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County Wexford
Ireland

WASTE LICENCE
LANDFILL FOR NON-HAZARDOUS WASTE

PROPOSED DECISION

Waste Licence	4-2
Register Number:	
Applicant:	South Dublin County Council
Location of Facility:	Arthurstown Landfill, Arthurstown, Kill, County Kildare

INTRODUCTION

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

This Waste Licence relates to an existing specially engineered landfill, which is located at Arthurstown, Kill, County Kildare. The facility is operated by South Dublin County Council and accepts baled municipal waste only.

The infrastructure at the facility includes facility offices, two weighbridges, a marshalling yard for acceptance of baled waste, leachate collection and storage infrastructure, a landfill gas collection system with an enclosed flare, surface water and groundwater collection infrastructure including a retention pond.

The facility commenced waste acceptance in 1997 and has a total capacity of in the region of 3.5 million tonnes. As of the end of 2002 the facility had accepted in the region of 1.594 million tonnes in total. The increase in tonnage which is provided for in this licence will shorten the operational life of the landfill. At an acceptance rate of 440,000 tonnes of waste per annum the facility has a remaining capacity in the region of under four and a half years. The hours of waste acceptance and of operation of the facility are specified in the licence. The lining system specified in this licence is in accordance with the requirements of the Landfill Directive for landfill for non-hazardous waste. The licence specifies that the groundwater levels be maintained below the base of the lining system until such time as agreed with the Agency.

This licence additionally requires the provision of infrastructure for the utilisation of the landfill gas generated on site. The licensee is also required to implement measures at the facility for the control of odours at the facility.

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

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DECISION & REASONS FOR THE DECISION

Reasons for the Decision

The Environmental Protection Agency (the Agency) is satisfied, on the basis of the information available, that the requirements of Section 40(4) of the Waste Management Act, 1996 have been complied with in respect of the application for a waste licence for the activities listed hereunder in Part I.

In reaching this decision the Agency has considered the application and supporting documentation received from the applicant, all submissions received from other parties and the report of its inspector.

Part I Activities Licensed

In pursuance of the powers conferred on it by the Waste Management Act, 1996, the Agency proposes, under Section 46(2) of the said Act to grant this Waste Licence to South Dublin County Council, P.O. Box 4122, Town Square, Tallaght, Dublin 24 to carry on the waste activities listed below at Arthurstown Landfill, Arthurstown, Kill, County Kildare subject to twelve conditions, with the reasons therefor and the associated schedules attached thereto set out in the licence.

Licensed Waste Disposal Activities, in accordance with the Third Schedule
of the Waste Management Act 1996

Class 1.	Deposit on, in or under land (including landfill): This activity is limited to the deposit of baled municipal waste at the facility.
Class 4.	Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons: This activity is limited to the storage of leachate in the storage and treatment tank and lagoons and the storage of surface water and groundwater at the facility.
Class 5.	Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment. This activity is limited to the deposit of baled municipal waste into lined cells at the facility.
Class 6.	Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule: This activity is limited to the biological treatment of leachate arising from the waste disposed of on-site.
Class 7.	Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule: This activity is limited to the physico-chemical treatment of leachate arising from the waste disposed of on-site.

INTERPRETATION

All terms in this licence should be interpreted in accordance with the definitions in the Waste Management Act, (the Act), unless otherwise defined in this section.

Aerosol	A suspension of solid or liquid particles in a gaseous medium.
Adequate lighting	20 lux measured at ground level.
Agreement	Agreement in writing.
Annually	At approximately twelve monthly intervals.
Attachment	Any reference to Attachments in this licence refers to attachments submitted as part of the waste licence application.
Application	The application by the licensee for this waste licence.
Appropriate facility	A waste management facility, duly authorised under relevant law and technically suitable.
Bi-annually	At approximately six monthly intervals
BAT	Best Available Techniques as defined in Article 2(11) of Council Directive 96/61/EC concerning integrated pollution prevention and control.
Condition	A condition of this licence.
Construction and Demolition Waste	All wastes which arise from construction, renovation and demolition activities.
Containment boom	A boom which can contain spillages and prevent them from entering drains or watercourses.
Daily Cover	Is the term used to describe material spread (about 150mm if soil cover is used) over deposited waste at the end of each day. Synthetic materials may also be used. Its objective is to minimise odour, the amount of litter generated and to control flies and access to the waste by birds and vermin. Where soils are used for daily cover, it is recommended that they be removed at the start of the day and subsequently reused as much as possible.
Daytime	0800 hrs to 2200 hrs.
Documentation	Any report, record, result, 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.
Emergency	Those occurrences defined in Condition 9.4.
Emission Limits	Those limits, including concentration limits and deposition levels established in <i>Schedule C: Emission Limits</i> , of this licence.
European Waste Catalogue (EWC)	A harmonised, non-exhaustive list of wastes drawn up by the European Commission and published as Commission Decision 94/3/EC and any subsequent amendment published in the Official Journal of the European Community.
FID	Flame Ionisation Detector

Hours of Operation	The hours during which the facility is authorised to be operational. The hours of operation of a facility are usually longer than the hours of waste acceptance to facilitate preparatory and completion works, such as the removal and laying of daily cover.
Hours of Waste Acceptance	The hours during which the facility is authorised to accept waste.
Intermediate Cover	Refers to placement of material (minimum 300mm if soil is used) for a period of time prior to restoration or prior to further disposal of waste.
Landfill	Refers to the area of the facility where the waste is disposed of by placement on the ground or on other waste.
Landfill Gas	Gases generated from the landfilled waste.
LEL (Lower Explosive Limit)	The lowest percentage concentration by volume of a mixture of flammable gas with air which will propagate a flame at 25°C and atmospheric pressure.
Licence	A waste licence issued in accordance with the Act.
Licensee	South Dublin County Council.
List I/II Organics	Substances classified pursuant to EC Directives 76/464/EEC and 80/68/EEC.
Liquid Waste	Any waste in liquid form and containing less than 2% dry matter. Any waste tankered to the facility.
Maintain	Keep in a fit state, including such regular inspection, servicing and repair as may be necessary to adequately perform its function.
Mobile Plant	Self-propelled machinery used for the emplacement of wastes or for the construction of specified engineering works.
Monthly	A minimum of 12 times per year, at approximately monthly intervals.
Night-time	2200 hrs to 0800 hrs.
Quarterly	At approximately three monthly intervals.
Sample(s)	Unless the context of this licence indicates to the contrary, samples shall include measurements by electronic instruments.
SCADA system	Supervisory Control and Data Acquisition system.
Sludge	The accumulation of solids resulting from chemical coagulation, flocculation and/or sedimentation after water or wastewater treatment with between 2% and 14% dry matter.
Specified Emissions	Those emissions listed in <i>Schedule C: Emission Limits</i> , of this licence.
Specified Engineering Works	Those engineering works listed in <i>Schedule B: Specified Engineering Works</i> , of this licence.
Trigger Level	A parameter value specified in the licence, the achievement or exceedance of which requires certain actions to be taken by the licensee.
White Goods	Refrigerators, cookers, ovens and other similar appliances.
EPA Working Day	Refers to the following hours: 0900 hrs to 1730 hrs Monday to Friday inclusive.

Working Face

The area of the site in which waste other than cover material or material for the purposes of the construction of specified engineering works is being deposited.

