Attachment D5
TMS Report On Annual Emissions Test Of The Landfill Gas Flare

ort an Droma Líonadh Talún,
Baile Dhá Thuile,
Co. Luimnigh.

Gortadroma Landfill,
Ballyhahill,
Co. Limerick.

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Licence Name: Gortadroma Landfill Site,
Limerick County Council

Licence Register: 17-2

Licence Condition: 6.3.3.2

FAO: Ms. Regina Campbell

Prepared By: John O'Carroll

Notification: **Incident Report**

Date: 12/December/2003.

I have just received results for the annual emissions monitoring carried out on the landfill gas flare by TMS environment on the 26th of November 2003. The emission limit for CO exceeded the licence limit of 50 mg/m^3.

Description of Incident:

TMS environmental carried out the annual emissions test on the landfill gas flare on the 26th of November 2003. The licence limit of 50mg/m^3 for CO was exceeded and all other parameters were within licence limits. The following were the results recorded for CO;

Parameter	Concentration mg/m^3		Mass Emission Rate kg/hr
	As Found	3% O_2 Ref.	As Found
CO	420	1130	1.23

Remedial Measures:

TMS environment personnel who carried out the monitoring, have stated in their report, that the arrangement of extending a probe over the top the flare stack is unsatisfactory and may have resulted in oxygen levels which are higher than those actually present in the emission stream due to dilution by ambient air. A continuous CO monitor is due to be installed in January 2004 and particular attention will be given to the positioning of the sample tube within the flare stack. This sample tube will also be used for annual monitoring requirements and results obtained should be more accurate.

Signed: John O Carroll

John O Carroll,
Landfill Manager

Copy: Tom Tarpey, Senior Engineer

tms environment ltd

LANDFILL GAS FLARE EMISSIONS SURVEY

AT

GORTADROMA LANDFILL, BALLYHAHILL

FOR

LIMERICK COUNTY COUNCIL

JOHN O'CARROLL,

LANDFILL SITE MANAGER

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David O'Reilly
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Report Ref 6608
Date Issued: 10th December 2003

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1.0 Scope

This report deals with a survey of emissions to atmosphere from the Landfill Gas Flare at the Gortadroma Landfill site, Ballyhahill, Co. Limerick.

2.0 Survey protocol

TMS Environment Ltd personnel conducted the survey during a visit to the site on 24th to 26th November 2003. Emissions to atmosphere from the Landfill Gas Flare were monitored. Temperature and velocity were measured *in situ* using a Type K thermocouple and pitot tube and manometer respectively. Oxygen levels and Combustion gases were determined *in situ* using an electrochemical analyser (Testo 350) fitted with a gas- drying unit. Particulates were sampled isokinetically and measured gravimetrically. Total Volatile Organic Compounds were analysed by sampling onto charcoal and silica gel adsorption tubes, which were analysed by Gas Chromatography-coupled-Mass Spectrometry (GCMS) following solvent desorption in the laboratory. Moisture content of the stack gases was determined in accordance with US EPA Method 4. Hydrochloric Acid was sampled by absorption using a dilute sulphuric acid solution followed by Titration. Hydrogen Fluoride was sampled by absorption using a dilute sulphuric acid solution followed by analysis by Ion selective electrode. Samples were collected from the Inlet gas using absorption solutions for total sulphur, total chlorine and total fluorine and were analysed using and ion chromatography, titration and ion selective electrode respectively. The Total Sulphur concentration of the inlet gas stream was determined using deionised water and not Hydrogen Peroxide solution, as the deionised water was the only suitable solution for the test available on the timescale of the survey. This is not expected to affect the reliability of the result. All samples were collected over 30 minute sampling intervals.

3.0 Results

The results are presented in Tables 1 and 2 below.

4.0 Evaluation of Results

The measurements were completed using a non-standard sampling arrangement which involved extending a probe over the top of the flare stack. This unsatisfactory arrangement may have resulted in oxygen levels which are higher than those actually present in the emission stream due to dilution by ambient air. Limerick County Council plan to install an improved sampling arrangement to allow reliable measurements for future monitoring events. The significance of this observation is that when the results are corrected from the measured to the reference oxygen concentrations, a high multiplication factor is applied, resulting in elevated results. It should be noted that the uncorrected results for all parameters other than Carbon monoxide comply with the Waste Licence limits. Carbon Monoxide concentrations exceed the limits specified in the Waste Licence.

Table 1 Emissions to atmosphere at Gortadroma Landfill Site, Ballyhahill Co. Limerick

EMISSION SOURCE	LANDFILL GAS FLARE		
	MEASURED EMISSIONS		
TEMPERATURE, °C	805.6		
VELOCITY, m/sec	3.16		
FLOW RATE (Dry), Nm^3/hr	2,918		
PARAMETERS	CONCENTRATION, mg/Nm^3		MASS EMISSION RATE, kg/hr
	AS FOUND	3% O_2 Ref.	AS FOUND
CO	420	1130	1.23
NO_x as NO_2	32.8	88.2	0.096
SO_2	< 2.86	< 7.69	$< 8.3 \times 10^{-3}$
O_2 %	14.3	-	-
CO_2 %	3.8		-
PARTICULATES	< 16.5	< 44.4	< 0.048
TOTAL VOLATILE ORGANIC CARBON (as C Relative to Toluene)	< 1.21	< 3.25	$< 3.5 \times 10^{-3}$
HYDROGEN CHLORIDE	< 33.9	< 91.2	< 0.099
HYDROGEN FLUORIDE	< 0.35	< 0.94	2.7×10^{-3}
MOISTURE	57.8 %		-
	WASTE LICENCE LIMITS		
PARAMETER	CONCENTRATION, mg/Nm^3		MASS EMISSION RATE, Kg/hr
CO	50		-
Nitrogen Oxides as NO_X	150		-
Particulates	N.A.		-
Hydrogen Chloride	50		> 0.3
Hydrogen Fluoride	5		> 0.05
Total Volatile Organic Compounds (as Carbon)	10		-
Total non-methane VOS's	N.A.		-
Flow, m^3/hour	3,000		

Note:

1. Results are reported relative to dry gas, 273.15K, 101.325 kPa and 3% oxygen.
2. Mass Emission rate is calculated from actual emission rate with no oxygen correction.

Table 2 Emissions to atmosphere at Gortadroma Landfill Site, Ballyhahill Co. Limerick

EMISSION SOURCE	INLET
MEASURED EMISSIONS	
PARAMETER	CONCENTRATION, mg/m^3
TOTAL SULPHUR	20.2
TOTAL CHLORINE	< 8.33
TOTAL FLUORINE	0.092

D.5.m Has A Time-Scale Been Proposed For The Installation Of Landfill Gas Infrastructure?

A gas utilisation plant which will generate electric power, will be installed during 2004, in accordance with the requirements of the Waste Licence (17-2).

D.5.1 Volume of Landfill Gas

Complete the following table providing estimates of the volumes of landfill gas which will be produced by the waste disposed of in the site. Use additional sheets if necessary. Additional advice on the completion of this section is provided in the *Guidance Notes*.

TABLE D.5.1 LANDFILL GAS VOLUMES

Year[1]	Quantity per year (m^3)
1998	4,182,900
1999	7,198,968
2000	10,336,800
2001	12,526,800
2002	14,278,800
2003	15,768,000
2004	13,753,200
2005	13,227,600
2006	14,892,000
2007	15,855,600
2008	16,556,400
2009	16,994,400
2010	17,344,800
2011	17,607,600
2012	16,556,400
2013	16,030,800
2014	15,855,600
2015	15,592,800
2016	15,417,600
2017	15,417,600
2018	15,330,000
2019	15,330,000
2020	15,330,000
2021	15,242,400
2022	13,578,000
2023	12,789,600
2024	12,264,000
2025	11,826,000

[1]These may be assigned a number, i.e. Year 1, Year 2, etc. where Year 1 is the first year of operation of the site, or may be actual i.e., 1997, 1998 etc.

Total Quantities of Landfill Gas to be Produced (m^3)	Between 1998 and 2025 the estimated quantity of landfill gas generated will be 397,084,668m^3

The nature, and basis of, these calculations should be detailed in **Attachment D.5.1.**

Attachment D.5.1.
Refer to Section 2.2.12 of the EIS (Main Report) for further details and description of the English and Welsh Environment Agency's approved landfill gas software, Gassim.

D.5.2 Landfill Gas Composition

Provide an assessment of the composition of landfill gas arising from the site. Details should be included in **Attachment D.5.2** using the Standard Forms, where appropriate, as provided in Annex 1.

Attachment included	**yes** ☒ **no** ☐ **not applicable** ☐

Attachment D.5.2
The typical composition of landfill gas is given in the table below and it is evident that over 99% of the gas volume is comprised of methane, carbon dioxide and nitrogen with the remainder consisting of a large number of trace gases.

Landfill gas comprises about 63% methane and 37% carbon dioxide but this can vary during the life of the landfill, especially during the early and later phases of operation. Initially, carbon dioxide is the dominant gas during the early stages of the decomposition while aerobic conditions prevail. As the oxygen is depleted due to the compaction of the waste material anaerobic conditions develop as organic waste matter decays and methane becomes the dominant gas. Eventually the levels of methane and CO_2 decrease and air is drawn into the pore spaces within the landfill and the fill then becomes biologically inert

Typical Composition of Landfill Gas

Component	Typical Vol (%)	MaxVol (%)
Methane	63.8	88.0
Carbon Dioxide	33.6	89.3
Oxygen	0.16	20.9
Nitrogen	2.4	87.0
Hydrogen	0.05	21.1
Carbon Monoxide	0.001	0.09
Ethane	0.005	0.0139
Ethene	0.018	-
Acetaldehyde	0.005	-
Propane	0.002	0.0171
Butanes	0.003	0.023
Helium	0.00005	-
Higher Alkanes	<0.05	0.07
Unsaturated Hydrocarbons	0.009	0.048
Halogenated Hydrocarbons	0.00002	0.032
Hydrogen Sulphide	0.00002	35.0
Organosulphur compounds	0.00001	0.028

Alcohols	0.00001	0.0127
Others	0.00005	0.023

Source: U.K. Dept of Environment Waste Management Paper No 27 (1989)

D.6 Capping System

Complete the following table detailing the design of the capping system. **Attachment D.6** should contain the appropriate documentation. Information provided should follow the sequence, and use the headings, established in Table D.6. Additional advice on completing this section is provided in the *Guidance Note*.

TABLE D.6 CAPPING SYSTEM

Provide the appropriate details in the Comments column.

		y/n	Comments
D.6.a	**Has the Capping System been designed?**	Y	See Attachment D.6.a
D.6.b	**Does the Capping System include a flexible membrane liner?**	Y	See Attachment D.6.b
D.6.c	**Have all capping materials been specified?**	Y	See Attachment D.6.c
D.6.d	**Has a Method Statement for construction been produced?**	Y	See Attachment D.6.d
D.6.e	**Has a Safety Statement for construction been produced?**	Y	See Attachment D.6.e
D.6.f	**Has a Quality Control Plan been produced?**	Y	See Attachment D.6.f
D.6.g	**Has a Quality Assurance Plan been produced?**	Y	See Attachment D.6.g
D.6.h	**Has a programme for monitoring landfill stability been developed?**	N	
D.6.i	**Has a programme for monitoring landfill settlement been developed?**	N	
D.6.j	**Has a programme for an Annual Topographical Survey been developed?**	Y	See Attachment D.6.j
D.6.k	**Has the daily cover been specified?**	Y	See Attachment D.6.k
D.6.l	**Has the intermediate cover been specified?**	Y	See Attachment D.6.l
D.6.m	**Has the temporary capping been specified?**	Y	See Attachment D.6.m

Attachment D.6 - Capping System

D.6.a Has the Capping System been designed?

Cells 1-10 of the existing site are fully capped. The capping system designed is as follows:

The capping system
The capping details of cells 1-4 are as follows, since cells 1-4 are unlined:

- 150mm topsoil
- 850mm subsoil
- Geocomposite drainage with a minimum hydraulic conductivity of $1x10^{-4}$ m/s
- LLDPE
- 0.5m Geocomposite Clay Liner
- Geogrid (to help stabilise the surface)
- 300mm gas drainage layer

All other completed cells (5-10) have the following capping details:

- 150mm topsoil
- 850mm subsoil
- 0.5m Geocomposite drainage layer with a minimum hydraulic conductivity of $1x10^{-4}$ m/s
- Geosynthetic Clay Liner (GCL)
- 300mm gas drainage layer or an equivalent geocomposite layer (cells 5 and 6 were stoned (and geogrid was placed) and on the remainder of the area a geocomposite was used)
- 300mm leachate recirculation layer in trenches for slotted pipes

Similar capping systems will be used in cells 11-13 and any future cells on a progressive basis once filling has ceased and final heights are reached

Regrading the existing surface
In cells 1-10, the surface of the waste over the area to be capped was temporarily capped with clay/silt and locally grassed prior to installation of the final capping. Some regrading of the surface was required to be carried out to achieve the final contours. The regrading was generally only carried out within the temporary capping material although the Contractor was made aware that waste could be encountered during the regrading works. Excavation of waste was however required along the boundary of Cells 1-4, 5, 7 and 9 so that the final capping layers could be tied in with the existing bentonite wall.

Topsoil
Where topsoil is removed during the construction of the new cells and other areas it will be stockpiled separately on site, so as to preserve soil structure, and maintained in a way that prevents dust generation, for use as part of the capping layer on the existing and proposed site. In cells 1-10 a 150mm thick topsoil layer was applied over the surface of the existing landfill. Grass seeding was applied to the topsoil.

LCC consulted with a landscape architect regarding the most suitable species of grass for the capped surface. The details were agreed with the Local Action Group representatives and the details of the mix applied is as follows:

Recommended meadow grass mix
35% Slender Creeping Red Festuca rubra litorolis
30% hand Fescue longifolia
20% Sheeps festuca ovine
10% Smooth Stalked meadow Grass Poa pratensis
5% Highland Browntop Bent agrostis castiellana

Seeding rate
- On level areas 5 grms per Sq Metre
- On slopes 10 grms per Sq Metre

Recommended grass/ wildflower mix
Meadow mixture MM G06 20% wild flowers 80% grasses.
Seeding rate: 5 grms per sq metre

Subsoil
In cells 1-10 the subsoil layer is at a minimum of 850mm in thickness and consists of material excavated from cells 11, 12 & 13. It was compacted during placement and consists of a peaty clay loam.

Geocomposite Drainage Layer
A geocomposite drainage layer was installed for the purpose of diverting surface water away from the cap of the landfill. The drainage layer extends beneath the subsoil to a collector drain from where it will discharge to the perimeter surface water ditch.

LLDPE Liner (over cells 1-4)
A 1mm thick textured LLDPE liner was installed below the drainage layer for the purpose of making the capping structure as impermeable as possible. The geomembrane is composed of linear low density polyethylene sheet manufactured from polyethylene resin produced in a low pressure ethylene polymerisation process in accordance with DIN 16 776, parts 1 and 2. The liner extends down the slopes

of the completed cells and is anchored into a trench at the foot of the slope beside the existing bentonite slurry wall.

Sections were joined by means of an extrusion welding process approved by the manufacturer of the liner. These welds were tested independently and are deemed acceptable if the tensile stress at yield is within 10% of the manufacturer's value for the parent sheet.

Geosynthetic Clay Liner
A GCL was installed across Cells 5-10 as the low permeability layer. The GCL was extended to the base of cells 5-10 and was tied into the HDPE base liner in an anchor trench which was backfilled in compacted layers.

Anchor Trench (cells 8 & 10)
The LLDPE geomembrane extends to the base of the side slopes of cells (1-4) and ties into an anchor trench 300mm wide by 600mm deep adjacent to the existing bentonite wall which surrounds Cells 1-4. The anchor trench was then backfilled in compacted layers. The GCL and the capping layer of cells 5-10 also extend to the base of the slide slopes of these cells and is connected in a similar anchor trench to the HDPE liner at the base of the cells. The capping of any further cells will be similarly designed.

D.6.b - Does the Capping System include a flexible membrane liner?
A flexible membrane liner has been placed over cells 1-4 in the form of linear low density polyethylene (LLDPE) sheets. They are only in place over cells 1-4 since the rest of the capped cells (5-10) are basal lined cells. A further description of this liner can be found in Section D.6.a.

D.6.c Have all capping materials been specified?
All capping materials for the capping of cells 11-13 and any further cells will be in accordance with Waste Licence and the EPA Landfill Design manuals.

D.6.d Has a Method Statement for construction been produced?
No Method statement has been produced at this stage for any construction works on site. All method statements will be agreed before work commences. All method statements will be in compliance with the specification requirements for each of the capping layers and the CQA plan.

D.6.e Has a Safety Statement for construction been produced?
All contractors involved in Specified Engineering Works at the site will submit a Safety Statement to the Agency, the Engineer and to Limerick County Council. A preliminary Health and Safety Plan will be prepared as part of the detailed design and will be sent to the EPA for approval. Limerick County Council will fulfil all of their obligations under the Safety Health and Welfare at Work (Construction) Regulations 2001.

D.6.f&g Has a Quality Assurance Plan been produced?
The installation of the capping system shall form part of the overall Construction Quality Assurance.

D.6.h&i Has a programme for monitoring landfill stability and settlement been developed?
In accordance with condition 8.9.1 of Waste Licence 17-2 a stability assessment of the side slopes of the facility is carried out annually and will be continued for all new cells constructed.
An annual topographical survey is carried out which will monitor settlement.

D.6.j Has a programme for an Annual Topographical Survey been developed?
A topographical survey is carried out annually.

D.6.k Has the daily cover been specified?

It is proposed to use a variety of inert and non-hazardous materials as daily and weekend cover, either individually or as a combination. At present Hessian is being used as daily cover. Other materials proposed for weekend cover include:

- excavated material from within the boundary of the site.
- wood chippings.
- Imported subsoil
- ASR - Automobile Shredder Material, 20,000 tonnes of ASR is available for this purpose every year (subject to testing confirmation from the source that the material is non-hazardous in nature).

D.6.l & m Has the intermediate and temporary cover been specified?

Topsoil and subsoil, which is stockpiled separately on site, is used as intermediate and temporary cover at present.

E WASTE ACCEPTANCE AND HANDLING

E.1 Existing Waste Types and Quantities

A detailed inventory of the types and quantities of wastes currently accepted at the site and proposed to be accepted should be submitted.

TABLE E.1.1 WASTE TYPES AND QUANTITIES

WASTE TYPE	TONNES PER ANNUM (existing 2003)	TONNES PER ANNUM (proposed)	TOTAL (from 2004-2025) tonnes
Household	47,918.24	72,000	1,235,077
Commercial	29,687.44	39,000	669,000
Sewage Sludge	3,676.73	4,770	81,824
Construction and Demolition			
Industrial Non-Hazardous Liquids			
Industrial Non-Hazardous Sludges	288.14	1,200	20,585
Industrial Non-Hazardous Solids	613.14	11,000	188,692
Hazardous			
Waste imported for restoration purposes			
Water Treatment Sludge*		2,030 *	34,822
Total	**82,183.69**	**130,000**	**2,230,000**

*Additional row added.

TABLE E.1.2 HAZARDOUS WASTE TYPES AND QUANTITIES *

HAZARDOUS WASTE	DETAILED DESCRIPTION	Tonnes Per Annum (Existing)	(Tonnes Per Annum Proposed
Waste Oil	Household hazardous - Stored at civic amenity centre for collection	3000 litres	3000 litres
Oil filters	Household hazardous - Stored at civic amenity centre for collection	0.5 tonnes	0.5 tonnes
Asbestos			
Oil/Sand Mixtures or Mixtures of Oil and Other Material			
Wood Preservative Waste			
Petroleum and Gas Treatment Wastes			
Inorganic Chemical Processes Wastes			
Organic Chemical Processes Wastes			
Agrochemical Wastes			
Infectious Healthcare Waste			
Chemical Industry Waste			
Photographic Processing Waste			
Paint and Ink	Household hazardous - Stored at civic amenity centre for collection	0	5 tonnes
Batteries	Household hazardous - Stored at civic amenity centre for collection	5 tonnes	5 tonnes
Fluorescent Light Bulbs	Household hazardous - Stored at civic amenity centre for collection	0.5 tonnes	0.5 tonnes
OTHER HAZARDOUS WASTE (APPLICANT TO SPECIFY)			

* Reference should be made to the following legislation when filling out this section: Council Directive 2000/532/EC, Council Directive on hazardous waste (2001/118/EC) and amended Council Directive on hazardous waste (2001/119/EC)

TABLE E.1.3 NON-HAZARDOUS WASTE TYPES

INERT OR INACTIVE WASTE	Check (if accepted)	Tonnes per Annum	Check (if proposed to be accepted)	Tonnes per Annum	Additional Information
Subsoil	☒	Not Available	☒	Not Available	See Note 1
Topsoil	☒	Not Available	☒	Not Available	See Note 1
Brickwork	☒	Not Available	☒	Not Available	See Note 1
Stone, Rock and Slate	☒	Not Available	☒	Not Available	See Note 1
Clay	☒	Not Available	☒	Not Available	See Note 1
Natural Sand	☒	Not Available	☒	Not Available	See Note 1
Concrete	☒	Not Available	☒	Not Available	See Note 1
Pottery & China	☒	Not Available	☒	Not Available	See Note 1
Solid Road Plannings, Solid Tarmacadam, Solid Asphalt	☒	Not Available	☒	Not Available	See Note 1

Note 1: Construction and Demolition waste is not accepted at Gortadroma landfill. Yet this material may be periodically used as material for landfill cover, service roads, hard-standing areas, creation of bunds or topsoil material for planting. It is proposed to continue to accept cover / construction material for these purposes and hence the boxes have been checked.

BIODEGRADABLE WASTE	Check (if accepted)		Check (if proposed to be accepted)		Additional Information
Wood & Wood Products	☒	Not Available	☒	Not Available	See note 2
Paper & Paper Products	☒	~13,010	☒	10,000-15,000	See note 3
Vegetable Matter	☒	~21,950	☒	20,000-25,000	See note 3
non-infectious Health-Care Waste	☐		☐		
Natural & Manmade Fibres	☒	~1,935	☒	2,000-3,000	See note 3
Road Sweepings	☒	516	☒	500-800	Figure taken from weighbridge records
Gully Emptyings	☒		☒		
Septic Tank Waste	☐		☐		
Silt & Dredgings	☐		☐		
Ash & Cinders	☐		☐		
Food Stuffs	☒		☒		May be present as a small percentage of domestic loads
Vegetable Oil	☒		☒		
Animal Excrement (including paunch contents)	☐		☐		

Note 2: Wood chippings are proposed to be used as weekend cover to supplement other inert materials or in the future may be added to assist in the generation of compost. Wooden furniture is accepted in domestic loads. C&D waste including timber is not accepted at the site.

