

INSPECTOR'S REPORT
WASTE LICENCE REGISTER NUMBER 16-1

(1) Summary:

Name of Applicant	Wexford County Council
Facility Name (s)	Killurin Landfill Site
Facility Address	"The Deeps", Killurin, Co Wexford
Description of Principal Activity	Deposit in or on land
Quantity of waste (tpa)	70,000
Environmental Impact Statement Required	No
Number of Submissions Received	one
INSPECTOR'S RECOMMENDATION	The proposed decision as submitted to the Board be approved.

Notices	Issue Date(s)	Reminder(s)	Response Date(s)
Article 14 (2) (b) (i)	Not Applicable		
Article 14 (2) (b) (ii)	3/11/97	Not applicable	3/12/97, 27/1/98
Article 14 (2) (a)	Not Applicable		
Article 16	16/6/98	19/8/98	3/9/98, 4/11/98, 11/11/98

Applicant Address	Wexford County Council, Spawell Road, Wexford
For Local Authority applicants, is the facility within its own functional area	Yes
Is the facility an existing facility:	Yes.
Prescribed date for application:	1/10/97
Date Application received:	30/9/97
Location of EIS in Application	Not Applicable

FACILITY VISITS:

DATE	PURPOSE	PERSONNEL	OBSERVATIONS
29/4/97	Pre-application site meeting	D Laurence	
24/10/97	Check site notice	D Laurence	Site Notice complies with Art. 8
19/3/98	Visit site and surrounds	D Laurence	
20/5/98	Visit pre-finalising Article 16 notice	D Laurence	

(2) Class/Classes of Activity

The class(es) of activities for which the applicant has applied are marked below. The principal activity is indicated by (P), other activities by (X).

Waste Management Act, 1996			
THIRD SCHEDULE Waste Disposal Activities		FOURTH SCHEDULE Waste Recovery Activities	
1. Deposit on, in or under land (including landfill).	P	1. Solvent reclamation or regeneration.	
2. Land treatment, including biodegradation of liquid or sludge discards in soils.	X	2. Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).	X
3. Deep injection of the soil, including injection of pumpable discards into wells, salt domes or naturally occurring repositories.		3. Recycling or reclamation of metals and metal compounds.	X
4. Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.	X	4. Recycling or reclamation of other inorganic materials.	X
5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.		5. Regeneration of acids or bases.	
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.	X	6. Recovery of components used for pollution abatement.	
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.	X	7. Recovery of components from catalysts.	
8. Incineration on land or at sea.		8. Oil re-refining or other re-uses of oil.	
9. Permanent storage, including emplacement of containers in a mine.		9. Use of any waste principally as a fuel or other means to generate energy.	X
10. Release of waste into a water body (including a seabed insertion).		10. The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.	X
11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.		11. Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.	X
12. Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.	X	12. Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule.	
13. Storage prior to submission to any activity referred to in this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.	X	13. Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.	X

Class description:

Third Schedule;

Class 1 refers to the landfilling of waste at the facility

Class 2 is not done at present but might be done in future to “deal with sludges”

Class 4 refers to the placing of sewage sludge in lagoons

Class 6 refers to a “possible” treatment process for “sludges and other materials”

Class 7 refers to “organic matter that has been composted prior to use as a temporary cover material. This is not an activity at present”

Class 12 refers to possible repackaging - by baling (etc) - of waste prior to landfilling

Class 13 refers to the glass which has been contaminated which must be disposed of by landfill or used a road sub-base.

Fourth Schedule;

Class 2 refers to re-using timber and other organic wastes and also the collection of waste oils.

Class 3 refers to the recovery of scrap metal.

Class 4 refers to the possible recovery of paper and packaging.

Class 9 refers to landfill gas extraction and possible energy recovery

Class 10 refers to possible windrow composting

Class 11 refer to the possible use of compost as cover material.

Class 13 refers to the storage, pending recovery, of cans and glass.

(NOTE that the Classes described in the application and set out above are as per the Waste Management Act 1996 prior to the amendment of the 3rd and 4th Schedules)

Activities recommended for licensing:

It is recommended that all the above activities, for which the applicant has applied for a waste licence, be licensed subject to the conditions contained in the attached Proposed Decision.

(3) Facility Location

Appendix 1 contains a location drawing and a layout drawing showing the significant features of the facility.

The facility, comprising some 11 hectares - of which 4.5 hectares are composed of the actual landfill - is located in an worked-out sand and gravel quarry, situated in a rural location in close proximity to the River Slaney near Killurin Bridge. The nearest residential properties are located on the north side of the road from Kyle Cross to Killurin Bridge, approximately 20 metres from the site fence. Several other residential properties exist within 500m of the proposed facility, including the Inis Glas commune. The dominant land-use is agricultural, with an intensive pig production unit being

located close-by. The facility is very effectively screened on all sides by a swathe of trees along the banks of the River Slaney, the woodlands around Inis Glas commune and planting along the public road.