PART II CONDITIONS

CONDITION 1 SCOPE OF THE LICENCE

- 1.1. Waste activities at the facility shall be restricted to those listed and described in Part I: Activities Licensed and authorised by this licence.
- 1.2. For the purposes of this licence, the facility is the area of land outlined in red on Drawing No. 2001-054-02-02 Rev.A – Site Plan: Showing Licensed Facility Boundary (Shown Red) & Site Notice Location of the application. Any reference in this licence to “facility” shall mean the area thus outlined in red.
- 1.3. This licence is for the purposes of waste licensing under the Waste Management Act, 1996 only and nothing in this licence shall be construed as negating the licensee’s statutory obligations or requirements under any other enactments or regulations.
- 1.4. Waste Acceptance.
 - 1.4.1. Baled municipal waste only may be disposed of at the facility subject to the maximum quantities and other constraints listed in *Schedule A: Waste Acceptance, of this licence*.
 - 1.4.2. Whole used tyres (other than bicycle tyres and tyres with an outside diameter greater than 1400mm) shall not be disposed of at the facility from 16 July 2003. Shredded tyres shall not be disposed of at the facility from 16 July 2006.
 - 1.4.3. No hazardous wastes, liquid wastes, shall be disposed of at the facility.
 - 1.4.4. The licensee shall ensure that all waste accepted at the facility is subject to treatment by 16th July 2009 or earlier if otherwise instructed by the Agency. This provision may not apply to inert waste for which treatment is not technically feasible, nor to any other waste for which such treatment does not contribute to the objectives of the landfill directive (1999/31/EC) as set out in Article 1 of the Directive by reducing the quantity of the waste or the hazards to human health or the environment.
- 1.5. Waste Acceptance Hours and Hours of Operation
 - 1.5.1. Waste may only be accepted at the facility for disposal between the hours of 8.00 a.m. to 7.30 p.m. Monday to Saturday inclusive.
 - 1.5.2. The landfill at the facility may only be operated during the hours of 8.00 a.m. to 8.00 p.m. Monday to Saturday inclusive.
- 1.6. The following shall constitute an incident for the purposes of this licence.
 - a) An emergency.
 - b) Any emission which does not comply with the requirements of this licence.
 - c) Any trigger level specified in this licence which is attained or exceeded.
 - d) Any indication that environmental pollution has, or may have, taken place.
- 1.7. Where the Agency considers that a non-compliance with any condition of this licence has occurred, it may serve a notice on the licensee specifying.
 - 1.7.1. That only those wastes as specified, if any, in the notice are to be accepted at the facility after the date set down in the notice.

1.7.2. That the licensee shall undertake the works stipulated in the notice, and/or otherwise comply with the requirements of the notice as set down therein, within the time-scale contained in the notice.

1.7.3. That the licensee shall carry out any other requirement specified in the notice.

When the notice has been complied with, the licensee shall provide written confirmation that the requirements of the notice have been carried out. No waste, other than that which is stipulated in the notice, shall be accepted at the facility until written permission is received from the Agency.

1.8. Every plan, programme or proposal submitted to the Agency for its agreement pursuant to any condition of this licence shall include a proposed timescale for its implementation. The Agency may modify or alter any such plan, programme or proposal in so far as it considers such modification or alteration to be necessary and shall notify the licensee in writing of any such modification or alteration. Every such plan, programme or proposal shall be carried out within the timescale fixed by the Agency but shall not be undertaken without the agreement of the Agency. Every such plan, programme or proposal agreed by the Agency shall be covered by the conditions of this licence.

1.9. This licence is being granted in substitution for the waste licence granted to the licensee on 4th March 1999 and bearing Waste Licence Register No: 4-1. This licence supersedes the previous Waste Licence (Register No: 4-1).

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 suitably 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.

2.1.2 Both the facility manager and deputy, and any replacement manager or deputy, shall successfully complete both the FAS Waste Management Training Programme (or equivalent agreed with the Agency) and associated on site assessment appraisal within twelve months of appointment.

2.1.3 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.

2.2 Management Structure

2.2.1 Within three months from the date of grant of this licence, the licensee shall submit written updated details of the management structure of the facility to the Agency. Any proposed replacement in the management structure shall be notified in advance in writing to the Agency. Written details of the management structure shall include the following information:-

- a) The names of all persons who are to provide the management and supervision of the waste activities authorised by the licence, in particular the name of the facility manager and any nominated deputies.
- b) Details of the responsibilities for each individual named under a) above.

- c) Details of the relevant education, training and experience held by each of the persons nominated under a) above.

2.3 Environmental Management System (EMS)

2.3.1 The licensee shall maintain an Environmental Management System (EMS) at the facility. Within six months of the date of grant of this licence, the licensee shall submit to the Agency for its agreement, a proposal for updating (where appropriate) of the documented EMS. The EMS shall be updated on an annual basis with amendments being submitted to the Agency for its agreement.

2.3.2 The EMS shall include as a minimum the following elements.

2.3.2.1 Schedule of Environmental Objectives and Targets

The objectives should be specific and the targets measurable. The schedule shall address a five-year period as a minimum. The schedule shall include a time-scale for achieving the objectives and targets and shall comply with any other written guidance issued by the Agency.

2.3.2.2 Environmental Management Plan (EMP)

The EMP shall include, as a minimum, the following: -

- a) The items specified to be contained in an Environmental Management Plan in the Landfill Operational Practices Manual published by the Agency.
- b) Methods by which the objectives and targets will be achieved and the identification of those responsible for achieving those objectives and targets.
- c) Any other items required by written guidance issued by the Agency.

2.3.2.3 Corrective Action Procedures

The Corrective Action Procedures shall detail the corrective actions to be taken should any of the procedures detailed in the EMS not be followed.

2.3.2.4 Awareness and Training Programme

The Awareness and Training Programme shall identify training needs, for personnel who work in or have responsibility for the licensed facility.

2.4 Communications Programme

2.4.1 Within three months of the date of grant of this licence, the licensee shall submit to the Agency for agreement a revised Communications Programme to inform and involve the local community and ensure that members of the public can obtain information at the facility, at all reasonable times, concerning the environmental performance of the facility. This programme shall subsequently be implemented and maintained at the facility or as otherwise instructed by the Agency.

REASON: To make provision for the proper 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 FACILITY INFRASTRUCTURE

3.1 The licensee shall establish all infrastructure referred to in this licence as required by the conditions of this licence.

3.2 Specified Engineering Works

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

3.2.2 All specified engineering works shall be supervised by a competent person(s) and that person, or persons, shall be present at all times during which relevant works are being undertaken.

3.2.3 Following the completion of all 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 include the following information:-

- a) A description of the works.
- b) As-built drawings of the works.
- c) Records and results of all tests carried out (including failures).
- d) Drawings and sections showing the location of all samples and tests carried out.
- e) Daily record sheets/diary.
- f) Name(s) of contractor(s)/individual(s) responsible for undertaking the specified engineering works.
- g) Name(s) of individual(s) responsible for supervision of works and for quality assurance validation of works.
- h) Records of any problems and the remedial works carried out to resolve those problems.
- i) Any other information requested in writing by the Agency.

3.3 Facility Notice Board

3.3.1 The licensee shall provide and 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.

3.3.2 The board shall clearly show

- a) The name and telephone number of the facility.
- b) The normal hours of opening.
- c) The name of the licence holder.
- d) An emergency out of hours contact telephone number.
- e) The licence reference number.
- f) Where environmental information relating to the facility can be obtained.

3.4 Facility Security

3.4.1 Security and stockproof fencing and gates shall be installed and maintained as described in correspondence dated 06/04/99. The security fence and gates shall be at the locations shown on Drawing No. AWL99/02 – Fencing Details. 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.

3.4.2 The licensee shall remedy any defect in the gates and/or fencing as follows.

- a) A temporary repair shall be made by the end of the working day.
- b) A repair to the standard of the original gates and/or fencing shall be undertaken within three working days.

3.5 Facility Roads and Hardstanding

3.5.1 Effective site roads shall be provided and maintained to ensure the safe movement of vehicles within the facility.

3.5.2 The hardstanding areas detailed in Drawing 96-09933.12.Rev.2 – “1:1000 Layout Plan showing hardstanding surfaces” shall drain via an oil separator to the stormwater collection system unless otherwise agreed in advance with the Agency.

3.6 Facility Office

3.6.1 The licensee shall provide and maintain an office at the facility. The office shall be constructed and maintained in a manner suitable for the processing and storing of documentation.

3.6.2 The licensee shall provide and maintain a working telephone and a method for electronic transfer of information at the facility.

