INSPECTORS REPORT
WASTE LICENCE REGISTER NUMBER W010

(1) Summary:

Name of Applicant	Meath County Council
Facility Name(s)	Basketstown Landfill
Facility Address	Basketstown, Summerhill, Co. Meath
Description of Principal Activity	Deposit on, in or under land
Quantity of waste (tpa)	60,000
Environmental Impact Statement (EIS) Required	No.
Number of Submissions Received	seven
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)	30 Oct 1997 18 Dec 1997		28 Nov. 1997 19 Jan. 1998
Article 14 (2) (a)	12 February 1998		
Article 16	3 April 1998 7 July 1998 5 August 1998		22 June 1998 30 June 1998 31 July 1998 20 August 1998 7 September 1998

Applicant Address	County Secretary, Meath County Council County Buildings, Railway Road, Navan, Co. Meath
Planning Permission Status and Date Granted (if appropriate)	Not Applicable
Planning Authority	Not Applicable
For Local Authority applicants, is the facility within its own functional area	Yes
Is the facility an existing facility	Yes
Prescribed date for application	Prior to 01 October 1997
Date Application received	30 September 1997
For Certified Sites, Have Matters in the EIS relating to environmental pollution been considered as required by Article 21 of SI 133 of 1997	Not Applicable
Location of Certificate in Application	Not Applicable
Confidential Information Submitted	None
Location of Planning Documents in Application	Not Applicable
Location of EIS in Application	Not Applicable

FACILITY VISITS:

DATE	PURPOSE	PERSONNEL	OBSERVATIONS
22/10/97	Site Visit Check Site Notice	M. Keegan	Site notice in compliance with Articles 5 and 7
29/10/98	Pre final report	M. Keegan	general site works

(2) Class/Classes of Activity

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

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.		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.		6.	Recovery of components used for pollution abatement.	
7.	Physico-chemical 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 (including evaporation, drying and calcination).		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,	
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.		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 a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.		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.	

Class Description:
The descriptions provided by the applicant for these activities are set out below;

Third Schedule
Class 1: refers to the deposit of waste in a landfill.
Class 4: refers to the placement of sludge (alum and sewage) into ponds/lagoons.

Fourth Schedule
Class 2: refers to composting proposals which following a review of the County Council's waste management strategy and infrastructural requirements is no longer proposed. This also refers to the handling of waste oils in the Oil Recycling Area.
Class 3: refers to the recycling of cans and scrap metal.
Class 4: refers to the recycling of bottles, clothing and car batteries.
Class 9: refers to the future utilisation of landfill gas to generate electricity which is no longer proposed as the Co. Co. were unsuccessful in relation to obtaining *AER III* funding. However, proposals are required for an active landfill gas control system in accordance with Condition 4.19.2.
Class 11: refers to proposals for use of compost from composting at the facility however as Class 2 will not be undertaken at the facility this proposal will also not be carried out on site.

(3) Facility Location

A location map showing the facility to which the application relates is provided in Appendix 1.

The facility, comprising some 13 hectares, is located in the townland of Basketstown in the south west of County Meath. The site is approximately 3 km north of Summerhill, 14 km from Trim, 10 km from Enfield and 28 km from Navan. The nearest residential property is located less than 100m west of the site boundary adjacent to the site entrance. The dominant landuse in the area is grazing to the north, south and west with an active sand and gravel quarry adjacent to the east of the site. The facility is located within the Knightsbrook river catchment area which is a tributary of the Boyne. The Knightsbrook river has been described by the Eastern Fisheries Board as an important salmonid river but has not been designated as such under the European Communities (Quality of Salmonid Waters) Regulations, 1988 (SI 293/1988) . The southern part of the site drains to the Dangan river which is a tributary of the Knightsbrook.

The site is a former sand and gravel quarry. Quarrying has left high unworked ridges on all sides of the excavations which provides some screening for the houses along the minor road CR 557 to the north of the site.

(4) Waste Types and Quantities

Total quantities and types of wastes accepted by the facility are shown below.

YEAR	NON-HAZARDOUS WASTE (tpa)	HAZARDOUS WASTE (tpa)	TOTAL ANNUAL QUANTITY OF WASTE (tpa)
1996	48,953	Not Applicable	48,953
1997	52,905	Not Applicable	52,905
1998	56,858	Not Applicable	56,858

The total quantities of waste deposited at the facility and the amount to be deposited prior to closure are shown below.

	NON-HAZARDOUS WASTE (tonnes)	HAZARDOUS WASTE (tonnes)	TOTALS (tonnes)
Already deposited	no records	Not Applicable	-------
To be deposited	117,670	Not Applicable	117,670

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

Expected Life of Facility (years)	approximately end 2000 for waste disposal
Maximum Annual Tonnage (tpa)	60,000

(5) Facility Operation/Management

Where Schedules or Conditions are referred to hereafter they are those listed in the Proposed Decision.

- **Waste Handling**

All incoming commercial vehicles are weighed and the data is entered into the site computer.

All wastes are delivered to the base of the tip face where they are spread and compacted in 1m high lifts. At the end of the day the waste is covered by 150 mm of inert material.

Private individuals arriving at the facility are directed to the public tipping area. Condition 4.4.2 requires that a permanent public tipping area be provided by prior agreement with the Agency within 6 months of the licence being granted.