The River Slaney is designated under the European Communities (Quality of Salmonid Waters) Regulations 1988. However these Regulations only apply to the fresh water stretch which commences north of Enniscorthy.

The wooded banks of the Slaney - including the area between the facility and the river itself - are subject to a proposed designation as a Natural Habitat Area under the European Communities (Natural Habitats) Regulations 1997.

(4) Waste Types and Quantities

The total quantity of waste deposited at the facility is shown below.

	NON-HAZARDOUS WASTE	HAZARDOUS WASTE	TOTAL QUANTITY OF WASTE
Already deposited	600,000 tonnes **	Not Applicable	600,000 tonnes

** figure given at time of application (October 1997)

The expected life of the facility and the expected maximum annual tonnage are indicated below.

Expected life of the facility, (in years)	3-5 years from end 1998
Maximum Annual Tonnage	70,000 tonnes

(5) Activity Summary

The landfill site at Killurin was operated sporadically in the early 1970s, with Wexford County Council taking it over in 1985. The landfill represents the major waste management facility for County Wexford, accepting domestic waste and limited commercial and industrial wastes. These materials are delivered by both the County Council's collection vehicles and also by a number of local waste management companies. Members of the public can also utilise the facility under a pre-paid ticket system. Sewage sludge and some industrial sludges are also accepted.

The application proposes that the remaining void-space is divided into 5 phases. These will be progressively filled to completed levels and restored. Such a requirement is formalised by *condition 4.18.2* of the proposed decision, as also are final contour levels. The after-use of the facility is not certain at present and hence the proposed

decision requires that a full landscaping proposal is made to the Agency within 12 months of the date of grant of the licence (*condition 8.5*).

The entire base of the old quarry has been covered by deposited waste and therefore no lining system is proposed. The nature of permeable sub-strata means that leachate migration from the site is inevitable. Hence some localised pollution is apparent from the environmental monitoring results submitted by the applicant in relation to the sole borehole installed between the facility and the River Slaney (see results set out in Appendix 1). However, there is evidence that the close proximity of the River Slaney - which is tidal to Enniscorthy - causes groundwater to be somewhat saline. In addition, the direction of groundwater flow - from high ground to the north-east of the facility to the Slaney itself - would indicate that there is very little risk to nearby water supplies. Nevertheless, conditions of the proposed decision require extensive mitigation to reduce considerably any leachate discharge and hence the risk of consequential pollution. This includes reducing leachate levels in the deposited wastes (*condition 4.15.1*), diverting groundwater entering the facility (*condition 4.16*), capping works to prevent rainfall ingress (*condition 8*) and leachate diversion between the facility and the River Slaney itself (*condition 4.15.2*). It is considered that such works will, when fully implemented, ensure that the activity will not cause environmental pollution and thereby satisfy Section 40(4)(b) of the Waste Management Act 1996.

(6) Facility Operation/Management

• Waste Acceptance Procedures

The application proposes that household and commercial wastes are accepted, along with some industrial wastes and sewage sludge.

Conditions 5.1 and 5.2 of the proposed decision restrict the waste types to be disposed of at the facility to household, commercial and industrial wastes. Hazardous wastes are prohibited. The proposed decision requires that the wastes are inspected prior to deposit and a record of all inspections be maintained. Inspections can occur at either the weighbridge or the working face. *Condition 5.3* sets down procedures for the acceptance of sludges, requiring that a detailed management scheme is put into place within three months of the date of the granting of the licence.

The facility also contains a recycling area for the storage of materials gathered elsewhere in Wexford. The proposed decision permits the storage of recyclable materials such as aluminium and steel cans, glass, used engine oil, scrap metal and fridges. At present, scrap metal is piled up in an unsightly manner on one part of the facility. The proposed decision requires that this area be concreted. The application also contains a statement that the applicant may wish to carry out the composting of waste at the facility in the future. Hence the proposed decision requires that a location and a detailed proposal with respect to this operation is made to the

Agency for the latter's agreement prior to such an activity commencing (*condition 5.6*).

- **Waste Handling**

Wastes entering the facility are weighed at the weighbridge and brought to the working face of the operational cell. The site has been divided into three large cells, with the deposited waste being spread in shallow layers and compacted. While the application of cover material has tended to be sporadic in the past, the proposed decision requires that comprehensive covering is instigated within three months of the date of grant of the licence (*condition 5.14*).

