniques -Several aspects of landfill operation can influence the amount of leachate generated: a) The active fill area should be kept as small as practicable, with maximum of 25 metres x 25 metres (width x length) and slope of 1:3, unless where specifically agreed by the Agency. b) The use of good compaction, and daily and intermediate cover to reduce the level of water infiltration and hence the quantity/quality of leachate produced. c) The applicant should put in place procedures to ensure that the capping system is not damaged by the placement of the soil restoration layers or the construction of environmental control systems, e.g., landfill gas or leachate pipework and associated manholes. d) Leachate Recirculation. This engineering practice reduces the volume of effluent for treatment and assists in accelerating the degradation/stabilisation of the waste in the landfill however leachate recirculation may only be considered in engineered, lined cells where suitable leachate collection systems, leachate level monitoring is in place and the lined cell is capped to the satisfaction of the Agency.	Applicable	a) Yes, as set out in OMP (Section 7) b) As above c) Not applicable, all environmental control systems will be installed during capping works d) Leachate recirculation is not practised at Powerstown Landfill. e) Annual slope stability assessments and biannual surface emissions assessments f) Waste acceptance procedures in place and adhered to. Control Techniques g) Use of ash and woodchip as daily cover. h) Leachate extraction system in place i) Leachate composition monitoring and depth monitoring carried out in compliance with licence. j) Phase 1 and 2 capped, Cells 15 and 16 have an intermediate cap. Phase 3 capping will take place as soon as settlement has occurred. k) Leachate is tinkered off site to Mortarstown wastewater treatment plant

Title of Document Final Draft BAT Guidance Note on the Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011			
BAT reference Number	**BAT Statement**	**Applicability to installation**	**Proposed / in place**
	e) The applicant should develop procedures to ensure that the capping system is not damaged by long-term settlement. A comprehensive monitoring and repair programme should be initiated to ensure the integrity of the capping layers. f) Adherence to the waste acceptance procedures and inspection of waste procedures. Operational Techniques The following control techniques are used at landfills for the minimisation of leachate emissions: g) Using soil, recovered or recycled materials or artificial cover materials to reduce infiltration of rainfall into the deposited waste, whilst operating restricted active area. h) Provide extraction system to enable removal of leachate for treatment and/or disposal. i) Monitoring of the depth and composition of leachate accumulating within the fill. j) Capping and restoring any completed area of the landfill as soon as possible. k) Leachate that has been removed from the landfill must be managed and shall undergo an appropriate level of treatment before it can be discharged to the environment. l) Adequate leachate storage facilities (appropriately sized). m) Covering of leachate storage facilities. n) Any on-site leachate treatment facility should be constructed and operated to appropriate design standards. Any aeration in leachate lagoon should be subsurface aeration. o) Diversion and collection of uncontaminated storm water for discharge or appropriate use from lined areas awaiting waste placement.		l) Leachate lagoon and leachate storage tank are appropriately sized m) Both lagoon and tank are covered. n) Not applicable o) There remains just 1 empty cell. Storm water from this Cell 18 is diverted to leachate as of 2014 due to the proximity of the adjacent cell 17. In the past, when there was total separation of empty cells from the active area, the storm water from empty cells was diverted to the surface water management system.
5.5.1 BAT is to prevent fugitive emissions to air	Management of Landfill Gas Emissions a) Minimise landfill gas production potential by pre-treating the waste prior to acceptance for landfilling.	Applicable	a) Yes, ref licence b) Yes, ref OMP c) Yes, ref OMP