3.7 Weighbridge

3.7.1 The licensee shall provide and maintain a weighbridge at the facility.

3.8 Vehicle Cleaning

3.8.1 The licensee shall maintain the existing wheelwash unit and vehicle cleaning facilities unless otherwise agreed with or instructed by the Agency.

3.9 Waste Water Treatment Plant

3.9.1 The licensee shall provide and maintain an on-site treatment system at the facility. This system shall discharge to the on-site leachate management system unless otherwise agreed in advance with the Agency.

3.10 Tank and Drum Storage Areas

3.10.1 All tank and drum storage areas shall be rendered impervious to the materials stored therein.

3.10.2 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:-

- (a) 110% of the capacity of the largest tank or drum within the bunded area; or
- (b) 25% of the total volume of substance which could be stored within the bunded area.

3.10.3 All drainage from bunded areas shall be diverted for collection and safe disposal.

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

- 3.10.5 The integrity and water tightness of all the bunds and their resistance to penetration by water or other materials stored therein shall be confirmed by the licensee and shall be reported to the Agency following its installation and prior to its use as a storage area .

This confirmation shall be repeated at least once every three years thereafter and reported to the Agency on each occasion.

3.11 Landfill Lining:

- 3.11.1 The landfill liner shall comprise:-

- a) A composite liner consisting of a 1m layer of compacted soil with a hydraulic conductivity of less than or equal to 1×10^{-9} m/s, (or equivalent to be agreed with the Agency) overlain by a 2mm thick high density polyethylene (HDPE) layer.
- b) A geotextile protection layer placed over the HDPE layer.
- c) A 500mm thick drainage layer placed over the geotextile layer with a minimum hydraulic conductivity of 1×10^{-3} m/s, of pre-washed, uncrushed, granular, rounded stone (16 - 32mm grain size) incorporating leachate collection drains.
- d) The side walls shall be designed and constructed to achieve an equivalent protection.

- 3.11.2 The liner detailed design and its construction shall be in accordance with the guidelines provided in the Agency's *Landfill Manual, Landfill Site Design*.

3.12 Leachate Management Infrastructure

- 3.12.1 The licensee shall provide and maintain a leachate storage lagoon(s) at the facility to facilitate the storage of leachate abstracted/collected from the waste. Prior to the use of any new cells for the deposition of waste the licensee shall ensure that sufficient leachate storage capacity is provided to cater for leachate generation from those cells. The lining for any new leachate storage lagoon shall be a composite liner in accordance with Condition 3.11.

- 3.12.2 Unless otherwise agreed with the Agency the licensee shall maintain the existing leachate management infrastructure as identified in Attachment D4 – Leachate Management [Article 14(2)(b)(ii) response dated 31/10/01].

- 3.12.3 All leachate management structures on-site shall be inspected and certified fit for purpose on an annual basis by an independent and appropriately qualified chartered engineer. The tanker(s) used for the transport of leachate offsite shall also be inspected once every two years by independent appropriately qualified personnel.

3.13 Landfill Gas Management.

- 3.13.1 Landfill Gas Management infrastructure shall be installed and maintained to facilitate the collection of landfill gas generated at the facility and its subsequent flaring or utilisation in accordance with the emission limits in *Schedule C.5: Emission Limits Values for Landfill Gas Plant, of this licence*. This shall include, *inter alia*;

- (i) Prior to 1st October 2003 the licensee shall install and maintain landfill gas utilisation plant as referred to in correspondence dated 30/10/02.
- (ii) The licensee shall ensure that sufficient flaring capacity is provided for and maintained at the facility to deal with the landfill gas collected prior to the operation of the generators for the utilisation of landfill gas as referred to above. The licensee shall provide and maintain a 2,500m³/hour capacity enclosed flare as referred to in correspondence of 19th December 2002.

- (iii) Following installation and commencement of operation of the generators referred to above the licensee shall maintain the 2,500 m³/hour flare referred to in (ii) above as a backup unit in the event of breakdown of any of the generators.
- 3.13.2 Flare unit efficiency shall be tested within six months of the date of grant of this licence and once every three years thereafter.
- 3.13.3 All 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.
- 3.13.4 Within three months of the date of grant of this licence the licensee shall submit to the Agency the following:-
 - (i) Details of the vents connected to the landfill gas collection system.
 - (ii) Details of the vents not connected to the landfill gas collection system.
 - (iii) A phasing plan for the connection of the vents referred to in (ii) to the landfill gas collection system for the agreement of the Agency.
- 3.13.5 All vents not connected to the landfill gas collection system and in waste filled cells, other than the active cell(s), shall be fitted with an effective activated carbon filter unless otherwise agreed with or instructed by the Agency.
- 3.13.6 The licensee shall connect the vents in the area known as "Gavin's Dump" to the active landfill gas collection system if monitoring at these vents indicates significant quantities of landfill gas.
- 3.14 Surface Water Management.
 - 3.14.1 Effective surface water management infrastructure shall be provided and maintained at the facility during construction, operation, restoration and aftercare of the facility. As a minimum, the infrastructure shall be capable of the following:
 - a) the prevention of contaminated water and leachate discharges into surface water drains and courses; and
 - b) the collection/diversion of run off arising from capped and restored areas.
- 3.15 Groundwater Management.
 - 3.15.1 Effective groundwater management infrastructure shall be provided and maintained at the facility during construction, operation, restoration and aftercare of the facility. As a minimum, the infrastructure shall be capable of the following:
 - a) the protection of the groundwater resources from pollution by the waste activities; and
 - b) the protection of other infrastructure, such as the liner, from any adverse effects caused by the groundwater.
 - 3.15.2 The licensee shall ensure that the groundwater levels are maintained below the base level of the clay layer of the lining system until such time as agreed in advance with the Agency. This shall be carried out through the installation and maintenance of the groundwater control system as referred to in Attachment H.6 and in correspondence of 28th March 2002, unless otherwise agreed with the Agency.
- 3.16 The licensee shall maintain the infrastructure and provisions relating to the site known as "Gavin's Dump" as detailed in the Article 16 response dated 2nd August 2002, unless otherwise agreed with the Agency.

3.17 SCADA system

3.17.1 All facility operations linked to the SCADA system shall also have a manual control, which will be reverted to in the event of break in power supply or during maintenance.

3.18 Monitoring Infrastructure.

3.18.1 Replacement of Infrastructure

Monitoring infrastructure which is damaged or proves to be unsuitable for its purpose shall be replaced within three months of it being damaged or recognised as being unsuitable.

REASON: To provide appropriate infrastructure for the protection of the environment.

CONDITION 4 RESTORATION AND AFTERCARE

4.1. The licensee shall restore the facility on a phased basis. The Restoration and Aftercare Plans for the facility shall include the plan submitted as part of Attachment G.1 – Restoration Scheme unless where otherwise instructed or agreed with the Agency.

4.2. The final profile/height of the facility shall be as a maximum be that as shown in Drawing No. AWL99-29A – Final Levels & Capping Detail. The profile of the remediated site referred to as “Gavin’s Dump” shall not be altered unless otherwise agreed with the Agency.

4.3. Final Capping

4.3.1. Unless otherwise agreed in advance with the Agency the final capping shall consist of the following:

- a) Top soil (150 -300mm).
- b) Subsoils, such that total thickness of top soil and subsoils is at least 1m.
- c) Drainage layer of 0.5m thickness having a minimum hydraulic conductivity of 1×10^{-4} m/s.
- d) Compacted mineral layer of a minimum 0.6m thickness with a permeability of less than 1×10^{-9} m/s or a geosynthetic material (e.g. GCL) or similar that provides equivalent protection.
- e) Gas collection layer of natural material (minimum 0.3m) or a geosynthetic layer.

4.4. No material or object that is incompatible with the proposed restoration of the facility shall be present within one metre of the final soil surface levels.

4.5. Where tree planting is to be carried out above waste-filled areas, a synthetic barrier shall be used to augment the clay cap. Combined topsoil and subsoil depths shall be a minimum of 1m.