- **Nuisance Control**

Potential nuisances are controlled by *condition 6* and by the requirements of *Condition 5.14*), which requires a more effective cover regime. It is expected that these developments will mitigate a historic problem at the facility of fly infestation. Other conditions address the control of vermin, which are also in evidence at present. The use of daily cover, as required by *Condition 5.14*), also minimises the potential for odour nuisance, as well as the attraction of the facility to birds and vermin, nuisance caused by insects and litter problems.

The proposed decision also requires an improved landfill gas management regime. This is necessary due to the nature of the surrounding ground - sands and gravels - and the proximity of residential properties. As noted earlier, the nearest property is 20 metres from the site boundary. Hence a gas trench (*condition 4.17.1*) and an active gas extraction system (*condition 4.17.2*) will need to be in place within a defined time period. The latter system should also help to control of the occurrence of odour.

At present, there is no wheelwash. The occurrence of mud on the public highway would not appear to have been a significant problem in the past due to the length of the internal access roads. However, the latter will inevitably shorten as the facility becomes filled. Furthermore, the extensive amount of restoration materials needed to adequately cap and landscape the facility may mean that mud on the highway becomes a problem in the final years of the facility's life. Hence *Condition 4.8* of the proposed decision requires that a proposal in respect of a wheelwash is submitted within 12 months, with a view to the long term prevention of the tracking of any materials onto the public road.

Scavenging has occurred in the past. This will not be allowed at the facility and is prohibited by *condition 5.10*.

- **Hours for Waste Acceptance**

The hours of opening are 8.30am to 5.45 pm Monday to Friday inclusive and Saturdays 8.30am to 1.00 pm (*condition 5.11*). Any changes in these hours are subject to the prior written agreement of the Agency.

(7) Facility Design

- **Infrastructure;**

At present, the security arrangements are as follows: the northern boundary of the facility along the public road is delineated by chainlink security fencing which links into the blockwork walls of the gated entrance. This fence continues along the eastern side of the site. To the west, the River Slaney acts as a natural barrier. The fencing system is, however, only partial with, for example, a significant gap between the site and the land occupied by the Inis Glas commune. Furthermore, a number of holes are observable in the existing fencing. Accordingly, *condition 4.2* of the proposed decision requires that a proposal is made to the Agency for the site to be comprehensively fenced. It also requires that existing defects in the chainlink fencing are rectified.

The main infrastructure within the facility includes a car park area, offices, weighbridge and plant garage. Bays for the storage of materials collected for recycling elsewhere in Wexford are provided. At the moment the public tipping area is situated towards the middle of the facility, but away from the locations where other vehicles deposit their wastes. *Condition 4.12* of the proposed decision requires that a proposal is made to the Agency for a new public tipping area to be constructed adjacent to the site offices, allowing for the possible haulage of full skips by a “slave” vehicle to the working area.

- **Leachate Management;**

At present, elevated leachate levels are evident in the deposited wastes at Killurin Landfill Site. A requirement of the proposed decision is that these levels are significantly reduced. This is to be done by:-

- (a) capping and landscaping filled cells (*conditions 4.18 and 8.5*)
- (b) groundwater cut-off drains (*condition 4.16*)
- (c) active leachate pumping and off-site removal (*condition 4.15.1*)
- (d) leachate cut-off drains between the facility and the Slaney to prevent overland and sub-surface flow (*condition 4.15.2*).

Items (b), (c) and (d) above have not be put forward by the applicant: however they are considered essential in order to cause the operation of the facility to satisfy the criteria set down in s40(4) of the Waste Management Act 1996. The proposed decision also allows the applicant to address the leachate problem by leachate treatment if considered desirable (*condition 4.15.1*).

- **Landfill Gas Management;**

The landfill already contains some passive gas vents, which have been installed only in Cell 2. *Condition 4.17.2* requires the applicant to install an active extraction system and gas flare within 12 months of the date of granting of the licence. As a

more immediate response, *condition 4.17.1* requires that a gas venting trench is installed on unfilled ground within the facility in parallel to the public road.

- **Capping System;**

The applicant proposed a capping system using 60,000m³ of capping and restoration materials. However, there appears to be some doubt as to whether materials obtained from the historic temporary capping of parts of the facility are suitable for final capping purposes in terms of (a) quantity, (b) specification and (c) due to possible contamination in the removal process. Hence the use of an artificial alternative - such as a low density polyethylene capping system - is set down in the proposed decision (*condition 4.18.1*). As *condition 4.1.8.2* of the licence requires that capping commences progressively with the completion to levels of Cells 3A and 3B, it will prove possible to see if what is proposed by the applicant is realistic. If not, artificial membrane capping can be imposed by way of the *Condition 4.18.3* of the proposed decision.

(8) Restoration and Aftercare

A detailed drawing showing final contour levels have been submitted and these levels are formalised by *Condition 4.18* of the proposed decision. Due to the absence of a detailed restoration scheme in the application itself, *condition 8.5* of the proposed decision requires that a detailed landscaping and restoration scheme is submitted to the Agency within 12 months.