Note 3: Vegetable matter, paper and paper products and natural & manmade fibres are typical constituents of municipal waste loads. The figures supplied for 'existing acceptance' are estimated from typical fraction divisions in municipal waste. Exact figures are not available.

For the proposed amounts these values are estimated with regard to the future development of the civic amenity site and composting area and the decrease in biodegradable material going to landfill under the landfill targets. These fractions are not acceptable in large quantities as commercial loads.

TABLE E.1.4 OTHER WASTES

OTHER WASTES	Check (if accepted)	Tonnes per Annum	Check (if proposed to be accepted)	Tonnes per Annum	Additional Information
Plasterboard and Plaster	☒	Not Available	☒	Not Available	See note 5
Dried Paints, Dried Varnish & Dried Lacquer	☐		☐		
Foundry Sand & Sand Blasting Residues	☐		☐		
Glass	☒	Not Available	☒	Not Available	See note 5
Latex & Rubber Solutions	☐		☐		
Solid, Fully Polymerised Plastics	☒	Not Available	☒	Not Available	See note 5
Solid Rubber (excluding tyres)	☒	Not Available	☒	Not Available	See note 5
Empty Containers	☒	Not Available	☒	Not Available	See note 5
Non-Hazardous Ferrous and Non-Ferrous Metals	☒	Not Available	☒	Not Available	See note 5
Asbestos Based Construction Materials*	☐		☐		

OTHER WASTES (APPLICANT TO SPECIFY)	Check (if accepted)		Check (if proposed to be accepted)		Additional Information
Waste from the preparation and processing of meat, fish and other foods of animal origin - waste not otherwise specified EWC/HWL code 02 01 99	☐	3,000 (once off - not per annum)	☒		Bone dust mixed with sand and previously deposited in a quarry. Certified non - hazardous

*Any special treatment should be specified

note 5: These materials will not be accepted at the landfill as the major fraction of commercial or industrial loads disposed of at the site. They may form a small fraction of domestic and commercial loads.

Attachment E.1 should contain any relevant additional information.

E.2 Waste Acceptance Procedures

Note: these must comply with the requirements of the Landfill Directive (1999/31/EC).

Procedures for checking waste loads as they arrive on site and as they are deposited must be included. These should follow the requirements of the Agency's Waste Acceptance Manual. A copy of these procedures and other associated documentation. should be included as **Attachment E.2.** Additional advice on completing this section is provided in the *Guidance Note.*

Attachment included	**yes** ☒ **no** ☐ **not applicable** ☐

Attachment E.2

Any carriers who fail to clarify the source and nature of their consignment or if the site manager has any doubt about it or the validity of the carriers permit, the carrier is instructed to pull in to the lay-by while the status of the permit or the nature and source of the waste is confirmed.

As a result of inspections, all unconfirmed loads and carriers are rejected and where a breach of the law is suspected the Waste Management Enforcement Officers of Limerick County Council, the EPA and the Gardai are informed as appropriate. Other landfill facilities in the neighbouring counties are also informed of the details of the rejected load by the site management.

Regular site traffic is monitored randomly to ensure maintenance of compliance with the regulations laid down by the licensing authority.

With respect to the tipping of sewage sludge and other non-hazardous industrial wastes the producer is responsible for providing a full and periodic analysis of the waste so that it complies with the waste acceptance criteria. A number of rapid confirmatory tests must be developed by the site operator and approved by the licensing authority to assist confirmation that the waste conforms to acceptance criteria. Industrial waste of a non-hazardous nature will not be accepted at the facility unless prior approval following documentation, has been given by the management in consultation with the licensing authority.

It is the responsibility of Limerick County Council to ensure that those responsible for checking the documentation accompanying vehicles and the site operatives carrying out an inspection at the working face are competent with respect to:

- understanding the waste acceptance criteria for the site in terms of licence requirements, the requirement for waste carriers to hold valid waste collection permits, and site management policies.
- understanding the basic underlying reasons for the acceptance criteria for the site.
- understanding the information which should be provided on the documentation accompanying loads.
- ability to identify or suspect non-conforming consignments of waste.
- procedures to follow in the event that either the documentation or the load is non-conforming.

The site operatives at the site reception and the disposal face are provided with training to ensure that they are technically competent in these areas. A record of non-compliant waste deliveries and actions taken are maintained at the site.

In the event that inspection of the waste at the reception area is not possible, then the consignment is moved to the waste inspection area and inspected by site staff. If the consignment is found to be in violation of the waste acceptance criteria, the waste is placed back into the transporting container and the carrier is requested to remove the material off-site (subject to the correct paperwork being in place).

Where a load is considered by initial inspection at the reception area to be acceptable, the load is transferred to the active area and tipped. The site operative responsible for inspecting waste at the active area, in consultation with site management, would then confirm that the load is acceptable. If found to be unacceptable the site operative will arrange for the waste material to be loaded back into the vehicle and removed off site. In all cases where an unacceptable load is removed from the site the producer and the authorities are informed.

Incorrectly documented loads which conform to the waste acceptance criteria are dealt with directly by the site management. Depending on circumstances, the load may be rejected or a capitation fee charged. The site management follows a similar routine in the case of consignments which are inadequately protected, for example, loose loads arriving unsheeted.

E.3 Waste Handling

Waste handling and site operating procedures should be described in **Attachment E.3,** this should include information on the methods and processes for handling waste on-site. Additional advice on completing this section is provided in the *Guidance Note*. Table E.3

For existing facilities **Table E.3** should be used to log wastes leaving the site.

Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment E.3

The procedure on 'Waste Reception and Handling' can be found in Section 3. of the Environmental Management Plan in Attachment H.1.

Table E.3: Note: for existing facilities only: Standard Form For Each load of Waste Leaving the Facility

Waste	EWC Code	Quantity / Tonnes	Recovery, reuse or recycling	Final Disposal
White Goods	20 01 36	50 tonnes	Munster Metal	Transported to Hammond Lane in Cork for recycling.
White Goods (Fridges)	20 01 35	40 tonnes	M.Baker Recycling, St Helens, Merseyside, UK	M.Baker Recycling, St Helens, Merseyside, UK
Mixed Metals	20 01 40	60 tonnes	Hegarty Metals, Ballysimon Rd., Limerick	Transported to Hegarty Metals recycling plant in Limerick for recycling.
Newspaper & Magazines	20 01 01	3 tonnes	Indavar Dublin	Crosbie Warehousing – permitted by Dublin City Council
Oil **Oil filters**	20 01 26	3000 litres 0.5 tonne	Atlas Oil IPC:472 Clonminam Ind. Est. Portlaoise Co. Laois, collection permit applied for.	Oil is reprocessed as an industrial fuel and is distributed to customers throughout the country.
Batteries	20 01 34 20 01 35	5 tonnes	Returnbatt Licence No: 105-1 Unit 35 Kildare Enterprise Centre Melitta Road Kildare	Parts are shipped to Germany and England for further recycling.
Fluorescent Tubes	20 01 21	0.5 tonnes	Irish Lamp Recycling Ltd., Kilkenny Road, Athy, Co. Kildare WCP/LK/057/02b	
Cans	20 01 40	1 tonne	Mr. Binman Ltd., Luddenmore, Grange, Kilmallock. WCP/LK/069/02b	Aluminium Cans go to Alcan UK for recycling. Steel cans go to Hegarty Metals for recycling
Plastics	20 01 39	10 tonnes	Irish Polymers Ltd.	Transported to Irish Polymer facility and recycled
Cardboard	20 01 01	12 tonnes	Transported by Limerick County Council	Transported to DGD Papers permitted facility in Co. Limerick for recycling
Glass	20 01 02	3 tonnes	Mr. Binman Ltd., Luddenmore, Grange, Kilmallock, Co. Limerick. WCP/LK/069/02b	Glass goes to Quinn Glass, Fermanagh for recycling

E.4 Hours of Operation

Attachment E.4 should contain details of hours of operation for (1) landfill facilities, (2) civic waste facilities and (3) 'other' facilities for each of sections E.4(a) to (d). Refer to Guidance note section E.4 for further details on completing this section.

E.4.(a) Proposed hours of operation
E.4 (b) Proposed hours of waste acceptance
E.4.(c) Proposed hours of construction and development works at the facility and timeframes.
E.4.(d) Any other relevant hours of operation expected.

Attachment E4

Waste Licence 17-2, Condition 1.6.1, details the operational, waste acceptance and construction and development work hours. No change is sought in these hours at this stage.

Waste may be accepted at the facility for disposal at the landfill only between the hours of 8.00am and 5.00pm Monday to Friday inclusive and between 8.00am and 5.00pm on Saturdays preceding Bank Holidays.

Work at the landfill may only be carried out during the hours of 7.30am to 8.00pm Monday to Friday inclusive, 7.30am to 6.30pm on Saturdays and 8.00am to 4.30pm on Sundays and Bank Holidays.

No construction activities are allowed on Sundays and Bank Holidays.

Operations on Sundays and Bank Holidays are limited to essential maintenance and fly spraying activities only.

Waste shall not be accepted at the landfill on Sundays and Bank Holidays.

Waste shall be accepted at the Civic Waste Facility only between the hours of 8.00am to 5.00pm Monday to Friday inclusive and 8.00am to 5.00pm on Saturdays preceding Bank Holidays. At present there is a three month trial underway whereby the Civic Amenity Centre is open from 10am to 1pm on Saturdays.

E.5 Raw Materials, Substances, Preparations and Energy

Attachment E.5 should contain a list of all raw, product and ancillary materials, substances, preparations, fuels and energy which will be utilised in or produced by the activity. Information on any insecticides, herbicides or rat poisons etc. should also be provided with their respective data and safety sheets. The Standard Forms, provided in Annex 1, should be used in the description of these materials, substances, etc., where relevant. Additional advice on completing this section is provided in the *Guidance Note*.

Attachment E.5

The following materials are used on site to facilitate the operation of the Landfill

Resource	Usage per annum
Electricity	2,345 units
Diesel	21,753 litres
Hessian Usage	555,000m^2
Oil	4 tonnes

Attachment included	yes ☐	no ☒	not applicable ☐

E.6 Targets

State whether all waste will be subject to treatment prior to landfilling.

Provide information as to the quantities of biodegradable municipal waste and how the targets of the Landfill Directive (1999/31/EC) relating to that waste type are to be achieved. In particular describe how the following will be achieved:

(a) a reduction by 16/07/06 to 75% by weight of the total amount of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available;

(b) a reduction by 16/07/09 to 50% by weight of the total amount of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available;

(c) a reduction by 16/07/16 to 35% by weight of the total amount of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available;

(d) Evidence should be provided to show that energy will be used efficiently.

Attachment E.6

The continued operation of Gortadroma Landfill is a key element of the Limerick/ Clare /Kerry Waste Plan, which sets out the targets for diversion of waste from landfill in line with the EU Waste Hierarchy. The targets for diversion of waste from landfill in the Limerick/ Clare /Kerry Waste Plan were set taking due account of the Landfill Directive together with National Policy Targets.

The continued operation of Gortadroma Landfill is required to provide sufficient time for alternative recycling and recovery facilities to be put in place. Notwithstanding this, recycling facilities at the site include a civic amenity centre, composting area and staff facilities which will assist in achieving the targets for diversion from landfill.

Condition 3.13 of Waste Licence (17-2) lays down the requirements for landfill gas management at the site. There is an enclosed flare of 1500m^3/hr capacity on site at present and by October 2004 a gas utilisation plant which will generate electric power, will be in place in accordance with the requirements of the waste licence (17-2).

PROPOSED ENVIRONMENTAL MONITORING

Programmes for environmental monitoring should be submitted as part of the application. These programmes should be provided as **Attachments J.1 to J.9** and should comply with the advice published by the Agency in the *Landfill Monitoring Manual*. The monitoring frequencies set down in the Manual are minimum requirements and these may need to be enhanced when site specific circumstances so dictate. Monitoring programmes for the Construction, Operation and Post-Closure Phases should be included. Additional advice on completing this section is provided in the *Guidance Note*.

F.1 Dust

Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐
Monitoring points identified, (plus 12-figure grid references)	**yes** ☒	**no** ☐	**not applicable** ☐
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F1

The programme arrangements for the monitoring of dust at the site follow the EPA monitoring requirements as set down in Schedule D.3 of the Gortadroma Waste Licence Reg. 17-2 which require that dust and PM_{10} monitoring be carried out. Dust monitoring is carried out three times a year, whereas PM_{10} monitoring is carried out annually. Daily and weekly site inspections are carried out to check for evidence of excessive generation of airborne dust especially during dry weather and large scale construction works.

The following table details the monitoring programme for the site.

Parameter	Monitoring Frequency	Analysis Method
Dust ($mg/m^2/day$)	Three times a year Note 1	Standard Method - VDI2119
PM_{10}	Annually	Standard Method - prEN12341

Note 1: Twice during the period May to September

The existing dust monitoring points can be found on Drawing no. F.1.

All future dust monitoring locations and frequencies will be proposed in accordance with the EPA Landfill Manual on 'Landfill Monitoring' (Nov. '02 – Draft for consultation).

F.2 Ecological

Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐
Monitoring points identified, (plus 12-figure grid references)	**yes** ☐	**no** ☐	**not applicable** ☒
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F2

The programme arrangements for the monitoring of the surrounding ecology at the site follow the EPA monitoring requirements as set down in Schedule D.8 of the Gortadroma Waste Licence Reg. 17-2 which requires that ecological monitoring be carried out annually. A Terrestrial Ecology survey was carried out by Rodger Goodwillie & Associates, the results of which are summarised in **Volume 2, Section 3.10 of the attached EIS**.

Parameter	Monitoring Frequency	Method
Ecological Monitoring	Annual	walk over survey

An appropriately qualified professional ecologist will be employed to undertake the annual walkover Ecology Survey and standard survey techniques will be employed, where possible, in accordance with the EPA Landfill Manual on 'Landfill Monitoring' (Nov. '02 – Draft for consultation).

F.3 Groundwater

Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐
Monitoring points identified, (plus 12-figure grid references)	**yes** ☒	**no** ☐	**not applicable** ☐
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F.3

The programme arrangements for the monitoring of the groundwater at the site follow the EPA monitoring requirements as set down in Schedule D.1 & D.6 of the Gortadroma Waste Licence Reg. 17-2 which requires that the groundwater is monitored annually/monthly/quarterly depending on the parameter being monitored. Quarterly and annually reports on groundwater monitoring are sent to the Agency.

The wells that are monitored monthly consist of BH2, BH10, BH13, SA1, SA2, GW 5 and Collins Well. See Drawing F.1 showing all existing monitoring points.

As part of the licence local private wells are to be monitored annually. Limerick County Council requested EURO Environmental Services to carry out monitoring on the private drinking water supplies of residents located in a 1km radius of the Gortadroma Landfill site in 2003.

Monitoring and analysis of 33 private wells are carried out annually in accordance with the waste licence 17-2.

Microbial contamination was detected in 31 out of 33 domestic wells sampled during 2003. This was reported to the EPA and a report on a 'Survey of Domestic Wells for Sources of Contamination at Gortadroma, Co. Limerick' commissioned and carried out by Limerick County Council to investigate the causes of the contamination. Each site was individually assessed and the possible sources of contamination were identified.

The most likely sources of contamination were identified as being:

- Septic Tanks
- Agricultural Activities

The source of contamination in the domestic wells surrounding the landfill site at Gortadroma originates locally around each well. The underlying speed of movement of groundwater indicates that the sources are likely to originate within approximately 125m of the well.

Some of the conclusions of the report are outlined below:

- The risk of surface water infiltration to the wells from inadequate protection to the well head is high in many cases.
- The widespread use of soakaways has greatly increased the risk of contamination by bypassing the natural treatment provided by the subsoil. The poor siting, construction and maintenance of septic tanks pose a serious risk of well contamination.

- The risk from agricultural activity is generally low except for one area. The landfill site is unlikely to present a risk of microbial contamination due the direction and speed of movement of groundwater flow.

Some recommendations regarding preventative and treatment measures recommended were made and are outlined as follows:

Prevention Measures

1. Provide adequate protection to the well head as per the recommendations of the GSI. This will involve constructing a small chamber either above or below ground level.

2. Where practical, grout the top 3 metres of the well to prevent ingress of water.

3. Ensure that the septic tanks are emptied at least once every two years.

4. Replace the existing soakaways with properly constructed percolation areas. If the existing soils are unsuitable for this, a proprietary wastewater treatment with an imported polishing filter should be installed.

5. Test the blockwork tanks for leaks, and replace leaking tanks with precast concrete tanks or proprietary systems.

6. Ensure that no animals have access to within 10 metres of the well head.

7. Where necessary, reposition septic tanks to a downgradient position of the well with a minimum separation distance of 30 to 60 metres dependant on sub soil conditions.

Treatment Measures

8. Install UV protection with iron / manganese removal systems.

9. Disinfect the well annually, preferably around September in accordance with the GSI guidelines.

It was stated that recommendations No 1, 2 and 9 could be quickly and economically applied to all the sites and should be carried out as a matter of urgency.

Further Testing

Further testing of wells in 2003 was carried out on 3rd/4th December. 34 wells were tested and 16 wells continued to show microbial contamination. During testing in March and May 2004, microbial contamination was detected in 15 of the 33 wells tested.

F.4 Landfill gas

Landfill Gas Monitoring

Refer to relevant section of guidance notes for further details on monitoring requirements for proposed facilities. Details should be included in Attachment D.5.2. Complete each of the following tables to show whether information has been included on aspects of landfill gas monitoring. Attachment D.5.2 should also contain information to show whether the data given in Tables D.5.2(a) and D.5.2.(b) below represents actual or anticipated data. Insert new Table D.5.2 as follows:

Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐

Monitoring points identified, (plus 12-figure grid references)	**yes** ☒	**no** ☐	**not applicable** ☐
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F.4

The monitoring programme for Landfill Gas is set down on Schedule D.2 of the current Waste Licence 17-2. The monitoring points were listed in Schedule D.1 as:

- 1 well per cell (identified on drawing F.1)
- Perimeter Monitoring Locations: C1 to C15 inclusive (identified on drawing F.1)
- Site office

The following table describes the monitoring schedule:

Table F.4 (b) Landfill Gas Monitoring

Parameter	Proposed Frequency of Analysis		Information Included Y/N	Method of Analysis	Information Included Y/N
	Gas boreholes/ vents/wells/perimeter locations	Facility Office			
Methane (CH_4) % v/v	Monthly	Weekly	Y	Infrared analyser/ flame ionisation detector	Y
Carbon Dioxide (CO_2) % v/v	Monthly	Weekly	Y	Infrared analyser/ flame ionisation detector	Y
Oxygen (O_2) % v/v	Monthly	Weekly	Y	Electrochemical Cell	Y
Atmospheric Pressure	Monthly	Weekly	Y	Standard	Y
Temperature	Monthly	Weekly	Y	Standard	Y

On the intake line to the flare there is a sampling point from where gas analysis can be conducted.

Emission limits and monitoring requirements for the gas flare and gas utilisation plant are given in Schedule C.5 of the Waste Licence 17-2.

All future landfill gas monitoring locations, parameters and frequencies will be in accordance with the EPA landfill manual on 'Landfill Monitoring' (Nov. '02 – Draft for consultation).

F.5 Leachate

Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐
Monitoring points identified, (plus 12-figure grid references)	**yes** ☒	**no** ☐	**not applicable** ☐
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F. 5

The programme arrangements for the monitoring of leachate at the site follows the EPA monitoring requirements as set down in Schedule D.1 & D.6 of the Gortadroma Waste Licence 17-2.

Leachate is monitored for levels in 2 locations per cell, within cells 5-13 and three locations within cells 1-4. It is also monitored at the raw leachate storage lagoon and at the treated leachate discharge point from the treatment plant. All leachate monitoring points are identified in drawing F.1. Some parameters are monitored continuously, some daily/weekly/monthly/quarterly/annually and bi-annually.

All future leachate monitoring locations, parameters and frequencies will be in accordance with the EPA Landfill Manual on 'Landfill Monitoring' (Nov. '02 – Draft for consultation).

F.6 Meteorological Data

Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐
Monitoring points identified, (plus 12-figure grid references)	**yes** ☒	**no** ☐	**not applicable** ☐
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F. 6 - Meteorological Data

The programme arrangements for the monitoring of Meteorological Data at the site follows the EPA monitoring requirements as set down in Schedule D.5 of the Gortadroma Waste Licence 17-2.

In accordance with the Waste Licence (17-1) an on-site meteorological station was installed on the roof of the Administration building as identified in Drawing F.1.

All future Meteorological Data monitoring will be in accordance with the EPA Landfill Manual on 'Landfill Monitoring' (Nov. '02 – Draft for consultation).

F.7 Noise

Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐
Monitoring points identified, (plus 12-figure grid references)	**yes** ☒	**no** ☐	**not applicable** ☐
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F.7

The programme arrangements for the monitoring of noise at the site follows the EPA monitoring requirements as set down in Schedule D.4 of the Gortadroma Waste Licence 17-2

A noise survey will be carried out on the site annually according to a condition in schedule E of the Gortadroma Waste Licence No 17-2. The noise monitoring locations are identified on Drawing F.1.

Parameter	Monitoring Frequency	Analysis Method
L $(A)_{EQ}$ [30 minutes]	Biannual	Standard
L $(A)_{10}$ [30 minutes]	Biannual	Standard
L $(A)_{90}$ [30 minutes]	Biannual	Standard
Frequency Analysis (1/3 Octave band analysis)	Biannual	Standard

All future noise monitoring will be in accordance with the EPA Landfill Manual on 'Landfill Monitoring' (Nov. '02 – Draft for consultation).

F.8 Odours

Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐
Monitoring points identified, (plus 12-figure grid references)	**yes** ☒	**no** ☐	**not applicable** ☐
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F.8
Odour monitoring is carried out in accordance with Schedule D.3 of the Gortadroma Waste Licence 17-2. Should complaints be received form residents in the area, they are investigated on a case by case basis. At present there are odour inspections carried out 4 times a day on the roads surrounding the site.

Four odour sensitive locations are monitored for odour which have been agreed with the Agency. Odour monitoring also takes place at the entrance to the site.

All future odour monitoring will be in accordance with the EPA Landfill Manual on 'Landfill Monitoring' (Nov. '02 – Draft for consultation).