- **Waste Acceptance Procedures**

All wastes are visually inspected at the weighbridge prior to disposal. The Co. Co. do not operate a collection service hence, all wastes in Meath are collected by commercial operators. These waste inputs are weighed and recorded on entry to the facility. Wastes delivered by the general public are accepted with prepaid tickets and are not weighed on site.

Domestic and compatible dry commercial and industrial wastes only are accepted at the landfill. No hazardous waste is deposited in the landfill. Condition 5.3 requires that procedures for waste acceptance be developed.

Waste acceptance procedures are in place for asbestos based material - EWC code 17 01 05, which require one week notice for disposal. If acceptable, the waste must be double bagged and sealed and disposed within a filled part of the landfill in an area with at least 4m of cover.

- **Nuisance Control**

The potential for nuisance from litter, vermin and odours is reduced by daily covering, compaction and limiting the area of active landfill. Condition 6.10 requires bird control measures to be submitted to the Agency for agreement within 3 months of grant of licence.

Mud and dust from vehicles travelling to and from the facility can cause a nuisance. It is proposed to minimise dust produced by maintaining good access to the tip face and cleaning of the public highway adjacent to the facility if it becomes a problem. In dry weather a sprinkler system is used to dampen the internal road surfaces. These mitigation measures are dealt with in Conditions 6.2 and 6.7. Condition 4.12 includes proposals for the installation of a wheelwash.

Burning of waste is not permitted on site. Compaction of waste essentially eliminates spontaneous fires occurring within the waste. Condition 10.1 includes the Emergency Response Procedures.

Litter is controlled on site by the location of high clay and gravel bunds and good tipping and operational practices. Only vehicles with properly enclosed or covered wastes will be allowed entry to the site. Litter patrols operate daily within the site and along the road. Fly tipping is prohibited. However, in the event of this occurring the appropriate measures must be taken as provided for in Conditions 6.3, 6.4 and 6.6.

The potential for odour nuisance is reduced by the application of daily cover. The facility does not accept wastes that create specific odour problems, e.g. fish and livestock offal nor is there any leachate treatment on site that could contribute to odour problems. Condition 6.8 refers to the control of odours beyond the boundary of the site. While landfill gas is passively vented to the atmosphere and may generate some odours Condition 4.19.2 requires proposals for a landfill gas control system.

Scavenging has not been an issue at the facility and is prohibited by Condition 5.7.

- **Hours of Operation**

Waste shall only be accepted at the site between 8.30 and 17.00 Monday to Friday inclusive, and between 8.30 and 16.30 on Saturdays as specified in Condition 5.8.

(6) Facility Design

- **Development**

The landfill is not an engineered facility. It has developed on a phased basis as shown in Appendix 1 comprising of a total of 3 phases. All cells in Phase I and II have been filled, and one cell in Phase III has been filled. However, because of levels some refilling of Phase II is currently underway and it is proposed to deposit another 1.3m of waste in Phase I before proceeding to the remaining cells in Phase III. Condition 4.18 requires that the extent of historical landfilling and future development be reported to the Agency prior to additional waste being placed into the cells in Phase III.

- **Infrastructure**

The facility is bounded by a security fence which links to a gated entrance. The main infrastructure within the facility is the site office, weighbridge, carpark area and recycling area, all of which are accessible from the main entrance. There are proposals to install a waste inspection area and a wheel cleaning area at the facility (Condition 4.7 and 4.12) as part of the conditioning plan.

All traffic must cross the weighbridge to gain access to the tipping area and the relevant information/documentation is presented to the supervisor.

The on-site services include ESB, water, telephone and first aid facilities. Toilet facilities are provided in the adjacent compound area and the effluent is discharged to a puraflo system and percolation area. Fuel is currently stored in an unbunded

400 gallon tank however, there are proposals to increase the capacity to 700 gallons and to construct a proper bunding system (Condition 4.15).

- **Liner Details**

The landfill is not an engineered site thus there is no liner system in place. However, new cells in Phase III will be lined in accordance with Condition 4.18.

- **Leachate Management**

At present there is no leachate management plan in operation on site as the landfill facility operates on a dilute and disperse principle. Leachate is not collected, stored or treated on or off site. Condition 4.20.1 requires submission of proposals for a leachate management plan to ensure that it does not cause environmental pollution.

Leachate levels have been measured within the waste and suggest that there is a leachate mound within the waste. From borehole information leachate may therefore be migrating in a northerly as well as a southerly direction.

Leachate discharge is resulting in the deterioration of the quality of the Tobernabeenog spring, the spring drain and the northern drains. A treatability study is being carried out on Tobernabeenog spring and the spring drain. Condition 4.20.2 requires details of the design and installation of the treatment facility be provided.

- **Landfill Gas Management**

At present landfill gas is passively vented to the atmosphere through 12 plastic standpipes in the completed area of the site. No active abstraction of landfill gas has been undertaken to date. The glacial deposits which underlie the site are primarily sands and gravels that allow landfill gas migration. Monitoring shall be carried out as is set out in Schedule F to ensure early detection of possible gas migration. Monitoring boreholes (6 No.) have been installed to monitor gas levels near sensitive receptors (dwellings) within 500m of the site. Condition 4.19.2 requires that details of an active landfill gas control system to be submitted to the Agency for agreement.

