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Ireland

WASTE LICENCE
Recommended Decision

Licence Register Number:	**W0011-02**
Applicant:	**Wicklow County Council**
Location of Facility:	**Ballymurtagh Landfill, Ballygahan Upper, Ballygahan Lower, Tinnahinch, Co. Wicklow**

INTRODUCTION

This introduction is not part of the licence and does not purport to be a legal interpretation of the licence.

This licence is the for the ongoing aftercare management of a closed landfill at Ballymurtagh, Ballygahan Upper, Ballygahan Lower, Tinnahinch, Co. Wicklow, and for the ongoing operation of an existing civic waste facility.

On 25 October 2007 the European Court of Justice (case C-248/05) found that Ireland failed to comply with articles 4, 5, 7 and 10 of Council Directive of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances (80/68/EC) in the design, constructing and authorisation of the Ballymurtagh landfill. At a meeting with the European Commission on 12 December 2007 it was decided that the waste licence for the landfill should be reviewed. The purpose of the licence review is to address the deficiencies in the earlier authorisation process identified by the Court.

This licence limits and controls the environmental impact of the closed landfill and requires periodic monitoring and control on the part of Wicklow County Council.

The licence sets out in detail the conditions under which **Wicklow County Council** will operate and manage this facility.

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Glossary of Terms

All terms in this licence should be interpreted in accordance with the definitions in the Waste Management Acts 1996 to 2010, unless otherwise defined in the section.

Adequate lighting	20 lux measured at ground level.
AER	Annual Environmental Report.
Agreement	Agreement in writing.
Annually	At approximately twelve-monthly intervals.
Application	The application by the licensee for this licence.
Appropriate facility	A waste management facility, duly authorised under relevant law and technically suitable.
Attachment	Any reference to Attachments in this licence refers to attachments submitted as part of this licence application.
BAT	Best Available Techniques.
Biannually	All or part of a period of six consecutive months.
Biennially	Once every two years.
BOD	5 day Biochemical Oxygen Demand (without nitrification suppression).
CBOD	5 day Carbonaceous Biochemical Oxygen Demand (with nitrification suppression).
CEN	Comité Européen De Normalisation – European Committee for Standardisation.
COD	Chemical Oxygen Demand.
Containment boom	A boom that can contain spillages and prevent them from entering drains or watercourses or from further contaminating watercourses.
Daily	During all days of plant operation and, in the case of emissions, when emissions are taking place; with at least one measurement on any one day.
Day	Any 24 hour period.
Daytime	0800 hrs to 2200 hrs.

dB(A)	Decibels (A weighted).
DO	Dissolved oxygen.
Documentation	Any report, record, results, data, drawing, proposal, interpretation or other document in written or electronic form which is required by this licence.
Drawing	Any reference to a drawing or drawing number means a drawing or drawing number contained in the application, unless otherwise specified in this licence.
Emission limits	Those limits, including concentration limits and deposition rates, established in *Schedule B: Emission Limits*, of this licence.
EMP	Environmental Management Programme.
Environmental damage	As defined in Directive 2004/35/EC.
EPA	Environmental Protection Agency.
Facility	Any site or premises used for the purpose of the recovery of disposal of waste.
Fortnightly	A minimum of 24 times per year, at approximately two week intervals.
GC/MS	Gas chromatography/mass spectroscopy.
ha	Hectare.
Hazardous waste	
Heavy metals	This term is to be interpreted as set out in "Parameters of Water Quality, Interpretation and Standards" published by the Agency in 2001. ISBN 1-84095-015-3.
Hours of operation	The hours during which the facility is authorised to be operational.
ICP	Inductively coupled plasma spectroscopy.

Incident	The following shall constitute as incident for the purposes of this licence: (i) an emergency; (ii) any emission which does not comply with the requirements of this licence; (iii) any exceedance of the daily duty capacity of the waste handling equipment; (iv) any trigger level specified in this licence which is attained or exceeded; and, (v) any indication that environmental pollution has, or may have, taken place.
Landfill Directive	Council Directive 1999/31/EC.
Landfill footprint	The area of the facility where waste is deposited.
LEMP	Landfill Environmental Management Plan
L_{eq}	Equivalent continuous sound level.
Licensee	Wicklow County Council, County Buildings, Wicklow
List I	As listed in the EC Directives 2006/11/EC and 80/68/EEC and amendments.
List II	As listed in the EC Directives 2006/11/EC and 80/68/EEC and amendments.
Local Authority	Wicklow County Council.
Maintain	Keep in a fit state, including such regular inspection, servicing, calibration and repair as may be necessary to perform its function adequately.
Monthly	A minimum of 12 times per year, at intervals of approximately one month.
Night-time	2200 hrs to 0800 hrs.
Noise-sensitive location (NSL)	Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
Oil separator	Device installed according to the International Standard I.S. EN 858-2:2003 (Separator system for light liquids, (e.g. oil and petrol) – Part 2: Selection of normal size, installation, operation and maintenance).

OMP	Odour Management Plan
PRTR	Pollutant Release and Transfer Register.
Quarterly	At approximately three – monthly intervals.
Sample(s)	Unless the context of this licence indicates to the contrary, the term samples shall include measurements taken by electronic instruments.
Sanitary effluent	Wastewater from facility toilet, washroom and canteen facilities.
SOP	Standard operating procedure.
Specified emissions	Those emissions listed in *Schedule B: Emission Limits,* of this licence.
Standard method	A National, European or internationally recognised procedure (e.g. I.S. EN, ISO, CEN, BS or equivalent); or an in-house documented procedure based on the above references; a procedure as detailed in the current edition of "Standard Methods for the Examination of Water and Wastewater" (prepared and published jointly by A.P.H.A., A.W.W.A. & W.E.F.), American Public Health Association, 1015 Fifteenth Street, N.W., Washington DC 20005, USA; or an alternative method as may be agreed by the Agency.
Storm water	Rain water run-off from roof and non-process areas.
The Agency	Environmental Protection Agency.
TOC	Total organic carbon.
Trigger level	A parameter value, the achievement or exceedance of which requires certain actions to be taken by the licensee.
VOC	Volatile Organic Compounds
Water Services Authority	**Wicklow County Council.**
Weekly	During all weeks of plant operation and, in the case of emissions, when emissions are taking place; with at least one measurement in any one week.
WWTP	Waste water treatment plant.

Decision & Reasons for the Decision

The Environmental Protection Agency is satisfied, on the basis of the information available, that subject to compliance with the conditions of this licence, any emissions from the activity will comply with and will not contravene any of the requirements of Section 40(4) of the Waste Management Acts 1996 to 2010.

Recommended Determination

In reaching this decision the Environmental Protection Agency has considered the application and supporting documentation received from the applicant and the report of its inspector.

Part I Schedule of Activities Licensed

In pursuance of the powers conferred on it by the Waste Management Acts 1996 to 2010, the Environmental Protection Agency (the Agency) proposes, under **Section 46(8)** of the said Acts to grant this Waste Licence to Wicklow County Council to carry on the waste activity/activities listed below at **Ballymurtagh Landfill, Ballygahan Upper, Ballygahan Lower, Tinnahinch, Co. Wicklow**, subject to conditions, with the reasons therefor and the associated schedules attached thereto set out in the licence. For the purpose of Article 48 of the Waste Management (Licensing) Regulations 2004 (S.I. No. 395) this facility is classed as a non-hazardous waste landfill.

Licensed Waste Disposal Activities, in accordance with the Third Schedule of the Waste Management Acts 1996 to 2011

Class D1.	***Deposit into or on to land (e.g. landfill, etc.)***

Licensed Waste Recovery Activities, in accordance with the Fourth Schedule of the Waste Management Acts 1996 to 2011

Class R3.	**Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes), which includes gasification and pyrolisis using the components as chemicals**
Class R4.	**Recycling/reclamation of metals and metal compounds**
Class R5.	**Recycling/reclamation of other inorganic materials, which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials**

Part II Schedule of Activities Refused

None of the proposed activities as set out in the licence application have been refused.