4.6. The restoration of the landfill facility shall be carried out on a phased basis and shall commence as soon as a cell is final capped. Landfill restoration shall be completed within twenty-four months of the date of cessation of waste deposition at the landfill facility. The phasing shall satisfy the following:-

4.6.1. Existing cells which have already been filled shall be final capped within six months of the date of grant of this licence.

4.6.2. Operational cells shall be final capped within twelve months of the cells having been filled to the required level, unless otherwise agreed with or instructed by the Agency.

CONDITION 5 FACILITY OPERATION AND WASTE MANAGEMENT

- 5.1 Wastes shall not be deposited in any cell or part of the landfill without the prior agreement of the Agency.
- 5.2 Only waste baled at facilities agreed in advance with the Agency may be accepted at the facility.
- 5.3 Where waste types are not permitted to be accepted at the facility, then those waste types shall not be accepted whether or not they have been baled, packaged, placed in other containers or waste materials, or pre-treated by any form of solidification or encapsulation.
- 5.4 All wastes shall be checked at the working face. Any wastes not suitable for acceptance shall be immediately removed for recovery or disposal at an appropriate alternative facility.
- 5.5 Working Face
- 5.5.1 Unless the prior agreement of the Agency is given, the following shall apply at the landfill:
- a) Only one working face shall exist at the landfill at any one time for the deposit of waste other than cover or restoration materials;
 - b) The maximum size of the working face shall be as detailed in correspondence dated 30/04/99.
 - c) The horizontal face of the waste will be covered at the end of each day with not less than 150mm free-draining sand and/or gravel;
 - d) The vertical face of the waste will be entirely covered by polythene sheeting after the end of the working day; and,
 - e) Where a vertical face of waste is not to be worked on the following day, the face will be covered with not less than 150mm free-draining sand and/or gravel, or alternative agreed in advance with the Agency.
- 5.6 Daily and Intermediate Cover
- 5.6.1 Appropriate cover material shall be placed across the whole landfill so that no waste, other than the following is exposed:-
- a) Waste suitable for specified engineering works.
 - b) Waste on the working face during the operational hours of the facility.
- 5.6.2 Any cover material at any location within the facility which is eroded, washed off or otherwise removed shall be replaced by the end of the working day.
- 5.7 Operational Controls
- 5.7.1 The landfill shall be filled in accordance with the four-phase, fifteen-cell sequence as shown in Drawing No. AWL02-27B – Site Infrastructure unless otherwise instructed or agreed with the Agency.
- 5.7.2 The filling of cells shall be in a manner such that commencement of waste deposition into a cell shall only occur once the previous cell is temporarily capped. No more than four temporarily capped cells may exist at any time prior to reaching final profile levels.

- 5.7.3 Wastes once deposited and covered shall not be excavated, disturbed or otherwise picked over with the exception of works associated with the construction and installation of the landfill gas collection system unless with the prior agreement from the Agency.
- 5.7.4 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.
- 5.7.5 Scavenging shall not be permitted at the facility.
- 5.7.6 Gates shall be locked shut when the facility is unsupervised.
- 5.7.7 The licensee shall provide and use adequate lighting during the operation of the facility in hours of darkness.
- 5.7.8 Fuels shall only be stored at appropriately bunded locations on the facility.
- 5.7.9 All tanks and drums shall be labelled to clearly indicate their contents.
- 5.7.10 No smoking shall be allowed on the facility other than in facility offices fitted with permanent gas monitoring systems.
- 5.8 Off-site Disposal and Recovery
 - 5.8.1 Waste sent off-site for recovery or disposal shall only be conveyed by a waste contractor agreed by the Agency.
 - 5.8.2 All waste transferred from the facility shall only be transferred to an appropriate facility agreed by the Agency.
 - 5.8.3 All wastes removed off-site for recovery or disposal shall be transported from the facility to the consignee in a manner which will not adversely affect the environment.
- 5.9 Leachate Management
 - 5.9.1 Leachate stored in the leachate storage lagoon shall be removed by tankering off-site in fully enclosed road tankers, unless where being treated in the leachate treatment process as detailed in Attachment D.4 or re-circulated in accordance with conditions of this licence.
 - 5.9.2 Leachate levels in the waste shall not exceed a level of 1.0m over the top of the liner at the base of the landfill.
 - 5.9.3 The level of leachate in the pump sumps shall be monitored as outlined in Section 17.5 of the Environmental Management Plan 2002 dated 16th July 2002 unless otherwise agreed with or instructed by the Agency.
 - 5.9.4 The frequency of leachate removal/discharge from the leachate lagoon shall be such that a minimum freeboard of 0.5m shall be maintained in the leachate lagoon at all times.
 - 5.9.5 Re-circulation of leachate or other contaminated water shall not be undertaken without the prior agreement of the Agency and, in any case, shall only be undertaken within cells which have been lined to the satisfaction of the Agency.
- 5.10 Maintenance
 - 5.10.1 All treatment/abatement and emission control equipment shall be calibrated and maintained, in accordance with the instructions issued by the manufacturer/supplier or installer. Written records of the calibrations and maintenance shall be made and kept by the licensee.
 - 5.10.2 All lagoon structures on the facility shall be inspected and certified fit for purpose every three years by an independent and appropriately qualified chartered engineer.
 - 5.10.3 The licensee shall maintain and clearly label and name all sampling and monitoring locations.

- 5.10.4 The wheel-wash shall be inspected on a daily basis and drained as required. Silt, stones and other accumulated material shall be removed as required from the wheel-wash and disposed of at the working face.

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

CONDITION 6 EMISSIONS

- 6.1. No specified emission from the facility shall exceed the emission limit values set out in *Schedule C: Emission Limits* of this licence. There shall be no other emissions of environmental significance.
- 6.2. The licensee shall ensure that the activities shall be carried out in a manner such that emissions do not result in significant impairment of, or significant interference with the environment beyond the facility boundary.
- 6.3. Landfill Gas
- 6.3.1. The following are the trigger levels for landfill gas emissions from the facility measured in any service duct or manhole on, at or immediately adjacent to the facility and/or at any other point located outside the body of the waste:-
- a) Methane, greater than or equal to 1.0% v/v; or
 - b) Carbon dioxide, greater than or equal to 1.5% v/v.
- 6.3.2. 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 :-
- a) In the case of landfill gas flare:
Temperature 273 K, pressure 101.3 kPa, dry gas at 3% oxygen; and
 - b) In the case of landfill gas combustion plant:
Temperature 273 K, pressure 101.3 kPa, dry gas; 5% oxygen.
- 6.3.3. Emission limits for emissions from landfill gas flare/combustion plant to atmosphere in this licence shall be interpreted in the following way:-
- 6.3.3.1. Continuous monitoring
- a) No 24 hour mean value shall exceed the emission limit value.
 - b) 97% of all 30 minute mean values taken continuously over an annual period shall not exceed 1.2 times the emission limit value.
 - c) No 30 minute mean value shall exceed twice the emission limit value.
- 6.3.3.2. Non-Continuous Monitoring
- a) For any parameter where, due to sampling/analytical limitations, a 30 minute samples is inappropriate, a suitable sampling period should be employed and the value obtained therein shall not exceed the emission limit value.
 - b) For all other parameters, no 30 minute mean value shall exceed the emission limit value.
 - c) For flow, no hourly or daily mean value shall exceed the emission limit value.
- 6.4. Groundwater

6.4.1 There shall be no direct emissions to groundwater.

6.4.2 Within three months of the date of grant of this licence, the licensee shall submit to the Agency for its agreement, groundwater monitoring trigger levels in accordance with the requirements of Directive 1999/31/EC.

6.5. Emissions to Surface Water

6.5.1. Discharges to the Hartwell River from the surface water drainage system constructed at the facility shall be at the location shown on Drawing No. 96-09933 01 Revision B, "1:2500 Layout Showing Final Contours, Storm Discharge Pipe and Monitoring Wells.