Title of Document Final Draft BAT Guidance Note on the Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011			
BAT reference Number	**BAT Statement**	**Applicability to installation**	**Proposed / in place**
by application of good landfill gas management and control techniques	b) Prevent landfill gas from migrating through the ground in both gaseous and dissolved states and prevent emissions of methane to the atmosphere. c) Manage odour risks/nuisance. d) Prevent condensate build-up in gas collection network. e) Use of horizontal and vertical gas collection pipework in the waste body. f) Carry out regular balancing of gas wells. g) Collect all landfill gas and, where feasible, utilise it to produce energy. h) Where energy generation from landfill gas is not possible, it should be burned in an enclosed flare with a minimum temperature of 1,000oC and a retention time of 0.3 seconds. i) Regularly monitor and balance gas extraction wells. j) Use the relevant management and control techniques outlined in Sections 4.4.6.2. k) The management and control techniques contained in the EPA Landfill Site Design Manual are applicable to hazardous and non-hazardous landfills. l) Follow the hierarchy of landfill gas treatment options: (i) landfill gas utilisation for energy recovery, (ii) enclosed flaring, (iii) venting with open flaring as odour control measure. m) Use automatic alert system to notify of utilisation plant failure, where applicable. n) Backup power system for enclosed flares. o) Manage condensate to prevent emissions.		d) Yes, daily dewatering, ref OMP e) Yes f) Yes, ref OMP g) All gas is collected as feasible. Not sufficient quantity for energy generation. h) Yes i) Yes, see f) j) Yes, comprehensive OMP k) Yes, design of Phase 2 & 3 was carried out in accordance with the manual. l) Yes, enclosed flaring operational m) Yes, flare is connected to Scada n) No o) Yes, knock out pot at flare along with condensate management in gas field as per d)
5.5.2 BAT for process emissions is to	a) Pre-treat waste to remove/reduce biodegradables. b) Selection of appropriate cell sizes. c) Maintenance of negative air pressure in the landfill gas extraction wells. d) Use of horizontal and vertical gas extraction wells. e) Use of appropriate materials for temporary cover, interim and final capping.	Applicable	a) Yes – ref licence b) Yes – as per landfill design manual c) Yes – ref OMP d) Yes e) Yes, as approved by Agency f) Yes, ref OMP g) Yes, underliner system in place in Phase

Title of Document Final Draft BAT Guidance Note on the Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011			
BAT reference Number	**BAT Statement**	**Applicability to installation**	**Proposed / in place**
	f) Regular monitoring of landfill extraction well field, balancing of wells and elimination of non-design condensate traps. g) Use of horizontal landfill gas collection pipework at the top of the side wall riser (beneath cap). h) Provide landfill gas management systems as outlined in Section 4.4.5. i) Control the combustion conditions of enclosed flares, in terms of the carbon monoxide concentration, temperature and retention time by ensuring that combustion occurs at 1,000°C with a product retention time of 0.3 seconds within the combustion zone.		1 & 2 and will be included in Phase 3 cap design h) Yes, as listed as BAT for fugitive emissions above i) Yes, ref licence and annual monitoring results
5.5.3 BAT for odour	BAT for odour emissions is to ensure that odours shall not result in significant impairment of amenities or the environment beyond the site boundary. Specifically BAT is to: a) For a greenfield landfill facility accepting a significant proportion of potentially odour forming wastes, provide a buffer distance of 750m between the landfill footprint and any sensitive receptor. The buffer distances may be decreased on a case by case basis. (Refer to Section 4.1.2.3 above and landfill site selection guidance issued by the Agency). b) Develop and operate of an Odour Management Plan. c) Minimise the open tipping face area, with maximum of 25 metres x 25 metres (width x length) and slope of 1:3, unless where specifically agreed by the Agency. d) Promptly compact and cover wastes with appropriate daily/weekly/intermediate or final cover. e) Immediately bury odorous wastes. f) Restrict tipping activities during periods of adverse weather. g) Upgrade and seal of sump covers. h) Aerate leachate storage areas. i) Improve landfill gas collection, venting and combustion systems.	Applicable	a) Not applicable b) Yes, OMP in place c) Yes, ref OMP d) Yes, ref OMP e) Yes, ref OMP f) Not applicable g) Yes h) No i) Yes j) Shall be considered as required in the future when landfill gas production decreases k) Yes l) Yes, as required m) Yes, biannually as per licence and OMP n) Yes, as listed for BAT for process emissions above