Part III Conditions

Condition 1. Scope

1.1 Waste activities at this facility shall be restricted to those listed and described in *Part I Schedule of Activities Licensed*, and shall be as set out in the licence application or as modified under Condition 1.4 of this licence and subject to the conditions of this licence.

1.2 Activities at this facility shall be limited as set out in *Schedule A: Limitations*, of this licence. **No waste shall be accepted at the landfill.**

1.3 For the purposes of this licence, the facility authorised by this licence is the area of land outlined in red on **Attachment B.1(i), Map 1**, of the application. Any reference in this licence to "facility" shall mean the area thus outlined in red. The licensed activity shall be carried on only within the area outlined.

1.4 No alteration to, or reconstruction in respect of, the activity, or any part thereof, that would, or is likely to, result in

(i) a material change or increase in:

- the nature or quantity of any emission;
- the abatement/treatment or recovery systems;
- the range of processes to be carried out;
- the fuels, raw materials, intermediates, products or wastes generated, or

(ii) any changes in:

- site management, infrastructure or control with adverse environmental significance;

shall be carried out or commenced without prior notice to, and without the agreement of, the Agency.

1.5 The facility shall be controlled, operated and maintained, and emissions shall take place as set out in the licence. All programmes required to be carried out under the terms of this licence become part of this licence.

1.6 This licence is for purposes of waste licensing under the Waste Management Acts 1996 to 2010 only and nothing in this licence shall be construed as negating the licensee's statutory obligations, or requirements under any other enactments or regulations.

1.7 Waste may be accepted at the civic waste facility between the hours of 0830 and 1800 Monday to Saturday inclusive.

1.8 This licence is being granted in substitution for the waste licence granted to the licensee on 3 April 2001 (Register No: W0011-01). The previous waste licence (Register No: W0011-01) is superseded by this licence.

Reason:	***To clarify the scope of this licence.***

Condition 2. Management of the Facility

2.1 Facility Management

2.1.1 The licensee shall employ a suitable qualified and experienced facility manager who shall be designated as the person in charge. The facility manager or a nominated, suitably qualified and experienced deputy shall be present on the facility at all times during its operation or as otherwise required by the Agency.

2.1.2 The licensee shall ensure that personnel performing specifically assigned tasks shall be qualified on the basis of appropriate education, training and experience as required and shall be aware of the requirements of this licence. In addition, the facility manager and his/her deputy shall successfully complete a FÁS waste management training programme or equivalent agreed by the Agency.

2.2 Environmental Management System (EMS)

2.2.1 The licensee shall **maintain** an Environmental Management System (EMS) within six months of the date of grant of this licence. The EMS shall be updated on an annual basis.

2.2.2 The EMS shall include, as a minimum, the following elements:

2.2.2.1 Management and Reporting Structure.

2.2.2.2 Schedule of Environmental Objectives and Targets.

The licensee shall **maintain** a Schedule of Environmental Objectives and Targets. The schedule shall, as a minimum, provide for a review of all operations and processes, including an evaluation of practicable options, for energy and resource efficiency, the use of cleaner technology (including emissions prevention/reduction), and the beneficial recovery/recycling of waste in subsequent landfill engineering operations. The schedule shall include time frames for the achievement of set targets and shall address a five-year period as a minimum. The schedule shall be reviewed annually and amendments thereto notified to the Agency for agreement as part of the Annual Environmental Report (AER).

The licensee shall ensure insofar as practicable that environmental objectives and targets are met according to the stated schedule.

2.2.2.3 Landfill Environmental Management Plan (LEMP)

The licensee shall maintain a LEMP, including a time schedule, for achieving the Environmental Objectives and Targets prepared under Condition 2.2.2.2. The LEMP shall have regard to the guidance set out in the EPA Manual on Landfill Operational Practices. The LEMP shall include:

- designation of responsibility for targets;
- the means by which they may be achieved; and
- the time within which they may be achieved.

The LEMP shall be reviewed annually and take into account operational experiences at the facility, the stage of development of the facility (active, closure, aftercare), evolving legislative and BAT requirements, as well as any Agency instructions that may issue. Amendments shall be notified to the Agency for agreement as part of the Annual Environmental Report (AER).

A report on the programme, including the success in meeting agreed targets, shall be prepared and submitted to the Agency as part of the AER. Such reports shall be retained on-site for a period of not less than seven years and shall be available for inspection by authorised persons of the Agency.

2.2.2.4 Documentation

(i) The licensee shall **maintain** an environmental management documentation system which shall be to the satisfaction of the Agency.

(ii) The licensee shall issue a copy of this licence to all relevant personnel whose duties relate to any condition of this licence.

2.2.2.5 Corrective Action

The licensee shall **maintain** procedures to ensure that corrective action is taken should the specified requirements of this licence not be fulfilled. The

responsibility and authority for persons initiating further investigation and corrective action in the event of a reported non-conformity with this licence shall be defined.

2.2.2.6 Awareness and Training

The licensee shall **maintain** procedures for identifying training needs and for providing appropriate training for all personnel whose work can have a significant effect upon the environment. Appropriate records of training shall be maintained.

2.2.2.7 Communications Programme

The licensee shall **maintain** a Public Awareness and Communications Programme to ensure that members of the public are informed, and can obtain information at the facility **or an alternative location as may be agreed** at all reasonable times concerning the environmental performance of the facility.

2.2.2.8 Maintenance Programme

The licensee shall **maintain** a programme for maintenance of all plant and equipment based on the instructions issued by the manufacturer/supplier or installer of the equipment. Appropriate record keeping and diagnostic testing shall support this maintenance programme. The licensee shall clearly allocate responsibility for the planning, management and execution of all aspects of this programme to appropriate personnel (see **Condition 2.1** above).

2.2.2.9 Efficient Process Control

The licensee shall **establish and maintain** a programme to ensure there is adequate control of processes under all modes of operation. The programme shall identify the key indicator parameters for process control performance, as well as identifying methods for measuring and controlling these parameters. Abnormal process operating conditions shall be documented, and analysed to identify any necessary corrective action.

Reason:	***To make provision for management of the activity on a planned basis having regard to the desirability of ongoing assessment, recording and reporting of matters affecting the environment.***

Condition 3. Infrastructure and Operation

3.1 The licensee shall establish and maintain, for each component of the facility, all infrastructure referred to in this licence in advance of the commencement of the licensed activities in that component, or as required by the conditions of this licence. Infrastructure specified in the application that relates to the environmental performance of the installation and is not specified in the licence, shall be installed in accordance with the schedule submitted in the application.

3.2 Facility Notice Board

3.2.1 The licensee shall **maintain** a Facility Notice Board on the facility so that it is legible to persons outside the main entrance to the facility. The minimum dimensions of the board shall be 1200 mm by 750 mm.

3.2.2 The board shall clearly show:

(i) the name of the facility;

(ii) the operational status of the facility;

(iii) the name of the licence holder **and contact telephone number**;

(iv) an emergency out of hours contact telephone number;

(v) the licence reference number; and

(vi) where environmental information relating to the facility can be obtained.

3.3 Specified Engineering Works (SEW)

3.3.1 The licensee shall submit proposals for any Specified Engineering Works, as defined in *Schedule D: Specified Engineering Works*, of this licence, to the Agency for its agreement at least two months in advance of the intended date of commencement of any such works. No such works shall be carried out without the prior agreement of the Agency.

3.3.2 All specified engineering works shall be supervised by an appropriately qualified person, and that person, or persons, shall be present at all times during which relevant works are being undertaken.