F.9 Surface Water

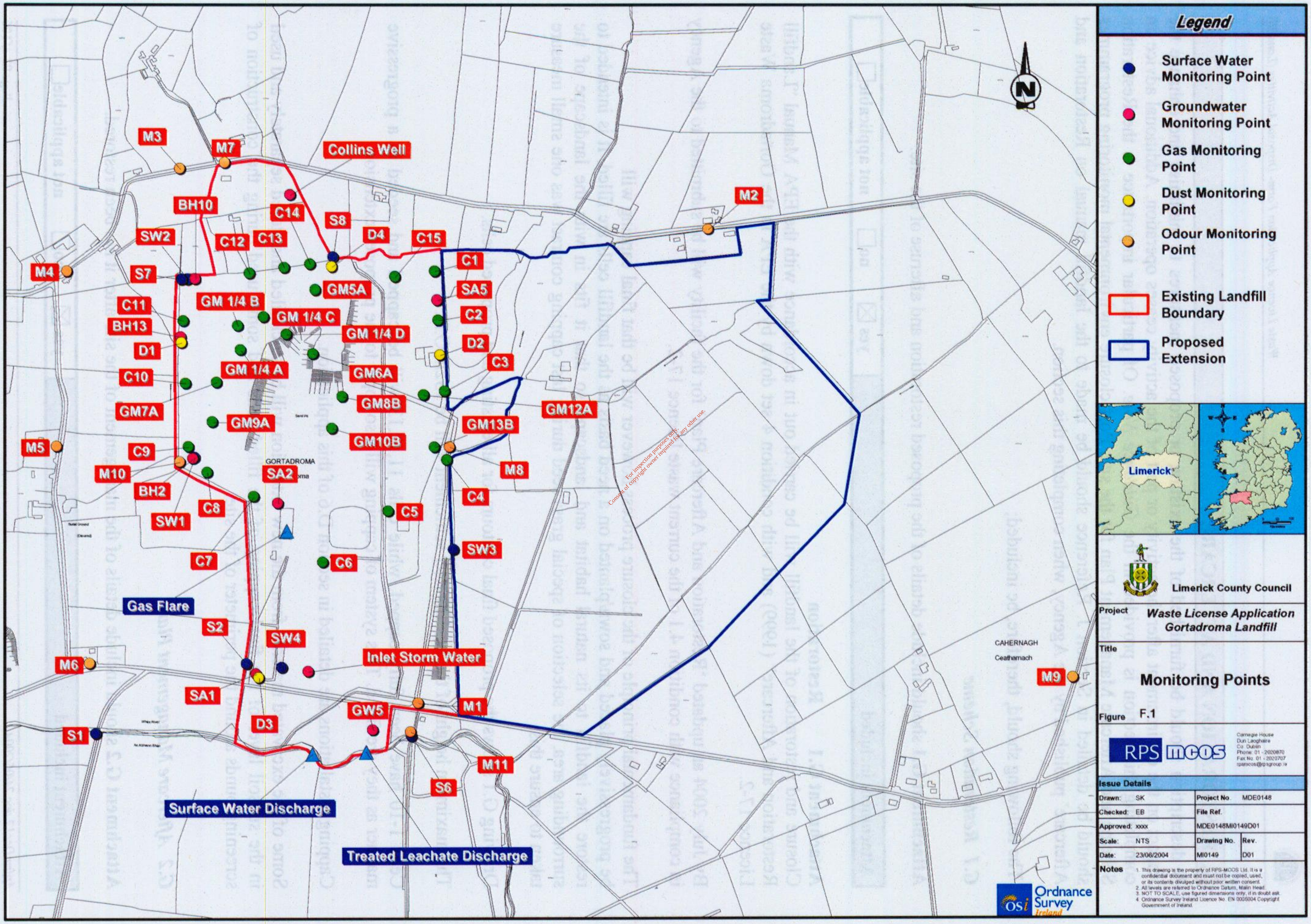
Monitoring Arrangements specified	**yes** ☒	**no** ☐	**not applicable** ☐
Monitoring points identified, (plus 12-figure grid references)	**yes** ☒	**no** ☐	**not applicable** ☐
Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment F9 - Surface Water
In compliance with Schedule D.6 of the current Gortadroma Waste Licence No 17-2 surface water monitoring is carried on a weekly/quarterly/annual basis depending on the particular parameter.

There are 12 surface water monitoring points which are tested quarterly these are shown on Drawing F.1.

All future surface water monitoring will be in accordance with the EPS Landfill Manual on 'Landfill Monitoring' (Nov. '02 – Draft for consultation).

Drawing F.1
Monitoring and emission Locations



G. RESTORATION AND AFTERCARE

A description should be furnished of the existing or proposed measures to minimise and enhance the impact on the environment after the activity or part of the activity ceases operation. Additional advice on completing this section is provided in the *Guidance Note*. Of particular importance is the Restoration Scheme and Aftercare Management Plan for the site. Post-closure environmental monitoring programmes should be detailed in Section J. Reference should be made to the landfill manual on Restoration and Aftercare' published by the Agency, when completing this section.

The following should, therefore, be included;

G.1 Restoration Scheme

Attachment G.1 should include details of the proposed restoration and afteruse of the site.

Attachment included	**yes** ☒ **no** ☐ **not applicable** ☐

Attachment G.1 Restoration

Closure and restoration of the landfill will be carried out in accordance with the EPA Manual "Landfill Restoration and Aftercare" (1999) and with condition 4 set down by the EPA in the Gortadroma Waste Licence 17-2.

By July 2004 an updated 'Restoration and Aftercare Plan' for the facility will be submitted to the Agency in compliance with condition 4.1 of the current waste licence 17-2.

The fundamental principle of the closure process however will be that final capping will be progressively placed and sown/planted on a need basis as the landfill cells are filled. It is intended to restore the landfill to its natural habitat and landscape so that it fits in with the landscape of the surrounding area, the selection of special grass seed during last capping contract was one small measure taken to ensure this.

Drawing G.1 shows the proposed final contours for all existing and proposed cells.

The maximum height of the landfill after settlement will be 132m O.D.

Cells 1-10 have been fully capped, while cells 11,12,13 will be capped and seeded in a progressive manner as they are filled. This system of capping will also apply to the proposed extension.

Capping installations are detailed in section D.6 of this application.

Some of the excavated material from the new extension will be stockpiled and stored separately and used in the subsoil layer of the final capping of the filled cells and some used during the construction of screening bunds around the perimeter of the site.

G.2 Aftercare Management Plan

Attachment G.2 should include details of the management of the site after it has been restored.

Attachment included	**yes** ☒ **no** ☐ **not applicable** ☐

Drawing G.1
Final Contours and Landscaping

LANDSCAPE SCREENING AREAS

EXISTING LICENCED WASTE DISPOSAL AREA

PROPOSED WASTE DISPOSAL AREA

SITE BOUNDARY

128.5m
125m
120m
115m
110m
132m
130m
135m
140m
145m
150m
155m
142.5m
107.5m
Burial Ground (Disused)
White River
An Abhainn Bhán
CAHERNAGH
Ceathárnach

LEGEND:

- Site Boundary
- 2.5m. Chainlink Fencing (Site Security)
- Haul Road
- Hardstanding Area
- Existing Planting
- Proposed Planting
- Existing Hedgerows
- Landscape Screening Areas
- Existing Waste Disposal Boundary
- Proposed Waste Disposal Boundary

Client:

Limerick County Council
Comhairle Chontae Luimnigh
County Buildings,
Co. Limerick.

NICHOLAS PEARSON ASSOCIATES
ENVIRONMENTAL PLANNERS • LANDSCAPE ARCHITECTS • ECOLOGISTS

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NOTES

1. This drawing is the property of RPS-MCOS Ltd., it is a confidential document and must not be copied, used, or its content divulged without prior written consent.
2. All Levels refer to Ordnance Survey Datum, Malin Head.
3. DO NOT SCALE, use figured dimensions only, if in doubt ask.

No.	Date	Amendment / Issue	App
F01	June'04	FINAL ISSUE	LO'T

Project: Waste Licence Application Gortadroma Landfill

Title: Final Contours & Landscape Layout

Drawn by:	HF	Job No:	mde0148
Checked by:	EB	File No:	mde0148FgG.1
Approved by:	LO'T	Fig. No:	Fig. G.1
Scale:	NTS	Rev:	F01
Date:	June '04		

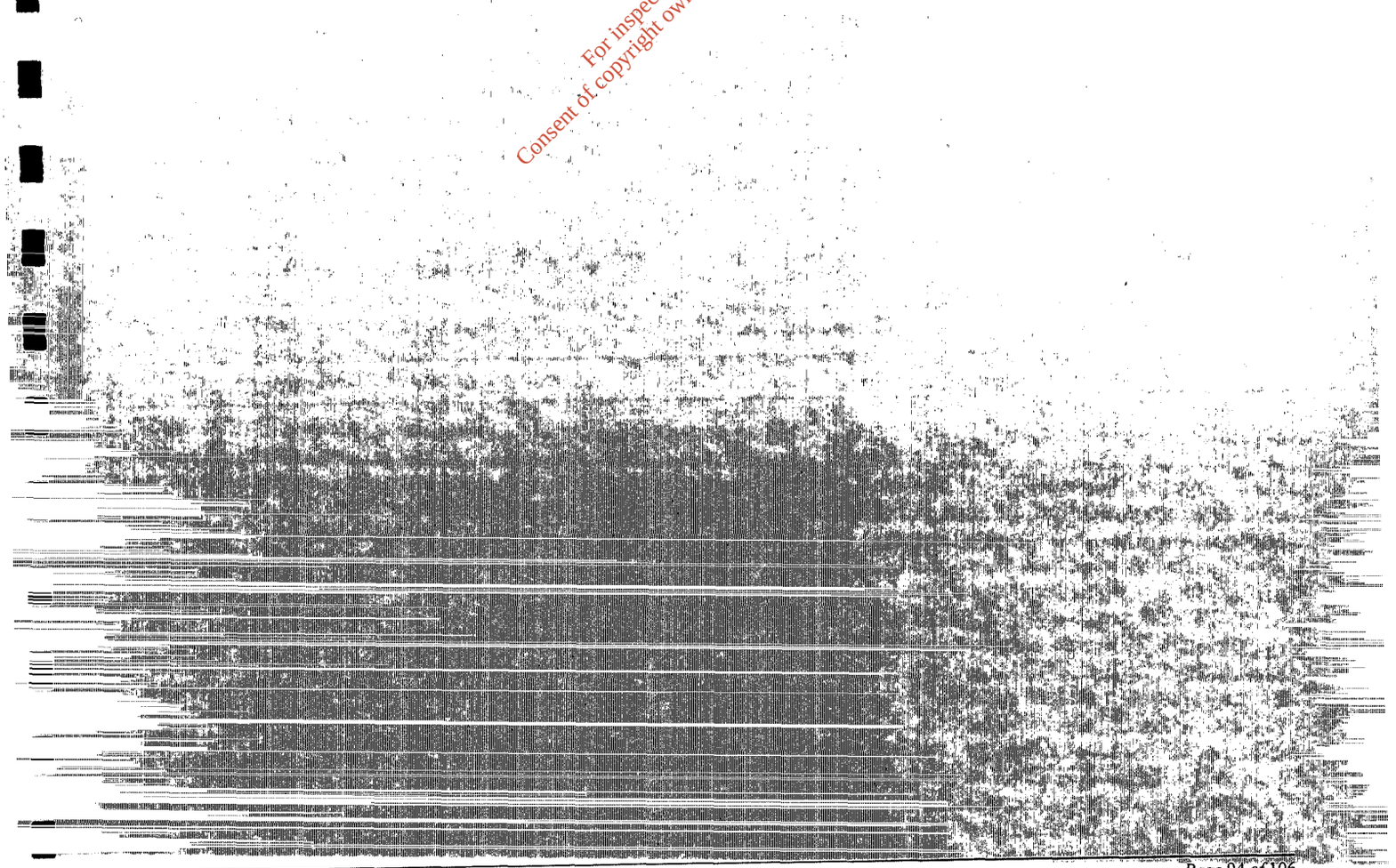
Attachment G.2 Aftercare

The leachate collection system, the landfill gas collection facilities, the control facilities (monitoring boreholes) and monitoring points (surface water control points) will be in operation and maintained until the waste has stabilised. In accordance with the EU Directive on Landfill of Waste (99/31/EC) and the EPA Landfill Manuals, the landfill will be remediated on the basis of the EPA license.

Monitoring of groundwater, surface water, leachate and landfill gas will continue for 30 years after closure of the landfill as recommended in the EU Directive on Landfill of Waste (99/31/EC) or as recommended by the EPA.

The performance and condition of all infrastructure, roads and fencing will be inspected quarterly during aftercare.

A surface water management plan will be implemented as part of the final capping to prevent the ingress of water. Ongoing repair and maintenance of the final capping will also be carried out.



H. MANAGEMENT PLANS

All applicants should include an Environmental Management Plan with their applications. Applications for existing sites should also include a Conditioning Plan. These plans should be consistent with all other details in the application. Additional advice on completing this section is provided in the *Guidance Note*.

H.1 Environmental Management Plan

Attachment H.1 should comprise the Environmental Management Plan. The Plan should comply with the requirements established in the Landfill Operational Practices manual published by the Agency.

Attachment included	**yes** ☒ **no** ☐ **not applicable** ☐

Attachment H.1
In compliance with Condition 2.3 of the existing Waste Licence 17-2, a revised Environmental Management Plan is to be submitted to the Agency by September 2004. The Environmental Management Plan will be updated annually in compliance with the terms and conditions of the Licence. The EMP will encompass the proposed site extension as it becomes operational and will be updated accordingly. The EMP can be found in Attachment H.1.

H.2 Conditioning Plan

Attachment H.2 should comprise the Conditioning Plan. All sites currently accepting wastes should submit a Conditioning Plan for the upgrading of existing operations and for continual improvement in environmental performance. Details of any adjacent waste activities (re: WMA Section 41(4)) including historical waste activities should also be provided. Submit a plan showing any relevant areas. The plan should clearly identify the boundary of the facility and indicate the north point. Note, if an existing facility, according to the Landfill Directive (99/31/EC) it may not continue unless, by 16/07/02 the operators of the landfill have prepared and presented to the competent authorities a conditioning plan for the facility.

For existing landfills the Conditioning Plan must comply with the requirements of Article 14 of the Landfill Directive (1999/31/EC).

Attachment included	**yes** ☒ **no** ☐ **not applicable** ☐

Attachment H.2 Conditioning plan
The Conditioning Plan describes the measures to be taken to improve the operation of the landfill and its impact on the surrounding environment and can be found in Attachment H.2.
The conditioning plan will apply to the landfill extension and will be updated accordingly.

Attachment H.1
Environmental Management Plan

LIMERICK COUNTY COUNCIL

GORTADROMA LANDFILL SITE

WASTE LICENCE 17-2

ENVIRONMENTAL MANAGEMENT PROGRAMME 2004

APPENDICES

INTRODUCTION

In pursuance of the powers conferred by Section 40(1) of the Waste Management Act, 1996, the Environmental Protection Agency (the Agency) granted a Waste Licence (registration number 17-1) to Limerick County Council (LCC) to carry on waste activities listed at Gortadroma Landfill, Gortadroma, Ballyhahill, Co. Limerick (National Grid Reference 1220E, 1435N). This licence was reviewed in 2003 and the current licence for the site is Licence 17-2, granted on 25th September 2003.

This licence is subject to twelve conditions and associated schedules. The licensed waste disposal and waste recovery activities in accordance with the Third Schedule of the Act are outlined in Appendix 1 of this document.

Under licence Condition 2, Management of the Activity, LCC are required to establish and maintain a documented environmental management system (EMS) for the facility. LCC is required to submit a proposal for the updating of the documented EMS for the facility within eighteen months from date of grant of licence 17-2. Licences 17-1 required the EMS to be updated on an annual basis and this updated EMP is submitted in compliance with this requirement. Condition 2.3.2.1 requires LCC to prepare a schedule of Environmental Objectives and Targets to be implemented over a five year time frame. Condition 2.3..2.2 specifies that the EMP shall include the following:

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

This document outlines the Environmental Management Programme for LCC's Gortadroma Landfill facility. It has been prepared in accordance with the EPA's draft Guidance on Environmental Management Systems and Reporting to the Agency and is structured as follows:

- Chapter 1 – Site Context
- Chapter 2 – Operator and Management Structure
- Chapter 3 – Waste Types and Quantities
- Chapter 4 – Engineering Details
- Chapter 5 – Site Operations
- Chapter 6 – Closure and Aftercare
- Chapter 7 – Environmental Management System

1. SITE CONTEXT

1.1 Site Location

The landfill site is located in the townland of Gortadroma, Ballyhahill, County Limerick, which is located approximately 12 km north of Newcastle West and 9 km south-west of Foynes. The location of the site is shown in Figure OP1 of the Waste Licence Application for Licnece 17-1. The facility is known and operates as the Gortadroma Landfill.

1.2 Site History

The landfill is situated in a disused sand and gravel quarry. LCC commenced landfilling operations at the site in 1990. Waste disposed at the site prior to 1997 was placed into unlined cells in the exhausted pit in the northern part of the site. In 1997 Cells 5 & 6 were being used for waste deposition. The future development of the site was divided into three phases to be introduced over the coming years. The construction of Phase 1 of the development consisting of Cells 7 & 9 began in 1998. These were filled and completed in August 2000.

Phase 2 consisted of Cells 8 & 10 and construction of these cells started in August 1999 and construction was completed during the last year of operation of Phase 1, August 2000. Cells 8 and 10 were filled and completed by July 2002. Construction of Phase 3, consisting of cells 11, 12, 13 was completed during 2002. Currently the operating cell is Cell 12, which is due to be filled by the end of Quarter 4, 2004.

The Council has made considerable advances in meeting the requirements of the waste licence, including upgrading of environmental controls and monitoring at the site

1.3 Land Use

The site is located in a landscape of undulating lowlands separated by areas of gently sloping farmland. There are pockets of poorly drained fields and bogland located at low points. The location of the landfill site itself is on a gentle south-facing slope.

The land use in the area is predominantly agricultural with a mixture of pasture and crop land and a significant amount of marginal agricultural land as damp pasture. The pattern of settlement is typical of a small-scale farming landscape, a dispersed pattern of farmhouses and their associated out-buildings scattered through the countryside. The road network serving this dispersed pattern of settlement surrounds the site as a series of small-scaled county roads and access laneways to individual farmhouses.

The site is bounded by agricultural land on the eastern, western and northern perimeters. The main County road 306 bounds the site to the south.

1.4 Site Description

The landfill facility at Gortadroma occupies an area of 35 ha. (86 acres). The facility within this compound is comprised of three distinct areas:

- **Operational Area : 4.5 ha.** This area of the site is occupied by the site facilities. These include the reception area, site roads, public tipping area, quarantine and special waste storage areas, farm plastics recycling area, leachate lagoon, leachate treatment plant and area for gas energy recovery compound;

- **Landfill Area : 11.1 ha.** This is the area of the site which has been set aside for waste disposal. The landfill area can be divided into five sections as follows;
    - Cells 1-4, filled and levelled by August 2000, capping completed March 2002;
    - Cells 5-6, filled and levelled by August 2000, capping completed March 2002;
    - Cells 7 & 9 (Phase 1), filled and levelled by August 2000, capping completed March 2002;
    - Cells 8 & 10 (Phase 2); filled and levelled by July 2002, capping completed June 2003;;
    - Cells 11,12 and 13 (Phase 3); construction complete, currently operating Cell 12.
- **Screening/Buffer Area : 19.4 ha.** This area will provide a visual, sound and odour barrier between the landfilling area and the area surrounding the site on completion of lansdcaping.

1.5 Surface Water Drainage

The site lies within the White River catchment. The restored landfill cells yield surface water runoff which is collected in open drains outside the landfill lining and conveyed to the existing surface water collection drain network. Control of surface water runoff at the site is achieved using the surface water settlement tanks. All surface water runoff from the site is channelled through these tanks, prior to discharging to the White River which lies south of the site.

1.6 Site Geology

Site geology and hydrogeology is based on information obtained from site investigations carried out by B.J. Murphy & Associates in September 1997 and included with the Environmental Impact Statement for Licence 17-1.

1.7 Regional Geology

The bedrock underlying the general area has been mapped as the Cummer Flagstone Formation which are Namurian in age and up to 230 m thick. These generally consist of bedded, argillaceous, coarse siltstones and mudstones overlain by an upper unit of more massive fine grained quartzitic, argillaceous sandstones or coarse siltstones with alternating mudstones. To the north west of the area lie the Upper Namurian Beds which are alternating sandstones, siltstones and shales. To the east is the Clare Shale Formation which consists of a series of soft shales.

1.8 Overburden Geology

There are two main soil types underlying this site; a sand and gravel and a silty clay and these are overlain in places by peat. Overburden thickness across the site is generally in excess of 20 m. Sand and gravel deposits are thickest in the north-west corner of the site (4-5m) thinning to approximately 2m to the south and east. Clay deposits underlie the entire site and generally consist of a stiff grey to brown silty gravely clay.

1.9 Hydrogeology

The site lies within the White River catchment. This river flows from east to west just to the south of the site. It then travels north and eventually discharges to the Shannon Estuary. Due to the nature of the bedrock, fissure flow will be dominant (i.e. secondary permeability).

The regional formation has been classified as a poor aquifer by the Geological Survey of Ireland. Testing of the bedrock indicated very low permeabilities. There are no records of any major groundwater abstraction in the area and the only wells recorded during a survey of the area were for domestic supply.

The majority of groundwater flow in the subsoils takes place in the gravels as these are the more permeable units. Groundwater flow directions are from the higher ground to the north towards the White River to the south. Groundwater levels are highest to the north of the site and lowest to the south. It is to the north that recharge probably occurs as the gravels are likely to have a high infiltration rate.

1.10 Meteorology

A computerised system called *Vaisala* was installed in May 2000. This system gives details continuously of the following meteorological conditions at the site:

- Wind speed and direction;
- Air temperature (min/max);
- Pressure;
- Humidity;
- Precipitation over 24hr period; and
- Evapotranspiration and evaporation rates.

Meteorological data available for the site prior to May 2000 was obtained from records at Shanagolden Climatological Station.

Long term reports from Shanagolden (1960 – 1997) indicate that the annual mean rainfall in the locality is estimated at 1100 millimetres (mm) with the months of October to January receiving the greatest monthly rates.

Data from the ion-site meteorological station indicate that the prevailing wind is from a south-westerly direction.