Title of Document Final Draft BAT Guidance Note on the Best Available Techniques for the Waste Sector: Landfill Activities, EPA 2011			
BAT reference Number	**BAT Statement**	**Applicability to installation**	**Proposed / in place**
	j) Consider the use of auxiliary fuels during periods when the rate of landfill gas production alone is insufficient to allow the operation of landfill gas combustion equipment. k) Cover or bury of waste excavated during the installation of leachate or landfill gas management systems. l) Use odour neutralising sprays/aerosols at times when either climatic or waste acceptance site monitoring indicates heightened risk to identified receptors (for example inversions or calms). m) Regular surface walk over VOC surveys of capped areas. n) Measures identified in Section 5.5.2 as appropriate.		

Table 9.3: Table I.8(ii) Conclusions on BAT (BREF Emissions from Storage)

Title of Document *BREF Emissions from Storage*			
5.1.1.1 general principles to prevent and reduce emissions	• Tank design • Inspection and maintenance	Applicable	• Glass lined leachate tank was designed to specification BS7793 • Yes
5.1.1.2 tank specific considerations	BAT is to cover open top tank by applying a floating cover, flexible or tent cover or a rigid cover (for non volatile substances)	Applicable to leachate storage	Leachate tank has a fixed roof.
5.1.1.2	BAT is to apply a vapour treatment installation for volatile substances	Diesel storage tank	No tank is not large enough to require this.
5.1.1.3 Preventing incidents and major accidents	BAT is to have: a) Operational procedures and training b) Instrumentation and automation to prevent overfill c) Instrumentation and automation to prevent leakage – leakage detection required on tanks containing liquid that can potentially cause soil pollution d) Soil protection around tanks – containment		a) Leachate handling procedures in place b) No c) Yes d) concrete bund around tank was designed, constructed and tested in accordance with the requirements of BS8007: 1987 'Design of Concrete Structures for Retaining Aqueous Liquids'.
5.1.3 basins and lagoons	BAT is to cover using a plastic cover or floating cover. BAT is to apply an impervious barrier where substances are stored with a risk of soil contamination.	Applicable to leachate lagoon	Lagoon has a floating cover. Lagoon is fully lined.
5.2 transfer and handling	BAT is to inspect and maintain (transfer and handling equipment)	Applicable to leachate collection system outside of landfill body	Yes daily inspections of all pipework and tanks. Maintenance as required.
5.2.2.1 piping	BAT is to: a) apply overground piping in new situations and for existing as per 5.2. b) minimise number of flanges (use welded connections) c) prevent corrosion d) for valves	Applicable to leachate pipework outside of landfill body	a) No b) Yes, HDPE pipework welded at connections c) Yes, HDPE pipework used d) Yes, appropriately specified

Title of Document *BREF Emissions from Storage*			
5.3.1 open storage	BAT is to apply enclosed storage but where open storage is only option, BAT is to: • Moisten surface with water • Protective planting • Place longitudinal axis of heap parallel to prevailing wind • One heap better than 2 or more, reduced surface area	Applicable to storage of cover, restoration and capping materials	BAT will be applied to materials storage for Phase 3 capping works.
5.4 transfer and handling of solids	a) BAT is to prevent dust dispersion due to loading and unloading activities in the open air, by scheduling the transfer as much as possible when the wind speed is low. b) When applying a mechanical shovel, BAT is to reduce the drop height and to choose the best position during discharging into a truck c) BAT is to adjust the speed of vehicles on-site to avoid or minimise dust being swirled up. d) BAT for roads that are used by trucks and cars only, is applying hard surfaces to the (permanent) roads e) BAT is to clean roads that are fitted with hard surfaces f) Cleaning of vehicle tyres is BAT g) Where it neither compromises product quality, plant safety, nor water resources, BAT for loading/unloading drift sensitive, wettable products is to moisten the product	Applicable to placement of waste in landfill, placement of cover materials, capping works, transfer of recyclable materials at civic amenity	a) wind direction and speed is a consideration on site b) yes c) there is a speed limit on site d) all internal roads with the exception of the temporary haul roads to active face are hard surface e) roads are cleaned regularly f) there is a wheel wash on site g) used as appropriate during construction activities, not suitable for waste handling