- **Capping System**

The capping system consists of a 300 mm gas layer which has a permeability greater than 1×10^{-4} m/s overlain by a 600 mm barrier layer with a permeability of less than 1×10^{-9} m/s. The drainage layer (300 mm of $K>1x\ 10^{-4}$ m/s) overlies the barrier layer and on top of this is 600 mm of free draining subsoil and a minimum of 200 mm of good topsoil. To date a temporary capping layer has been installed on the filled cells. Condition 4.23.1 specifies the temporary and final capping to be introduced on completed cells. The above ground infrastructure associated with the

leachate and landfill gas management will be accommodated within the capping layer.

(7) Decommissioning and Aftercare

It is proposed to restore the facility to grassland sward to allow re-use as agricultural land. The Restoration Scheme and Aftercare Management Scheme are provided for in Condition 8.

(8) Emissions to Air

Emissions to air include landfill gas, odours and dust.

An assessment of the potential impact of odours on the nearby residences was carried out. Air samples were collected and analysed for VOC's, mercaptans and sulphides from sampling locations at each of the nearby residences and at two locations on site. No mercaptans nor sulphides, which are the major odour producing gases, were detected (detection limit <0.05 ppm) at the residences and the VOC levels at the residences where detected (detection limit 0.01µg) are below 1/40th of the 8hr OEL as per the 1997 Code of Practice for Safety, Health and Welfare.

Emissions of dust are reduced by the placement of daily cover and compaction of the waste. Schedule G sets a limit for dust levels at or beyond the site boundary.

(9) Emissions to Groundwater

The geology of the area is dominated by the glacial deposits which form the undulating topography and the large feature known as the Galtrim Moraine which results from the deposition of sedimentary material as the ice sheet retreated. The Basketstown site lies within this feature and has a complex interbedded sequence of sand, gravel, silt and clay overlying the limestone bedrock. The glacial material can be broadly divided into a glaciofluvial layer overlying a clayey till layer. The limestone bedrock is identified as being part of the Upper Dark limestone formation consisting of black fine grained calcarenites.

The upper glaciofluvial layer is described as being a poor aquifer due to its thin saturated thickness while the lower limestone (some gravel overlying the limestone) aquifer is defined as a regionally important aquifer which may have some karstified and fissured flow. The clayey tills are considered to have low permeability and cause confining conditions in part of the lower limestone aquifer. There are no public groundwater supplies within the catchment area of the site and a reported industrial supply is no longer in use.

Groundwater quality was monitored by 15 boreholes located within the landfill body, along the boundary and up and downgradient of the site.

Based on the information received from the applicant there are three private wells (PW1, PW3, PW4) completed within the upper aquifer. They all are located upgradient of the site and one of the wells PW1 has been decommissioned by the owner and PW4 replaces it.

The emission standard that applies to groundwater is the Groundwater Directive. According to the Groundwater Directive all indirect discharges of List I substances are subject to prior investigations and all technical precautions must be taken to prevent such a discharge. Indirect discharge of List II substances are also subject to prior investigations and technical precautions must be taken to prevent groundwater pollution.

Boreholes 20, 21 and 22 are drilled into the waste and indicate that the waste subsoil interface is above the original water table in the glaciofluvial layer (June 1993). Borehole information indicates a minimum of 0.5m of unsaturated subsoil prior to the deposition of the waste. In borehole 20 an unsaturated zone of 0.58m was indicated. The placement of waste is therefore above the water table. Although leachate can contain both list I and II substances there is no direct discharge of either List I or II substances at this site due to the presence of an unsaturated zone below the base of the waste. The water table ranges from 0.5 to 4.5m below ground level.

The proposed EQS's for the aquatic environment published by the Agency and the drinking water MAC (maximum admissible concentration) are used for comparison and as an indication of the levels of contamination present. The groundwater quality is described below in terms of the two hydrogeological units; the shallow glaciofluvial layer and the deeper limestone aquifer. The monitoring boreholes are shown in Fig. C.6.2 June 1998 in Appendix 2.

Glaciofluival Layer

BH19, PW3 and PW4 monitor the glaciofluvial layer. BH19 is located approximately 150 m west of the site, PW3 is approximately 100m to the west and PW4 is located approximately 200m north-east of the site. These boreholes monitor the background quality of the groundwater in the shallow aquifer. PW1 was also used to monitor the upper aquifer and results from 1997 indicated that it had a generally good quality with Mn exceeding the MAC only on one occasion, however, total and faecal coliforms were present in 1997. This well has now been decommissioned by the owner and replaced by PW4.

The general quality of groundwater in BH19 is moderate as can be seen from the high potassium levels which when compared to the sodium levels give a K:Na ratio of 1.125 which may indicate contamination by plant organic matter. Also there are levels of iron and manganese above the MAC for drinking water for BH19. Phenol (List II) at levels below the proposed EQS's has also been detected.

The results of PW3 indicate that there is elevated iron and manganese levels and some presence of bacteria in this well. Fluoride exceeded the MAC on one occasion. Toluene was detected in the results on the 18/5/98 but further sets of results do not indicate the presence of toluene.

PW4 is a recently drilled private well. The overall quality of this borehole is good with no exceedances of the proposed EQS's with the notable exception of dichloromethane (List I) which was detected on one occasion only and has been attributed to grease from the drilling rods. Subsequent monitoring does not indicate the presence of dichloromethane.