2. OPERATOR AND MANAGEMENT STRUCTURE

2.1 Details of Operator

Operator Name:	Limerick County Council
Operator Address:	County Hall, Dooradoyle, Co Limerick 061 496000
Site Name:	Gortadroma Landfill
Site Address:	Gortadroma, Ballyhahill. Co Limerick

2.2 Management Structure

LCC has overall responsibility for the management and operation of the Gortadroma Landfill site. The LCC senior engineer is responsible for the management of municipal waste and waste facilities in the county. With reference to Condition 2.1.1 of the Waste Licence, the facility manager and executive engineer have responsibility for day to day site operation. In the absence of both the facility manager and executive engineer, the appointed deputy manager is responsible for the site operation. Figure 1 details the Gortadroma Landfill Management Structure.

LCC has appointed the following consultants to provide technical, management and site engineering support.

MC O'Sullivan has been authorised to provide LCC with:

- Site engineering, infrastructural development and Agency reporting assistance;
- Leachate assessment and management; and
- Landfill gas assessment and management.

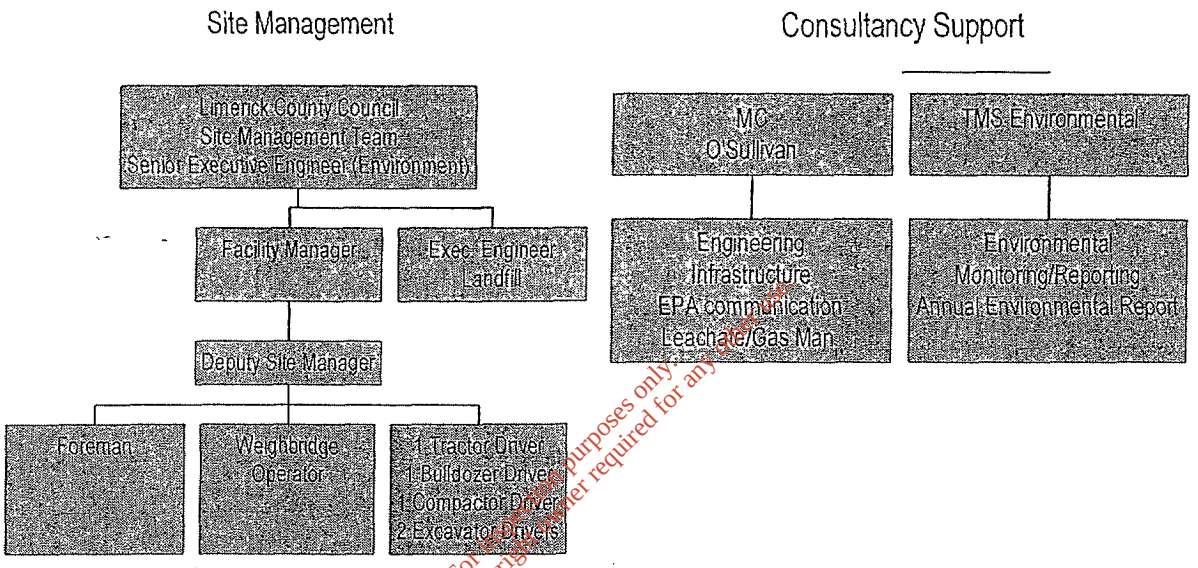
TMS Environmental has been authorised to assist LCC with:

- Monthly Environmental Monitoring and reporting;
- Quarterly Environmental Monitoring and reporting; and
- Annual Environmental monitoring and reporting to the Agency.
- Preparation of an annual environmental report (AER).

The executive engineer for landfill and the facility manager are present on site from day to day during the operation of the facility. The deputy site manager operates at the site part-

time. The facility manager has overall responsibility for the operations at the site. The executive engineer is responsible for present and future developments at the site, including licence applications.

Figure 1: Management Structure



The contact details of the site management team are as follows:

	Contact Telephone No
Senior Engineer, Environment Section:	061- 496000
Tom Tarpey	
Facility Manager	069 82355
John O' Carroll	
Executive Engineer:	069-82387
Sinéad Kennedy	
Deputy Site Manager:	069-82339
Colm Morrissey	

3. WASTE TYPES AND QUANTITIES

3.1 Types of Waste

The landfill site is licensed to accept domestic and commercial and industrial wastes, as provided in Part 1 of Waste Licence 17 –2 and Appendix 1 of this document. The site also accepts non-hazardous industrial sludges and sewage sludges. Sludge is disposed of by spreading in a thin layer and mixing with other wastes.

No hazardous waste can be disposed of in the landfill except as agreed with the Agency. The site currently accepts hazardous materials for recycling including batteries, waste oil, fluorescent tubes and hosusehold paint. These materials are collected in suitable containers that will be located in the civic amenity area. Materials are collected for disposal by collectors who have been agreed with the Agency in accordance with Condition 5.9.1 of the Licence.

The types of waste that are accepted at the facility, are given in Table 3.1 below by waste category.

Table 1: Waste types

Inert or Inactive Waste	Acceptable
Subsoil[Note 1]	Yes
Topsoil[Note 1]	Yes
Brickwork	No
Stone, Rock & Slate	No
Clay[Note 1]	Yes
Natural Sand[Note 1]	Yes
Concrete	No
Pottery & China	No
Solid Road Planings, Solid Tarmacadam & Solid Asphalt	No
Biodegradable Waste	**Acceptable**
Wood & Wood Products [Note 2]	Yes
Paper & Paper Products [Note 2]	Yes
Vegetable Matter	Yes
Non-Infectious Health Care Waste	No
Natural & Man Made Fibres	Yes
Road Sweepings	Yes
Gully Emptyings	Yes
Septic Tank Waste	No
Silt & Dredgings	No
Boiler Scale	No
Ash & Cinders	No

Food Stuffs	No
Oil/Water Mixtures	No
Vegetable Oil	No
Fats, Waxes and Greases	No
Animal Excrement (including paunch contents)	No
Animal Blood	No
Other Wastes	Acceptable
Plasterboard & Plaster	Yes
Dried Paints, Dried Varnish & Dried Lacquer	No
Foundry Sand & Sand Blasting Residues	No
Glass	Yes
Latex & Rubber Solutions	Yes
Solid, Fully Polymerised Plastics	Yes
Solid Rubber (excluding tyres)	Yes
Empty Containers	Yes
Non-Hazardous Ferrous & Non Ferrous Metals	Yes
Waste Type	Acceptable
Household	Yes
Commercial	Yes
Sewage Sludge	Yes
Construction and Demolition	No
Industrial Non Hazardous Sludges	Yes
Other Industrial Non Hazardous Waste	Yes
Hazardous	No

Note 1: These materials may be accepted for recovery at the site

Note 2: These materials may be accepted where contaminated and comprise part of a load

3.2 Quantities of Waste

In accordance with Schedule A of the Waste Licence the quantity of wastes to be accepted for disposal at the landfill shall not exceed 130,000 tonnes per annum, unless otherwise agreed in writing in advance with the Agency. In December 2001, approval was sought and received for an additional 5, 000 tonnes for the year 2002. In December 2002, approval was also sought and received for an additional 11,000 tonnes for the calendar year 2003.

Table 2 details the quantities of waste accepted at the site between January and December 2003. Since July 2000, LCC have not accepted glass, plastic or uncontaminated cardboard in order to conserve the remaining void space in the site for household wastes.

Table 2: Waste Quantities Accepted at Gortadroma, 2003

Month	Commercial / Industrial	Private Domestic	Council Refuse	Council Street Cleaning	Sludge
January	3812.30	4970.60	624.60	18.44	319.06
February	3701.94	3443.03	462.58	14.28	311.30
March	2229.79	3634.94	491.97	23.68	257.40
April	2313.76	4048.84	548.85	24.82	360.05
May	1980.65	4208.79	512.08	11.20	363.78
June	2208.12	4729.10	469.52	28.18	428.60
July	1518.26	4453.44	719.46	22.80	479.06
August	945.08	2474.84	445.20	13.96	208.20
September	1137.12	2438.48	499.44	21.04	335.22
October	1491.70	5235.36	308.68	42.32	251.86
November	1407.96	4346.78	22.94	196.14	334.50
December	1667.00	3934.04	168.44	196.28	315.84
SUBTOTAL	24413.68	47918.24	5273.76	613.14	3964.87
ANNUAL TOTAL			81,815.96 tonnes		

3.3 Waste Procedures

Waste acceptance and handling procedures were submitted to the Agency in May 2000. These procedures have superseded procedures included in the Environmental Impact Statement, Volume 7 (Technical Appendix O - Operational Plan for Landfill) and are included in Attachment E2 of the Waste Licence Application.

The procedures currently in use are detailed in Appendix 2 (Environmental Procedures) of this document. Procedures will be being reviewed and revised in accordance with Condition 5.3.1 of the Licence.

The acceptance procedures are based on the specified criteria and procedures established in the EPA's Manual on Waste Acceptance (2nd Draft, March 1997).

All waste entering the site is monitored and recorded.

3.4 Site Capacity

The waste licence application of 1997 predicted a life expectancy at the site of 9 years. The increase in waste being disposed at landfill from 1998 to 2002 reduced this life expectancy by 2 years.

There was a large reduction in waste being disposed at the landfill during 2003. If this reduction in waste continues through 2004 and 2005, it is estimated that the landfill will capable of accepting waste to the end of 2005.

In April 2003 the void volume was estimated at 387,083 m³. 57,524 tonnes of waste have been accepted at the landfill in the period April – December 2003. Assuming a conservative compaction rate of 0.7 tonnes/m³ and allowing for the volume taken up with weekend subsoil cover, it is calculated that the volume remaining at the end of 2003 was 208,400 m³.

4. ENGINEERING DETAILS

4.1 Site Preparation

Details on preparatory works for Gortadroma Landfill were included as Appendix D2 to the Waste Licence Application 17-1. It outlines construction schedules, method statement, safety statement and required materials. Stability analysis on foundation soils concluded it was necessary to remove the peat and sandy gravels by excavation to the underlying clay which has a low permeability.

Contract 9, which covered the capping of cells 1-4, 5&6, 8&10 and 7&9 has been completed.

A gas abstraction system has been installed on all the above cells. Flaring of landfill gas commenced initially from 5 and 6, 7 and 9 and 1-4 in April 2002. Flaring of gas from cells 8 and 10 commenced in January 2003.

4.2 Site Services

Services on site include electricity, water, telephone, and first aid facilities. Toilet and shower facilities are provided in the office building area. A well that has been drilled on county council lands adjacent to the site serves the sanitary facilities of the site. The site reception building has recently been extended to include additional office space, a meeting room / canteen, and changing rooms, showers and a canteen facility for site operatives.

Wastewater from the reception and office area is collected and discharged to an existing septic tank on site. All supernatant from the on-site septic tank isdirected to the leachate treatment works for further treatment. A single phase electricity supply is provided for the administration and reception area. A three phase electricity supply is connected to the site to provide power for the leachate treatment plant.

Site facilities include one site office and reception area, weighbridge, public and staff car parking area, 2 wheel washes, a civic amenity are and CCTV.

The site office includes an administration area with office facilities, security, waste reception, records and files and a staff locker and canteen room. The office is equipped with a telephone and fax machine in accordance with the licence conditions. A storage building has recently been constructed. Site facilities also include fuel storage for refuelling of site machinery.

There is no laboratory on site. Laboratory facilities are available at the LCC laboratory and TMS Environmental provides laboratory services for monitoring requirements.

A site notice board is erected adjacent to the site entrance. This provides the following information:

- Site name;
- Name, address and telephone number of site operator;
- Licence identification number
- Site opening hours;
- Contact and emergency telephone numbers.

4.3 Waste Recycling and Quarantine/Inspection Area

The Waste Inspection and Quarantine areas have been constructed and are segregated into two discrete areas.

The civic amenity area facilities currently include provisions for the collection of farm plastic, white goods, glass, metal collection containers; battery collection containers; waste oil and filters, newspapers and magazines, steel cans, aluminium cans, cardboard, plastics. The acceptance of paint containers from householders is due to commence in the first quarter of 2004. A slab for composting of green waste has been constructed and it is anticipated that composting will commence by mid 2004.

4.4 Site Containment

All current and future cells have been designed as a total containment facility. Cells 1-4 constructed during the initial phase of landfilling, i.e. 1990-1996, were not contained, but a bentonite cut-off wall has been constructed around these cells to stop groundwater ingress into the body of waste and leachate seepage from this waste.

Cells 5 and 6 have been lined with a geotextile clay liner (GCL) over a compacted subgrade and a protection layer of pea gravel.

Cells 7 and 9 have been lined with a high density polyethylene (HDPE) liner over GCL consisting of a layer of bentonite sandwiched between two layers of woven geotextile.

Cells 8 and 10 have a single High Density Polyethylene (HDPE) liner over the formation level of GCL consisting of a layer of bentonite sandwiched between two layers of woven geotextile.

Cells 11,12 &13 have a composite liner structure, combining a low permeability bentonite enhanced soil and a composite barrier of HDPE and geosynthetic liner, to achieve maximum protection.

The composite liner system comprises a 2.5mm High Density Polyethylene (HPDE) liner and a GCL layer consisting of a layer of bentonite, sandwiched between two layers of woven geotextile. This provides an impenetrable barrier between the cell and the underlying clay layer. Further details and specifications of the liner system are provided in Attachment D3: Liner System of the Waste Licence Application.

4.5 Leachate Management

Each cell in the facility is drained by a combination of leachate pipes which drains into a leachate collection manhole. Leachate build-up in the manholes is drained to a Leachate Handling and Pumping Station. The current treatment system consists of a HDPE lined aeration tank. The volume of the aeration tank is 1,140 m^3, which is marginally bigger than the 1,000 m^3 of the original designed structure. Excess sludge is pumped directly from the aeration tank rather than from the sludge-thickening tank. The aerators in the aeration tank are shrouded to prevent excess aerosols being generated. The leachate treatment plant has been upgraded to include an anoxic tank and a new raw leachate lagoon. The original raw leachate lagoon is now used fot the storage of treated leachate.

Leachate is dealt with as outlined below:

- Where allowable leachate is recirculated on all lined cells, (i.e. all cells excluding cells 1-4, which are not lined). This would typically not exceed volumes of 8-10 m3/hr.

- Leachate is pumped from cells to raw leachate storage lagoon prior to treatment.

- Subject to meeting emission limits set out in Schedule C of Waste Licence 17-2 and a minimum flow rate in the White River of 50 litres/sec, Limerick County Council propose to discharge treated leachate to the White River during 2004. Where emission limits are not met, the leachate is returned to the raw leachate lagoon to undergo further treatment.

- Where flow conditions do not allow discharge to the River the treated leachate is routed to the treated leachate lagoon and stored until flow conditions allow discharge or tankered off site to wastewater treatment plants at Castletroy and Newcastle West

The leachate treatment consists of nitrification (anoxic tank), extended aeration, clarification, settling, sand filtration and a peat bed filter. Subsequent to leachate treatment, effluent is directed to a collection sump and routed back to the treated leachate storage lagoon.

4.6 Landfill Gas Management

A landfill gas procedural plan was submitted to the Agency as part of Article 16A in June 1998 in the event of uncontrolled gas migration being detected in the monitoring boreholes. The Emergency Response Procedure in Appendix 2 also refers to the necessary steps required in the event of uncontrolled gas migration.

Landfill gas is currently collected and flared from Cells 1-4, 5, 6, 7, 8, 9 and 10. Gas from the uncapped cell 13 is collected from 2 vent pipes and connected to the gas collection system.

Migration of gas will be prevented by the containment design on the base and sidewalls of the cells. Permanent gas monitoring boreholes are constructed around the perimeter of the site so that any migration of gas can be discovered quickly and controlled

Gas abstraction wells have been installed in cells 1-4, 5-6, 7 & 9 and 8 & 10. Gas extracted from the wells is carried via buried pipework and condensate traps to a gas extraction flare unit. The installation of this system was completed for cells 1-4, 5 & 6 and 7 & 9 in April 2002. The system for cells 8 & 10 was completed in January 2003. LCC propose the installation of 3 extraction wells in uncapped cell 13 which will be connected to the gas collection system and flare. These works will be carried out in early 2004.

Contract documents are currently being prepared for the installation of a gas utilisation plant, which is anticipated to be operational in Quarter 4 2004.

The pump, energy recovery and/or flare units will be fitted with an auto-ignition device and alarm system which will warn of system failure. The flare stack is enclosed to avoid risk of fire and to minimise night-time visual impact. Any energy recovery system which might be installed in the future will also be enclosed to reduce the impact of noise emissions.

In the event of a breakdown it is envisaged that there will be no major risk from landfill gas except the possibility of additional odour for the period of the breakdown.

Outside the perimeter of the landfill area, 15 gas monitoring wells have been bored to monitor uncontrolled gas migration.

A Landfill Gas Management Plan is included as Attachment D5 of the Waste Licence Application. Periodic gas monitoring submissions, as required by the waste licence, are retained at the site office.

4.7 Fencing, Gates and Site Security

The entire site is fenced on all sides using 2.5m. high security fencing with wire mesh to prevent unauthorised access. The actual area of waste disposal is fenced off with 2.5m high chainlink fencing. In addition, restricted areas such as the leachate lagoon and the leachate treatment compound are surrounded by a 2.5m high chainlink fence. The gas handling compound has been enclosed with fencing.

An 8m high anti litter fence was erected along the north eastern boundary of the site to provide a defence against escape of litter due to prevailing south westerly winds.

Fences are maintained and inspected on a weekly basis with any damage observed repaired. There are two entrances to the site. One entrance is located at the east of the site and is used by construction traffic. This gate is locked at the end of each operating day. The main entrance is used by waste collectors, staff and members of the public. This gate is locked at the end of each working day. The site office is positioned such that all vehicles entering the site can be monitored in advance of their entry into the tipping area.

All waste vehicles are required to pass over the weighbridge in order that the weighbridge operator can obtain the relevant information and documentation sought. Access to the site is limited to LCC site staff, site staff contracted to LCC and licensed operators. Members of the general public who wish to visit the facility can do so after prior arrangement with facility management. There is open access to civic amenity facilities during operational hours of the facility.

4.8 Site Access

Access to the site is from County Road 306. This access is used by all traffic associated with the operation of the landfill. Internal and access roads were upgraded during 2001, and the construction entrance was upgraded in 2002 and surface dressed in 2003.

4.9 Offices, Fuel Storage

Mobile tankers are used to refuel the plant operating on the site. A fuel storage bund has been constructed such that a mobile fuel tanker can be parked in a contained area.

The fuel bund is covered by a canopy to prevent filling with rainwater.

4.10 Landscaping

The final profile of the facility was originally submitted as per Drawing No. G.1.1 Rev A in September 1997 and the drawing "landscape layout" Drg. No. 9765 - LP-01 in Appendix J of the EIS volume 5. The original proposal was revised in May 2000 to a single ridgeline sloping to the east, which is considered to be more in character with the surrounding topography. The waste will be filled to 1.6 m below the final levels to allow for the final capping layer.

The landscape plan for the site boundaries was agreed with the local residents and Phase 1 has been completed. Phase 2 was commenced during the growing season in 2002 and is now completed.

An updated landscape plan has recently been submitted and approved by the EPA.

4.11 Monitoring

A comprehensive monitoring programme is set out in Schedule D of the Waste Licence. Further details of monitoring are given in Chapter 5.

4.12 Wheelwash

2 Wesley Automatic Truck Wheelwash Systems has been installed at the site. One at the weighbridge and one at the site construction entrance. The main components of the system are:

- A washing platform
- A water storage tank
- A pump/control room
- A settlement tank

Details of the wheelwash system are provided in Appendix A of the February 2000 submission report entitled "EPA Licence Conditions".

4.13 Site Weighbridge

The weighbridge in place at present is an Avery weighbridge model no. J102-L200. It consists of a pre-stressed, pre-cast road vehicle weighbridge, linked to the Riteweigh Payload 2 computerised software system. The weighbridge platform has a platform size of 18m x 3m and a weighing capacity of 60,000kg x 10kg increments.

All incoming commercial vehicles are weighed and the data is entered into the site computer connected to the weighbridge under the following headings:

- Vehicle registration number;
- Name of carrier;
- Name of person delivering waste;
- Operator;
- Time and date;
- Refuse type;
- Weights;
- Quantity of waste; and
- Name of operator checking load.

Detailed and summary reports of any transaction or category of transaction can be printed directly from the computer. The weighbridge is subject to annual calibration in accordance with the manufacturer's instructions.

4.14 Surface Water Control Measures

Wastewater from the wheelwash is drained to a sump and pumped to the raw leachate storage lagoon for treatment at the leachate treatment plant.

Wastewater from the quarantine and inspection area arising in this area will be drained to an adjacent sump and pumped to the raw leachate lagoon. Waste water from the composting slab will also be drained to the raw leachate lagoon.

A storm water settling lagoon has been constructed and is fully operational.All surface water from the site is routed through this lagoon for settlement prior to discharge to the White river.

4.15 Fire Control and Firewater Retention

The stormwater settling lagoon referred to above will also be available as a source of firewater. Other measures in place to supply firewater include two 5000 gallon portable tankers, a 3inch high head petrol pump, 200 m of fire hosing, a mobile vacuum tank and a portable 300 litre sprayer.

5. SITE OPERATIONS

5.1 General

The operation of the site will be developed and carried out in accordance with the environmental management system (EMS) which will be developed for the facility under Condition 2.1 of Licence 17-1 and within the framework of the Environmental Management Programme (EMP).

5.2 Hours of Operation

The established normal operation hours, unless subject to the prior written agreement of the Agency, of the landfill site and for the receipt and handling of waste are:

- 08:00am to 16:30pm Monday - Friday
- 08:00am to 16:30pm Saturdays preceding Bank Holidays only

5.3 Site Personnel

The overall responsibilities and management structure for the facility is given in Chapter 2. The appointed executive engineer and facility manager are based at the site. The deputy site manager operates at the site on a part-time basis.

MCOS provides engineering consultancy services to develop the required engineering works.

TMS Environmental provides a monitoring and analysis service and also prepares the Annual Environmental Report.

5.4 Access and Site Security

Access to the site is limited to the following groups of people. Those:

- depositing waste;
- availing of recycling facilities;
- involved in site management;
- contract staff to LCC; and
- otherwise authorised by LCC

It is a requirement of site management that all visitors to the site excluding those authorised to use the facility must report to the site office at the time of entering and leaving the site. Access to the site outside normal operational hours shall not be permitted.

The site is secured to prevent unauthorised access, as described in Chapter 5.

5.5 Waste Acceptance

The current procedure for waste acceptance is provided in Appendix 2 – Environmental Procedures.