Table 9.4: Table I.8(iii) Conclusions on BAT (BREF Energy Efficiency)

Title of Document BREF on Energy Efficiency, European Commission, 2009			
4.2.1 Energy efficiency management	A number of energy efficiency management techniques are determined as BAT: Relevant to this facility is to implement and adhere to an energy efficiency management system.	Applicable	Not currently in place but shall be considered going forward.
4.2.2.1 Planning and establishing objectives and targets	BAT is to continuously minimise the environmental impact of an installation.	Applicable	EMS in place.
4.2.2.2	Identification of energy efficiency aspects of an installation and opportunities for energy saving	Applicable	Energy efficiency audit completed 2014
4.2.2.3	BAT is to optimise energy efficiency by taking a systems approach to energy management in the installation	Not applicable to current set-up	Will be kept under consideration
4.2.2.4	BAT is to establish energy efficiency indicators	Applicable	In place, ref Energy Efficiency Audit 2014
4.2.5	BAT is to maintain the impetus of the energy efficiency programme	Applicable	Requirement of licence, see condition 2.5.1
4.2.6	BAT is to maintain expertise in energy efficiency and energy-using systems	Applicable	A staff member from the Carlow-Kilkenny Energy Agency provides time each week to CCC and Powerstown Landfill who in turn passes expertise to CCC/landfill staff
4.2.7	BAT is to ensure that the effective control of processes is implemented	Applicable	In place, ref Energy Efficiency Audit 2014
4.2.8	BAT is to carry out maintenance at installations to optimise energy efficiency	Applicable	Opportunities to optimise energy efficiency through maintenance will be identified by regular audits
4.2.9	BAT is to establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of operations and activities that can have a significant impact on energy efficiency	Applicable	In place, ref Energy Efficiency Audit 2014
4.3.7	BAT is to optimise compressed air systems (CAS) using the techniques such as those in Table 4.6 of BREF	Applicable	Identification of air leaks on site inspections triggers mitigation

Title of Document BREF on Energy Efficiency, European Commission, 2009			
4.3.8	BAT is to optimise pumping systems by using the techniques in Table 4.7 in BREF	Applicable	In place, design of pumping systems took account of many BAT
4.3.9	BAT is to optimise heating, ventilation and air conditioning systems		Yes, ref Energy Efficiency Audit 2014 and subsequent actions
4.3.10	BAT is to optimise artificial lighting systems		Yes, in place

Table 9.5: Table I.8(iv) Conclusions on BAT (Landfill Directive)

Title of Document Landfill Directive (99/31/EC)				
Article	5 (1)	BMW diversion	Applicable	In place - ref Condition 5.6 of the licence
Article	5 (3)	Waste acceptance - banning of certain wastes	Applicable	In place, ref Condition 5.2 of licence and Waste Acceptance Procedures
Article	6 (a)	Wastes to be accepted in different classes of landfills (Pre-treatment of waste)	Applicable	In place, ref Condition 5.3.1 of licence and Waste Acceptance Procedures
Articles	7, 8 & 9	Application for and issue of a permit	Applicable	Licence W0025-03 in place
Article	10	Cost of the landfill of waste	Applicable	Yes, ref Table 7.2, 5.2 primary requirements / 5.3 Environmental liabilities
Article	11	Waste acceptance procedures	Applicable	In place, ref Condition 5.2 of licence and Waste Acceptance Procedures
Article	12	Control and monitoring procedures	Applicable	Yes, as per Conditions/Schedules of licence
Article	13	Closure and after care procedures	Applicable	Yes, CRAMP submitted to Agency for approval
Annex	1.1 & 1.2	Location	Not Applicable	Existing facility
Annex	2	Water control and leachate management	Applicable	Yes, following in place: Surface water management system, Leachate management system with transfer off-site for appropriate treatment, Phase 1 and 2 capped to prevent precipitation entering landfill body, intermediate cap on closed cells 15 & 16, daily cover on Cell 17. Phase 3 permanent cap to be completed upon final settlement.