3.3.3 Following the completion of any specified engineering works, the licensee shall complete a construction quality assurance validation. The validation report shall be made available to the Agency on request. The report shall, as appropriate, include the following information:

(i) A description of the works;

(ii) As-built drawings of the works;

(iii) Records and results of all tests carried out (including failures);

(iv) Drawings and sections showing the location of all samples and tests carried out;

(v) Name(s) of contractor(s)/individual(s) responsible for undertaking the specified engineering works;

(vi) Records of any problems and the remedial works carried out to resolve those problems; and

(vii) Any other information requested in writing by the Agency.

3.4 The licensee shall have regard to the guidance given in the Environmental Protection Agency Landfill Manuals (Site Design, Operational Practices, Monitoring, Site Investigations, and Restoration and Aftercare), as may be relevant, in the development, operation and closure of the facility.

3.5 Facility Security

3.5.1 Security and stockproof fencing and gates shall be installed and maintained. The base of the fencing shall be set in the ground. Subject to the implementation of the restoration and aftercare plan and to the agreement of the Agency, the requirement for such site security may be removed.

3.5.2 Gates shall be locked shut when the facility is unsupervised.

3.5.3 The licensee shall remedy any defect in the gates and/or fencing as follows:

(i) A temporary repair shall be made by the end of the working day; and

(ii) A repair to the standard of the original gates and/or fencing shall be undertaken within three working days.

3.6 Landfill Gas Management

3.6.1 Active landfill gas management infrastructure as appropriate, to include gas flare(s) and interconnecting pipework, shall be provided and maintained.

3.6.2 All landfill gas extraction well-heads shall be designed to include a regulating valve and monitoring points either side of the said valve. The licensee shall also provide monitoring ports at regular intervals along the gas extraction system. The monitoring ports shall be suitable for the monitoring outlined in Schedule C1.3.

3.6.3 Condensate Management

The licensee shall implement a landfill gas condensate management plan at the facility and this shall include, as a minimum, the following:

(i) Identification of all areas of the landfill gas extraction system where condensate is likely to accumulate;

(ii) Daily maintenance schedule to provide for the inspection and removal of condensate from landfill gas extraction pipework; and

(iii) The rationalisation/elimination of narrow diameter pipework (i.e. 50mm I.D. or less) at the facility.

3.6.4 Any buildings constructed on the facility shall have regard to the guidance given in the Department of Environment 1994 publication "Protection of New Buildings and Occupants from Landfill Gas" and any subsequent revisions.

3.7 Groundwater

3.7.1 All wells & boreholes shall be adequately sealed to prevent surface contamination and, as may be appropriate, decommissioned according to the UK Environment Agency guidelines "Decommissioning Redundant Boreholes and Wells" (or as otherwise may be agreed by the Agency).

3.7.2 Groundwater monitoring wells shall be constructed having regard to the guidance given in the Agency's landfill manual "Landfill Monitoring".

3.8 The licensee shall install on all emission points such sampling points or equipment, including any data-logging or other electronic communication equipment, as may be required by the Agency. All such equipment shall be consistent with the safe operation of all sampling and monitoring systems.

3.9 In the case of composite sampling of aqueous emissions from the operation of the facility, a separate composite sample or homogeneous sub-sample (of sufficient volume as advised) shall be refrigerated immediately after collection and retained as required for EPA use.

3.10 The licensee shall clearly label and provide safe and permanent access to all on-site sampling and monitoring points and to off-site points as required by the Agency. The requirement with regard to off-site points is subject to the prior agreement of the landowner(s) concerned.

3.11 Tank, Container and Drum Storage Areas

3.11.1 All tank, container and drum storage areas shall be rendered impervious to the materials stored therein. Bunds shall be designed having regard to Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' (2004).

3.11.2 All tank and drum storage areas shall, as a minimum, be bunded, either locally or remotely, to a volume not less than the greater of the following:

(i) 110% of the capacity of the largest tank or drum within the bunded area; or

(ii) 25% of the total volume of substance that could be stored within the bunded area.

3.11.3 All drainage from bunded areas shall be treated as hazardous waste unless it can be demonstrated to be otherwise. All drainage from bunded areas shall be diverted for collection and safe disposal.

3.11.4 All inlets, outlets, vent pipes, valves and gauges must be within the bunded area.

3.11.5 All tanks, containers and drums shall be labelled to clearly indicate their contents.

3.12 The licensee shall have in storage an adequate supply of containment booms and/or suitable absorbent material to contain and absorb any spillage at the facility. Once used, the absorbent material shall be disposed of at an appropriate facility.

3.13 Silt Traps and Oil Separators

The licensee shall, within twelve months of date of grant of this licence, install and maintain silt traps and oil separators at the facility:

(i) Silt traps to ensure that all storm water discharges, other than from roofs, from the facility pass through a silt trap in advance of discharge;

(ii) An oil separator on the storm water discharge from yard areas. The separator shall be a Class I full retention separator.

The silt traps and separator shall be in accordance with I.S. EN-858-2: 2003 (separator systems for light liquids).

3.14 All pump sumps, storage tanks or other treatment plant chambers from which spillage of environmentally significant materials might occur in such quantities as are likely to breach local or remote containment or separators, shall be fitted with high liquid level alarms (or oil detectors as appropriate) within six months from the date of grant of this licence.

3.15 The provision of a catchment system to collect any leaks from flanges and valves of all over-ground pipes used to transport material other than water shall be examined. This shall be incorporated into a Schedule of Environmental Objectives and Targets set out in Condition 2 of this licence for the reduction in fugitive emissions.

3.16 All wellheads shall be adequately protected to prevent contamination or physical damage within six months from the date of grant of this licence

3.17 Surface Water Management

The licensee shall maintain at least:

- **a network of diversion drains around and upgradient of the landfill,**
- **a network of surface and sub-surface drains on the landfill cap, and**
- **a stormwater retention pond**

for the purpose of diverting surface water run-off and overland flow away from and off the landfill cap.

In the event that a leachate extraction programme is initiated under condition 6.16.6, the licensee shall assess and report on the adequacy and performance of the surface water run-off management infrastructure as described above to ensure and confirm it is diverting overland flow from the landfill cap to the greatest extent possible.

3.18 The licensee shall provide and maintain a Wastewater Treatment plant at the facility for the treatment of sanitary effluent arising on-site. Any waste water treatment system and percolation area shall satisfy the criteria set out in the *Code of Practice Wastewater Treatment and Disposal Systems Serving Single Houses (p.e ≤ 10)*, published by the Environmental Protection Agency.

Reason: ***To provide for appropriate operation of the facility to ensure protection of the environment.***

Condition 4. Interpretation

4.1 Emission limit values for emissions to waters in this licence shall be interpreted in the following way:

4.1.1 Composite Sampling

(i) No pH value shall deviate from the specified range.

(ii) For parameters other than pH and flow, eight out of ten consecutive composite results, based on flow proportional composite sampling, shall not exceed the emission limit value. No individual results similarly calculated shall exceed 1.2 times the emission limit value.

4.1.2 Discrete Sampling

For parameters other than pH and temperature, no grab sample value shall exceed 1.2 times the emission limit value.

4.2 The concentration limits for emissions to atmosphere specified in this licence shall be achieved without the introduction of dilution air and shall be based on gas volumes under standard conditions of :

4.2.1 In the case of landfill gas flare:

Temperature 273 K, pressure 101.3 kPa, dry gas at 3% oxygen; and

4.2.2 In the case of landfill gas combustion plant:

Temperature 273 K, pressure 101.3 kPa, dry gas; 5% oxygen.

4.3 Where the ability to measure a parameter is affected by mixing before emission, then, with agreement from the Agency, the parameter may be assessed before mixing takes place.

4.4 Noise from the facility shall not give rise to sound pressure levels (Leq, T) measured at **the boundary** of the facility which exceed the limit value(s).

4.5 Dust and particulate matters from the activity shall not give rise to deposition levels which exceed the limit value(s).