(9) Hydrogeology

The facility is a sand and gravel quarry. It is probable that the depth of extraction was governed by the depth of the water table and hence waste has been deposited in close proximity to it. Due to the facility's location to the River Slaney, the water table is at a similar height to the river itself. Being tidal, there is evidence of saline intrusion in the borehole in close proximity to the River. Hence it would appear from the site investigation supplied with the application that a direct discharge of leachate into the groundwater occurs from part of the facility. However, the groundwater at this location is considered to be permanently unsuitable for domestic and agricultural uses. This is due to a combination of factors, including the very restricted area between the facility and the River Slaney and the saline quality of the groundwater caused by tidal influences at this location.

The groundwater gradient is from north-east to south-west, from the higher land surrounding the site to the River itself. Groundwater therefore naturally discharges into the River Slaney. The bedrock is not classified as a Regionally Important Aquifer in the general vicinity of Killurin and the River Slaney. Furthermore, the brackish nature of groundwater between the facility and the River Slaney - coupled with the close

proximity of the site and the river - means that it is unproductive at the location of Killurin Landfill site.

Groundwater monitoring is required by *condition 9.1*. Given the sensitivity of the facility in respect of receptors and also current leachate contamination, monthly frequencies of groundwater and surface water monitoring are set out in the proposed decision for a limited number of selected analytical parameters. However, as already noted, groundwater diversion and other works are required by *condition 4* so that leachate levels and the hydraulic gradient within the site are appropriately reduced in the medium term.

(10) Emissions to Air

Emissions to air include landfill gas and dust. In addition there is potential in the future for emissions of the combustion products of landfill gas. *Condition 7.1* sets emission limits for landfill gas detected in buildings and for dust deposition. *Condition 7.6* sets trigger levels for landfill gas detected on or in the immediate vicinity of the facility. Landfill gas management is required by *condition 4.17*. Dust control is required by *condition 6.7*. Dust and landfill gas monitoring requirements are established under *condition 9.1*. *Condition 10.6* - in conjunction with *condition 3.1* - requires further action, including investigations and remedial action to be taken if trigger levels or emission limits are exceeded.

(11) Noise Emissions

Noise is not considered to be a problem at this landfill due to the effective screening. The only area of significant impact is caused by traffic turning into the site entrance. Noise emission limits are established by *condition 7.1*. *Condition 7.3* requires that there shall be no clearly audible tonal component in noise emissions from the facility. Noise monitoring of the facility is required by *condition 9.1*.

(12) Emissions to Sewer

There are no emissions to sewer. A septic tank has been installed by the site office to deal with sewerage arising on the facility.

(13) Emissions to Surface Water

The Eastern Regional Fisheries Board has confirmed that the European Communities (Quality of Salmonid Waters) Regulations 1988 only apply to the freshwater stretch of the Slaney, north of Enniscorthy.

The current operation of the landfill results in leachate passing directly to surface water ditches and thence to the River Slaney. While these discharges are diluted by rainfall falling on the facility and its environs and also - once in the river itself - by the flow of the Slaney, surface water discharges of this nature are causing some localised pollution in ditches draining from the facility in the direction of the River and also in parts of marshland of the river bank. However, information contained in the application would indicate that there is no obvious effect on water quality in the Slaney itself.

Any such discharges are required to be mitigated by the conditions of the proposed decision. *Condition 4.15.2* requires that a detailed proposal is made to the Agency for appropriate civil engineering to collect leachate from these sources. In addition, it is expected that leachate emissions at these locations will be reduced when provision has been made for the leachate level reduction as referred to in Section 7 above. Finally, the proposed decision requires that water sampling of the Slaney main channel is undertaken immediately upstream and downstream of the facility (*condition 9.6*).

(14) Other Significant Environmental Impacts of the Development

None.

(15) Waste Management, Air Quality and Water Quality Plans

Wexford County Council have recently finalised their Waste Management Plan. That Plan sets out that the Killurin Landfill site is an interim solution for all wastes disposed of within Wexford and that it will close in 3-4 years' time. A Water Quality Management Plan for the Slaney Catchment exists, but it does not make reference to any environmental effects caused by the landfill. However, it is considered that the requirements of the proposed decision - particularly those which will reduce the leachate burden to the River Slaney - further the overall objectives of the Plan.

(16) Submissions/Complaints

One submission was received from the Eastern Regional Fisheries Board, dated 5 May 1998. It notes the Board has no objection to the granting of the licence, but that the River Slaney is designated under EC legislation and that it is important that its quality is safeguarded.

Signed: _____

Dated: _____

Duncan Laurence (Dr)
Inspector I