Title of Document Landfill Directive (99/31/EC)				
	3 3.3	Protection of soil and water Artificial sealing layer and drainage layer	Applicable Applicable	Phase 1, no liner in place (pre-directive). Phase 2 and 3, liner in place. Phase 1 and 2 geological barrier in place. Phase 3 geological barrier to be installed following settlement, ref Section 3.3.2 and 3.3.3 of accompanying EIS for specification.
	3.3	Surface sealing layer	Applicable	
	4	Gas control	Applicable	Landfill gas collection and treatment system in place.
	5	Nuisance and hazards	Applicable	Yes, ref OMP, EMS,ERP
	6	Stability	Applicable	Yes
	7	Barriers	Applicable	Yes, ref security fencing and gate on Drawing LW14-120-02-001 Rev A (Attachment D.1) and Section 3.2.4 of accompanying EIS
Annex	II	Waste Criteria and Procedures	Applicable	As referenced, Articles 5 & 11 above
Annex	II	Control and Monitoring Procedures in operation and after-care phases	Applicable	Yes: Met data. Leachate and surface water sampling upstream and downstream, landfill gas monitoring, groundwater sampling, groundwater trigger levels in place, annual slope stability, and annual topographical survey. All as per conditions of licence and this annex.

Note: The date of submission of relevant documentation list above in Tables I.8 are recorded in Table 2.5 and Table 2.7 of Attachment B.13.

9.8.4 I.8d Emerging Technique

Not applicable

9.8.5 I.8e Environmental Considerations

Not Applicable

9.8.6 I.8f Measures Proposed to Ensure

a) *The best available techniques are or will be used to prevent or eliminate or, where that is not practicable, generally reduce an emission from the activity;*

There is no further proposed development at this site as a consequence of this licence review application which seeks to increase the maximum allowable tonnage per annum from 40,000 to 50,000 tonnes. Therefore BAT refers to existing activities.
Tables 7.2 to 7.5 demonstrate the use of BAT at Powerstown Landfill and Recycling Facility. The landfill has been developed in three distinct phases, Phase 1, Phase 2 and Phase 3. Landfilling commenced in Phase 1 in 1975 and ceased in 1990. Phase 1 (or the 'old landfill') is located on the south western portion of the site. Phase 1 is an unlined landfill which was developed in a spent sand and gravel quarry and operated as a 'dilute and disperse' type landfill. CCC applied for a waste licence for the facility in 1998 and it was granted in 2000.

Capping of Phase 1, the development of Phase 2 and 3 and capping of Phase 3 have all been carried out in accordance with BAT, the Landfill Directive and the conditions of the licences issued by the EPA. Measures to prevent, eliminate, or where not practical, generally reduce emissions from the facility are discussed in more detail in Attachment E, Attachment F and the EIS.

b) *no significant pollution is caused;*

The EIS concludes that *the majority of the environmental aspects examined with regards to the proposed development have a neutral environmental impact. That is, the proposed development will not increase the impacts on the receiving environment over that already permitted under the existing development.*

Attachment I. 4 contains a Baseline Report which examines the impact of the unlined portion of the landfill.

c) *waste production is avoided in accordance with the waste hierarchy in Council Directive 98/2008/EC on waste and section 21A of the Waste Management Act 1996, as amended; where waste is produced, it is prepared for re-use, recycled or recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment (applicants should provide this information in the context of sections 29(2A), 32 and 38(5A) of the Waste Management Act 1996, as amended);*

Leachate is the only waste material generated by this activity. Please refer to Attachment H.2 for further detail on leachate minimisation and H.4 and H.5 for further details on recovery.

d) *energy and other resources are used efficiently;*

Please refer to Table 7.4 in this attachment, regarding BAT and energy efficiency and to Attachment G.2.

e) *the necessary measures are taken to prevent accidents and limit their consequences;*

There is a Health and Safety Plan for the facility and Emergency Response Procedures. Please refer to Attachment J. The Health and Safety Plan for the site is kept on site.

f) *the necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory state.*
A CRAMP has been prepared and submitted to the Agency for approval. Please refer to Attachment K.