Reason: ***To clarify the interpretation of limit values fixed under the licence.***

Condition 5. Emissions

5.1 No specified emission from the facility shall exceed the emission limit values set out in *Schedule B: Emission Limits*, of this licence. There shall be no other emissions of environmental significance.

5.2 No emissions, including odours, from the activities carried on at the site shall result in an impairment of, or an interference with amenities or the environment beyond the facility boundary or any other legitimate uses of the environment beyond the facility boundary.

5.3 No substance shall be discharged in a manner, or at a concentration, that, following initial dilution, causes tainting of fish or shellfish.

5.4 The licensee shall ensure that all or any of the following:

- Vermin
- Birds
- Flies
- Mud
- Dust
- Litter

associated with the activity do not result in an impairment of, or an interference with, amenities or the environment at the facility or beyond the facility boundary or any other legitimate uses of the environment beyond the facility boundary. Any method used by the licensee to control or prevent any such impairment/interference shall not cause environmental pollution.

5.5 Evidence of gross contamination in the surface water discharge at monitoring point SWD6 shall be treated as an incident.

Reason: ***To provide for the protection of the environment by way of control and limitation of emissions.***

Condition 6. Control and Monitoring

6.1 The licensee shall carry out such sampling, analyses, measurements, examinations, maintenance and calibrations as set out below and as in accordance with *Schedule C: Control & Monitoring,* of this licence.

6.1.1 Analyses shall be undertaken by competent staff in accordance with documented operating procedures.

6.1.2 Such procedures shall be assessed for their suitability for the test matrix and performance characteristics shall be determined.

6.1.3 Such procedures shall be subject to a programme of Analytical Quality Control using control standards with evaluation of test responses.

6.1.4 Where any analysis is sub-contracted it shall be to a competent laboratory.

6.2 The licensee shall ensure that:

(iii) sampling and analysis for all parameters listed in the Schedules to this licence; and

(iv) any reference measurements for the calibration of automated measurement systems;

shall be carried out in accordance with CEN-standards. If CEN standards are not available, ISO, national or international standards that will ensure the provision of data of an equivalent scientific quality shall apply.

6.3 All automatic monitors and samplers shall be functioning at all times (except during maintenance and calibration) when the activity is being carried on unless alternative sampling or monitoring has been agreed in writing by the Agency for a limited period. In the event of the malfunction of any continuous monitor, the licensee shall contact the Agency as soon as practicable, and alternative sampling and monitoring facilities shall be put in place. The use of alternative equipment, other than in emergency situations, shall be as agreed by the Agency.

6.4 Monitoring and analysis equipment shall be operated and maintained as necessary so that monitoring accurately reflects the emission/discharge (or ambient conditions where that is the monitoring objective).

6.5 The licensee shall ensure that groundwater monitoring well sampling equipment is available/installed on-site and is fit for purpose at all times. The sampling equipment shall be to Agency specifications.

6.6 All treatment/abatement and emission control equipment shall be calibrated and maintained in accordance with the instructions issued by the manufacturer/supplier or installer.

6.7 The frequency, methods and scope of monitoring, sampling and analyses, as set out in this licence, may be amended with the agreement of the Agency following evaluation of test results.

6.8 The licensee shall prepare a programme, to the satisfaction of the Agency, for the identification and reduction of fugitive emissions using an appropriate combination of best available techniques. This programme shall be included in the Environmental Management Programme.

6.9 The integrity and water tightness of all underground pipes, tanks, bunding structures and containers and their resistance to penetration by water or other materials carried or stored therein shall be tested and demonstrated by the licensee within **twelve** months of the date of grant of this licence. This testing shall be carried out by the licensee at least once every three years thereafter and reported to the Agency on each occasion. This testing shall be carried out in accordance with any guidance published by the Agency. A written record of all integrity tests and any maintenance or remedial work arising from them shall be maintained by the licensee.

6.10 The drainage system (i.e., gullies, manholes, any visible drainage conduits and such other aspects as may be agreed) and bunds and silt traps shall be inspected weekly and desludged as necessary. All sludge and drainage from these operations shall be collected for safe disposal. The drainage system, bunds and silt traps shall be properly maintained at all times.

6.11 An inspection for leaks on all flanges and valves on over-ground pipes used to transport materials other than water shall be carried out weekly. A log of such inspections shall be maintained.

6.12 A visual examination of the storm water discharges shall be carried out **weekly**. A log of such inspections shall be maintained.

6.13

6.14 Pollutant Release and Transfer Register (PRTR)

The licensee shall prepare and report a PRTR for the site. The substance and/or wastes to be included in the PRTR shall be as agreed by the Agency each year by reference to EC Regulations No. 166/2006 concerning the establishment of the European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC. The PRTR shall be prepared in accordance with any relevant guidelines issued by the Agency and shall be submitted electronically in specified format and as part of the AER.

6.15 The licensee shall, within six months of the date of grant of this licence, develop and establish a Data Management System for collation, archiving, assessing and graphically presenting the monitoring data generated as a result of this licence.

6.16 Leachate Management

6.16.1 In addition to well L10/01, four new leachate monitoring wells shall be installed to the base of the landfill at locations that will best provide representative information on the level and nature of leachate within the landfill. Wells shall be installed within 12 months of the date of grant of this licence.

6.16.2 No fewer than five operational leachate monitoring wells drilled to the base of the waste body and capable of providing depth readings and samples of leachate from the base of the landfill shall be maintained at all times unless otherwise agreed with the Agency.

6.16.3 The level of leachate in **leachate monitoring wells and** pump sumps shall be monitored as outlined in *Schedule C.3*, of this licence.

6.16.4 **Any leachate extracted from the landfill shall be stored in compliance with the conditions of this licence and tankered off-site** in fully enclosed road tankers to a facility approved by the Agency.

6.16.5 Recirculation of leachate or other contaminated water shall not be undertaken.

6.16.6 Upon exceedence of trigger levels to be established under condition 6.20, the licensee shall investigate whether the landfill is the source of contamination of groundwater. If it cannot be established that the landfill is not the source of contamination, the establishment of a programme of leachate extraction shall be evaluated taking the following factors into account:

- **location/source of contamination within the landfill;**
- **head of leachate above landfill base, particularly in the contaminated area if localised;**
- **the influence of leachate head as a driving force for contaminants through the landfill base; and**
- **the rate of leachate extraction (m^3/day) considered necessary to effect a reduction in the throughput of relevant contaminants through the base of the landfill.**

A report on the evaluation shall be prepared and submitted to the Agency within three months of a groundwater trigger level being exceeded.

A programme of leachate extraction shall be commenced with the agreement or upon the instruction of the Agency. Leachate extraction shall cease when analysis of groundwater shows that trigger levels are no longer exceeded and in any event or otherwise only with the agreement of the Agency.

6.17 Landfill Gas

6.17.1 **Unless where otherwise agreed by the Agency, all landfill gas collected shall be** flared in an enclosed flare or landfill gas utilisation plant.

6.17.2 The licensee shall ensure that measures are in place to ensure the continuous operation of the required landfill gas management infrastructure at all times.

6.17.3 Flares shall be operated to ensure a burn chamber residence time of minimum 0.3 seconds and burn temperature of minimum 1000°C.

6.17.4 In order to minimise release of untreated landfill gas at nuisance forming concentrations/volumes, the landfill gas flare shall be capable of operating with a gas support fuel (e.g. natural gas) to allow effective treatment of landfill gas in the event that the landfill gas itself cannot support combustion. Alternative appropriate treatment techniques may be employed with the written prior approval of the Agency.

6.17.5 At least one on-site staff member, **or a contractor,** shall have adequate knowledge and training on the operation of the landfill gas management system and balancing of the gas fields to maximise landfill gas control. The licensee shall ensure that regular (daily/weekly routines) assessment of the operation of the landfill gas management system, e.g. field balancing and control of condensate, is carried out and that records of these assessments are maintained on site.