The shallow glaciofluvial layer is currently being monitored within the landfill site boundary at boreholes 9, 11 and 12. Tobernabeenog spring is the surface expression of the groundwater from the glaciofluvial layer.
In general there are elevated levels of iron, manganese, ammonia (List II) and potassium compared to background which may be attributed to the leachate from the landfill. Borehole 9 and the Tobernabeenog spring are particularly affected. Results from BH 9 indicate that ammonia (List II) and potassium exceed the drinking water MAC and iron, manganese and barium (List II) exceed the proposed EQS's.
The potassium sodium ratio for borehole 11 indicates the presence of organic contamination. In addition, BH11 has levels of nitrite (List II), iron, manganese higher than the proposed EQS's and ammonia and potassium greater than the MAC for drinking water. These results suggest a low quality groundwater.
BH12 exceeds the proposed EQS for aluminium, manganese and iron, with elevated levels of barium (List II) also being detected and levels of ammonia greater than the MAC.
The most recent results indicate that generally in the glaciofluvial layer nitrite and ammonia (both List II), manganese and potassium results exceed the drinking water MAC with barium (List II) levels in BH 9 and 12 remaining elevated compared to background.

Borehole 8 is located just outside the southern boundary of the site and is completed within the glaciofluvial layer. The analysis indicate elevated levels of iron, manganese and ammonia (List II) and on one occasion chloride.

The current downgradient monitoring boreholes in the shallow glaciofluival layer are 5, 6, 7 and 15. Borehole 5 is located just down gradient of the "old landfill" . The results from BH 5, 6 and 7 indicate that ammonia (List II), iron, manganese, barium (List II) and potassium are elevated above background and exceed the MAC for drinking water. BH7 also shows levels of sulphate above the MAC. All these results indicate a slightly contaminated groundwater but are of a better quality than borehole 9 within the landfill area. This indicates that some attenuation is taking place. The results from May 1998 show that the quality of the groundwater of BH 6 is good with elevated iron and manganese. Naturally elevated levels of iron and manganese have been found in groundwaters in this part of Co. Meath. The presence of chloroform (List I) has been detected on one occasion in BH 6 but not in the last set of results. Similarly BH 7 shows an improvement with the last set of results only having exceedances of manganese and sulphate.

Limestone Aquifer
The background quality of the groundwater in the limestone aquifer is monitored by Borehole 16 which is located approximately 200 m east of the site. The results from

one set of analysis indicate that the quality is relatively good with exceedances of the proposed EQS's for manganese, iron and nickel (List II), and of the MAC for ammonia (List II). Sulphate levels were also elevated.

Boreholes 13 and 14 monitor the groundwater in the limestone aquifer within the landfill site boundary.
BH13 is located just north of the area of the site where the waste has been deposited. There are elevated levels of ammonia (List II), iron and manganese, all of which are above the MAC's for drinking water. However, the most recent results from May 1998 indicate an improvement in the overall quality to a good quality groundwater.
Borehole 14 is located within the downgradient part of the site. The results indicate the presence of manganese and iron at levels above the drinking water MAC but comparable to the background levels. However, toluene (List I) and chloroform (List I) were detected at levels below the proposed EQS's on one occasion only in both BH 13 and 14 in May 1998 but they were not found in the last set of results.

Boreholes 17 and 18 have recently been drilled in the limestone aquifer downgradient of the site and only one set of results are available. The results for BH17 suggest a good quality water with an elevated level of manganese, similarly BH18 is generally of good quality with levels of manganese and iron below the background but with a slight exceedance of ammonia (List II) and fluoride (List II) compared to the drinking water MAC.

Discussion
Leachate is indirectly discharging into the glaciofluvial layer as there is no lining system in place. The leachate mixes with the shallow groundwater and the majority of the contaminated groundwater moves southwards, however, a small amount migrates northwards due to the presence of a leachate mound within the waste. The effect of this can be seen in the results for BH 9 and Tobernabeenog spring. There is some improvement in water quality as one moves away from the landfill area. This is as a result of attenuation processes including dilution. The rate of flow of the contaminant plume is in the order of 16 to 18 m/day.

The clay layer acts as a semi-confining layer for the deeper limestone aquifer. Borehole 14 is artesian thus suggesting that there is little downward movement within this aquifer. This is supported by the relatively consistent quality indicated by the analysis results. If any contaminated groundwater does enter this aquifer it will receive some dilution. As the movement of groundwater in this aquifer is between 1 to 2 m/d this allows some attenuation to take place.

The private wells PW1,3 and 4 are all located in the glaciofluvial aquifer upgradient or adjacent to the landfill. PW 2 is located in the lower limestone aquifer at the entrance to the landfill and adjacent to the landfilling operations. Monitoring results suggest that the landfill is not currently impacting on these wells.

Mitigation measures include capping and restoration as required in Condition 4.23 and Condition 8. The installation of a treatment plant for Tobernabeenog and the spring

drain as required in Condition 4.20.2 will treat a significant amount of the groundwater as it discharges to the surface. Condition 4.21 requires a groundwater management plan. Monitoring in accordance with Condition 9.1 will also be carried out. Condition 10.5. provides for immediate investigations in the event of any pollution being detected, as well as providing for the introduction of appropriate remediation measures following such an event. Condition 3.3 provides for the immediate notification of any such incident to the Agency.