10 ATTACHMENT J – ACCIDENT PREVENTION & EMERGENCY RESPONSE

The most recent update of the Emergency Response Plan for Powerstown Landfill and Recycling Facility was submitted to the Agency in August 2014. It is included in Appendix J.

11 ATTACHMENT K – DECOMMISSIOING, RESTORATION & AFTERCARE

CCC has submitted information to the Agency in relation to decommissioning, restoration and aftercare including the CRAMP, ELRA and Section 53 Returns. Please refer to Attachment B.13 for dates of submission of each of these documents. The CRAMP is included as Appendix K. The ELRA was revised and re-submitted to the Agency for approval in August 2014. It is included in Appendix K.

12 ATTACHMENT L – STATUTORY REQUIREMENTS

1. *Indicate how the requirements of Section 83(5)(a)(i) to (v) and (vii) to (x) of the EPA Act 1992, as amended, shall be met, having regard, where appropriate, to any relevant specification issued by the Agency under section 5 (3) of the Act and the reasons for the selection of the arrangements proposed*

Sections 83 (5) (a) (i) to (v) and (vii) to (x) of the EPA Acts 1992 as amended states that:

'5) The Agency shall not grant a licence or revised licence for an activity—

(a) unless it is satisfied that—

(i) any emissions from the activity will not result in the contravention of any relevant air quality standard specified under section 50 of the Air Pollution Act 1987, and will comply with any relevant emission limit value specified under section 51 of the Air Pollution Act 1987,

(ii) any emissions from the activity will comply with, or will not result in the contravention of, any relevant quality standard for waters, trade effluents and sewage effluents and standards in relation to treatment of such effluents prescribed under section 26 of the Local Government (Water Pollution) Act 1977,

(iii) any emissions from the activity or any premises, plant, methods, processes, operating procedures or other factors which affect such emissions will comply with, or will not result in the contravention of, any relevant standard including any standard for an environmental medium prescribed under regulations made under the European Communities Act 1972, or under any other enactment,

(iv) any noise from the activity will comply with, or will not result in the contravention of, any regulations under section 106,

(v) any emissions from the activity will not cause significant environmental pollution,

(vii) having regard to Part III of the Act of 1996, production of waste in the carrying on of the activity will be prevented or minimised or, where waste is produced, it will be recovered or, where that is not technically or economically possible, disposed of in a manner which will prevent or minimise any impact on the environment,

(vii*a*) without prejudice to subparagraph (vii), waste generated in the carrying on of an industrial emissions directive activity, in order of priority in accordance with section 21A (inserted by Regulation 7 of the European Communities (Waste Directive) Regulations 2011) of the Act of 1996, will be prepared for re-use, recycled, recovered or, where that is not technically or economically possible, disposed of in a manner which will prevent or minimise any impact on the environment,

(viii) energy will be used efficiently in the carrying on of the activity,

(ix) necessary measures will be taken to prevent accidents in the carrying on of the activity and, where an accident occurs, to limit its consequences for the environment and, in so far as it does have such consequences, to remedy those consequences,

(x) necessary measures will be taken upon the permanent cessation of the activity (including such a cessation resulting from the abandonment of the activity) to avoid any risk of environmental pollution and return the site of the activity to a satisfactory state,

(x*a*) in the case of an industrial emissions directive activity, necessary measures referred to in subparagraph (x) including measures of appropriate duration shall be taken in accordance with section 86B'

In response:

(i) An air impact assessment has been undertaken as part of the EIS that was submitted with the planning application to An Bord Pleanála. Chapter 9 of the EIS demonstrates that the emissions to air from the site (flare emissions and dust) are in compliance with the EPA Emission Limit Values and that Powerstown Landfill, if licensed to accept 50,000 tonnes per annum, will not have a significant impact on ambient air quality. Please refer to Attachment I.1.