6.17.6 The licensee shall arrange for an annual, **or other period as may be agreed with the Agency,** independent assessment of the landfill gas management system. The licensee shall undertake actions, as necessary, having regard to the recommendations of this independent assessment as may be required by the Agency.

6.17.7 The licensee shall conduct continuous gas monitoring in any enclosed structures at the facility for methane (CH4) % v/v, carbon dioxide (CO2) % v/v and oxygen (O2) % v/v;

6.17.8 In relation to landfill derived gases the following shall constitute a trigger level:

(i) methane greater than 1% v/v; or,

(ii) carbon dioxide greater than 1.5% v/v,

measured in any monitoring borehole, building on or adjacent to the facility, service duct, manhole or other point as may be specified, located external to the body of waste.

6.17.9 The licensee shall carry out routine monitoring of the landfill gas management system in accordance with *Schedule C1.2.*

6.17.10 The licensee shall carry out biannual VOC surface emissions monitoring on the landfill cap. In relation to surface emissions from the waste body and identified features, the following shall constitute a trigger level:

(i) VOC greater than or equal to 50ppmv as methane average over capped area; or

(ii) VOC greater than or equal to 100ppmv as methane instantaneous reading on open surfaces within the landfill footprint; or

(iii) VOC greater than or equal to 500ppmv as methane around all identified features.

6.17.11 When siting and operating landfill gas infrastructure, regard shall be had to the potential for, and mitigation of, odour nuisance.

6.18 Stability Assessment

The licensee shall carry out a stability assessment of the side slopes of the facility annually. The results of this assessment shall be reported as part of the Annual Environmental Report (AER).

6.19 Topographical Monitoring

A topographical survey shall be carried out within twelve months of the date of **grant of this licence** and shall be repeated annually thereafter **unless otherwise agreed with the Agency**. The survey shall be in accordance with any written instructions issued by the Agency.

6.20 Groundwater

6.20.1 Within six months of the date of grant of this licence, the licensee shall submit to the Agency for its agreement, groundwater monitoring trigger levels **having regard to the requirements of Directive 1999/31/EC**.

6.20.2 The trigger levels as specified in Condition 6.20.1 for groundwater shall be measured at locations specified in *Schedule C.4*.

6.21 Landfill Cap Assessment

The licencee shall assess the adequacy and performance of the landfill cap to ensure and confirm that the cap is operating as designed and preventing to the greatest extent possible the ingress of surface water to the waste body. A report on the assessment shall be provided to the Agency within 18 months of the date of grant of this licence. The report's recommendations or other actions deemed necessary by the Agency on foot of the report shall be implemented within 18 months of completion of the report, unless an alternative schedule is agreed by the Agency.

6.22 No smoking shall be allowed at the facility.

Reason:	***To provide for the protection of the environment by way of treatment and monitoring of emissions.***

Condition 7. Resource Use and Energy Efficiency

7.1 The licensee shall carry out an audit of the energy efficiency of the site within one year of the date of grant of this licence. The audit shall be carried out in accordance with the guidance published by the Agency, "Guidance Note on Energy Efficiency Auditing". The energy efficiency audit shall be repeated at intervals as required by the Agency.

7.2 The audit shall identify all practicable opportunities for energy use reduction and efficiency and the recommendations of the audit will be incorporated into the Schedule of Environmental Objectives and Targets under Condition 2 above.

Reason:	***To provide for the efficient use of resources and energy in all site operations.***

Condition 8. Materials Handling

8.1 **Waste management** on-site shall only take place in accordance with the conditions of this licence and in accordance with the appropriate National and European legislation and protocols.

8.2 Waste may only be deposited in appropriate receptacles and quantities at the civic waste facility. No other disposal, recovery, storage or transfer of waste shall take place at the facility.

8.3 Civic Waste Facility

a) Unless the prior agreement of the Agency is given only household waste and household hazardous waste shall be accepted at the civic waste facility and the civic waste facility shall not be used as a transfer station for bulk or skip waste by commercial operators or local authority waste collection vehicles.

b) The quantity of waste to be accepted at the civic waste facility shall not exceed 1,000 tonnes per annum unless otherwise agreed with the Agency.

c) Subject to agreement under sub-condition (a) above and conditions of this licence, hazardous waste of a similar nature and scale to household hazardous waste may be accepted at the civic waste facility from non-household sources such as small businesses and farms. In employing this sub-condition, the licensee shall have regard to any guidance published by the Agency under the National Hazardous Waste Management Plan 2008-2012 (and its revisions). The licensee shall be entitled to place a reasonable quantitative or volumetric cap on the acceptance of hazardous waste so as to avoid inappropriate use of the service.

d) The licensee shall maintain detailed written waste acceptance procedures for the acceptance and handling of waste at the civic waste facility.

8.2 Waste sent off-site for recovery or disposal shall be transported only by an authorised waste contractor. The waste shall be transported from the site of the activity to the site of recovery/disposal only in a manner that will not adversely affect the environment and in accordance with the appropriate National and European legislation and protocols.

8.3 The licensee shall ensure that, in advance of transfer to another person, waste shall be classified, packaged and labelled in accordance with National, European and any other standards which are in force in relation to such labelling.

8.4 The loading and unloading of materials shall be carried out in designated areas protected against spillage and leachate run-off.

8.5 Waste shall be stored in designated areas, protected as may be appropriate against spillage and leachate run-off. The waste shall be clearly labelled and appropriately segregated.

8.6 No waste classified as green list waste in accordance with the EU Shipment of Waste Regulations (Council Regulation EEC No. 1013/2006, as may be amended) shall be consigned for recovery without the agreement of the Agency.

8.7 Waste for disposal/recovery off-site shall be analysed in accordance with *Schedule C: Control & Monitoring*, of this licence.

8.8 Unless approved in writing, in advance, by the Agency the licensee is prohibited from mixing a hazardous waste of one category with a hazardous waste of another category or with any other non-hazardous waste.

8.9 The licensee shall neither import waste into the State nor export waste out of the State except in accordance with the relevant provisions of Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14th June 2006 on shipments of waste and associated national regulations.

Reason:	***To provide for the appropriate handling of material and the protection of the environment.***

Condition 9. Accident Prevention and Emergency Response

9.1 The licensee shall, within six months of date of grant of this licence, ensure that a documented Accident Prevention Procedure is in place that addresses the hazards on-site, particularly in relation to the prevention of accidents with a possible impact on the environment. This procedure shall be reviewed annually and updated as necessary.

9.2 The licensee shall **maintain** a documented Emergency Response Procedure is in place that addresses any emergency situation which may originate on-site. This procedure shall include provision for minimising the effects of any emergency on the environment. This procedure shall be reviewed annually and updated as necessary.

9.3 Incidents

9.3.1 In the event of an incident the licensee shall immediately:

(i) carry out an investigation to identify the nature, source and cause of the incident and any emission arising therefrom;

(ii) isolate the source of any such emission;

(iii) evaluate the environmental pollution, if any, caused by the incident;

(iv) identify and execute measures to minimise the emissions/malfunction and the effects thereof;

(v) identify the date, time and place of the incident;

(vi) notify the Agency and other relevant authorities.

9.3.2 The licensee shall provide a proposal to the Agency for its agreement within one month of the incident occurring or as otherwise agreed by the Agency, to:

(i) identify and put in place measures to avoid recurrence of the incident; and

(ii) identify and put in place any other appropriate remedial actions.

Reason: ***To provide for the protection of the environment.***

Condition 10. Closure, Restoration and Aftercare Management

10.1 Closure, Restoration & Aftercare Management Plan (CRAMP)

10.1.1 The licensee shall **maintain** a fully detailed and costed plan for the closure, restoration and long-term aftercare of the site.

10.1.2 The plan shall be maintained and reviewed annually and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the prior agreement of the Agency.