(10) Noise Emissions

The facility is located adjacent to an active sand and gravel quarry. A noise survey was carried out to assess the impact of the landfill on noise sensitive receptors Appendix 1). Traffic was deemed to be the main source of noise at the above receptors along the approach road.
The $L(A)_{eq}$ results at noise monitoring points N3 and N4 to the west of the site, N6 and N10 to the east all exceeded the EPA daytime $L(A)_{eq}$ guideline of 55 dB(A). N3, N4, N10 are all residential properties located adjacent to the access road for the landfill and the quarry. The corresponding $L(A)_{10}$ values are also high indicating that the noise source is predominantly traffic except at N6 where it is attributed to the adjacent quarry equipment.
Condition 7.3 states that there shall be no clearly audible tonal component in noise emissions from the facility.

(11) Emissions to Sewer

There are no emissions to sewer from the site.

(12) Emissions to Surface Waters

Surface water runoff discharges directly into the spring fed drain which flows into the southern stream which is a tributary of the Dangan river which ultimately discharges into the Knightsbrook river. The closest spawning area is in a reach of the Dangan river and is approximately 2 km downstream of the landfill. The Knightsbrook ultimately joins the Boyne (a designated salmonid river). However, the surface water quality standards only apply to the waters designated under the European Communities (Quality of Salmonid Waters) Regulations 1988.

A biological assessment of the Dangan river was carried out in August 1997 and the results indicated that river was moderately polluted (Q3) at Dangan bridge which is 3-4 km downstream of the landfill. However, the southern stream upstream of the confluence of the landfill drain was eutrophic thus indicating that although the landfill may be having an impact on the river quality it is not solely responsible. The quality in the Dangan river improves to Q4 before it reaches the Boyne river.

An electro-fishing survey was carried out in July 1998. It indicated that there are a moderate number of salmon parr in the vicinity of the Knightsbrook weir. Salmon parr were also found at Dangan Bridge which is downstream of the landfill site. Good numbers of brown trout were found in the Clonymeath river upstream and downstream of the drain from the Basketstown area. This indicates that the landfill is not having a significant impact on the fish stocks at Dangan bridge. Schedule F outlines the requirements for future monitoring of the Knightsbrook river catchment.

(13) Ecology

The ecological study in Attachment C.4 states that there is a well developed wetland area to the north of the site which is of local importance. Schedule F.4.4 outlines the monitoring requirements for this wetland which include water level and annual vegetation surveys.

(14) Other Significant Environmental Impacts of the Development

None

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

A Waste Plan exists and the Council state that the Water Quality Management Plan for the Rivers Tolka, Liffey and Boyne do not affect the site.

(16) Submissions/Complaints

Appendix 3 contains a list of all submissions received relating to the application. The dates received and the details of the individual, department, group or organisation making the submission are provided.

An overview of all submissions received in relation to the waste licence application is provided. This includes a summary of all issues raised in the submissions and clearly shows how these issues are dealt with in the proposed decision.

1. and 2.
Date of submission: 20/10/1997, 09/03/1998 Eastern Regional Fisheries Board (Same submission submitted twice)
Items raised as follows:

1. *They are opposed in principle to the concept in this waste facility of allowing an uncontrolled leachate plume to be diluted by groundwater.*
2. *They are concerned with the high levels of ammonia present in boreholes BH 6, 7, 10 and 12. These indicate badly polluted groundwater and would be extremely hazardous to fish and invertebrate life in surface water.*

3. *They are concerned with the quality of the Tobernabeenog spring. These waters drain to the Knightsbrook river, an important salmonid nursery river and a tributary of the River Boyne. Ammonia levels stated range from 7.35 - 15.32 mg/l and there are also high orthophosphate levels.*
4. *They are concerned at the general lack of sampling on site and in all waters around the site.*
5. *They ask that the EPA would aim for a much better controlling system at Basketstown such as lined cells as well as an extensive decontamination programme on site if a licence is granted.*

RESPONSE

Conditions 4.20 and 4.22 will protect the surface waters downstream of the landfill site. Monitoring as in Schedule F will be put in place to assess the effects (if any) of the landfill site on the fish stocks in the Knightsbrook river before it joins the Boyne and if any deterioration over time or as a result of an incident in the surface water quality is observed then mitigation measures will be required to be put in place. Increased monitoring both in terms of the number of sampling locations and in the frequency of biological assessments is required.

3.

Date received: 4/12/1997 Tony McCormack, Galtrim Lodge

Items raised and responses are below each item as follows;

- *disused gravel pits and quarries are in most cases hydrogeologically unsuitable for the disposal of most types of waste.*

RESPONSE

The facility when operated in accordance with the conditions will not cause significant environmental pollution.

- *"unsuitable materials" such as unbagged asbestos being disposed of at the site.*

RESPONSE

Condition 5.2 outlines the wastes that are acceptable at the facility. Condition 5.3 requires waste acceptance procedures to be submitted to the Agency for agreement.

- *advised by agricultural advisor not to use field 5 for grazing of young cattle or horses or for the making of silage due to the continuing and ongoing problem of litter from the dump.*

RESPONSE

Conditions 6.3, 6.4 and 6.6 all deal with litter control measures.

- *ground water abstraction from Kilsaran quarry will result in interference with existing groundwater movement in the aquifer and may even change the direction of flow in some instances.*

RESPONSE

Information obtained from the applicant during the licensing process confirms that the Kilsaran quarry is not using a groundwater supply.