6.5.2. No raw leachate, treated leachate or contaminated surface water shall be discharged to Hartwell River.

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

6.6. Disposal of Leachate

6.6.1. All leachate or contaminated water tankered from the facility shall be transported to the location referred to in correspondence of 27th May 2002 and shown in Drawing No. AWL02/0501 – Leachate Discharge Manhole at Saggart Treatment Plant and disposed of there, unless otherwise agreed with the Agency.

REASON: To control emissions from the facility and provide for the protection of the environment.

CONDITION 7 NUISANCE CONTROL

7.1 The licensee shall ensure that vermin, birds, flies, mud, dust, litter and odours do not give rise to nuisance at the facility or in the immediate area of the facility. Any method used by the licensee to control any such nuisance shall not cause environmental pollution.

7.2 The road network in the vicinity of the facility shall be kept free from any debris caused by vehicles entering or leaving the facility. Any such debris or deposited materials shall be removed without delay.

7.3 All loose litter or other waste, placed on or in the vicinity of the facility, other than in accordance with the requirements of this licences, shall be removed, subject to the agreement of the landowners, immediately and in any event by 10.00am of the next working day after such waste is discovered.

7.4 The licensee shall ensure that all vehicles delivering waste to and removing waste and materials from the facility are fully covered.

7.5 In dry weather, site roads and any other areas used by vehicles shall be sprayed with water as and when required to minimise airborne dust nuisance.

7.6 All vehicles leaving the working face shall use both the dry wheel shake-out unit at the exit from the cells area and the wheelwash unit at the entrance to the Marshalling Yard.

7.7 There shall be no queuing of waste vehicles on the public access road prior to entering the facility.

7.8 Bird Control

7.8.1 Birds shall be prevented from gathering on and feeding at the facility by the use the bird control scheme submitted on 30th April 1999, unless otherwise agreed with the Agency. The birds of prey and/or other techniques shall be in place on the facility and shall maintain their presence every day, from before dawn to after dark, until the waste activities cease and all the waste is capped to the written satisfaction of the Agency. The use of gas operated bird scaring devices is prohibited at the facility.

7.9 The precautions set out in the “Operational Management Plan, Rev.2 24/3/1997 (ET/MB); Vermin”, shall be carried out to prevent, control and eradicate infestations of insects, pests and vermin unless otherwise instructed or agreed with the Agency.

7.10 Noise/Disturbance

7.10.1 The licensee shall ensure the following;

- (i) that low sound level plant is used on site,
- (ii) all heavy machinery and mechanical plant used on site are fitted with acoustic panels and acoustics mufflers (exhaust silencers),
- (iii) the use of suitable noise screens/control measures for waste activities in Cells 11-15 which shall be agreed in advance with the Agency.

REASON: To provide for the control of nuisances

CONDITION 8 MONITORING

8.1 The licensee shall carry out such monitoring and at such locations and frequencies as set out in *Schedule D: Monitoring* of this licence and as specified in this licence.

8.2 The licensee shall amend the frequency, locations, methods and scope of monitoring as required by this licence only upon the written instruction of the Agency and shall provide such information concerning such amendments as may be requested in writing by the Agency. Such alterations shall be carried out within any timescale nominated by the Agency.

8.3 Monitoring and analysis equipment shall be operated and maintained in accordance with the manufacturers’ instructions (if any) so that all monitoring results accurately reflect any emission, discharge or environmental parameter.

8.4 The licensee shall provide safe and permanent access to all on-site sampling and monitoring points and to off-site points as required by the Agency.

8.5 The licensee shall maintain permanent gas monitoring systems in the site office and any other enclosed structures at the facility. All landfill gas monitoring equipment, other than permanent monitoring systems within buildings, shall be certified as being intrinsically safe.

8.6 Within three months of date of grant of this licence, the licensee shall submit to the Agency an appropriately scaled drawing(s) showing all the monitoring locations that are stipulated in this licence. The drawing(s) shall include the reference code of each monitoring point. Any subsequent amendments to the monitoring locations shall be submitted on an updated drawing(s).

8.7 Groundwater Monitoring

8.7.1 Subject to the agreement of the well owners, all private wells as referred to in correspondence dated 6th April 1999 shall be monitored as set out in *Schedule D: Monitoring, of this licence*.

8.7.2 Within three months of the date of grant of this licence, the licensee shall carry out a review of the past and present monitoring of the private wells referred to above to determine what effect, if any, the facility has had to the quantity of water supply of these wells. Details of this review shall be submitted the Agency for agreement.

8.8 Surface Water Monitoring

8.8.1 Monitoring of the surface water discharge flow shall be as detailed in Section 17.3 of the Environmental Management Plan dated 11th July 2002 unless otherwise agreed with the Agency. Details of this monitoring and monitoring of the flow in the Hartwell River shall be included in the quarterly surface water monitoring reports required in this licence.

8.9 Noise Monitoring

8.9.1 Within three months of the date of grant of this licence the licensee shall submit proposed amendments to the noise monitoring locations, as referred to in *Table D.1.1 Monitoring Locations, Schedule D: Monitoring*, of this licence, to the Agency for agreement.

8.10 Meteorological Monitoring

8.10.1 The licensee shall make arrangements for representative meteorological data to be collated for the facility to fulfil the requirements of *Schedule D.6: Meteorological Monitoring* of this licence.

8.11 Topographical Survey

8.11.1 A topographical survey shall be carried out within six months of the date of grant of this licence. The survey shall include a measurement of the remaining available void space. It shall be repeated annually thereafter. The survey shall be in accordance with any written instructions issued by the Agency.

8.12 Biological Assessment

8.12.1 A biological assessment of the Hartwell and Kill Rivers shall be undertaken annually. This assessment shall use appropriate biological methods such as the EPA Q-rating system for the assessment of rivers and streams.

8.13 Stability Assessment

8.13.1 Within six months of the date of grant of this licence, and annually thereafter, the licensee shall carry out a stability assessment of the side slopes of the facility.

8.14 Odour Monitoring

8.14.1 The licensee shall inspect the facility and its environs daily for nuisances caused by odours. This inspection shall include monitoring at the relevant locations specified in *Table D.1.1 Monitoring Locations* and incorporate the use of an FID.

8.14.2 As part of the odour control programme in place at the facility, the licensee shall carry out a monthly review of odour control measures in place at the facility. This shall include:

- (i) consideration of odour complaints received (including details and nature of the complaints, times and weather conditions);
- (ii) details of any monitoring carried out (including to validate complaints and identify the source of the complaint and actions taken, where relevant);
- (iii) an update on existing landfill gas control infrastructure (including operational status, number of vents connected and not connected to the landfill gas collection system, quantity of gas collected and flared/utilised, and estimated quantity of landfill gas being produced);
- (iv) recommendations and implementation of same.

The licensee shall maintain these reports on site and forward them to the Agency on request.

8.14.3 The licensee shall arrange for an independent odour audit of the facility on a quarterly basis unless otherwise agreed with the Agency. Within two months of the date of grant of

this licence the licensee shall submit to the Agency for its agreement a proposal on the extent and timing of these audits.

8.15 Nuisance Monitoring

8.15.1 The licensee shall, at a minimum of one week intervals, inspect the facility and its immediate surrounds for nuisances caused by litter, vermin, birds, flies, mud and dust.

8.16 Landfill Gas Utilisation Plant

8.16.1 The licensee shall install and maintain continuous carbon monoxide monitors on the outlets of the gas engine(s).

8.17 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 arrangements have been agreed in writing by the Agency. In the event of the malfunction of any continuous monitor, the licensee shall inform the Agency within twenty-four hours of the discovery of the fault and alternative sampling and monitoring facilities shall be put in place. Prior written agreement for the use of alternative equipment, other than in emergency situations, shall be obtained from the Agency.

8.18 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.