Only permitted waste contractors are allowed to use the facility. Wastes delivered to the site are directed to the office where the consignment is recorded and appropriate documentation exchanged. All waste inputs brought to the site are weighed and recorded. The weighbridge operator records each waste load delivered to the site, the volume and weight of the refuse, the registration number and owner of the vehicle together with the nature and origin of the wastes. This information is compiled on a monthly basis and used for billing purposes and also to determine the remaining life of the site.

Where the site management forms the opinion that waste does not comply with the waste acceptance criteria, as defined by the waste licence, such waste is not accepted. In such cases, all relevant information pertinent to this waste is recorded.

All wastes arriving at the site should either be fully enclosed or covered by suitable netting and will be inspected for suitable cover on arrival. This inspection is aided by the use of overhead CCTV located at the reception area.

Wastes currently accepted for recycling include glass, waste oil and filters, newspapers and magazines, fluorescent tubes, farm plastics, white goods, steel cans and drink cans, cardboard and plastics.

5.6 Waste Placement

The current written procedure for waste placement (Appendix 2 - Environmental Procedures) is to be reviewed and revised if necessary for the Environmental Management System. The location of the active working cell for waste placement will be determined by the site management and logged at the reception area, vehicles will be directed along the internal haul road to the active landfill area.

When commencing deposition in a new cell, a track machine will be used to make a base at the bottom of a new cell for the compactor. This method will prevent any damage to the cell lining. The cell will be filled with waste, which will then be used to make a road within the cell for future deposition.

Waste will be deposited and compacted on a series of thin layers of a maximum depth of 500mm along a gently inclined surface. Known as 'Onion Skin' face building, this technique has the advantages of permitting high lifts, assisting in the application of daily cover and is less likely to generate wind blown litter. Other methods will be employed as required.

Good mixing and homogenisation of waste is essential to obtaining high compaction and rapid stabilisation of waste. Waste must be run over 4-5 times with each wheel on the compactor.

The working area and amount of waste exposed at any one time will be kept to the minimum whilst remaining practical for the acceptance and safe operation of vehicles and plant. Only one active area will be operated at any time for the receipt of dry wastes.

Vehicles are required to un-sheet as close as possible to the operational area to limit windblown litter.

The total height of the working face will be no more than about 2.5m and compaction will take place in such a manner to ensure a stable gradient.

Sludge wastes will be spread in a thin layer and mixed carefully with other waste and subsequently covered with a new layer of solid waste. No sludge will be placed in the bottom 1m of each cell.

5.7 Waste Cover

At the end of the working day exposed waste will be covered. Cover material will be maintained adjacent to the working area at all times. The cover material currently used is hessian. The use of this material for cover is constantly monitored by the site management for suitability and options for additional or alternative cover have not been ruled out.

The main purpose of covering is to minimise wind blown litter, inhibit fly and rodent infestation, discourage birds and reduce risk of odour nuisance. The top surfaces, flanks and faces of layers of waste will normally be worked by a compactor into a loosely knitted surface prior to the application of cover material to prevent wastage.

The weekend cover material is sourced from the excavation of new cells, from a material stockpile on site, and from external sources. Suitable material such as silt, peat, sandy gravels and other permeable material are available on site. Any suitable material generated during the preparation of the site and suitable waste such as construction wastes will also be used. The daily cover shall be permeable material to allow leachate to sink into the drainage system. The cover material used is Hessian and is applied by means of an applicator bar attached to an excavator. The interface between an exposed face of a completed cell and a new cell as well as a completed but unrestored surface will receive a minimum 300 mm of cover as these faces may be exposed to the elements for some time. Ongoing repair and maintenance of this cover will be carried out. This comprehensive approach to covering waste will assist control of nuisance such as birds, odour and litter. At weekends waste is covered with 150mm of clay. In the event that hessian will no longer be used the above principles will apply.

5.8 Site Equipment

The machines in daily use at Gortadroma are as follows:

- Bulldozer (D9), (full-time hire);
- 35 tonnes steel wheel compactor, (full-time hire);
- Volvo dumper (hired as required);
- tractors (LCC owned); and
- excavators.

Additional machinery retained on site includes a mobile tank, trailers and vacuum tank.

5.9 Description and Sequence of Working

This detail is outlined in Chapter 3 and Chapter 5.

5.10 Settlement and Density

The waste will be compacted on placement at the facility to a density of *ca.* 0.8 t/m^3.

- Mixed household and commercial wastes as per licence: 0.8t/m3

An allowance for settlement of the placed wastes is typically in the range of 15%.

5.11 Phasing

The phasing sequence and schedule are being carried out according to details submitted in the waste licence application (Attachment D2) and are as follows:

Cells 1-4, filled and capped

Cells 5 & 6 had a combined remaining life of 1.3 years in 1997. These have since been filled and capped.

The future of the site development in 1997 was divided into three phases. Phase 1 construction commenced in 1998 and consisted of Cells 7 & 9. Phase 1 was filled and levelled by August 2000, and has now been capped.

Phase 2, consisting of Cells 8 & 10 was constructed during the last year of operation of Phase 1 (2001). The filling of these cells was completed in July 2002, and they are capped

During the operation of Phase 2 the development of Phase 3 comprising Cells 11, 12 and 13 was completed. Filling of Phase 3 commenced in July 2002 and has an approximate operational life of 3 years. It is estimated to be completed in 2005

5.12 Environmental Nuisances

5.12.1 Active Litter Management Plan

An active litter management plan has been prepared as part of the Environmental Management Programme to comply with Schedule B, Content of an Environmental Management Programme. A full detailed programme is outlined in Appendix 3.

The plan incorporates the use of improved anti-litter netting which is erected around an active cell and in particular along the north eastern boundary to protect against the prevailing winds.

The use of hessian has been approved by the Agency as a daily means of waste cover.

In the event of excessive high winds, which can be determined by the on-site meteorological station, an inspection is required to check if litter is airborne. If conditions are such, the site will be temporarily closed. Waste collectors will be notified, in such an event.

Litter picking teams will be employed to retrieve all litter in the event of litter blowing off site or on to the fences. Additionally, county litter wardens carry out weekly litter inspections in the surrounding area of the landfill.

Each waste load entering the site will be inspected via CCTV for suitable net cover.

5.12.2 Birds

Scavenging birds are a common source of nuisance at many landfill sites taking household waste. They disturb compacted and partially covered waste whilst searching for food and may lead to complaints about food scraps, excreta and other waste dropped away from the

landfill. Good site management, including good compaction and efficient covering is considered the best method of minimising nuisance from birds.

Methods for controlling bird nuisance has been provided since February 1999 using a combination of the following control techniques;

- full time falconer and two falcons, three hawks. Birds are flown at irregular intervals on a daily basis;
- visual deterrents including balloons; and
- shooting.

A daily bird control report is completed and documented. The report covers the effectiveness of the bird control measures, numbers of birds present and bird control starting and finishing time. A combination of the above measures has resulted in a dramatic decrease in the bird numbers frequenting the site.

5.12.3 Pest Control (vermin and flies)

The placement of daily cover material over the deposited waste will minimise the potential for vermin and insect infestation at the site. The site is inspected at daily intervals for the presence of vermin and insects. De-infestation measures shall be implemented as necessary by the facility manager. Records of inspections are maintained. The effectiveness of this process will be continuously revised to ensure that the vermin control exercise remains effective.

5.12.4 Dust and Mud Control

During dry weather the following measures are carried out to ensure dust from landfilling and associated operations does not become a nuisance:

- tractor brush;
- wheelwash;
- council road-sweeper; and
- water tanker / sprayer.

The primary access road is cleaned as required. Mud control on roads forms part of the routine site inspection programme. In the event that mud and debris is carried off the site onto the public highway due to inclement weather, the site manager shall arrange to have the access road cleaned.

The wheelwash facility will be used at all times to prevent the deposit of mud on the main access roads.

To prevent dust arising from the working face there will be the application of daily cover using a degradable film.

5.12.5 Traffic

The approach road to the site is Country Road 306 and is capable of handling heavy vehicles. This road is continually monitored and is continually improved or upgraded as deemed necessary by LCC.

5.12.6 Fires

Burning of waste is not permitted at the site. Litter removed from the site roads or access road or fences is deposited at the active tip-face. However, provision is made to have fire-fighting equipment on site to cater for fires that could arise either within the landfill itself or in the vehicles arriving at the site.

The effected area shall be marked off by signs. Personnel or equipment shall not move over the affected area in these circumstances.

Suitable fire fighting equipment is kept on site and all operatives will receive training as necessary. In the event of an outbreak of fire, a telephone system is available to notify the appropriate agencies and will be dealt with immediately as an emergency. Any outbreak of fire shall be immediately notified to the Senior Engineer, Environment Section, LCC and the Fire Chief, Thomas McCarthy, Fire Station, Foynes, County Limerick.

No smoking signs are displayed on site and there is also a large stockpile of clay material and the necessary machinery to move it, should it be required to extinguish a fire.

Measures in place to supply firewater in addition to the newly constructed storm water and settling lagoons include two 5000 gallon mobile vacuum tanks , a 3 inch high head pump and 200 m of fire hosing.

5.12.7 Firewater Treatment

Firewater within the body of landfilled waste will be contained by the lining system and discharged to a leachate treatment plant.

Firewater runoff from areas of the site including quarantine and waste inspection area will be collected and discharged to the leachate treatment lagoon.

Firewater runoff from other areas such as paved roads and haulage roads will be collected in the surface water collection system. Contaminated surface water will have to pass through the leachate treatment lagoon. All contaminated firewater run-off will pass through the settling and storage lagoons.

5.12.8 Odours

Since September 2002, odour checks is carried out at five sensitive locations on the perimeter road surrounding the site. Records of each odour monitoring round is kept in the site office. The frequency of the checks was increased in 2003 from twice daily to four times daily.

The previous passive venting system for landfill gas from Cells 1-4, 5, 6, 7, 8, 9 and 10 has now been replaced by an active system which is operating to mitigate any potential odours from these cells.

5.12.9 Noise

Noise levels are within acceptable emission limit values as set out in Schedule C of Waste Licence 17-2. The last annual survey was carried out on 4th, 8th and 9th September 2003. Noise monitoring has been increased from an annual to a bi-annual requirement under Licence 17-2.

5.12.10 Leachate and Surface Water Management

The infrastructure for leachate and surface water management has been covered in Chapter 4.

5.12.11 Landfill Gas

Landfill gas management has been covered in Chapter 4.

5.13 Monitoring

Regular monitoring is carried out to ensure that the activities at the site are not causing or likely to cause pollution of the environment or harm to human health. Additional monitoring will be carried out in the even of contamination occurring. Monitoring, assessment and review will be undertaken for the following at the frequencies determined in Schedule D of Waste Licence 17-2:

- day to day operation of the site;
- weekly inspection;
- landfill gas, perimeter, gas vents, wells within waste, and site office;
- PM 10 and dust monitoring;
- noise monitoring;
- leachate levels in cells and storage lagoons;
- leachate composition, emission limits;
- leachate treatment plant monitoring;
- groundwater monitoring;
- groundwater levels and quality;
- meteorological monitoring;
- ecological monitoring;
- biological assessment of White River;
- surface water quality and flow;
- monitoring of private wells within 500m and 1000m of the site; and
- progress of restoration / settlement.

Site operations will be monitored to assess compliance with the Waste Licence and the EMP and to measure any effects which changes in operating practice may have upon environmental control systems (such as gas and leachate management). A record of when monitoring is carried out and details of any remedial works will be retained at the site office.

Monitoring of the landfill gas will be undertaken by trained and competent personnel using suitable monitoring equipment which will be regularly checked and calibrated in accordance with the manufacturers recommendations. Alternative monitoring equipment of an approved type may be substituted in the event of failure of this equipment. All calibration, maintenance and training records will be retained at the site office.

The monitoring results will be recorded in a manner which will enable identification of variations in results. The results will be forwarded to the Agency as required by the waste licence requirements, although any significant changes will be notified forthwith to the Agency.

Surface water, groundwater and leachate monitoring will be undertaken from the boreholes, and monitoring wells in accordance with the Schedule D of waste licence 17-2. This monitoring schedule will be reviewed regularly as the site develops to determine whether any modifications to the monitoring parameters or frequencies are required.

Monitoring locations for groundwater, gas, surface water, noise and dust are shown on MCOS Figure No. D4/2, Rev A, September 1997 in the waste licence application. Additional monitoring locations were proposed for surface water, groundwater and landfill gas vents in a submission to the Agency in February 2000, ref. MCOS Figure No. 3M/3, Rev B.

The site will be surveyed not less than annually so that rates of infilling and settlement can be quantified.

5.14 Safety and emergency procedures

Emergency situations are identified as follows:

- significant spillage;
- fire;
- leachate leakage, level exceedance;
- landfill gas exceedence in site office and off-site;
- equipment breakdown;
- breach of security; and
- health & safety incidents/accidents.
- Where monitoring of private wells indicates that the facility is having a significant adverse effect on the quantity and/or quality of water supply
- Where monitoring of side slopes of the facility indicate that there may be a risk of slope failure.

The emergency response procedure was submitted to the Agency in October 2000. (Ref. Appendix 2 - Environmental Procedures).

6. CLOSURE AND AFTERCARE

6.1 Final Height and Profile

The final height in the original profile for the Gortadroma Landfill Site was 142 m O.D. In the revised profile, proposed in May 2000, the final height is 135 m O.D. The final level achieved in the capping of Cells 1-10 was 132 m O.D. The reduction in elevation from the original proposal to the constructed height is 10m.

The original profile of the site had two hillocks with a small valley between them. In the revised profile there is a single ridgeline sloping to the east in place of the hillocks. The surface water runoff from the site will be directed evenly north and south from the high line of the ridge. There is a surface water drainage swale at the toe of the final cover to collect runoff from the capped area.

6.2 Cell Life Spans and Restoration

The quantity of waste to be landfilled in each cell on the site is outlined in Table 3. The additional quantity of waste that can be facilitated by the revised contours is estimated at 15,000 tonnes, which at current filling rates is an additional 1.4 months of filling at the site. Following a topographical survey carried out in January 2001, the design of cells 11 – 13 was revised, with a subsequent reduction in final capacity.

Table 3: Estimated volume in each cell

Cell	Final Capacity (t)	Cell	Final Capacity (t)
5	108,790	9	48,301
6	110,174	10	84,161
7	126,583	11 - 13	308,000
8	119,692		

The remaining life span of each cell and time frame for restoration of these cells is outlined in Table 4. This time frame is estimated at current filling rates. The restoration dates indicate the period in which the restoration / final capping contract will be carried out.

Table 4: Cell Life Spans and Proposed Restoration Dates.

Cell No	Life Span (years)	Status
1 - 4		Restored
5		Restored
6		Restored
7		Restored
8		Restored
9		Restored
10		Restored
11	0.6	Proposed restoration date Quarter 1 2006

12	0.8	Proposed restoration date Quarter 1 2006
13	0.2	Proposed restoration date Quarter 1 2006

Note:Life spans of each cell and proposed dates for commencement of restoration may change depending on the volume of waste disposed in 2004.

6.3 Landfill Gas

Final capping of cells 1-4, 5, 6, 7 &9 and 8 &10 has been completed and gas abstraction from these cells commenced in April 2002.

6.4 Leachate Management

Leachate will continue to be pumped from the cells to the leachate holding lagoon and on to the leachate treatment plant. Under contract 9, a leachate re-circulation system was installed in all lined cells.

6.5 Capping Layer

On completion of each phase, the cells are restored as per the requirements of the waste licence and current best practices, with prior agreement from the Agency.

Details of the capping system are provided in Attachment D6 of the application for Waste Licence 17-1

6.6 Landscaping

The proposed landscape layout shown in the licence application and EIS was forwarded to the Agency on May 25th 2000. Approval was received from the Agency on July 31st 2000. Stage 1 of this landscaping plan has been completed, Stage 2 commenced in 2002 and was completed in 2003.

7. ENVIRONMENTAL MANAGEMENT SYSTEM

7.1 General Overview

The EMS is to be developed to comply with Condition 2.1 and will be based around a simple 'plan, do, check and act' system as follows:

- **Planning**: the environmental policy, register of environmental aspects and impacts, register of legislation, objectives and targets, and environmental management programme will make up the 'plan' part of the system;

- **Implementation and operation**: structure and responsibility, training, awareness and competence, communication, EMS documentation, EMS and document control, operational control and emergency preparedness and response comprise to the 'do' part, this part will also include the environmental manual which will contain new and current operational procedures and the register of legislation;

- **Checking and Corrective Action**: The 'check' part of the system incorporates monitoring and measurement, non-conformance, corrective and preventive action, records and the audit system; and

- **Management Review**: this covers the 'act' part of the process which brings the system full circle in the management system performance back to the planning phase in a designated timescale, resulting in continual improvement.

Environmental procedures have been drawn up within the operational plan for the EIS and as part of waste licence requirements (Appendix 2 - Environmental Procedures). All existing procedures are presently being reviewed and will be revised if necessary in order to maintain control of the landfill site's significant environmental aspects. Additional procedures will be drafted for inclusion in the EMS. All new and revised procedures will be forwarded to the Agency for approval prior to inclusion in the EMS.

7.2 Planning

This section describes how significant environmental aspects and impacts will be identified and assessed for the EMS, establishes and records legislation relevant to these and the setting of the environmental objectives and targets in order to fulfil the environmental policy.

7.3 Objectives and Targets

A Schedule of Environmental Objectives and Targets (Appendix 4) has been drawn up to provide the framework for the EMP to be developed in the coming months. The site's environmental policy will be developed to be consistent with the schedule.

The setting of these objectives and targets considers regulatory obligations, available technology, financial considerations and operational requirements.

The environmental objectives and targets will be developed to be consistent with the commitment to the continual improvement of the environmental management system, the prevention of pollution, and also to other commitments included in the environmental policy which was submitted in February 2002.

Additional Environmental Procedures will be drafted in order to achieve the objectives and targets. These procedures will be forwarded to the Agency for approval.

7.4 Environmental Management Programme

LCC will establish and maintain an environmental management programme within which it will set environmental objectives and targets to be achieved. Responsibility for achieving objectives and targets is designated and the necessary mechanisms and timeframes for achieving each of the objective and targets are detailed.

7.5 Implementation and Operation

The Implementation and Operation section will define the structure and responsibility for implementing the environmental management system, issues pertaining to training, awareness and competence and also to the way by which LCC receives and responds to communication relating to the landfill site. The section will also cover the environmental management system documentation and its control, operational control of the landfills' significant environmental aspects and those control procedures and equipment that LCC have in place for emergency situations.

7.6 Structure and Responsibility

Details of site personnel are provided in Chapter 6.

7.7 Training, awareness and competence

In accordance with Condition 2.3.2.4 of waste licence 17-2, LCC recognise the need to train employees to ensure they have the appropriate knowledge and understanding of the potential impacts their work can have on the environment. Personnel within the Council performing specifically assigned tasks at the landfill shall be qualified on the basis of appropriate education and/or training as required.

The employees associated with the site will undergo an on-site general environmental awareness training. General awareness and management and key personnel training will be conducted as relevant.

7.8 General Awareness

All employees receive training which covers:

- background to licence and conditions, EPA requirements;
- requirements to ensure operational procedures can be fulfilled;
- requirements regarding specifically assigned tasks;
- the importance of conformance with the landfill sites environmental policy and objectives and targets;
- the potential environmental effects of work activities, and the environmental benefits of improved performance;
- individual roles and responsibilities for achieving compliance with the environmental policy, objectives and targets, and with the requirements of the environmental management system; and
- computer training.

Management and Key Personnel

Training will be provided to enable management and key personnel to participate fully in managing environmental issues. The Executive Engineer and facility manager and deputy manager have completed the Waste Management Training Programme run by FAS in conjunction with Enviros Aspinwall.

7.9 Communication

LCC submitted details of a Waste Licence Communications Programme to the Agency in May 2000, in accordance with Condition 2.7 of the licence. The Agency requested additional information in September 2000 in relation to the follow-up of complaints and incidents and the availability of information to the public. A detailed response was submitted and the programme was approved by the Agency in November 2000. The programme consists of the following components.

7.10 Scheduled Meetings

A Joint Monitoring Committee, comprising four officials from Limerick County Council, four representatives from the Gortadroma Action Group and chaired by an elected member of Limerick County Council from the area meets every 4-6 weeks to discuss issues, formal submissions to the Agency and/or developments at the site.

Provision of the following documentation for the public to view;

- Waste Licences 17-1 (superseded) and 17-2 (in operation since 25th September 2003),
- Environmental Impact Statement,
- Waste Licence Application form,
- Waste Licence Review Application form,
- Conditioning Plan,
- Periodic reports,
- All monitoring records,
- Incident/Complaints reports,
- Once-off reports submitted to the agency,
- MSDS sheets,
- Calibration records,
- Bait box inspection records,
- Rejected loads log,
- Bird control reports, and
- Litter picking reports.

LCC have also made a commitment for staff at Gortadroma to provide any environmental information pertaining to the site to any member of the public.

A Register of Information will be developed as part of the environmental management system for viewing at the site office and at the Environment Section of LCC at County Buildings, Limerick. This will be composed of the environmental policy, all environmental management procedures, the Register of Environmental Legislation (REL) and all site records.

Residents meetings. These meetings are held on a regular basis. The key aims of residents meetings are to deal with the set up of the communications programme and secondly, to consult intensively on the current management of the site and the restoration and closure programme. The focus is on individual issues and is used to build the residents' confidence and relationships with the Council. The resident committee is comprised of the local community representatives and LCC.

7.11 Documentation

The environmental management programme has been developed to provide a description of the core of the environmental management system for Gortadroma Landfill and the interactions within that system as set out in this chapter. On completion of the environmental management system documentation such as procedures and register of legislation, there will be 'signposts' to other documentation, which provides detail as to the running of the environmental management system.

The environmental management system refers to the environmental management programme which includes the procedures used by LCC to meet the site's environmental policy. Existing procedures are currently being reviewed and will be revised if necessary for inclusion in the environmental management system. Additional procedures will be drawn up in the coming months and will be submitted to the Agency for approval.

In turn the procedures will be developed to identify the records, forms and other support materials which provide evidence of the operation of the environmental management system.

7.12 Document Control

All documentation relating to Conditions 2.1 to 2.10 and Conditions 10.1 to 10.6 will be collated and held in the environmental management system file, which will contain the environmental management programme (EMP) in the Gortadroma site office. The register of information will be available for viewing at the site office. This includes the environmental policy, environmental management procedures, register of legislation and all site records.