10.2 The CRAMP shall include as a minimum, the following:

10.2.1 A scope statement for the plan.

10.2.2 The criteria, including those specified in this licence, which define the successful closure and restoration of the facility or part thereof, and which ensure minimum impact to the environment.

10.2.3 A programme to achieve the stated criteria.

10.2.4 Where relevant, a test programme to demonstrate the successful implementation of the plan.

10.2.5 Details of the long-term supervision, monitoring, control, maintenance and reporting requirements for the restored facility.

10.2.6 Details of the costings for the plan and the financial provisions to underwrite those costs.

10.3 A final validation report to include a certificate of completion for the CRAMP, for all or part of the site as necessary, shall be submitted to the Agency within three months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment.

10.4 Finished Levels/Profile

10.4.1 Completed areas of the landfill shall be profiled so that no depressions exist in which water may accumulate. Any depressions arising after profiling shall be rectified by the emplacement of suitable capping or restoration materials.

10.4.2 Final contours and landscaping should be such that the finished slopes of the facility are structurally stable, resistant to erosion, and protective of pollution control and monitoring infrastructure.

Reason:	***To make provision for the proper closure of the activity ensuring protection of the environment.***

Condition 11. Notification, Records and Reports

11.1 The licence shall notify the Agency by both telephone and facsimile, if available, to the Agency's headquarters in Wexford, or to such other Agency office as may be specified by the Agency, as soon as practicable after the occurrence of any of the following:

(i) any release of environmental significance to atmosphere from any potential emissions point;

(ii) any emission that does not comply with the requirements of this licence;

(iii) any malfunction or breakdown of key control equipment or monitoring equipment set out in *Schedule C: Control and Monitoring* of this licence which is likely to lead to loss of control of the abatement system; and

(iv) any incident with the potential for environmental contamination of surface water or groundwater, or posing an environment threat to air or land, or requiring an emergency response by the Local Authority.

The licensee shall include as part of the notification, date and time of the incident, summary details of the occurrence, and where available, the steps taken to minimise any emissions.

11.2 In the case of any incident relating to discharges to water, the licensee shall notify the Local and Water Services Authority and the Inland Fisheries Ireland as soon as practicable after such an incident.

11.3 The licensee shall make a record of any incident. This record shall include details of the nature, extent, and impact of, and circumstances giving rise to, the incident. The record shall include all corrective actions taken to manage the incident, minimise wastes generated and the effect on the environment, and avoid recurrence. The licensee shall, as soon as practicable following incident notification, submit to the Agency the incident record.

11.4 The licensee shall record all complaints of an environmental nature related to the operation of the activity. Each such record shall give details of the date and time of the complaint, the name of the complainant (if provided), and give details of the nature of the complaint. A record shall also be kept of the response made in the case of each complaint.

11.5 The licensee shall record all sampling, analyses, measurements, examinations, calibrations and maintenance carried out in accordance with the requirements of this licence and all other such monitoring which relates to the environmental performance of the facility.

11.6 The licensee shall as a minimum keep the following documents at the site:

(i) the licences relating to the facility;

(ii) the current EMS for the facility;

(iii) the previous year's AER for the facility;

(iv) records of all sampling, analyses, measurements, examinations, calibrations and maintenance carried out in accordance with the requirements of this licence and all other such monitoring which relates to the environmental performance of the facility;

(v) relevant correspondence with the Agency;

(vi) up-to-date site drawings/plans showing the location of key process and environmental infrastructure, including monitoring locations and emission points;

(vii) up-to-date Standard Operational Procedures for all processes, plant and equipment necessary to give effect to this licence or otherwise to ensure that standard operation of such processes, plant or equipment does not result in unauthorised emissions to the environment;

(viii) the current Landfill Environmental Management Plan (LEMP); and

(ix) any elements of the licence application or EIS documentation referenced in this licence.

This documentation shall be available to the Agency for inspection at all reasonable times.

11.7 The licensee shall submit to the Agency, by the 31st March of each year, an AER covering the previous calendar year. This report, which shall be to the satisfaction of the Agency, shall include as a minimum the information specified in *Schedule E: Annual Environmental Report,* of this licence and shall be prepared in accordance with any relevant guidelines issued by the Agency.

11.8 The licensee shall submit report(s) as required by the conditions of this licence to the **Agency's Headquarters in Wexford**, or to such other Agency office as may be specified by the Agency.

11.9 All reports shall be certified accurate and representative by the facility manager or a nominated, suitably qualified and experienced deputy.

Reason: ***To provide for the collection and reporting of adequate information on the activity.***

Condition 12. Financial Charges and Provisions

12.1 Agency Charges

12.1.1 The licensee shall pay to the Agency an annual contribution of **€16,338**, or such sum as the Agency from time to time determines, having regard to variations in the extent of reporting, auditing, inspection, sampling and analysis or other functions carried out by the Agency, towards the cost of monitoring the activity as the Agency considers necessary for the performance of its functions under the Waste Management Acts 1996 to 2011. The first payment shall be a pro-rata amount for the period from the date of grant of this licence to the 31st day of December, and shall be paid to the Agency within one month from the date of grant of the licence. In subsequent years the licensee shall pay to the Agency such revised annual contribution as the Agency shall from time to time consider necessary to enable performance by the Agency of its relevant functions under the Waste Management Acts 1996 to 2011, and all such payments shall be made within one month of the date upon which demanded by the Agency.

12.1.2 In the event that the frequency or extent of monitoring or other functions carried out by the Agency needs to be increased, the licensee shall contribute such sums as determined by the Agency to defray its costs in regard to items not covered by the said annual contribution.

12.2 Environmental Liabilities

12.2.1 The licensee shall as part of the AER, provide an annual statement as to the measures taken or adopted at the site in relation to the prevention of environmental damage, and the financial provisions in place in relation to the underwriting of costs for remedial actions following anticipated events or accidents/incidents, as may be associated with the carrying on of the activity.

12.2.2 The licensee shall arrange for the completion, by an independent and appropriate qualified consultant, of a comprehensive and fully costed Environmental Liabilities Risk Assessment (ELRA) to address the liabilities from past and present activities. The assessment shall include those liabilities and costs identified in Condition 10 for execution of the CRAMP. A report on this assessment shall be submitted to the Agency for agreement within twelve months of date of grant of this licence. The ELRA shall be reviewed as necessary to reflect any significant change on site, and in any case every three years following initial agreement. The results of the review shall be notified as part of the AER.

12.2.3 As part of the measures identified in Condition 12.2.1, the licensee shall, to the satisfaction of the Agency, make financial provision to cover any liabilities identified

in Condition 12.2.2. The amount of indemnity held shall be reviewed and revised as necessary, but at least annually. Proof of renewal or revision of such financial indemnity shall be included in the annual 'Statement of Measures' report identified in Condition 12.2.1.

12.2.4 Unless otherwise agreed, any revision to that part of the indemnity dealing with restoration and aftercare liabilities shall be computed using the following formula:

Cost = (ECOST x WPI) + CiCC

Where:

Cost	=	Revised restoration and aftercare cost
ECOST	=	Existing restoration and aftercare cost
WPI	=	Appropriate Wholesale Price Index [Capital Goods, Building & Construction (i.e. Materials & Wages) Index], as published by the Central Statistics Office, for the year since last closure calculation/revision.
CiCC	=	Change in compliance costs as a result of change in site conditions, changes in law, regulations, regulatory authority charges, or other significant changes

12.2.5 The licensee shall have regard to the Environmental Protection Agency Guidance on Environmental Liability Risk Assessment, Decommissioning Management Plans and Financial Provision when implementing Conditions 12.2.2 and 12.2.3 above.

Reason:	***To provide for adequate financing for monitoring and financial provisions for measures to protect the environment.***

SCHEDULE A: Limitations

The following waste related processes are authorised:

Aftercare management of the closed landfill.
Acceptance of waste at a civic waste facility.