<p><i>REASON: To ensure compliance with the conditions of this licence by provision of a satisfactory system of monitoring of emissions</i></p>

CONDITION 9 CONTINGENCY ARRANGEMENTS

9.1. In the event of an incident the licensee shall immediately.

- a) Identify the date, time and place of the incident.
- b) Carry out an immediate investigation to identify the nature, source and cause of the incident and any emission arising therefrom.
- c) Isolate the source of any such emission.
- d) Evaluate the environmental pollution, if any, caused by the incident.
- e) Identify and execute measures to minimise the emissions/malfunction and the effects thereof.
- f) Provide a proposal to the Agency for its agreement within one month of the incident occurring to:-
 - i) Identify and put in place measures to avoid reoccurrence of the incident.
 - ii) Identify and put in place any other appropriate remedial action.

9.2. The licensee shall maintain a written Emergency Response Procedure (ERP) at the facility. The ERP shall address any emergency situations which may originate on the facility and shall include provision for minimising the effects of any emergency on the environment.

- 9.3. 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.
- 9.4. Emergencies
- 9.4.1. All significant spillages occurring at the facility shall be treated as an emergency and immediately cleaned up and dealt with so as to alleviate their effects.
- 9.4.2. No waste shall be burnt within the boundaries of the facility. A fire at the facility shall be treated as an emergency and immediate action shall be taken to extinguish it and notify the appropriate authorities.
- 9.4.3. In the event that monitoring of local wells indicates that the facility is having a significant adverse effect on the quantity and/or quality of the water supply this shall be treated as an emergency and the licensee shall provide an alternative supply of water to those affected.
- 9.4.4. In the event that monitoring of the slide slopes of the facility indicate that there may be a risk of slope failure this will be treated as an emergency.

REASON: To ensure compliance with the conditions of this licence by provision of a satisfactory system of monitoring of emissions

CONDITION 10 RECORDS

- 10.1 The licensee shall keep the following documents at the facility office:-
- The current waste licence relating to the facility.
 - The current EMS for the facility.
 - The previous year's AER for the facility.
 - All written procedures produced by the licensee which relate to the licensed activities.
- 10.2 The licensee shall maintain a written record for each load of waste arriving at the facility, excluding those arriving at the Civic Waste Facility. The licensee shall record the following:-
- The date.
 - The name of the carrier (including, where appropriate, the waste collection permit details);
 - The vehicle registration number.
 - The name of the producer(s)/collector(s) of the waste as appropriate.
 - The name of the waste facility (if appropriate) from which the load originated including the waste licence or waste permit register number.
 - A description of the waste including the associated EWC codes.
 - The quantity of the waste, recorded in tonnes.
 - The name of the person checking the load; and,
 - Where loads or wastes are removed or rejected, details of the date of occurrence, the types of waste and the facility to which they were removed.
- 10.3 Written Records
- The following written records shall be maintained by the licensee:-
- The quantities of waste disposed of at the facility each month and each year. These records shall include the relevant EWC Codes.

- b) All training undertaken by facility staff.
 - c) Results from all integrity tests of bunds and other structures and any maintenance or remedial work arising from them.
 - d) Details of all nuisance inspections.
 - e) Records of flare maintenance and training provided.
 - f) The names and qualifications of all persons who carry out all sampling and monitoring as required by this licence and who carry out the interpretation of the results of such sampling and monitoring.
 - g) The date(s) of commencement of leachate re-circulation into new cells.
 - h) The date(s) in which each cell has been filled with waste.
- 10.4 The licensee shall maintain a written record of all complaints relating to the operation of the facility. Each such record shall give details of the following:-
- a) Date and time of the complaint.
 - b) The name of the complainant.
 - c) Details of the nature of the complaint.
 - d) Actions taken on foot of the complaint and the results of such actions.
 - e) The response made to each complainant.
- 10.5 A written record shall be kept of each consignment of leachate removed from the facility. The record shall include the following:-
- a) The name of the carrier.
 - b) The date and time of removal of leachate from the facility.
 - c) The volume of leachate, in cubic metres, removed from the facility on each occasion.
 - d) The name and address of the Waste Water Treatment Plant or sewer to which the leachate was transported.
 - e) Any incidents or spillages of leachate during its removal or transportation.
- 10.6 A written record shall be kept of the volumes of leachate re-circulated to cells of the landfill. These records shall include as minimum;
- a) The date.
 - b) The volume of leachate, in cubic metres, re-circulated.
 - c) The cell(s) to which the leachate was re-circulated.
- 10.7 A written record shall be kept at the facility of the programme for the control and eradication of vermin and fly infestations at the facility. These records shall include as a minimum the following:-
- a) The date and time during which spraying of insecticide is carried out.
 - b) Contractor details.
 - c) Contractor logs and site inspection reports.
 - d) Details of the rodenticide(s) and insecticide(s) used.
 - e) Operator training details.
 - f) Details of any infestations.
 - g) Mode, frequency, location and quantity of application.
 - h) Measures to contain sprays within the facility boundary.

CONDITION 11 REPORTS AND NOTIFICATIONS

- 11.1 Unless otherwise agreed by the Agency, all reports and notifications submitted to the Agency shall:-
- a) Be sent to the Agency's headquarters.
 - b) Comprise one original and three copies unless additional copies are required.
 - c) Be formatted in accordance with any written instruction or guidance issued by the Agency.
 - d) Include whatever information as is specified in writing by the Agency.
 - e) Be identified by a unique code, indicate any modification or amendment, and be correctly dated to reflect any such modification or amendment.
 - f) Be submitted in accordance to the relevant reporting frequencies specified by this licence, such as in *Schedule E: Recording and Reporting to the Agency* of this licence.
 - g) Be accompanied by a written interpretation setting out their significance in the case of all monitoring data.
 - h) Be transferred electronically to the Agency's computer system if required by the Agency.
- 11.2 In the event of an incident occurring on the facility, the licensee shall:-
- a) Notify the Agency as soon as practicable and in any case not later than 1000 hrs the following working day after the occurrence of any incident.
 - b) Submit a written record of the incident, including all aspects described in Condition 9.1(a-e), to the Agency as soon as practicable and in any case within five working days after the occurrence of any incident.
 - c) In the event of any incident which relates to discharges to surface/sewer water, notify the Eastern Regional Fishery Board and/or Kildare County Council, as appropriate, as soon as practicable and in any case not later than 10:00 a.m. on the following working day after such an incident.
 - d) Should any further actions be taken as a result of an incident occurring, the licensee shall forward a written report of those actions to the Agency as soon as practicable and no later than ten days after the initiation of those actions.
- 11.3 Reports relating to Facility Operations
- 11.3.1 Leachate Handling Procedures:-
- (a) The licensee shall submit to the Agency for its agreement updated Leachate Handling Procedures for the handling of leachate on the facility and during removal from the lagoon and subsequent transport/discharge to the Waste Water Treatment Plant or sewer.
- 11.4 European Pollution Emissions Register (EPER)
- 11.4.1 European Pollution Emission Register reporting shall be in accordance with any relevant guidance issued by the Agency.
- 11.5 Annual Environmental Report
- 11.5.1 The licensee shall submit to the Agency for its agreement, within one month of the end of each calendar year, an Annual Environmental Report (AER).
- 11.5.2 The AER shall include as a minimum the information specified in *Schedule F: Content of Annual Environmental Report* of this licence and shall be prepared in accordance with any relevant written guidance issued by the Agency.

REASON: To provide for proper reports to and notifications to the Agency.

CONDITION 12 CHARGES AND FINANCIAL PROVISIONS

12.1 Agency Charges

- 12.1.1 The licensee shall pay to the Agency an annual contribution of €24,506.84 or such sum as the Agency from time to time determines, towards the cost of monitoring the activity or otherwise in performing any functions in relation to the activity, as the Agency considers necessary for the performance of its functions under the Waste Management Act, 1996. The licensee shall in 2004 and subsequent years, not later than January 31 of each year, pay to the Agency this amount updated in accordance with changes in the Public Sector Average Earnings Index from the date of the licence to the renewal date. The updated amount shall be notified to the licensee by the Agency. For 2003, the licensee shall pay a pro rata amount from the date of this licence to 31st December. This amount shall be paid to the Agency within one month of the date of grant of this licence.
- 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 defraying its costs.