- *attenuation of leachate by the subsoil may upset the natural balance in the subsoil and will result in the probable pollution of existing potable water sources in the area serving surrounding properties.*

RESPONSE

The groundwater monitoring requirements outlined in Schedule F and Condition 4.17 require the provision of an alternative water supply in the event that the monitoring of the local wells demonstrates that the facility is affecting the quantity or quality of the supply.

Mr. Mc Cormack would like the following to be included as part of the requirements of a licence;

1. Connection to a group water supply for Galtrim Lodge.

RESPONSE

Condition 4.17 requires the provision of an alternative water supply in the event that the monitoring of the local wells demonstrates that the facility is affecting the quantity or quality of the supply.

2. Independent monitoring of the testing of the water.

RESPONSE

The surface water, groundwater and the private water supplies will be monitored by the EPA as part of its compliance monitoring of the facility.

3. Measures to remedy the smell should be put in place.

RESPONSE

Conditions 6.1 and 6.8 shall ensure that the odours do not result in significant impairment of, or significant interference with the environment beyond the facility boundary.

Condition 5.10 deals with the requirement for cover material.

4. Procedures to be put in place for investigation of a complaint.

RESPONSE

All complaints will be dealt with in accordance with Condition 3.14 .

5. Restoration plan so that the site will blend into the countryside when finished.

RESPONSE

Condition 8.2 requires the facility to be restored in accordance with the Restoration Plan.

6. Litter control measures to be put in place but that high fencing becomes unsightly when winds come and all the paper stick to the fence.

RESPONSE

Litter Control measures are outlined in Conditions 6.3, 6.4 and 6.6.

7. Control measures for rats.

RESPONSE

Conditions 6.1 and 6.9 deal with the control measures for rats.

8. Road cleaning measures

RESPONSE

Condition 4.12 deals with the requirements for a wheelwash at the facility. Condition 6.2 outlines the measures to maintain the road network free from debris.

9. Traffic control as heavy vehicles destroy the front boundaries along the road, cause nuisance, damage to road surfaces, and verges and routing problems.

RESPONSE

Condition 6.2 outlines the measures to ensure that the road network is kept free from any debris.

10. Noise control as there is constant noise from the machinery from the dump and the gravel plant next door.

RESPONSE

Noise limits are contained in Schedule G.

11. Procedures for dealing with noise complaints and actions taken.

RESPONSE

All complaints will be dealt with in accordance with Condition 3.14.

12. Dust control as the windows have to be constantly cleaned and that it could not be a healthy atmosphere to live in. Also the boundary hedge died as it was encrusted with dust.

RESPONSE

Condition 6.2 is concerned with maintaining the road network free from any debris. Condition 4.12 requires a wheelwash on site. Schedule F.2 outlines the dust monitoring requirements. Schedule G sets out the emission limits.

13. More boreholes should be opened.

RESPONSE

Boreholes 16 to 19 have been drilled during the licence application process and will be used to monitor aquifers..

14. Visual impacts from the vent pipes and fencing should be addressed.

RESPONSE

The monitoring structures will be incorporated into the capping in accordance with Condition 4.23. The visually prominent fencing has been temporarily erected as a litter control measure. The fencing will be maintained in accordance with Condition 4.3.2.

15. Restoration plan.

RESPONSE

The landfill will be restored in accordance with Condition 8.2.

4.

Date of submission: 9/3/1998 North Eastern Health Board -

Letter of the 14 October 1998 stating that they have no further conditions to add to the correspondence of the 9 March 1998 below.

Items raised as follows;

1. *All waste disposal operations on this site shall cease on the 31/12/1999.*

RESPONSE

Condition 8.1 relates to final contours and landfill shall cease once these are achieved.

2. *There is evidence of leachate discharging from Tobernabeenog. There is evidence of leachate in the "spring drain" along the southern portion of the landfill site. The water quality in this drain has deteriorated in the past four years. A treatment system shall be installed for the discharge from Tobernabeenog spring which would help reduce the further deterioration of the "spring drain".*

RESPONSE

Condition 4.20.2 requires proposals for the installation of a treatment plant for the spring and drain.

3. *Control borings from the upper and lower aquifers shall be developed north of the landfill site away from the plume of leachate.*

RESPONSE

Boreholes 16 and 19 and PW4 inclusive have all been drilled since the submission of the application and will be used to monitor the shallow and deep aquifers.

4. *The ground water from all boreholes on-site and control boreholes shall be monitored quarterly as outlined in Table J3.1. In addition the aluminium levels shall be examined. The results of monitoring shall be submitted to the EPA within one month of receipt of analysis results.*

RESPONSE

Schedule F sets out the requirements for groundwater monitoring.

5. *All tanks, drums, barrels of oil. waste oil, fuel or chemicals shall be placed on an impervious base which are surrounded by oil tight bund walls. Each bunded area shall be capable of containing 110% of the total volume of tanks, barrels and drums contained therein.*

Drums and barrels of waste oil shall be correctly handled and stored to prevent drum leakage. All spillage shall be dealt with promptly by containment. Small volumes shall be absorbed, large volumes shall be contained and pumped back into storage.

RESPONSE

Condition 4.15 deals with fuel storage requirements.