(ii) A surface water quality impact assessment was undertaken as part of the EIS. This assessment concluded that discharges from the facility will not adversely impact water quality or breach of Environmental Quality Standards in the receiving water body in accordance with the EC Environmental Objectives (Surface Waters) Regulations (*S.I. No. 272/2009*). Please refer to Attachment I.2.

(iii) The environmental emissions from the facility are considered to the atmospheric and surface water as discussed in bullet points (i) and (ii) directly above.

(iv) A noise impact assessment was undertaken as of the EIS for the planning application to An Bord Pleanála. Chapter 8 of the EIS concludes that noise will not impact the environment. Please refer to Attachment I.7.

(v) Please refer to bullet point (iii).

(vii) Leachate is the only waste generated on site as a result of landfilling activities. The prevention and minimisation of leachate generation is dealt with in Attachments H and D.1 Section 4.1.4.

(viia) There are no technically or economically feasible method to prepare for re-use, recycle or recover leachate at Powerstown Landfill and Recycling Centre. Please refer to Attachment D.1, Section 4.1.4 for details of leachate disposal.

(viii) Attachment G of this application outlines the measures undertaken onsite to ensure that energy is used efficiently.

(ix) There is an Emergency Response Plan for the site. Please refer to Attachment J.

(x) A CRAMP and an ELRA have been prepared by CCC and submitted to the Agency as detailed in Attachment B.13.

(xa) A baseline report is being prepared. Please refer to Attachment I.4.

2. *Indicate whether or not the activity is carried out, or may be carried out, or is located such that it is liable to have an adverse effect on -*
(a) a site placed on a list in accordance with Part 3 of S.I. 477 of 2011, or
(b) a site where consultation has been initiated in accordance with Article 5 of the EU Habitats Directive (92/43/EEC).

Undertake a screening for Appropriate Assessment and state whether the activity, individually or in combination with other plans or projects, is likely to have a significant effect on a European Site(s), in view of best scientific knowledge and the conservation objectives of the site(s). Where it cannot be excluded, on the basis of objective scientific information, following screening for Appropriate Assessment, that an activity, either individually or in combination with other plans or projects, will have a significant effect on a European Site, provide a Natura Impact Statement, as defined in Regulation 2(1) of the European Communities (Birds and Natural Habitats) Regulations (S.I. No. 477 of 2011). Where based on the screening it is considered that an Appropriate Assessment is not required, provide a reasoned response.

As part of the planning permission application to An Bord Pleanála for the extension of the lifetime of the facility, an Appropriate Assessment was prepared to assess the impacts of the development on the environment. The Natura Impact Statement (NIS) concluded that:

'The Powerstown Landfill is not resulting in any loss or fragmentation of habitats for which the SAC is designated.

The Powerstown Landfill is not causing significant disturbance to or affecting the population density of any of the species for which the SAC is designated.

The Powerstown Landfill is not causing any significant change to the water resource nor to water quality'.

The NIS (Stage 1 and Stage 2) is included with this application.

3. *Indicate whether or not the activity is liable to have an adverse effect on water quality in light of the European Communities Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009).*

As part of the planning permission application to An Bord Pleanála for the extension of the lifetime of the facility, an EIS was prepared to assess the impacts of the development on the environment. Chapter 12 of the EIS describes the assessment of surface water and concluded that:

'There are no hydrological impacts from the proposed development in terms of either an increase in run-off or an increase in suspended solids in the surface water run-off from this site. There will be no construction-related impacts on water quality and there will be no decrease in water quality in the receiving waters of the River Barrow catchment as a result of the continued operation of landfilling activities if current management practices are continued'.

There has been no change to the status or risk of the water bodies since the EIS was prepared.

4. *Indicate whether or not the activity is liable to have an adverse effect on water quality in light of the European Communities Environmental Objectives (Ground Water) Regulations 2010 (S.I. No. 9 of 2010).*

Chapter 13 of the EIS describes the assessment of groundwater. It concludes that:

'It is evident from data collected upstream and downstream of the landfill that groundwater quality is being impacted on. The source of this is mostly likely leachate from the unlined portion of the site.