No additions to **these processes** are permitted unless agreed in advance with the Agency.

TABLE A.1 WASTE CATEGORIES AND QUANTITIES AT THE CIVIC WASTE FACILITY

WASTE TYPE	MAXIMUM TONNES PER ANNUM
Household recyclable waste **Household hazardous waste and small-scale hazardous waste from commercial/agricultural sources**	1,000

SCHEDULE B: Emission Limits

B.1 Emissions to Air

Emission Limits Values for Landfill Gas Plant:

Emission Point Reference No.: **Flare**
Minimum Discharge Height: 5m

Parameter	Flare (enclosed) Emission Limit Value Note 1	Utilisation Plant Emission Limit Value Note 1
Nitrogen oxides (NO_x)	150 mg/m^3	500 mg/m^3
Particulates	Not applicable	130 mg/m^3

Note 1: Dry gas referenced to 5% oxygen by volume for utilisation plants and 3% oxygen by volume for flares.

B.2 Emissions to Surface Water

Emission Point Reference No: SWD6
Name of Receiving Waters: Avoca River
Location: Outlet pipe to Avoca River on river bank, opposite the entrance to the civic waste facility

Parameter	Emission Limit Value
Suspended solids	35

B.4 Noise Emissions

Daytime dB(A) L_{Aeq} (30 minutes)	Night-time dB(A) L_{Aeq} (30 minutes)
55 Note 1	45 Note 1

Note 1: There shall be no clearly audible tonal component or impulsive component in the noise emission from the activity at **the site boundary.**

SCHEDULE C: Control & Monitoring

C.1.1 Control of Emissions to Air

Control of Landfill Gas Management System

Location	Parameter	Frequency
All wellheads and extraction pipework	Vacuum pressure	Weekly
	Gas flow rate	Weekly
	Methane	Weekly
	Oxygen	Weekly
	Temperature	Weekly

Emission Point Reference No.: Flare Stacks & Generation Plant

Description of Treatment: Gas Extraction & Combustion

Control Parameter	Monitoring	Key Equipment Note 1
Continuous burn	Continuous with alarm call-out	Flame detector or equivalent approved Pumps engines
Extraction	Continuous with alarm call-out	Pressure gauge or equivalent approved Pumps engines

Note 1: The licensee shall maintain appropriate access to standby and or spares to ensure the operation of the abatement system.

C.1.2 Monitoring of emissions to air

Emission Point Reference No.: Flare Stacks & Generation Plant

Parameter	Flare (enclosed) Monitoring Frequency	Utilisation Plant Monitoring Frequency	Analysis Method Note 1/Technique
Inlet			
Methane (CH_4) % v/v	Weekly	Weekly	Infrared analyser or equivalent approved
Carbon dioxide (CO_2) % v/v	Weekly	Weekly	Infrared analyser or equivalent approved
Oxygen (O_2) % v/v	Weekly	Weekly	Electrochemical or equivalent approved

Process Parameters			
Combustion temperature	**Continuous**	**Quarterly**	**Temperature probe/datalogger**
Residence time	**Quarterly**	**Quarterly**	**To be agreed.**
Outlet			
Volumetric Flow Rate	Biannually	Continuous	Standard Method
Carbon monoxide (CO)	**Biannually**	Continuous	Flue gas analyser/datalogger or equivalent approved
Nitrogen oxides (NOx)	Biannually	Biannually	Flue gas analyser or equivalent approved
Sulphur dioxide (SO_2)	Biannually	Biannually	Flue gas analyser or equivalent approved
Particulates	Annually	Annually	Isokinetic Gravimetric or equivalent approved

Note 1: All monitoring equipment used should be intrinsically safe.

C.1.3 Monitoring of Landfill Gas Emissions

Locations:
- Ballymurtagh Road Adit (SW3)
- Deep Ballygahan Adit
- Groundwater wells (G1/04, G2/04, RC6, 'Monitoring Well', G2/05, G1/05, Twin Shafts)
- Site office and other enclosed structures at the facility
- Perimeter gas monitoring wells (G1-G8)

and

All other sampling boreholes/wells outside the waste body

and

Other selected locations as may be specified

Parameter	**Monitoring Frequency**		**Analysis Method/Technique**[Note 3]
	Boreholes and sampling wells[notes 1, 2]	Site Office	
Methane (CH_4)	Monthly	Weekly	Infrared analyser/FID
Carbon dioxide (CO_2)	Monthly	Weekly	Infrared
Oxygen (O_2)	Monthly	Weekly	Electrochemical cell
Atmospheric pressure & trend	Monthly	Weekly	Standard method
Temperature	Monthly	Weekly	

Note 1: All perimeter monitoring boreholes must be installed to the standards specified in the Agency Guidance on Landfill Monitoring.

Note 2: **Sampling locations, e.g. groundwater wells, including "all other sampling boreholes/wells outside the waste body", not listed above and not specifically installed for gas monitoring shall be monitored when sampled per other schedules specified in this licence or according to the schedule specified in the table above.**

Note 3: Or other method agreed.

C.2.1. Control of Emissions to Water

Emission Control Location: SWD6

Description of Treatment: Retention pond

Control Parameter	Monitoring	Key Equipment[Note 1]
Residence time & flow restriction	Flow rate, depth	Flow meter, overflow alarm

Note 1: The licensee shall maintain appropriate access to standby and/or spares to ensure the operation of the abatement system.

C.2.2. Monitoring of Emissions to Water

Emission Point Reference No.: SWD6
Landfill surface water retention pond and run-off from civic waste facility

PARAMETER[Note 1]	MONITORING FREQUENCY
Flow	Continuous measurement Daily total
Visual Inspection/Odour [Note 2]	Weekly
Total Suspended Solids	Quarterly
Dissolved Oxygen **Electrical Conductivity** **Total ammonia (as N)** **Total nitrogen** **Chloride** **pH** **Temperature** **COD** **BOD** **Total P/orthophosphate** **Metals / non metals** [Note 3] **List I/II organic substances (Screen)** [Note 4] **Mercury** **Sulphate (SO_4)** **Nitrate** **Faecal Coliforms** **Total Coliforms**	As required per note 2 or as instructed by the Agency

Note 1: All the analysis shall be carried out by a competent laboratory using standard and internationally accepted procedures.

Note 2: **Where there is evident gross contamination, should be analysed initially for a limited suite of parameters shown in the table and, if necessary or as directed by the Agency, for the full suite of parameters shown in the table.**

Note 3: Metals and elements to be analysed by AA/ICP should include as a minimum: boron, cadmium, calcium, chromium (total), copper, iron, lead, magnesium, manganese, nickel, potassium, sodium and zinc.

Note 4: Samples screened for the presence of organic compounds using Gas Chromatography / Mass Spectrometry (GC/MS) or other appropriate techniques and using the list I II Substances from EU Directive 76/464/EEC and 80/68/EEC as a guideline. Recommended analytical techniques include: volatiles (US Environmental Protection Agency method 524 or equivalent), semi-volatiles (USEPA method 525 or equivalent, and pesticides (USEPA method 608 or equivalent).

C.3. Leachate Monitoring

Locations:

Leachate monitoring wells and sumps **(including well L10/01 and additional monitoring wells to be installed in compliance with conditions 6.16.1 and 6.16.2)**.

PARAMETER[Note 1]	LEACHATE[Note 2] Monitoring Frequency
Visual inspection/odour	Monthly in monitoring wells Daily in operational pump sumps
Leachate level in monitoring wells	Monthly
Leachate level in pump sumps when in use	Continuous
COD	Quarterly
BOD	Quarterly
Ammonia (as N)	Quarterly
pH	Annually
Chloride	Annually
Electrical conductivity	Annually
Metals/non-metals[Note 3]	Annually
Cyanide (total)	Annually
Fluoride	Annually
List I/II organic substances[Note 4]	Annually
Mercury	Annually
Sulphate	Annually
Total P/orthophosphate	Annually
Total oxidised nitrogen	Annually

Note 1: All the analysis shall be carried out by a competent laboratory using standard and internationally accepted procedures.