6. *A designated waste inspection bay shall be provided adjacent to the site entrance. This area shall be hard surfaced, concreted, bunded and drained. Where waste presented for landfill does not comply with waste acceptance criteria, such waste*

shall be refused entry and arrangements made for its safe disposal. No hazardous waste shall be deposited at the landfill.

RESPONSE

Conditions 4.7 and 4.9 details the requirements for the waste inspection area.

7. *A hard surfaced storage bay finished in concrete and bunded shall be provided for the storage of recyclable metals and metal compounds.*

RESPONSE

Conditions 4.8 and 4.9 deal with the requirements for the bring facility (for recycling).

8. *The wheels and underbody of all vehicles transporting waste shall be washed, prior to exit from the site, in a properly constructed wheel washing facility.*

RESPONSE

Condition 4.12 deals with the wheelwash and its specification.

9. *All waste water from the wheel wash and surface water run-off from concreted areas shall be collected and treated.*

RESPONSE

Condition 4.12 deals with the wheelwash, its specification and the collection of the waste water.

10. *The top or horizontal face of the active waste disposal area shall be covered on a daily basis with a minimum of 150 mm of suitable intermediate cover material. The horizontal surface of the deposited waste shall not remain uncovered overnight. No vertical face of material shall remain uncovered in excess of 48 hours.*

RESPONSE

Conditions 5.9 and 5.10 deal with working face and cover material requirements.

11. *The dust gauges shall be sited and operated in accordance with BS 1747 Part 1 of 1969: Methods for the Measurement of Air Pollution: Deposit Gauges. The present dust gauge D4 is in the shadow of the eastern edge of the raised tip and shall be moved further eastwards into the fall or to the north east.*

RESPONSE

Schedules F.1 and G detail the monitoring requirements and the dust emission limits.

12. *All waste loads arriving at the site shall be suitably enclosed or covered by suitable netting.*

RESPONSE

Conditions 6.6 deals with the covering requirements of loads entering the site.

13. *In dry weather all roads on the landfill site shall be sprayed with water at least twice daily. An approved wetting agent shall be included in the spray at a ratio specified by the manufacturer.*

RESPONSE

Condition 6.7 deals with road wetting to minimise dust.

14. *Dust deposition shall not exceed 180 mg/m^2/day measured at the site boundaries and averaged over 30 days. All recorded data shall be submitted to the EPA on a monthly basis.*

RESPONSE

Schedule G details the emission limits and Schedule F details the monitoring requirements. Conditions 3.6 and 3.7 requires results to be submitted to the Agency at agreed frequencies.

15. *Pest control measures shall include the implementation of a preventative / eradication programme. Routine baiting for rodents shall be carried out and permanent baiting points shall be provided and strategically placed to cover the entire landfill site. The location of the baiting points shall be reviewed as necessary.*

RESPONSE

Pest control requirements are covered by Conditions 6.1, 6.9 and 6.10.

16. *Activities on site shall not give rise to noise levels at noise sensitive location which exceed the following sound pressure limits:-*

50dB LA_{eq}	*1 hour*	*0830 to 1700 Monday to Friday*
		0830 to 1600 Saturdays
40dB LA_{eq}	*15 mins*	*at all other times and Bank Holidays*

RESPONSE

The Noise limits are contained in Schedule G and are in accordance with EPA guidelines.

17. *The landfill site shall be secured against any unauthorised entry.*

RESPONSE

Condition 4.3 deals with site security.

18. *A register shall be kept of all complaints received and the manner in which complaints are addressed.*

RESPONSE

All complaints will be dealt with in accordance with Condition 3.14.

5. and 6. (Same submission submitted twice)

Date received: 28/08/1998 and 8/10/1998 Tony McCormack, Galtrim Lodge, Summerhill, Co. Meath.

1. Smell from septic tank effluent is unacceptable.

RESPONSE

Condition 6.1 requires the licensee to inspect the facility weekly for nuisance caused by odour.

Condition 6.8 provides that the activities be carried out such that odours do not result in significant impairment of, or significant interference with amenities or the environment beyond the facility boundary.

2. Concerned about the family's drinking water and still requests connection to the main supply.

RESPONSE

Schedule F.5 requires monitoring of all private wells within 500 m of the facility.

Condition 4.17 allows for the provision of an alternative supply of water in the event that monitoring of the local wells demonstrates that the facility is affecting the quantity or quality of the supply.

3. The proposal to raise the site to a slope shape seems to be also to extend the life of the landfill. It seems to be getting wider as well as increasing the height.

RESPONSE

The final profile of the facility shall be in accordance with Condition 8.1.

4. The crow bangers are disturbing their sleep and their baby.

RESPONSE

Condition 6.10 states that the licensee shall submit proposals for bird control and Condition 9.4 requires a noise monitoring programme as a result of the operations on site including bird control measures.

7.
Date of submission: 16 October 1998 Gillian and Alan Synnott, Basketstown, Summerhill, Co. Meath

A number of general points were made in the introduction section of the submission and will be addressed under the following sections

Unsuitability of the Present Site
The site is hydrogeologically unsuitable as a landfill site.
It is an unlined site and thus the leachate created is allowed uncontrolled to disperse into the surrounding area.
There is a duty of care on the Co.Co. to ensure that, that, which they bring on to their land will not escape and cause adjoining landowners damage, so as not to give rise to an action in tort against the County Council.
RESPONSE
The site when operated in accordance with the conditions of the licence will not cause significant environmental pollution.