A document control procedure will be developed to ensure that environmental management system documentation:

- can be located, and is available at key locations;
- is reviewed at least annually, revised as necessary and approved by authorised personnel;
- is current - obsolete documents are removed from work areas to insure against unintended use. Where relevant, obsolete documents are archived;
- is legible, dated for revision, identified and maintained in an orderly manner;
- is suitably identified, if any obsolete documents are retained for legal and/or knowledge preservation purposes.

The document control procedure will be developed to deal with the creation and modification of various types of documents. It will be the executive engineer and facility manager's responsibility to ensure that the information contained in the manual and associated documents is kept up to date and accurate at all times.

7.13 Emergency Preparedness and Response

In accordance with Licence Condition 9, Contingency Arrangements, LCC have submitted a written emergency response procedure to the Agency. This procedure addresses any emergency situation which may originate on the site and includes provision for minimising the effects of any emergency on the environment. Refer (Appendix 2-Environmental Procedures).

The emergency preparedness and response procedure will be reviewed where appropriate, particularly after the occurrence of an accident or emergency situation through the corrective action procedure.

Emergency response training will be undertaken as appropriate.

7.14 Checking and Corrective Action

This section outlines the way by which LCC will monitor, measure, audit and record the environmental performance of the management system. It also establishes how non-conformance within the system is dealt with, and how any corrective and preventive action is carried out.

7.15 Monitoring and Measurement

LCC record information to track performance, monitor relevant operational controls and determine conformance of the system with the Schedule of Objectives and Targets and with the Waste Licence. Further detail is included in Chapter 5.

Monitoring and measurement equipment is calibrated, as appropriate, and records of process retained. Procedures for environmental monitoring will be developed for the environmental management system.

7.16 Nonconformance and Corrective and Preventive Action

LCC will establish and maintain a procedure to define responsibility and authority regarding nonconformance, taking action to mitigate any impacts caused and for initiating and completing corrective and preventive action.

Any corrective and preventive action taken to eliminate the causes of actual and potential nonconformance shall be appropriate to the magnitude of the problems and commensurate with the environmental impact encountered.

Changes to documented procedures arising from corrective and preventive action shall be implemented and recorded.

7.17 Records

LCC maintain and store environmental records. These will include training records and the results of audits and reviews. The records will be collated and maintained legible, identifiable-and traceable to the activity, product, project or service involved: They will be stored in such a way as to minimise deterioration and loss and to facilitate easy retrieval.

Records shall be kept for a minimum period to demonstrate conformance to the requirements of the environmental management system as defined in the Document Control procedure.

Copies of all environmental records will be maintained by the facility manager.

APPENDICES

Appendix 1	Part 1 of waste Licence 17-2 , Waste Activities
Appendix 2	Environmental Procedures
	Procedures for Waste Reception and Handling
	Procedure for Wheel Cleaning
	Procedure for Operation of the Facility in Adverse Wind Conditions
	Procedure in Event of Uncontrolled Gas Migration Detected in Monitoring Boreholes
	Procedure for Emergency Phone
	Procedure for Documenting and Reporting on Landfill Gas Flare
	Operational Procedure for Drivers and Banksman at Tiphead
	Emergency Response Procedures
	ERP for Fire/ Explosion within the cells, outside the cells but within the facility
	ERP for Damage to Integrity of Leachate Management System
	ERP to Spillage of Leachate
	ERP to Containment of Stormwater Settling Lagoons
	ERP for Emergency Procedures outside of Normal Working Hours
	ERP in the event that monitoring indicates that the facility is having an impact on the quantity and/or quality of the local wells
	ERP in the event that monitoring of the side slopes indicates that there may be a risk of slope failure
Appendix 3	Active Litter Management Plan
Appendix 4	Objectives and Targets for 2004
	Review of Objectives & Targets Outlined in 2003 EMP

APPENDIX 1

Part 1 of Waste Licence 17-2

Activities Licenced at Cortadroma Landfill

Part I Activities Licensed

In pursuance of the powers conferred on it by the Waste Management Act, 1996, the Agency, under Section 46(2) of the said Act hereby grants this Waste Licence to Limerick County Council, Council Buildings, 79-84 O' Connell Street, Limerick, to carry on the waste activities listed below at Gortadroma Landfill, Gortadroma, Ballyhahill, County Limerick 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 waste disposed of at the landfill prior to 1997 which was placed into unlined cells in the exhausted sand and gravel pit.
Class 2	**Land treatment, including biodegradation of liquid or sludge discards in soils:**
	This activity is limited to the disposal of sludge from municipal water treatment and wastewater treatment plants and non-hazardous industrial sludge 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 leachate storage lagoon prior to treatment.
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 disposal of waste in lined cells.
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 treatment of leachate at the facility.
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 treatment of leachate by settlement, filtration or by chemical precipitation or other physico-chemical means at the leachate treatment plant.
Class 11	**Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule:**
	This activity is limited to the mixing of sludge with other wastes during the landfilling process to ensure that the waste body is as homogenous as possible.
Class 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:**
	This activity is limited to the storage of waste prior to its disposal.

Licensed Waste Recovery Activities, in accordance with the Fourth Schedule of the Waste Management Act 1996

Class 2	**Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes):** This activity is limited to the composting of green waste accepted subject to a limit of 1000m^3 of compost and waste at any one time at the facility, the storage of waste oils at the civic waste facility and the use of wood chippings as weekend cover only.
Class 3	**Recycling or reclamation of metals and metal compounds:** This activity is limited to the storage of metal and metal compounds at the facility.
Class 4	**Recycling or reclamation of other inorganic materials:** This activity is limited to the storage of inorganic materials at the facility prior to reuse on-site or off-site.
Class 9	**Use of any waste principally as a fuel or other means to generate energy:** This activity is limited to the provision of a landfill gas recovery facility.
Class 10	**The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system:** This activity is limited to the use of organic waste which has been fully composted as intermediate cover and in the closure/restoration stage of the landfill.
Class 11	**Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule:** This activity is limited to the use of composted waste as landfill cover material.
Class 12	**Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule:** This activity is limited to the possible exchange of waste being delivered to the facility in exchange for processed waste subject to the agreement of the Agency.
Class 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:** This activity is limited to the temporary storage of waste prior to inspection, recycling, recover and/or reuse at the facility or elsewhere.

APPENDIX 2

ENVIRONMENTAL PROCEDURES

Procedures for Waste Reception and Handling
Procedure for Wheel Cleaning
Procedure for Operation of the Facility in Adverse Wind Conditions
Procedure in Event of Uncontrolled Gas Migration Detected in Monitoring Boreholes
Procedure for Emergency Phone
Procedure for Documenting & Reporting on Landfill Gas Flare
Operation Procedure for Drivers and banskman at Tiphead
Emergency Response Procedures
ERP for Fire/ Explosion within the cells, outside the cells but within the facility
ERP for Damage to Integrity of Leachate Management System
ERP to Spillage of Leachate
ERP to Containment of Stormwater Settling Lagoons
ERP for Emergency Procedures outside of Normal Working Hours
ERP in the event that monitoring indicates that the facility is having an impact on the quantity and/or quality of the local wells
ERP in the event that monitoring of the side slopes indicates that there may be a risk of slope failure

Procedures for Waste Reception and Handling

Introduction

The Gortadroma Landfill is licenced to accept waste types which are outlined in Appendix A, as per Condition 1.4 of licence 17-2. No hazardous waste, construction and demolition waste, *animal* by-products or loads comprising mainly of loose plastic shall accepted in the landfill. However, construction and demolition waste shall be accepted at the facility, if this waste is used for recovery purposes and not disposal. In order to ensure that the waste accepted at the facility complies with the terms of the licence, Limerick County Council have strict controls on what the producer/contractor is disposing of at the facility.

All testing, characterisation and acceptance procedures will be in accordance with the Draft Waste Acceptance Manual 1997 as produced by the EPA.

As from 1 July 2000, commercial waste containing glass, metal and non-contaminated cardboard shall not be accepted at the Gortadroma Landfill.

Waste Characterisation, Testing and Verification

In accordance with the Draft Waste Acceptance Manual, Limerick County Council shall adopt the three level hierarchy as indicated below:

- **Level I - Basic Characterisation**
  It is performed by or on behalf of the waste producer. This constitutes a thorough determination of the short and long term leaching behaviour and/or characteristic properties of the waste. The possible risks involved when handling the waste should be identified and included in the waste transfer document. (see Appendix B)

- **Level II - Compliance Testing**
  It is performed by Limerick County Council or the EPA and paid for by the producer/contractor. This entails periodic testing to determine whether the waste is in accordance with the accompanying documentation and that results of analyses as provided are accurate. The tests focus on key variables and behaviour identified by Basic Characterisation.

- **Level III - On site verification**
  It is performed by Limerick County Council and constitutes a check to ensure that the waste is in accordance with the accompanying documentation. It may consist of a visual inspection of a load of waste before and after unloading.

Level I- Basic Characterisation

All producers/contractors of waste shall be obliged to conduct a Level I Basic Characterisation on the waste which they intend to send to the landfill. Upon receipt of this basic characterisation, Limerick County Council will determine whether the waste as described is acceptable. It may well be necessary for the producer/contractor to use an analytical laboratory to establish the composition of the waste in question and to do further sampling to ensure consistency of results.

In order to determine the acceptability of a waste type, all waste producers/contractors who propose to dispose of industrial waste will be obliged to conduct a waste characterisation survey in accordance with the 'European Waste Catalogue', the 'Hazardous Waste List' (see Figure 1) and the NACE Code. Those disposing of municipal waste will be required to carry out a waste characterisation survey as outlined in 'Municipal Waste Characterisation' (EPA 1996). Limerick County Council in determining whether the waste is acceptable or not, shall use the standard outlined in Appendix A.

In order to estimate what constituents of the waste contribute to landfill leachate it may be necessary to use a simulated extraction procedure to create a leachate. The resultant eluate (leachate) from this procedure shall then be tested to estimate the leachate characteristics of the waste.

Should the need arise, Limerick County Council shall request the producer/contractor to conduct toxicity testing on the simulated leachate to assess ecotoxicological risk to the environment. This shall be tested on three aquatic species from different trophies using standardised and internationally accepted procedures and carried out by a competent laboratory.

The toxicity unit limits to be applied will be in accordance with the recommendations in the most up to date EPA Draft Waste Acceptance Manual.

The following information shall be used to determine whether leachate extraction and/or ecotoxicological testing is required.

- the source of the waste,
- the business of the waste producer,
- the waste composition,
- the materials stored and used at the location of the waste production

Based on experience to date and the type of waste being presented Limerick County Council is confident that simulated leachate testing will not be required in most cases. However, commercial waste contractors will be obliged to present a basic characterisation report on any new waste source if required by the Council.

New customers will be requested to conduct a level I Basic Characterisation prior to disposing of waste at the facility.

Inert Waste is defined in the Draft Waste Acceptance Manual as a waste that does not undergo any significant physical, chemical and biological transformation. Appendix C contains a table of the inert wastes that are acceptable at the Gortadroma landfill. If a producer/contractor wishes to dispose of a waste not included in this table as an inert waste it must be proven that the waste is inert. This will involve proving that the waste is:

- chemically stable
- non biodegradable and
- non-hazardous

Experience to date indicates that very little inert material is disposed of at the landfill as it is mostly recycled in road making and raising land levels. The inert material that is disposed of at the landfill is used for covering the waste at the weekend.

Level II - Compliance Testing

Compliance testing shall be carried out at intervals of not more than 12 months for loads presented by frequent users of the landfill. loads presented by infrequent users shall be subject to compliance testing, as considered necessary by Limerick County Council. The compliance testing ensures that the incoming waste complies with the details provided in the Waste Transfer Document. The results obtained shall be compared with those of the producer/contractor, if there is any variability in these results, Limerick County Council shall request the producer/contractor to furnish further information to determine whether the waste is acceptable at the facility in accordance with the terms of the licence. The criteria to be checked for when carrying out compliance testing shall include:

- type of waste
- type of containment
- waste production process
- quantities and frequency of waste deposition
- variability of the waste
- possible consequences of any significant alteration to the composition of the waste

- evaluate test results

When carrying out compliance testing for leachate characteristic criteria, the values as indicated in Appendix D for non-hazardous waste shall be adopted. 95% of samples taken will be required to conform to these values. Should the test results for the non-conforming parameter be greater than 1.5 times the acceptable value then the entire sample will be deemed to have failed. To allow for uncertainty in the laboratory analysis a ± 10% tolerance will be acceptable in the limit of detection.

Level III-- On site verification

Each load arriving at the facility must be subjected to Level III verification. This may involve a number of checks and tests to ensure that the waste on arrival corresponds to the description as given in the accompanying documentation.

Acceptance Procedure

The procedure that shall be adopted at the Gortadroma Landfill is shown in Figure 2. The procedure is as follows:

1. Waste arrives on site.
2. Documentation is checked - An example of the type of documentation that shall. be incorporated into the waste acceptance procedure is shown in Appendix B. This Waste Transfer Document shall be used for all loads presented - except for members of the public presenting small quantities of household waste in trailers and in cars at the weighbridge. It is Limerick County Council's intention to use the Waste Transfer Document initially on a trial basis for approximately six months and then assess whether any amendments will be necessary to facilitate a more practical document.
3. All vehicles will have their contents examined at the tip head and this shall be crosschecked with the documentation presented. If the waste is unacceptable the waste shall be isolated and arrangements put in place for the contractor to remove the waste from site.
4. Members of the public bringing in waste in their car or in a trailer shall be requested to inform the Weigh bridge Controller with details of the type of waste they are disposing of. This waste shall be verified visually by landfill staff prior to final placement in the landfill.
5. If the person who is checking in the load is suspicious of its contents the driver shall be directed to the waste inspection area where the load shall be tipped and inspected to ensure that it corresponds to the accompanying documentation. In any event compliance testing will be carried out at regular intervals.
6. Assuming the on-site verification at the weigh bridge is satisfactory, the load is weighed in and directed to the tip-head. At the working face following disposal the load shall be checked to verify that the description is correct.
7. Providing the load is acceptable the driver shall call to the office on departure to have documentation stamped.

Competence of Staff

All staff involved in waste acceptance at the site shall be competent with respect to the following:

- have a knowledge of the waste acceptance procedures used at the site
- know what is required in the documentation accompanying the waste
- be capable of identifying conforming and non-conforming consignments
- know the safety requirements for handling, sampling and testing the wastes and
- know the procedures to be followed in the event of a consignment not conforming with the waste acceptance criteria.

A list of what waste is acceptable and what is not shall be circulated to all staff working at the facility. A non-exhaustive list indicating the waste streams, which are and are not accepted is attached on Appendix A.

Rejected Loads Procedure

If the person checking in the load is suspicious about its contents it shall be tipped and checked at the designated waste-inspection are in order to determine its contents. If it is found to be unacceptable the contractor will be informed that he is to remove it from the facility immediately. If the producer/contractor fails to act upon this request, Limerick County Council shall arrange for its removal a transferal to the waste contractors main place of business or if this is not appropriate it shall be removed to an authorised disposal facility. Upon disposal of the waste the contractor will be invoiced for all costs incurred by the Council.

Figure 1 – Procedure for Characterising Waste

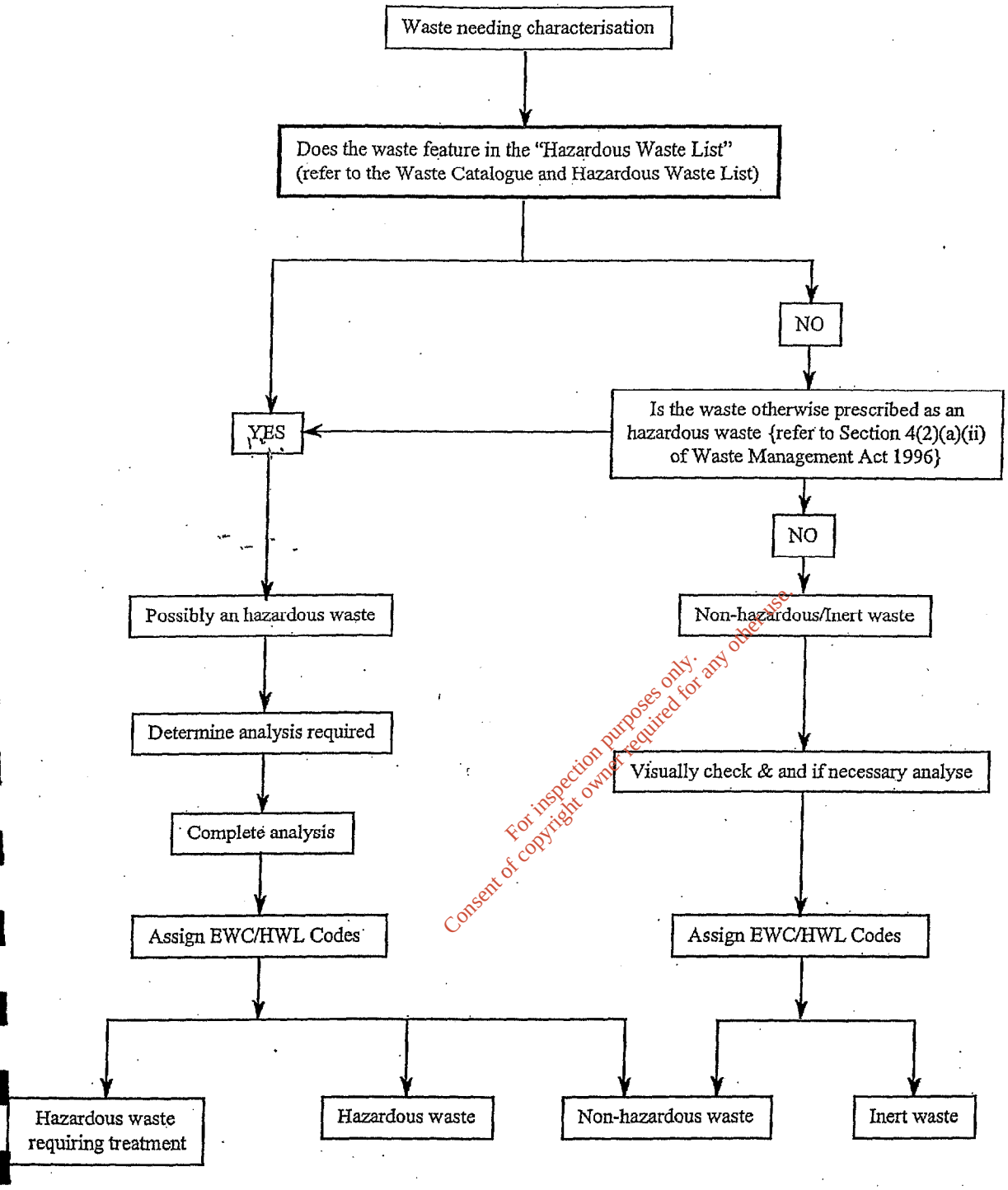
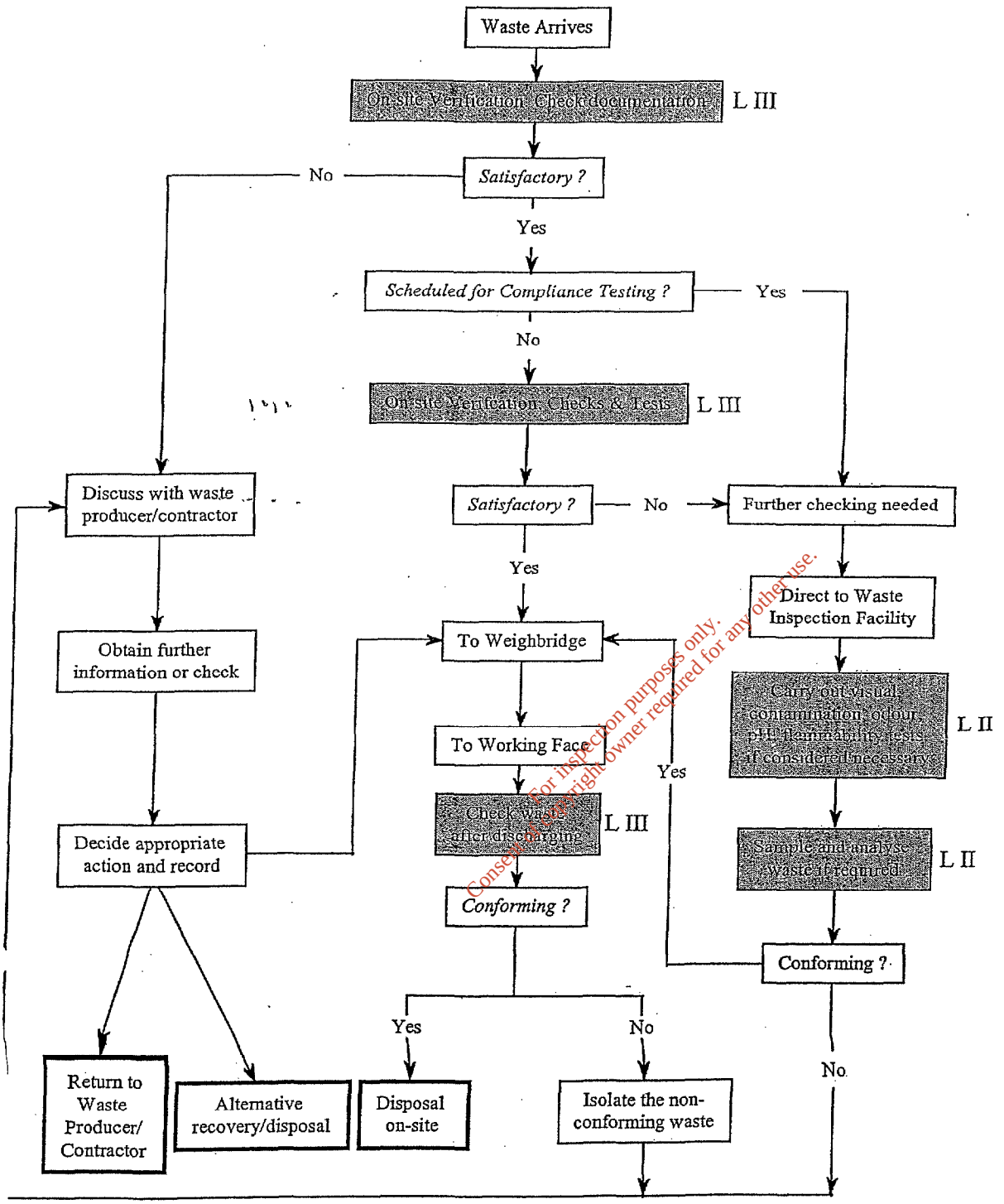


Figure 2 : Waste Acceptance Procedure



L II: LEVEL II - Compliance Testing
L III: LEVEL III - On-site Verification

Table 1: **Appendix A – Acceptable Waste Types**

Inert or Inactive Waste	Acceptable
Subsoil[Note 1]	Yes
Topsoil[Note 1]	Yes
Brickwork	No
Stone, Rock & Slate	No
Clay[Note 1]	Yes
Natural Sand[Note 1]	Yes
Concrete	No
Pottery & China	No
Solid Road Planings, Solid Tarmacadam & Solid Asphalt	No
Biodegradable Waste	**Acceptable**
Wood & Wood Products [Note 2]	Yes
Paper & Paper Products [Note 2]	Yes
Vegetable Matter	Yes
Non-Infectious Health Care Waste	No
Natural & Man Made Fibres	Yes
Road Sweepings	Yes
Gully Emptyings	Yes
Septic Tank Waste	No
Silt & Dredgings	No
Boiler Scale	No
Ash & Cinders	No
Food Stuffs	No
Oil/Water Mixtures	No
Vegetable Oil	No
Fats, Waxes and Greases	No
Animal Excrement (including paunch contents)	No
Animal Blood	No
Other Wastes	**Acceptable**
Plasterboard & Plaster	Yes
Dried Paints, Dried Varnish & Dried Lacquer	No
Foundry Sand & Sand Blasting Residues	No
Glass	Yes
Latex & Rubber Solutions	Yes
Solid, Fully Polymerised Plastics	Yes
Solid Rubber (excluding tyres)	Yes
Empty Containers	Yes
Non-Hazardous Ferrous & Non Ferrous Metals	Yes

Construction and Demolition	No
Industrial Non Hazardous Sludges	Yes
Other Industrial Non Hazardous Waste	Yes
Hazardous	No

Note 1: These materials may be accepted for recovery at the site

Note 2: These materials may be accepted where contaminated and comprise part of a load

Appendix B – Waste Transfer Document

Waste Producer		Waste Contractor (if applicable)	
Company Name & Address: Tel: Fax:	Contact Name (BLOCK CAPITALS): Signed:_____ Date dispatched:	Company Name & Address: Permit No.: Tel: Fax:	Contact Name (BLOCK CAPITALS): Signed:_____ Date dispatched/collected: Date delivered:

Waste Description

Ref. No.:

Source of the waste (processes involved):

Physical Description:
solid / in powder form / cohesive sludge / slurry fluid

How the waste is contained (e.g. loose, in a container, baled, compacted, etc.):

Waste Quantity (weight, volume, no. of containers, etc.):

Name(s) & Concentration(s) of the substance(s):

Odour:
strong / weak / odourless

Description of smell:

European Waste Catalogue (EWC) code:

Chemical & Physical Analysis carried out ?