Note 2: Visual inspection and leachate levels to be monitored at all leachate monitoring wells and collection sumps. **Leachate composition to be monitored from a composite sample of leachate collected one from each of the five monitoring wells. In the event of an exceedence of trigger levels under condition 6.20 and initiation of an evaluation under condition 6.16.6, leachate composition is to be monitored individually from each leachate monitoring well and sump on a monthly basis until and unless otherwise agreed with the Agency.**

Note 3: Metals and elements to be analysed by AA ICP should include as a minimum: boron, cadmium, calcium, chromium (total), copper, iron, lead, magnesium, manganese, nickel, potassium, sodium and zinc.

Note 4: Samples screened for the presence of organic compounds using gas chromatography mass spectrometry (GC/MS) or other appropriate techniques and using the list I/II Substances from EU Directive 76/464/EEC and 80/68/EEC as a guideline. Recommended analytical techniques include: volatiles (US Environmental Protection Agency method 524 or equivalent), semi-volatiles (US EPA method 525 or equivalent), and pesticides (US EPA method 608 or equivalent).

C.4 Groundwater Monitoring

Location: **- Ballymurtagh Road Adit discharge (SW3)**
- Groundwater wells (G1/04, G2/04, RC6, 'Monitoring Well', G2/05, G1/05, Twin Shafts)
- Private wells (W1, W2, W3, W4, G5)
- Other locations as may be agreed or directed by the Agency

PARAMETER[Note 1]	GROUNDWATER Monitoring Frequency
Visual inspection/odour[Note 2]	**Quarterly**
Groundwater level (wells)	**Quarterly**
Dissolved oxygen	**Quarterly**
Electrical conductivity	**Quarterly**
Ammonia (as N)	**Quarterly**
Chloride	**Quarterly**
pH	**Quarterly**
Sulphate (SO_4)	**Quarterly**
TOC	**Quarterly**
Sodium	**Quarterly**
Potassium	**Quarterly**
Phenols	Quarterly
Metals/non-metals[Note 3]	Annually
List I/II organic substances [Note 4]	Annually
Mercury	Annually
Nitrate	Annually
Total P/orthophosphate	Annually
Cyanide (total)	Annually
Fluoride	Annually
Total alkalinity	Annually
Residue on evaporation	Annually
Fluoride	Annually
Calcium	Annually
Faecal coliforms	Annually
Total coliforms	Annually

Note 1: Where appropriate all the analyses shall be carried out by a competent laboratory using standard and internationally accepted procedures.

Note 2: Where there is evident gross contamination, additional samples shall be analysed and the full suite of parameters shown tested.

Note 3: Metals and elements to be analysed by AA/ICP should include as a minimum: boron, cadmium, calcium, chromium (total), copper, iron, lead, magnesium, manganese, nickel, potassium, sodium and zinc.

Note 4: Samples screened for the presence of organic compounds using gas chromatography/mass spectrometry (GC/MS) or other appropriate techniques and using the list I/II Substances from EU Directive 76/464/EEC and 80/68/EEC as a guideline. Recommended analytical techniques include: volatiles (US Environmental Protection Agency method 524 or equivalent), semi-volatiles (US EPA method 525 or equivalent), and pesticides (US EPA method 608 or equivalent).

C.5 Receiving Water Monitoring

Location: SW1, SW2, SW4, SW5 on Avoca River
(or at alternative locations as may be agreed or directed)

Parameter[note 1]	Monitoring frequency
Visual Inspection/Odour[Note 2]	Quarterly
Dissolved Oxygen	Quarterly
Electrical Conductivity	Quarterly
Total ammonia (as N)	Quarterly
Chloride	Quarterly
pH	Quarterly
Total Suspended Solids	Quarterly
Temperature	Quarterly
COD	Quarterly
BOD	Quarterly
Total oxidised nitrogen	Annually
Metals / non-metals [Note 3]	Annually
List I/II organic substances (screen) [Note 4]	Annually
Mercury	Annually
Potassium	Annually
Sodium	Annually
Total alkalinity	Annually
Sulphate (SO_4)	Annually
Nitrate	Annually
Total P/orthophosphate	Annually
Biological Quality (Q) Rating/Q index	Annually[Note 5]

Note 1: All the analysis shall be carried out by a competent laboratory using standard and internationally accepted procedures.

Note 2: Where there is evident gross contamination, additional samples should be analysed and the full suite of parameters shown tested.

Note 3: Metals and elements to be analysed by AA/ICP should include as a minimum: boron, cadmium, calcium, chromium (total), copper, iron, lead, magnesium, manganese, nickel, potassium, sodium and zinc.

Note 4: Samples screened for the presence of organic compounds using Gas Chromatography - Mass Spectrometry (GC/MS) or other appropriate techniques and using the list I/II Substances from EU Directive 76/464/EEC and 80/68/EEC as a guideline. Recommended analytical techniques include: volatiles (US Environmental Protection Agency method 524 or equivalent), semi-volatiles (USEPA method 525 or equivalent, and pesticides (USEPA method 608 or equivalent).

Note 5: Monitoring period – June to September.

C.6 Meteorological Monitoring

Location: At the facility at a location to be agreed, or from an agreed representative station in the region (except rainfall – to be measured at the facility)

Parameter	Monitoring Frequency	Analysis Method/Technique
Precipitation volume	Daily	Standard Method
Evaporation	Daily	Standard Method
Evapotranspiration [Note 1]	Daily	Standard Method
Atmospheric humidity (14.00h CET)	Daily	Standard Method
Temperature (min./max.)	Daily	Standard Method
Wind direction	Daily	Standard Method
Wind Force [Note 1]	Daily	Standard Method
Atmospheric Pressure [Note 1]	Daily	Standard Method

Note 1: Monitoring frequency for these parameters may be decreased with the agreement of the Agency.

SCHEDULE D Specified Engineering Works

Specified Engineering Works
Development of the facility.
Installation or non-routine maintenance of Landfill Gas Management Infrastructure.
Installation of Leachate Management Infrastructure.
Installation or non-routine maintenance of Surface Water Management Infrastructure.
Installation or non-routine maintenance of landfill capping infrastructure
Any other works notified in writing by the Agency.

SCHEDULE E: Annual Environmental Report

Annual Environmental Report Content [Note 1]
Emissions from the facility
Resource consumption summary.
Complaints summary.
Schedule of Environmental Objectives and Targets.
Environmental management programme – report for previous year.
Environmental management programme – proposal for current year.
Pollutant Release and Transfer Register – report for previous year.
Pollutant Release and transfer Register – proposal for current year.
Ambient monitoring summary.
Tank and pipeline testing and inspection report.
Reported incidents summary.
Energy efficiency audit report summary.
Meteorological data summary.
Development or infrastructural works summary (completed in previous year or prepared for current year).
Reports on financial provision made under this licence, management and staffing structure of the facility and a programme for public information.
Review of closure, restoration & aftercare management plan.
Statement of measures in relation to prevention of environmental damage and remedial actions (environmental liabilities).
Environmental Liabilities Risk Assessment Review (every three years or more frequently as dictated by relevant on-site change including financial provisions).
Topographical and Stability Surveys (including comparison with previous years survey results)
Updates/Amendments to Odour Management Plan (OMP).
Updates to Landfill Environmental Management Plan (LEMP).
Current monitoring location reference drawing.
Report on the programme for public information.
Review of environmental liabilities.
Any amendments to the CRAMP.
Any other items specified by the Agency.

Note 1: Content may be revised subject to the agreement of the Agency.

Signed on behalf of the said Agency _____

On the xx day of xxxxx, 200X xxxxxxxxxxxx **Authorised Person**