The proposed development will not impact on the soils and geology of the site as no further construction works will be required. There is a potential for groundwater contamination as a result of leachate leakage, however the remaining cells of Phase 3 have been constructed with a clay liner five times greater than that required by Landfill Directive liner system. The risk of leachate reaching the bedrock is considered negligible from Phase 3 of the site and therefore the proposed development will not increase the risk of groundwater contamination'.

Subsequent to the completion of the EIS, CCC carried out a Tier 3 assessment of the unlined portion of the site. This was submitted to the Agency in May 2013. Further analysis of the groundwater contamination is included in the baseline report in Attachment I.4.

5. *Indicate whether any of the substances specified in the Schedule of the EPA (Industrial Emissions) (Licensing) 2013, S.I. No. 137 of 2013, are discharged by the activity to the relevant medium.*

This licence application does not seek permission for any further development at the site. Therefore there will not be any changes to the existing emissions or management/abatement and control. The following substances specified in the Schedule of the EPA (Industrial Emissions) (Licensing) 2013, S.I. No. 137 of 2013 are discharged by the activity to air:

- Sulphur dioxide and other sulphur compounds
- Oxides of nitrogen and other nitrogen compounds
- Carbon monoxide
- Volatile organic compounds
- Dust including fine particulate matter
- Chlorine and its compounds
- Fluorine and its compounds

and to water:

- Metals and their compounds
- Materials in suspension
- Substances which contribute to eutrophication

Substances which have an unfavourable influence on the oxygen balance These substances are monitored in compliance with the licence. The substances emitted to air are the exhaust air from the flare stack and fugitive VOC and dust emissions. Substances emitted to surface water are from the licensed discharge to Powerstown Stream and to groundwater from leachate from the unlined portion of the landfill. Further information on air emissions and abatement is included in Attachment E.1, E.2 and D.1.

6. *Indicate if the best environmental practices are in place for control of diffuse emissions from the installation as set out in the following legislation:*

a BAT Conclusions Implementing Decision published by the EC.

(a) *A specification prepared by the Agency in accordance with Section 5 of the Environmental Protection Agency Act 1992 as amended;*

Please refer to Attachment I.8.

(b) the *Urban Waste Water Treatment Regulations 2001 (S.I. No. 254 of 2001)* as amended by the *Urban Waste Water Treatment (Amendment) Regulations 2004 (S.I. No. 440 of 2004)* or any future amendment thereof;

This is not applicable to Powerstown Landfill and Recycling Facility.

(c) the *European Communities (Good Agricultural Practice for Protection of Waters) Regulations 20 (S.I. No. 610 of 2010)* or any future amendment thereof;

This is not applicable to Powerstown Landfill and Recycling Facility.

(d) the *Local Government (Water Pollution) Act, 1977 (Control of Cadmium Discharges) Regulations 1985 (S.I. No. 294 of 1985)*;

This is not applicable to Powerstown Landfill and Recycling Facility.

(e) the *Local Government (Water Pollution) Act, 1977 (Control of Hexachlorocyclohexane and Mercury Discharges) Regulations 1986 (S.I. No. 55 of 1986)*;

This is not applicable to Powerstown Landfill and Recycling Facility.

(f) the *Local Government (Water Pollution) Acts, 1977 and 1990 (Control of Carbon Tetrachloride, DDT and Pentachlorophenol Discharges) Regulations 1994 (S.I. No. 43 of 1994)*; and,

This is not applicable to Powerstown Landfill and Recycling Facility.

(g) measures or controls identified in a pollution reduction plan for the river basin district prepared in accordance with Part V of the *EC Environmental Objectives (Surface Waters) Regulations 2009 S.I. No. 272 of 2009* for the reduction of pollution by priority substances or the ceasing or phasing out of emissions, discharges and losses of priority hazardous substances.

Please refer to Attachment I.2.