12.2 Financial Provision for Closure, Restoration and Aftercare

- 12.2.1 The licensee shall from a date to be set by the Agency establish and maintain a fund, or provide a written guarantee, that is adequate to assure the Agency that the licensee is at all times financially capable of implementing the Restoration and Aftercare Plan required by Condition 4. The type of fund established and means of its release/recovery shall be agreed by the Agency prior to its establishment.
- 12.2.2 Any fund established shall be maintained in an amount always sufficient to underwrite the current Restoration and Aftercare Plan.
- 12.2.3 The licensee shall revise the cost of restoration and aftercare annually and any details of the necessary adjustments to the fund or guarantee must, within two weeks of the revision, be forwarded to the Agency for its agreement. Any adjustment agreed by the Agency shall be effected within four weeks of said written agreement.
- 12.2.4 Unless otherwise agreed any revision to the fund shall be computed using the following formula:-

$$\text{Cost} = (\text{ECOST} \times \text{WPI}) + \text{CiCC}$$

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.

12.3 Cost of landfill of waste

Within six months of date of grant of this licence, the licensee shall submit a report to the Agency for agreement estimating the cost of closure and aftercare of the facility for a period of at least thirty years. Using this information the licensee shall demonstrate how the cost of landfill of waste will cover these closure and aftercare costs in accordance with Article 10 of Directive 1999/31/EC.

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

SCHEDULE A : Waste Acceptance

A.1 Waste Acceptance

Table A.1 Waste Categories and Quantities

Waste Type	Maximum (Tonnes Per Annum)
Baled Municipal Waste	440,000

SCHEDULE B : Specified Engineering Works

Specified Engineering Works
Development of the facility including preparatory works and lining.
Final capping.
Installation of Landfill Gas Management Infrastructure.
Installation of Leachate Management Infrastructure.
Installation of Groundwater Control Infrastructure.
Installation of Surface Water Management Infrastructure.
Any other works notified in writing by the Agency.

SCHEDULE C : Emission Limits

C.1 Noise Emissions:

(Measured at the specified boundary locations indicated in Table D.1.1).

Day dB(A) L_{Aeq} (30 minutes)	Night dB(A) L_{Aeq} (30 minutes)
55	45

C.2 Landfill Gas Concentration Limits:

(Measured in any building on or adjacent to the facility).

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

C.3 Dust Deposition Limits:

(Measured at the monitoring points indicated in Table D.1.1).

Level (mg/m ² /day) ^{Note 1}
350

Note 1: 30 day composite sample with the results expressed as mg/m²/day.

C.4 Surface Water Discharge Limits:

Measured at the outlet from the Surface Water Retention Pond (SW2).

Flow (l/s)
1,000

C.5 Emission Limits Values for Landfill Gas Plant

Emission Point Reference numbers: As per Table D.1.1 and as agreed with the Agency in advance.

Volume to be emitted: 3000m³/hr unless agreed otherwise with the Agency.

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
CO	50 mg/m ³	1400 mg/m ³
Particulates	Not applicable	130 mg/m ³
Total Volatile Organic Compounds (VOCs)	Not applicable	1000 mg/m ³
Total non-methane VOCs	Not applicable	75 mg/m ³
Total organic carbon (TOC)	10 mg/m ³	Not applicable
Hydrogen Chloride	50 mg/m ³ (at mass flows > 0.3 kg/h)	50 mg/m ³ (at mass flows > 0.3 kg/h)
Hydrogen Fluoride	5 mg/m ³ (at mass flows > 0.05 kg/h)	5 mg/m ³ (at mass flows > 0.05 kg/h)

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

SCHEDULE D : Monitoring

D.1 Monitoring Locations

Monitoring locations shall be those as set out in Table D.1.1 and Drawings AWL02-14C 7 AWL02-15B.

Table D.1.1 Monitoring Locations

Landfill Gas	Landfill Gas Flare / Utilisation Plant	Dust Deposition / Odour	Noise
Stations		Stations	Stations
Gas vents/wells within the waste and including "Gavin's Dump"	LFGF1 ^{Note 2}	<u>Dust</u> D1 D2 D3 D4 D5	N2 N3 N4 N5 N6
Perimeter Boreholes	Emission points from additional plant ^{Note 1}	<u>Odour – On-site:</u> Minimum of 4 fixed locations + 4 others dependent on wind direction (2 upwind/ 2 downwind)	Amended N1 (to be along facility boundary) New N7 (to be located between N2 and N3)
Site Offices		<u>Odour – Off-site:</u> As for onsite	
Surface Water	Ground Water	Leachate	
Stations	Stations	Stations	
SW1 SW2 SW3 SW4	^{Note 4 (i)} MW2 MW3(MW22) MW8 (MW6) MW11 MW14 (MW15) MW16 MW20 (MW21)	^{Note 5 (i)} Leachate collection points/collection sumps for Cells 1, 8 and 11. Leachate lagoon Balance Tank (LB) Leachate wells in "Gavin's Dump"	
New SW5 (to be at inlet to Surface Water Retention Pond) ^{Note 3}	^{Note 4 (ii)} All of MW1 to MW22	^{Note 5 (ii)} As per Note 5 (i) above and including all leachate collection points/collection sumps for all cells	
	^{Note 4 (iii)} PW1 to PW5		

Note 1: To be agreed in advance with the Agency.

Note 2: Emission point from existing flare (Condition 3.13)

Note 3: To be agreed in advance with the Agency.

Note 4: (i) To be monitored for all parameters in accordance with Table D.5.1. Those wells in brackets may be used as alternatives if agreed in advance with the Agency.

(ii) To be monitored for levels (mOD) in accordance with Table D.5.1.

(iii) To be monitored for all parameters in Table D.5.1 at frequencies specified in correspondence of 6th April 1999.

Note 5: (i) To be monitored for all parameters in accordance with Table D.5.1.

(ii) To be monitored for levels (above liner/base where relevant) in accordance with Table D.5.1.

D.2 Landfill Gas

Table D.2.1 Landfill Gas Monitoring Parameters, Frequency and Technique

Parameter	Monitoring Frequency		Analysis Method ^{Note1} /Technique ^{Note2}
	Gas Boreholes/ Vents/Wells	Site Office	
Methane (CH ₄) % v/v	Monthly	Weekly	Infrared analyser/flame ionisation detector
Carbon dioxide (CO ₂)% v/v	Monthly	Weekly	Infrared analyser/ flame ionisation detector
Oxygen(O ₂) %v/v	Monthly	Weekly	Electrochemical cell
Atmospheric Pressure	Monthly	Weekly	Standard
Temperature	Monthly	Weekly	Standard

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

Note 2: Or other methods agreed in advance with the Agency.

D.3 Dust/Odour Monitoring

Table D.3.1 Dust Monitoring Frequency and Technique

Parameter (mg/m ² /day)	Monitoring Frequency	Analysis Method/Technique
Dust	Three times a year ^{Note 2}	Standard Method ^{Note 1}
Odour	Quarterly	Note 3

Note 1: Standard method VDI2119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method) German Engineering Institute). Any modifications to eliminate interference due to algae growth in the gauge should be reported to the Agency.

Note 2: Twice during the period May to September.

Note 3: To be agreed with Agency.

D.4 Noise

Table D.4.1 Noise Monitoring Frequency and Technique

Parameter	Monitoring Frequency	Analysis Method/Technique
L(A) _{EQ} [30 minutes]	Bi -Annually	Standard ^{Note 1}
L(A) ₁₀ [30 minutes]	Bi -Annually	Standard ^{Note 1}
L(A) ₉₀ [30 minutes]	Bi -Annually	Standard ^{Note 1}
Frequency Analysis(1/3 Octave band analysis)	Bi -Annually	Standard ^{Note 1}

Note 1: "International Standards Organisation. ISO 1996. Acoustics - description and Measurement of Environmental noise. Parts 1, 2 and 3."