Special Problems/Requirements/Knowledge with regard to the waste:

2nd Waste Contractor (if applicable)		Landfill Operator accepting the waste	
Company Name & Address: Permit No.: Tel: Fax:	Contact Name (BLOCK CAPITALS): Signed:_____ Date dispatched/collected: Date delivered:	Landfill Name & Address: Licence No.: Tel: Fax:	Contact Name (BLOCK CAPITALS): Signed:_____ Date accepted:

Appendix C - List of Inert Wastes

List of Inert Wastes			
Group	**Description of Material**	**Notes**	
I	Rocks and Soils (naturally occurring)	Includes clay, sand, gravel, sandstone, limestone, crushed stone, china clay, construction stone, stone from the demolition of buildings or structures, slate, topsoil, peat, silt and dredgings.	
II	Ceramic or concrete materials	Comprises of: (i) glass; (ii) ceramics; (iii) concrete.	- **excludes** glass fibre and glass reinforced plastic - includes bricks and mortar, tiles, clay ware, pottery and china - includes reinforced concrete, concrete blocks, breeze blocks and aircrete blocks **but excludes** concrete paint washings
III	Minerals	Comprises of: (i) moulding sands; (ii) clays; (iii) mineral absorbents; (iv) man-made mineral fibres; (v) silica; (vi) mica.	- **excludes** sands containing organic binders - includes moulding clays and clay absorbents, including bentonite - includes glass fibres, but **excludes** glass reinforced plastic and asbestos

Appendix D – Standards for Leachate Characteristics

Eluate Characteristic	Units	Inert Waste	Non-Hazardous Waste	Hazardous Waste
pH	mg/l	4 - 13#	4 - 13#	4 - 13
TOC	mg/l	< 200	< 200	40 - 200
Arsenic	mg/l	< 0.1	< 0.2	0.2 - 1
Lead	mg/l	*	< 0.4	0.4 - 2
Cadmium	mg/l	*	< 0.1	0.1 - 0.5
Chromium	mg/l	*	< 0.1	0.1 - 0.5
Copper	mg/l	*	< 2	2 - 10
Nickel	mg/l	*	< 0.4	0.4 - 2
Mercury	mg/l	*	< 0.02	0.02 - 0.1
Zinc	mg/l	*	< 2	2 - 10
Phenols	mg/l	< 10	< 10	10 - 100
Fluoride	mg/l	< 5	< 10	10 - 50
Ammonium	mg/l	< 0.05	< 0.2	0.2 - 1
Chloride	g/l	< 0.5	< 1.2	1.2 - 6
Cyanide	mg/l	< 0.1	< 0.2	0.2 - 1
Sulphate	g/l	< 0.1	< 0.2	0.2 - 0.1
Nitrite	mg/l	3	< 6	6 - 30
AOX**	mg/l	< 0.3	< 0.6	0.6 - 3
Cl Solvents	µg/l	< 10	< 20	20 - 100
Pesticides	µg/l	< 0.5	< 1	1 - 5
Lipoph. Sub.	mg/l	< 0.1	< 0.4	0.4 - 2

* Total Metals < 5 mg/l, with no metal greater than lowest hazardous level
** Absorbed Organically Bound Halogens
#Acceptable Range
Testing facilities for those characteristics shaded are very limited or not available in Ireland at present

Procedure for Wheel Cleaning

The site has approximately 310 m *of* paved roads between the disposal area and the public roads. In association with this a wheel wash facility has been installed on the exit road near the reception area. All vehicles that have deposited waste at the operating face will use the wheelwash facility before leaving the site.

A wheel wash has also been installed at the construction entrance to the landfill. This will ensure that vehicles involved in future contracts at the landfill will travel over the wheelwash prior to exiting the site.

These measures will permit satisfactory control *of* mud on the public highways. Contaminated water from the wheel cleaning will be discharged to the leachate treatment system.

Procedure for Operation of the Facility in Adverse Wind Conditions

The operational cell will be surrounded by netting before any waste is disposed in it. This netting will be supported by four meter high steel support posts, which may be set into barrels of concrete or set into permanent foundations.

Filing of waste will be phased in such a way, where practical, as to ensure that we are operating in a low lying area during the windy months.

It has been practice since April 1999 to close to commercial waste during windy days and also to domestic waste in extremely windy conditions. Up to May 2000 the decision to close has been solely based on the judgement of the manager on any given day. This process was further developed when the meteorological station is installed in May 2002.

In the event of any loose papers /plastics blowing outside our netting system, these papers / plastics will be recovered as soon as possible and this will be recorded in our litter picking reports. A copy of these reports will be maintained at the site office.

It is our intention to continue the above practices as they have been proven to be successful since implementation.

Procedure in Event of Uncontrolled Gas Migration Detected in Monitoring Boreholes

At present perimeter landfill gas monitoring locations are being installed around the Gortadroma site. Monitoring will be carried out at these locations on a monthly basis. In the event of uncontrolled gas migration being detected in the monitoring boreholes the following steps will be taken:

1. The frequency of monitoring will be increased to ensure that there is no increase in the levels of gas migration above trigger levels.

2. If gas migration is shown to be increasing then additional boreholes will be installed further from the landfill cells, where possible to evaluate the extent of the gas migration. In the event of persistent gas levels a risk analysis shall be carried out to evaluate the potential of danger from landfill gas.

3. All filled cells (1-10) are fully capped and connected to a gas collection and flaring system.

4. LCC propose to drill wells in Active cells and connected to the gas collection systems where practicable.

5. A landfill gas utilisation plant will be installed in 2004.

Limerick County Council's Procedure for Handling the Emergency Phone.

Limerick County Council have a designated land line emergency number which can be contacted outside of office hours.

The following is the procedure when this number is contacted.

1. The call to this number is diverted to the mobile emergency phone, which is held on a weekly rotational basis by various area supervisors. In the event of this mobile phone been out of coverage, a paging service is activated, which will guarantee that the supervisor holding the emergency mobile phone will be contacted.

2. On receiving the complaint, the supervisor holding the emergency mobile phone will make contact with the person in charge of the area where the complaint has originated. A full list of contact numbers is held with the emergency mobile phone.

3. The person in charge of the area where the problem exists, will then decide if any practicable response can be made to the problem at this time. If a practicable response can be made, it will be undertaken immediately and if not, it will dealt with as a priority the next working day.

Landfill Gas Flare

Procedure For Documenting & Reporting

1. The flare is checked on a daily basis by the site manager or deputy manager to verify that it is operating and to ensure it is burning at a temperature in excess of 1000 ^{0}C. This information is recorded in the daily log sheet, which is kept in the site office.
2. In the event that the flare is out of operation for a period greater than four hours, this will be reported as an incident to the Agency.
3. All routine maintenance and breakdown maintenance will be recorded and kept in a file at the site office.
4. All annual monitoring requirement results will be submitted with all the other annual reports.
5. All continuous monitoring results will be downloaded on a daily basis and will be available for inspection at the site office.
6. Any emission results, which exceed the values specified will be reported as an incident to the agency.

Procedure For Implementing Corrective Action

1. In the event of the flare shutting down, the site manager or deputy manager will investigate the cause of the shut down, by means of checking the alarm panel.
2. If the fault alarm can be reset, the flare will re-started immediately.
3. If there is an electrical or mechanical fault, the council electrician or fitter will be contacted and requested to attend to the problem without delay.
4. Any parts that may require occasional replacement will be kept in stock at the landfill.
5. If a problem exists, which can not be corrected by Limerick County Council staff, the advise of an engineer from Biogas U.K Ltd. will be requested.

OPERATIONAL PROCEDURE FOR DRIVERS &BANKSMAN AT TIPHEAD

- The banksman is responsible for direction of traffic and enforcement of safety rules at the tiphead.

- The banksman should ensure the following;
  - That a vehicle is only directed to reverse to the tip face, when the previous load tipped, has been fully cleared by the driver of the D9 Bulldozer.
  - That only one vehicle is allowed reverse to the tip face at any given time.
  - That any driver, who needs to disembark his vehicle at the tip face, must be wareing a high visibility vest.
  - That any accidents or failure by any person to comply with safety procedures is reported to the Site Manager or Executive Engineer without delay.

- The drivers of the D9 Bulldozer and the Compactor shall operate in the following manner;
  - The D9 Bulldozer should remain stationery until the vehicle tipping at the tip face has fully discharged the refuse load and has driven away from the tiphead.
  - The driver of the D9 Bulldozer can then proceed to push the refuse load to the working face.
  - The Compactor should remain on the working face at all times and can continue to roll the waste providing the compactor is well clear of the tip face.

- In the event that either machine requires refuelling, all operations should be temporarily stopped at the tiphead.

- In the event that either machine requires repair or servicing, the machine should be moved to a safe working area clear of the tip face.

- Drivers of Excavators and Dump Trucks should not operate close to the tip face. If subsoil needs to be transported for construction of screening banks and covering of waste, an alternative route away from the tip face should be used.

- Drivers of the tractor for the fly spraying operation, shall ensure that the tractor is kept well clear of the tip face.

- Drivers of all machinery at the site shall ensure that reverse beacons and lights are fully operational at all times and that a high visibility jacket is worn before they disembark the machine that they are operating.

Signed:_____
John O Carroll
Landfill Manager

Emergency Response Procedures

The Emergency Response Procedure shall be put into action in the event of one of the following incidences occurring or being imminent:

- Fire/Explosion - within the cells, outside the cells but within the facility.
- Damage to the integrity of the on site leachate management system which would consist of either - damage to the liner within the cells or leachate lagoon, leachate discharge within the site, leachate discharge outside the site.
- Spillage of leachate during transport and /or discharge at the waste treatment plant.
- Migration of landfill gas - within the site office, elsewhere within the facility, off site.
- Contamination of stormwater and settling lagoons
- Person falling into leachate lagoon
- Where monitoring of private wells indicates that the facility is having a significant adverse effect on the quantity and / or quality of the private water supply.
- Where monitoring the side slopes of the facility indicate that their may be a risk of slope failure.

In the event of an emergency on the site, the following Emergency Response Procedure (ERP) will be put into action. The ERP will be linked to the major Emergency Plan for Limerick.

Activation of the Emergency Response Procedure

The procedure will be initiated and controlled by the site manager or the senior member of staff on duty at that time in response to any event which, with little or no warning, causes or threatens:

- Death or injury
- Damage to property and or the environment
- Serious disruption to the essential services of the site.

Where any such event is beyond the normal capabilities of the site staff or outside the normal operating times of the facility, additional assistance shall be obtained as outlined below.

Control of Operations under the ERP

The control of operations under the ERP shall be exercised by the Facility Manager or designated alternative

The function of the controller of operations shall be as follows:

- to provide overall control and direction and to co-ordinate all of the activities of the County Council personnel and activities during the emergency.
- to require the attendance of such services as are needed during the emergency Le. fire services, Gardai, ambulance, any Limerick County Council resources which are required.
- to requisition any equipment deemed necessary to deal with the incident.
- to maintain a log of the incident.
- in the event of an environmental emergency inform the Environmental Office and Health and Safety Section of Limerick County Council, the Newcastle West Office of Limerick County Council and the EPA of the incident.
- provide a written report on the emergency to the Director of Services, Environment & Emergency Services, Limerick County Council, the Health and Safety Section Limerick County Council where appropriate and the EPA.

Demobilisation of the ERP

The controller of the ERP may demobilise the procedure under the following conditions:

- the emergency which was imminent does not occur.
- the emergency has occurred and been dealt with under the ERP

The controller shall notify those bodies and agencies that have been informed or the emergency under the ERP when the ERP is being demobilised.

Additional Response Procedure for Individual Incidences

- **Emergency Response Procedure for Fire/Explosion within the cells, outside the cells but within the facility.**

All site operators and staff shall be aware of the dangers associated with fire and the procedures to deal with them. All operatives shall receive basic instruction on fire safety and protocol. A number of site operatives will attend fire officer training courses. At least one of these personnel will be on site at all operational times. The actions to be taken in the event of a fire are as follows;

A fire alarm system has been installed in the reception building. In the event of a fire the alarm will be activated. The Fire Safety Drill or Code of Practice as developed by the site management in discussion with the Chief Fire Officer will be implemented. All staff shall be familiar with this code. There is one fire extinguisher located within the main reception building and two additional extinguishers within the adjacent portacabin (Welfare Building).

Upon discovery of a fire site staff shall immediately attend the fire. The landfill shall be closed to all incoming waste until the fire has been extinguished. Based on the size of the fire the site staff shall determine if the services of the fire brigade are required or if the fire can be extinguished by site personnel.

Waste loads which are observed to be smoking upon arrival at site shall be directed to the emergency waste storage area. It shall then be inspected by the management who will decide whether to extinguish it themselves or alert the fire authorities. The fire shall be extinguished with water or by smothering with inert material.

Freshly deposited waste in the working area which is observed to be on fire or smoking will be removed by the excavator. The material is to be removed to a prepared pad of inert material where it shall be extinguished by water or smothering with inert material. Water shall be provided from fire water tanks (two 5,000 gallon tankers) maintained at the active area of the landfill along with a high head pump and 200 m of fire hosing. In the event of additional water being required it shall be pumped from the surface water drains within the site on a temporary basis. Following completion of the fire extinguishing procedures several inspections shall be undertaken at the site of the incident to ensure that the fire has successfully been dealt with.

In the event of the fire being deep seated within the landfill. the area will be sealed of all sources of oxygen. This will be carried out by blocking vents and covering any exposed surfaces thus eventually extinguishing the fire. All contaminated firewater shall be directed to the leachate treatment works for treatment prior to discharge to the White River.

The EPA shall also be notified of any fire incident at the site. A log of the incident shall be maintained. A written report on the fire shall be submitted to the Director of Services, Environment & Emergency Services, Limerick County Council and the Health and Safety Section of Limerick County Council.

In the event of a fire outside normal operational hours, Newcastlewest fire station shall have a set of keys for all security gates and buildings. In addition they shall have emergency call out numbers for the site management team and a full set of plans and drawings of the main infrastructure for the facility.

The Facility Manager or designated alternative shall make the decision as to whether outside assistance is required and direct on-site personnel to extinguish the fire. Contaminated firewater to be contained and discharged to leachate lagoon by portable tanker. The Facility Manager is to inform Limerick County Council and the EPA of the occurrence of the fire.

- **Emergency Response Procedure For Damage To Integrity of Leachate Management System**

At present the treated leachate is tankered off site for disposal. Subsequent to approval from the EPA the treated leachate will be discharged to the White River.

In the event of damage occurring to the integrity of the leachate management system on site personnel will be mobilised to construct temporary bund *I* containment measures. The portable tankerwill be mobilised to collect any leachate for discharge *I* transport to the leachate lagoon.

If required a pumping contractor will be mobilised to provide additional pumping equipment to provide containment of the leachate. In the event of off site leachate removal being required in the future leachate may be tankered in the short term to both Newcastle West and Castletroy Wastewater Treatment Plants.

The Facility Manager or designated alternative shall contact the Environmental Section of Limerick County Council, the Shannon Regional Fisheries Board and the EPA in the event of a threat of discharge of leachate to the White River.

In the event of spillage of leachate into local water courses the river downstream will be electrofished to remove fish stocks. Barriers across drains and water courses will be used and leachate rich surface water will be pumped back into the landfill.

The Facility Manager or designated alternative will direct the on site operatives in the construction of temporary containment measures.

- **Emergency Response To Spillage of Leachate**

All activities will be carried out in such a manner as to prevent any spillage. However in the case of a spillage all proper management procedures will be implemented.

In the event of a spillage of leachate occurring outside of the lined cells a temporary bund will be constructed and the portable tanker will be mobilised to collect the leachate and discharge it to the leachate lagoon. In the event of a larger spill a mobile pump could be set up with direct discharge to the leachate collection system via the nearest manhole.

In the event of spillage of leachate into local water courses, the Shannon Regional Fisheries Board will be immediately informed and if necessary, the river downstream will be electrofished to remove fish stocks. Barriers across drains and waste courses will be used and leachate rich surface water will be pumped back into the landfill.

The Facility Manger or designated alternative will direct the on site operatives in the implementation of leachate control measures. The Facility Manager is to inform Limerick County Council and the EPA of the occurrence of the spillage and a full report on the outcome. In the event of leachate being discharged to the local surface water body a report will also be forwarded to the Shannon Regional Fisheries Board.

- **Emergency Response To Migration of Landfill Gas**

A permanent gas monitoring system has been installed in the site office. The monitoring system comprises of specific sensors to detect dangerous levels of methane and carbon dioxide as well as monitoring oxygen depletion within the reception building. Methane is flammable and explosive at concentrations of 5 - 15% v/v in air. Methane also acts as an asphyxiant in closed spaces. .
The EPA manual on Landfill Operational Practices recommends that site operators should ensure that the concentration of methane generated by the facility does not exceed 20% of the lower explosive limit (LEL) in structures on the site. The lower explosive limit is taken as a methane concentration of 5% and the upper explosive limit is 15% methane. Therefore a concentration of 1 % v/v of methane is the maximum level acceptable within buildings. In addition the EPA state that applicable thresholds for carbon dioxide are 1.5% by volume. In the event of these trigger levels of methane or carbon dioxide being exceeded the operator is recommended to take immediate steps to mitigate the migration of landfill gas.

In the event of the concentration of methane or carbon dioxide significantly increasing the gas alarm system within the reception building shall be activated. In the event of the concentration of methane exceeding 1 % v/v or the concentration or carbon dioxide exceeding 1.5% within the reception building a second warning shall be activated indicating that all personnel are required to vacate the building immediately.

The Environmental Section of Limerick County Council and the licensing authority will be informed immediately.

- **Emergency Response to Contamination of Stormwater Settling Lagoons.**

In the event of the contamination of the water in the stormwater lagoon the discharge of surface water runoff to the White River will be temporarily stopped. The outfall from the lagoons to the White River is controlled via penstocks. In the event of the water being contaminated the penstocks will be shut. All of the contaminated runoff will be pumped or tankered to the leachate treatment plant.

Contamination of the stormwater lagoon may occur in the event of the discharge of firewater runoff from the site or mixing of surface water runoff and leachate in the event of damage to the integrity of the leachate management system.

- **Emergency Response Procedure For Emergency Situations Outside of Normal Working Hours**

The following provisions have been made for response to emergency situations outside of normal working hours, i.e. night, weekend, and holiday periods. Copies of all keys for the landfill site shall be held in the Office of the Director of Services, Environment & Emergency Services. In addition further sets shall be lodged with the local fire station and Garda station.

The following Limerick County Council personnel shall be contactable outside of normal working hours:

Mr. John O Carroll, Facility Manger	Tel: 068 22925
Ms. Sinead Kennedy, Executive Engineer	Tel: 087 2072389
Limerick County Council Emergency Services	Tel: 061 419226

Emergency Response Procedure In Event of a Person Falling Into Leachate Lagoon

All personnel involved in the maintenance and monitoring of the leachate lagoon are required to wear life belts. In addition personnel shall be required to wear a safety harness when working in close proximity or within the leachate lagoon. An adequate number of life buoys are provided on the perimeter of the lagoon to be used in the event of unauthorised personnel trespassing onto the landfill site and accidentally falling into the lagoon. Four life jackets are held at reception building for use by site personnel.

Contactable personnel in the event of an emergency.

Mr. John O Carroll	Tel 068 22925
Ms Sinead Kennedy	Tel 087 2072389
Mr John Copse	Tel
Newcastlewest Area Office	Tel 069 62100 /069 62312
Limerick County Council Office	Tel 061 496000
Limerick County Council Emergency Services	Tel 061 419226
Shannon Regional Fisheries Board	Tel 061 455171 /Fax 061 326533
Newcastlewest Garda Station	Tel 069 62111
EPA Regional Inspectorate Cork	Tel 021 4875540
EPA Headquarters Wexford	Tel 053 60600

Emergency Response Procedure in the event that monitoring indicates that the facility is having an impact on the quantity and/or quality of the local wells

Under the licence 17-2, 27 local wells are tested annually. In the event of contamination being identified in samples taken as part of the annual monitoring, the residents affected would be notified of the contamination and advised to boil or cease usage of the water supply as appropriate. The Mid Western Health Board would be kept advised of all notifications issued.