Lack of monitoring of domestic wells.
RESPONSE
All domestic wells within 500m of the site will be monitored as outlined in Schedule F.

They state that the landfill is now full.
RESPONSE
The final profile of the facility shall be in accordance with Condition 8.1 .

They dispute the Co.Co. forecasted figures for 1997.
RESPONSE
The weighbridge will record the quantities of waste and this is required to be reported in the Annual Environmental Report as outlined in Schedule C.

The landfill has caused them problems with vermin and insects.
RESPONSE
Conditions 6.1 and 6.9 deal with the prevention, control and eradication of infestation of insects, pests and vermin.

Dust
Significant dust is generated by the landfill site.
The traffic creates a large amount of dust in the summer on the public road.
There is no attempt to wash the wheels of vehicles exiting the site.
They claim that there is no inspection carried out with regard to minimising dust and debris from the landfill site.
There has been a lack of dust monitoring at the site.

RESPONSE

Condition 6.2 is concerned with maintaining the road network free from any debris. Condition 4.12 requires a wheelwash on site. Schedule F.2 outlines the dust monitoring requirements. Schedule G sets out the emission limits.

Landfill Gas
There has been a lack of landfill gas monitoring at the site.
RESPONSE
Schedule F.1 details the monitoring programme for landfill gas at the facility.

No plans have been put in place to prevent landfill gas migration.
RESPONSE
Condition 4.19.2 requires details of an active landfill gas control system. Condition 9.2 requires proposals to detect off site migration of landfill gas. Condition 9.3 requires proposals for permanent monitoring system to be installed in the site office.

Groundwater Quality Monitoring
Their private well has not been sampled by the Co. Co. to date.
RESPONSE
Schedule F.5 requires monitoring and Condition 9.5 requires details of all private wells within a 500m of the landfill.

The frequency of the monitoring of the groundwater is too long and that it should be carried out on a weekly basis.
RESPONSE
Monitoring as outlined in Table F.4.1 of Schedule F is proposed.

Leachate
The leachate levels and volumes should be monitored.
RESPONSE
The leachate levels will be monitored as per Table F.6 of Schedule F and the volumes will be calculated for the Annual Environmental Report as per Schedule C.

The leachate sampling is inadequate and should be carried out on a bi-weekly basis.
RESPONSE
Leachate composition will be analysed as per Table F.4.1 of Schedule F.

The site is unsuitable due to presence of open fissures in the bedrock which allows rapid migration of leachate.
RESPONSE
The groundwater will be monitored as per Schedule F.

Noise
They dispute the noise monitoring results submitted by the County Council.
They are disturbed by "shot gun like" noise from the landfill.

They have to endure noise from vehicles.
There is also additional background noise from machinery.
RESPONSE
Condition 9.4 requires a noise monitoring programme as a result of operations on site including bird control measures. Noise limits are detailed in Schedule G.1 for daytime and nightime levels.

Odours
They are subjected on a daily basis to a distasteful smell.
RESPONSE
Condition 6.1 requires the licensee to inspect weekly the facility for nuisance caused by odour.
Condition 6.8 requires that the activities shall be carried out such that odours do not result in significant impairment of, or significant interference with amenities or the environment beyond the facility boundary.

They require more cover material to dampen the odours.
RESPONSE
Condition 5.10 requires cover material to be placed on the waste progressively throughout the day.

Smells also come from the commercial vehicles.
RESPONSE
Condition 6.6 ensures that all vehicles delivering waste to the facility are fully covered.

Aesthetic Look of the Landfill Site
The high earth mounds as advised by the Co. Co. do not exist.
RESPONSE
The landfill shall be restored in accordance with Condition 8.2.

The front entrance is not secure and that the gate is deficient in keeping out human scavengers.
RESPONSE
Condition 4.3 deals with site security and while under Condition 5.7 scavenging shall not be permitted at the facility.

Litter attaches itself to the wire fencing and is not clean up with any frequency.
RESPONSE
Conditions 6.3, 6.4 and 6.6 deal with litter control measures.

Access Road
The access road is and never was designed to cater for the amount of heavy vehicular traffic is now has.
There is a serious risk of road traffic accidents as there is an increase in large dump trucks travelling along this road.

There are continuous deposits of mud and muck from the dump trucks.
RESPONSE
Condition 4.12 deals with the requirement for a wheelwash and Condition 6.2 addresses the maintenance of the road network free from debris.

Closure
The landfill has presently exceeded its capacity.
RESPONSE
The landfill will cease accepting waste when it reaches the final contours referred to in Condition 8.1.

The site from the start was unsuitable for a landfill.
The County Council displayed a cavalier attitude to the legitimate concerns of adjoining land owners.
Meath County Council is not a fit entity to continue operating the landfill.
RESPONSE
The licensee must comply with the Conditions attached to the licence. Condition 2.2 requires the setting of Environmental Objectives and Targets and the preparation of an Annual Environment Report. Condition 2.3 requires the development of an Environmental Management Programme.

Signed _____ Date: 12 November, 1998
Margaret Keegan, Inspector

APPENDIX 1

1. **LOCATION MAP**
2. **LOCATION PLAN**
3. **CELL PHASES**

APPENDIX 2

MONITORING BOREHOLE LOCATIONS

APPENDIX 3

SUBMISSIONS/COMPLAINTS