D.5 Surface Water, Groundwater and Leachate

Table D.5.1 Water and Leachate - Parameters / Frequency

Parameter ^{Note 1}	SURFACE WATER ^{Note 2}	GROUNDWATER	LEACHATE ^{Note 3}
	Monitoring Frequency	Monitoring Frequency	Monitoring Frequency
Visual Inspection/Odour ^{Note 2}	Weekly	Quarterly	Quarterly
Groundwater Level	Not Applicable	Monthly	Not Applicable
Leachate Level	Not Applicable	Not Applicable	Continuous
Ammoniacal Nitrogen	Quarterly ^{Note 6}	Quarterly	Annually
BOD	Quarterly	Not Applicable	Annually
COD	Quarterly	Not Applicable	Annually
Chloride	Quarterly	Quarterly	Annually
Dissolved Oxygen	Quarterly	Quarterly	Not Applicable
Electrical Conductivity	Quarterly ^{Note 6}	Quarterly	Annually
PH	Quarterly ^{Note 6}	Quarterly	Annually
Total Suspended Solids	Quarterly ^{Note 6}	Not Applicable	Not Applicable
Temperature	Quarterly ^{Note 6}	Quarterly	Quarterly
Metals / non metals ^{Note 3}	Annually	Annually	Annually
Cyanide (Total)	Not Applicable	Annually	Annually
Fluoride	Not Applicable	Annually	Annually
List I/II organic substances ^{Note 4}	Once off ^{Note 5}	Annually ^{Note 5}	Once off ^{Note 5}
Mercury	Annually	Annually	Annually
Sulphate	Annually	Annually	Annually
Total Alkalinity	Annually	Annually	Not applicable
Total P/orthophosphate	Annually	Annually	Annually
Total Oxidised Nitrogen	Annually	Annually	Annually
Total Organic Carbon	Not Applicable	Quarterly	Not Applicable
Residue on evaporation	Not Applicable	Annually	Not Applicable
Faecal Coliforms	Not Applicable	Annually	Not Applicable
Total Coliforms	Not Applicable	Annually	Not Applicable
Biological Assessment	Annually ^{Note 7}	Not Applicable	Not Applicable

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 of leachate, additional samples should be analysed.

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: 2 surface water locations, 3 groundwater locations and 2 leachate locations to be agreed with the Agency for these parameters.

Note 6: Discharge of diverted surface water/groundwater shall be monitored on a monthly basis for these parameters.

Note 7: Appropriate biological methods (such as EPA Q-Rating System) to be used for the assessment of rivers and streams. River locations only.

D.6 Meteorological Monitoring

Table D.6.1 Meteorological Monitoring:

At the on site weather station unless otherwise instructed or agreed with the Agency.

Parameter	Monitoring Frequency	Analysis Method/Technique
Precipitation Volume	Daily	Standard
Temperature (min/max.)	Daily	Standard
Wind Force and Direction	Daily	Standard
Evaporation	Daily	Standard
Evapotranspiration ^{Note 1}	Daily	Standard
Humidity	Daily	Standard
Atmospheric Pressure ^{Note 1}	Daily	Standard

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

D.7 Landfill Gas Combustion Plant/Enclosed Flare

Location: Existing Flare (Condition 3.13) and for additional plant to be agreed in advance with the Agency

Table D.7.1 Landfill Gas Utilisation Plant/Enclosed Flare Parameters and Monitoring Frequency

Parameter	Flare (enclosed)	Utilisation Plant	Analysis Method ^{Note1} /Technique ^{Note2}
	Monitoring Frequency	Monitoring Frequency	
Inlet			
Methane (CH ₄) % v/v	Continuous	Weekly	Infrared analyser/flame ionisation detector/thermal conductivity
Carbon dioxide (CO ₂)%v/v	Continuous	Weekly	Infrared analyser/ thermal conductivity
Oxygen (O ₂) %v/v	Continuous	Weekly	Electrochemical/thermal conductivity
Total Sulphur	Annually	Annually	Ion chromatography
Total Chlorine	Annually	Annually	Ion chromatography
Total Fluorine	Annually	Annually	Ion Selective Electrode
Process Parameters			
Combustion Temperature	Continuous	Quarterly	Temperature Probe/datalogger
Outlet			
CO	Continuous	Continuous ^{Note 3}	Flue gas analyser/datalogger
NO _x	Annually	Continuous ^{Note 3}	Flue gas analyser
SO ₂	Annually	Annually	Flue gas analyser
TOC	Annually	Not applicable	Flame ionisation
Total VOCs	Not applicable	Annually	Flame ionisation
Total non-methane VOCs	Not applicable	Annually	Adsorption-thermal desorption
Particulates	Note applicable	Annually	Isokinetic/Gravimetric
Hydrochloric acid	Annually	Annually	Impinger / Ion Chromatography
Hydrogen fluoride	Annually	Annually	Impinger / Ion Chromatography

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

Note 2: Or other methods agreed in advance with the Agency.

Note 3: Continuous monitoring of carbon monoxide and nitrogen oxides is required. Monitoring of one of these parameters may be reduced to quarterly with the prior agreement of the Agency.

SCHEDULE E : Recording and Reporting to the Agency

Report	Reporting Frequency ^{Note1}	Report Submission Date
Environmental Management System Updates	Annually	One month after the end of the year reported on.
Annual Environment Report (AER)	Annually	Thirteen months from the date of grant of licence and one month after the end of each year thereafter.
Record of incidents	As they occur	Within five days of the incident.
Bund, tank and container integrity assessment	Every three years	Six months from the date of grant of licence and one month after end of the three year period being reported on.
Specified Engineering Works reports	As they arise	Prior to the works commencing.
Monitoring of landfill gas	Quarterly	Ten days after end of the quarter being reported on.
Monitoring of Surface Water Quality	Quarterly	Ten days after end of the quarter being reported on.
Monitoring of Groundwater Quality	Quarterly	Ten days after end of the quarter being reported on.
Monitoring of Leachate	Quarterly	Ten days after end of the quarter being reported on.
Meteorological Monitoring	Annually	One month after end of the year being reported on.
Dust Monitoring	Three times a year	Ten days after the period being reported on
Noise Monitoring	Bi-annually	One month after end of the period being reported on.
Odour audit	Quarterly	Ten days after the period being reported on
Any other monitoring	As they occur	Within ten days of obtaining results.

Note 1: Unless altered at the request of the Agency.

SCHEDULE F : Content of the Annual Environmental Report

Annual Environmental Report Content

Reporting Period.

Waste activities carried out at the facility.

Quantity and Composition of waste received, disposed of and recovered during the reporting period and each previous year.

Calculated remaining capacity of the facility and year in which final capacity is expected to be reached.

Methods of deposition of waste.

Summary report on emissions.

Summary of results and interpretation of environmental monitoring.

Resource and energy consumption summary.

Proposed development of the facility and timescale of such development.

Volume of leachate produced and volume of leachate transported / discharged off-site.

Report on development works undertaken during the reporting period, and a timescale for those proposed during the coming year.

Report on restoration of completed cells/ phases.

Site survey showing existing levels of the facility at the end of the reporting period.

Estimated annual and cumulative quantities of landfill gas emitted from the facility.

Estimated annual and cumulative quantity of indirect emissions to groundwater.

Annual water balance calculation and interpretation.

Report on the progress towards achievement of the Environmental Objectives and Targets contained in previous year's report.

Schedule of Environmental Objectives and Targets for the forthcoming year.

Full title and a written summary of any procedures developed by the licensee in the year which relates to the facility operation.

Tank, pipeline and bund testing and inspection report.

Reported incidents and Complaints summaries.

Review of Nuisance Controls.

Report on the use of a portion of the waste charges for appropriate local environmental improvement projects during the year and details of plans for forthcoming year.

Reports on financial provision made under this licence, management and staffing structure of the facility, and a programme for public information.

Report on training of staff.

Any other items specified by the Agency.

Signed on behalf of the said Agency
on the 8th day of April, 2003

Ray Cullinane, Authorised Person