Limerick County Council would then carry out an assessment of the wells to determine the source of contamination.

Where the source of contamination is found to be from the facility, Limerick County Council would notify the EPA of the incident and would contact the Newcastle West area office to commence the temporary supply of water to affected residents. The Emergency Response Procedure for Damage to the Integrity of the Leachate Mangement System would also be put in place.

Where the quantity of water supply to the wells is affected by landfill operations, e.g where pumping of groundwater is being undertaken, temporary supply of water to affected residents would similarly commence.

The Newcastle West area currently has two 5000 gallon tankers on standby in the event of an emergency water supply being required. These tankers would be sterilised prior to filling with water from the local water treatment plant, to ensure that water transferred to them would remain in accordance with the standards outlined in the Drinking Water Regulations.

In the event of water being unfit for human consumption but acceptable for bathing, the tankers would be brought to Gortadroma landfill and water containers distributed to the affected residents as required.

In the event of water being unsuitable for bathing or where the quantity of water is affected, Limerick County Council would arrange for water to be pumped from the tankers to the individual water storage tanks in each house.

Ongoing monitoring of the affected wells would be carried out to determine if the source of contamination had been resolved. Water supply would continue until it has been accepted, by both the Mid Western Health Board and the EPA, that the supply has returned to an acceptable standard.

A Group Water Scheme has been proposed for the area around Gortadroma and the proposed scheme is expected to be approved for funding in 2004.

Emergency Response Procedure in the event that monitoring of the side slopes indicates that there may be a risk of slope failure.

Under Condition 8.9 of licence 17-2, a slope stability assessment is required to be undertaken annually. In addition to this, the Facility Manager undertakes a weekly inspection of the landfill where possible slope stability issues may be detected.

In the event of the detection of a potential slope failure or where a slope failure has occurred without prior detection, the Facility Manager would notify staff of the location of the possible failure and arrange for staff to make the area safe, by erecting a barrier around the risk area and placing warning signage. The emergency would be notified to the EPA as an incident.

An assessment of the slope failure would be undertaken by the Facility Manager, or where deemed necessary, the consulting engineers. Following the assessment a method statement for the works required to make the area safe would be prepared. This statement would incorporate the potential health & safety risks associated with the works. The Method statement would be circulated to the EPA. The works may include regrading of the slope area and / or excavation of waste and placing in the active waste disposal area.

The Facility Manger would instruct the relevant staff members on the proposed method statement and works would proceed under the supervision of the Facility Manager.

APPENDIX 3

ACTIVE LITTER MANAGEMENT PLAN

ACTIVE LITTER MANAGEMENT PLAN

The Active Litter Management Plan for the Gortadroma Landfill can be divided into the following areas:

Improved Netting

As part of the Active Litter Management Plan, a 5m high anti-litter net is always erected around the active cell, unless an embankment is being used to stop the escape of litter. In addition, and 8m high anti-litter net was erected along the north eastern boundary of the site to provide a second defence against the possible escape of litter due to the prevailing south westerly winds.

Action: Maintain a high quality netting around the active cell and north eastern boundary.

Introduction of Hessian

The Agency has approved the use of hessian as a daily means of covering the waste. The hessian is very successful in minimising the escape of litter from the tip face. Problems were experienced during high wind conditions with the biodegradable plastic, as it tended to separate at the overlaps, even wheh significant sand ballast was used.

Action: Ensure that hessian is applied properly over the tip face during daily covering.

Use of Meteorological Station for Guidance of Temporary Closure

In a report submitted to the Agency in September 2000, it is stated that in the event of wind speeds in excess of 8 m/s an immediate inspection is required to check on the possibility of litter becoming airborne. This system is a key tool when deciding on temporarily closing the landfill for waste disposal. The figure of 8 m/s was essentially based on experience.

If any member of the management team considers that litter may become airborne, the landfill shall be temporarily closed until conditions improve. It is important to note that the met station data will be used as a management tool when deciding to close due to high winds, but the decision will not be exclusively based on the met station.

Following temporary closure of the landfill, all waste collectors are immediately notified by telephone that the landfill will be closed for the duration of the high winds. When the winds reduce to an acceptable speed, the waste collectors are then notified that the landfill is reopen for disposal.

Action: On site management will constantly monitor wind conditions on site, but shall use the Meteorological station data where appropriate.

Litter Picking Teams

In the event that litter escapes from the site, a litter picking team is immediately dispatched to retrieve all litter, under the direction of the management team. Daily inspections of the site and surrounds are also carried our by the litter picking team.

Action: Continue litter picking when required and carry out daily inspection of the site and surrounds.

County Litter Control Wardens

The County Litter Control Wardens carry out a weekly litter inspection in the area surrounding Gortadroma Landfill. This is essentially a spot check on the litter picking team. We consider that this measure adds a further level of litter awareness at the site.

County Litter Wardens have been instructed to carry out a weekly inspection until further notice.

Requirement on Waste Collection Vehicles to be Fully Covered

The weighbridge operator monitors each waste load entering the landfill via CCTV overhead camera. If net or cover is torn or has unacceptably large holes, the net or cover is then inspected more closely. If the covering is found to be insufficient, the waste load is disposed at the tip face and the waste contractor is instructed that the vehicle will not be allowed entry to the landfill again with a poor quality net.

Action: Each waste load entering the landfill shall be inspected via CCTV.

Baled Waste

Baled waste has not yet been considered as an option.

APPENDIX 4

OBJECTIVES AND TARGETS FOR 2004

OBJECTIVES AND TARGETS, GORTADROMA LANDFILL SITE 2004

No.	Objective	Reason for undertaking project	Project Summary	Target	Responsibility
1.	Line side slope of cells 5/6	Reduce landfill gas emissions	Side slope of cells 5/6 to be lined with 'Geo Hess Multi Cover'	January 2004	L.C.C
2.	Drill three gas wells on cell 13	Reduce landfill gas emissions	Install three gas abstraction wells in cell 13 and connect them to the flare	January 2004	L.C.C M.C.O.S
3.	Increase recycling in civic amenity area	Promote more recycling	Extra bins to be installed to include plastic bottles & paint cans	February 2004	L.C.C
4.	Up-grade GA 94 to GA 2000	To enable monitoring of CO and H_2S	Purchase GA 2000 gas monitor	February 2004	L.C.C
5.	Submit Licence Application	To extend landfill beyond current boundary	Submit licence application to the Environmental Protection Agency	Quarter 1 2004	L.C.C M.C.O.S
6.	Provide improved bird control service	To increase the use of birds of prey	Tenders due to be submitted by 22nd January 2004	March 2004	L.C.C
7.	Install life jacket cabnets	Improve safety	Install life jacket cabinets adjacent to all lagoons	May 2004	L.C.C
8.	Training of General Operatives	Improve awareness of licence and landfill requirments	Send three general operatives on FAS Waste Management operators course.	September 2004	L.C.C
9.	Fire control & First Aid training	Improve emergency response and site safety	To be arranged with L.C.C safety officer and fire department	September 2004	L.C.C
10.	Installation of gas utilisation plant	Licence Requirement	Tenders Documents being prepared	Quarter 4 2004	L.C.C M.C.O.S
11.	Composting of green waste	Licence Requirement	Tenders received for provision of Equipment	Mid 2004	L.C.C
12.	Planting of earth mound south of flare compound	Provide screening	Planting earth mound in line with revised landscape plan.	Quarter 4 2004 Quarter 1 2005	L.C.C M.C.O.S
13.	Landscaping of hard sand areas	Improve visual appearance	Hard stand area at back of site office to be top soiled & plant grass.	September 2004	L.C.C
14.	Provision of outlet for Fridge/Freezers	To deal with hazardous component of Fridge/Freezers	All Ireland agreement now in place. Collection to arranged by L.L.C.	April 2004	L.C.C

Status of Targets and Objectives for 2003

	Objective	Reason for Undertaking Project	Project Summary	Target in 2003 EMP	Status - January 2004	Responsibility
1	Fencing/handrail around all open lagoons.	Improve Safety	Install safety fencing and hand railings around all open lagoons	May-03	Completed	LCC and RPS MCOS
2	Provision of Training for Fire Response	Improve emergency response procedures	Experts from Fire Department of LCC will provide training to site staff	Aug-03	Ongoing - Quarter 1 2004	LCC
3	Landfill Gas Flare - Installation of Equipment and Software	EPA Requirement to improve operation.	Installation of the following: Continuous CO monitor(on outlet); fixed metal tube on flare stack for monitoring purposes; automatic restart (in event of power failure); modem connection to enable download of information to laptop in site office; shelter around control panel	Jul-03	CO Monitor - Jan 04 Automatic Restart Installed Modem N/A - Rented 1500 m3/hr flare installed	LCC and RPS MCOS
4	Provision of Equipment and Commissioning of Composting Slab	EPA Requirement	Tender will be prepared to source composting equipment and expert advice	Dec-03	Completed	LCC and RPS MCOS
5	Additional Signs	EPA requirement to improve identification	Provide signs for all lagoons /tanks on site	May-03	Completed	LCC
6	Extension to Site Reception Building	Extra office and filing /meeting room required. Permanent changing rooms and canteen for outdoor staff	Currently in progress, not included in last years objectives	Apr-03	Completed	LCC and RPS MCOS
7	Re-route Septic Tank Drainage	Malfunction of percolation area	Pump supernatant from septic tank to raw leachate lagoon	May-03	Completed	LCC and RPS MCOS

Status of Targets and Objectives for 2003

Objective	Reason for Undertaking Project	Project Summary	Target in 2003 EMP	Status - January 2004	Responsibility
8 Reroute runoff from wheel wash and drainage from waste inspection area.	New raw leachate lagoon in place	Run off drain to be re-diverted to new raw leachate holding lagoon	May-03	Completed	LCC and RPS MCOS
9 Electricity generation from landfill gas	Licence requirement	Installation of gas utilisation plant (tender process and subsequent installation of plant	December 03 (subject to public procurement procedures)	Contracts being prepared Installation in Quarter 4 2004	LCC and RPS MCOS
10 Temporary capping of Cell 13 and grass seeding	Stabilise slopes and improve visual impact	Temporary subsoil capping and subsequent seeding of Cell 13	May-03	Completed	LCC
11 Reshaping and landscaping of soil mound on site	Provision of screen south of the site and improve visual impact	Reshaping and landscaping works	Nov-03	Ongoing	LCC and Coillte
12 Landscaping of western boundary embankment	Provide screen ot the west of the site	Landscaping of embankment	Apr-03	Competed	LCC and Coillte
13 Double surface dressing of eastern access road and roadway within leachate treatment plant	Dust control	LCC surface dressing team to surface dress the roads	Sep-03	Completed	LCC
14 Provision of additional ducting to leachate treatment plant and eastern access wheelwash	Provision of electricity supply to monitoring equipment at leachate treatment plant and to access barrier at wheelwash	Extension to Contract 8	Apr-03	Completed	LCC

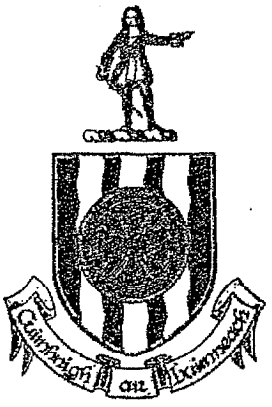
Status of Targets and Objectives for 2003

	Objective	Reason for Undertaking Project	Project Summary	Target in 2003 EMP	Status - January 2004	Responsibility
15	Provision of electronic barriers system at eastern and western access	Requirement of financial section of LCC and to increase security	Installation of barriers	May-03	Completed	LCC
16	Training of three operators on official FAS Waste Management Operators Training Course	Improve awareness	lcc to arrange with FAS	September 03 (subject to availability)	Unavailable in 2003, proposed for 2004	LCC
17	Training of landfill manager on operation and balancing of fas field	To improve operation and management of landfill gas flare	Attend IWM UK course in Practical Management of Landfill Gas Control Systems	Jun-03	Completed	LCC

Attachment H.2
Conditioning Plan

CONDITIONING PLAN

Gortadroma Landfill (Waste Licence 17-1)



Limerick County Council

Environment Section,
Limerick County Council,
98 Henry Street,
Limerick.

Date: 16/July/2002

Table of Contents

Guidance on Preparing a Conditioning Plan:

1. General

1. The European Council Directive on the Landfill of Waste (1999/31/EC) was published on 26th April 1999. The Landfill Directive must be transposed into national legislation on July 16th 2001.

2. This has major long-term implications for the management of both municipal waste and landfills. The Directive places stringent operational and technical requirements on the operation and management of landfill sites to prevent or reduce as far as possible negative effects on the environment, in particular, the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect. To a large extent, these requirements are being met in Ireland through the licensing systems introduced under the Environmental Protection Agency Act (EPA), 1992 and the Waste Management Act (WMA), 1996.

3. Various provisions of the Directive and different types of landfill have different dates for implementation. Most importantly the Directive distinguishes between new and existing landfill sites, which in essence enables existing landfill sites time to comply with the requirements of the Directive.

2. New Landfills

1. All new landfill sites granted a licence from 16th July 2001 must comply with the full requirements of the Landfill Directive.

3. Existing Landfill Sites

1. The landfill directive does not provide a specific definition of 'existing landfill site'. National legislation provides a definition of 'existing facility' and this is interpreted to have the same meaning as 'existing landfill site' used in the landfill directive.

2. 'Existing landfill sites' (existing facilities) are defined in the Waste Management (Licensing) Regulations, 2000 (SI No 185 of 2000), Article 3 subsection (4). Section 3 of the EPA Act also defines an 'established activity'.

3. In summary, existing landfill sites include those landfills:
   a) that have been granted a waste licence from the Agency prior to 16th July 2001;
   b) that were operational prior to the 16th July 2001 which have applied to the Agency for a waste licence prior to the prescribed date set in the regulations and which have an appropriate permit where relevant; and
   c) a facility connected with an activity specified in the First Schedule of the Act of 1992 (IPC activities).

4. Article 14 of the landfill directive specifies measures that Member States must take in relation to existing landfill sites, see Table 1 Article 14 - Summary of Requirements. It states that landfills, which have been granted a permit, or already in operation at the time of transposition (16/7/01) of this Directive (existing Landfill sites), may not continue to operate unless certain steps are taken.

   This includes the requirement of landfill operators preparing a Conditioning Plan for the facility (must be submitted to the Agency by 16/7/02), which must include particulars listed in Article 8 of the Directive (Conditions of the Permit - landfill project complies with all requirements of this Directive, including the Annexes; management of the landfill site: landfill operated in such a manner that the necessary measures are taken to prevent accidents and limit their consequences; financial provision; project is in line with the relevant waste management plan) and any corrective measures which the operators consider will be needed to comply with the requirements of this directive.

   The Agency will be responsible for the approval of the Conditioning Plan. The Agency must decide on the basis of the conditioning plan and the directive whether operations may continue.

5. Existing landfill sites have a transitional period within which to comply with the various requirements of the Directive, but must comply with all requirements of the Directive by 16th July 2009 at the latest. The precise timing of when each landfill must comply with the various requirements will depend upon the agreed conditioning plan.

4. Landfill Closure

1. Landfills that ceased accepting waste for disposal prior to 16/7/01 are not subject to the requirements of the landfill directive and do not need to complete a Conditioning Plan.

2. Existing landfills that are to cease accepting waste for disposal by 16/7/02 may be exempt from preparing a Conditioning Plan. The operators of any such facility should inform the Agency in writing as soon as possible to clarify that a Conditioning Plan is or is not required. These landfills are still subject to the closure requirements of the landfill directive. It should also be noted that the cessation of a waste activity to which a WMA waste licence relates requires a licence review in accordance with Section 46(5)(a) of the WMA.

3. Existing landfill sites, on the basis of the submitted Conditioning Plan, not approved to continue to operate may be instructed to close down as soon as possible by the competent authority (the EPA). These landfills are subject to the closure requirements of the landfill directive

4. The landfill directive specifies landfill closure requirements in article 7(g) (proposed plan for the closure and aftercare procedures) and article 13 (closure and aftercare procedures) that must be satisfied.

5. Conditioning Plan

1. The licensing system addresses, in most cases, the requirements of the landfill directive. However, to comply with the directive it is necessary for landfill operators of existing sites, as defined above, to submit a Conditioning Plan by 16/7/02. For operators that have gone through the process of getting a Waste Licence or IPC licence, the majority of the information required in the Conditioning Plan has either been submitted as part of the IPC/Waste Licence application and/or is required under the IPC/Waste Licence.

2. To facilitate landfill operators preparing a Conditioning Plan the Agency has prepared a pro forma, which is attached as Annex A. This sets out each specific requirement of the Directive that must be addressed by the landfill operator and included within the Conditioning Plan. It provides a timetable, with the date by which the different types of landfill must comply, outlining when the various requirements take effect for the different classes of existing landfills.

3. **The Conditioning Plan is required to be submitted to the Agency on or before the 16/7/2002.**

4. **It should be noted that the landfill operator in completing the Conditioning Plan is responsible for ensuring compliance with the Directive, if (s)he feels that the information in the pro- forma does not address all the requirements of the Directive relating to their facility additional sheets should be attached and the issue(s) addressed and the relevant section of the Agency should be notified immediately.**

Table 1 Article 14 – Summary of Requirements

EXISTING LANDFILL SITES	Hazardous Waste Landfill	Non-hazardous Waste Landfill	Inert Waste Landfill
Landfill operators need to submit a 'Conditioning Plan' showing how they are to comply with the directive (with the exception of Annex I, point 1 – the location of the landfill)	16/7/2002	16/7/2002	16/7/2002
The competent authority (CA) must then assess the plans and close sites that have not been granted a permit as soon as possible.	As soon as possible - no date set	As soon as possible - no date set	As soon as possible - no date set
Competent authority to authorise necessary works and lay down the transitional period for the completion of the approved plan.	16/7/2002	Latest date to accomplish corrective measures - 16/7/2009	Latest date to accomplish corrective measures - 16/7/2009
Articles 4 (classification of sites), 5 (banned wastes), 11 and Annex II (waste acceptance procedures and criteria respectively) to apply to existing landfills for hazardous waste.	16/7/2002	N/A	N/A
Article 6 (wastes to be accepted in different classes of landfill) to apply to existing landfills for hazardous waste.	16/7/2004	N/A	N/A

GUIDANCE FOR THE PREPARATION OF CONDITIONING PLAN FOR EXISTING LANDFILL SITES

Notes For Completion of the Conditioning Plan Form

1. *Licensees completing the Conditioning Plan should, where relevant, cross-refer to information already submitted to the Agency in relation to their IPC/waste licence; the licensee need not submit such information in the Conditioning Plan except in the case where this information has been updated.*
2. *All boxes should be completed. If the item is not applicable, the words 'not applicable' should be inserted and an explanation attached. Where it is necessary to include attachments, the Article number should be used to identify the attachment e.g. A3 etc.*
3. *For each Article, where relevant, a timeframe should be provided to indicate when the licensee proposes to comply with the specified requirements. In general for landfills classified as non-hazardous and inert the requirements of the Directive must be complied with by the latest 16/7/2009*
4. *The Conditioning Plan should be submitted in the form of an original and five copies to IPC or Waste Licensing Administration, Environmental Protection Agency, Johnstown Castle PO BOX 3000, Wexford.*

ANNEX A - CONDITIONING PLAN FOR EXISTING LANDFILL SITES

WASTE/IPC LICENCE REG NO:	*17-1*

LICENSEE	*Limerick County Council*

LOCATION OF FACILITY	*Gortadroma Landfill, Ballyhahill, County Limerick.*

CONTACT DETAILS	
Name:	*Mr Tom Tarpey, Senior Engineer*
Address:	*Limerick County Council, 79/84 O'Connell St., Limerick*
Tel No:	*061 - 318477*
Fax No	*061 - 318478*

ARTICLE 3(4) SCOPE	Please indicate if your landfill serves an Island or an Isolated Settlement. If yes provide supporting evidence. (y / n)
Landfill sites for non-hazardous or inert wastes with a total capacity not exceeding 15,000 tonnes or with an annual intake not exceeding 1,000 tonnes serving islands, where this is the only landfill on the island and where this is exclusively destined for the disposal of waste generated on that island.	*No*
Landfill sites for non-hazardous or inert waste in isolated settlements if the landfill site is destined for the disposal of waste generated only by that isolated settlement. Where isolated settlement means a settlement with no more than 500 inhabitants per municipality or settlement and no more than five inhabitants per square kilometre and where the distance to the nearest urban agglomeration with at least 250 inhabitants per square kilometre is not less than 50km, or with difficult access by road to those nearest agglomerations due to harsh meteorological conditions during a significant part of the year.	*No*

Attachment A3 included	Yes ☐ no ☐ not applicable ☐✓

ARTICLE 4 CLASS OF LANDFILL	Existing Landfill Sites date of Compliance	Please indicate one class only
Landfill for hazardous waste	16/7/2002	
Landfill for non-hazardous waste	Latest 16/7/2009	✓
Landfill for inert waste	Latest 16/7/2009	

ARTICLE 5(3)		
WASTE & TREATMENT NOT ACCEPTABLE IN LANDFILLS Note 4	**Please indicate if any of the listed wastes are accepted for disposal to landfill (y / n)**	**Specify the date on which the facility will comply with this requirement (latest date is 16/7/2009 for landfills classified as non-hazardous or inert)**
Liquid Waste Note 1	No	*Not Applicable*
Waste which, in the conditions of landfill, is explosive, corrosive, oxidising, highly flammable or flammable, as defined in Annex III to Directive 91/689/EEC Note 1	No	*Not Applicable*
Hospital and other clinical wastes which are infectious Note 1	No	*Not Applicable*
Whole used tyres (excluding tyres used as engineering material) Note 2	No	*Not Applicable*
Shredded used tyres Note 3	No	*Not Applicable*
Any other type of waste which does not fulfil the acceptance criteria determined in accordance with Annex II of the Landfill Directive Note 1	No	*Not Applicable*
Waste which has been diluted or mixed solely to meet the relevant acceptance criteria Note 1	No	*Not Applicable*

Note 1: Landfill Directive prohibits the acceptance of these wastes for disposal at 'existing hazardous waste' landfills from 16 July 2002.
Note 2: Landfill Directive requires these not to be accepted for disposal at 'existing hazardous waste' landfills from 16 July 2003, excluding bicycle tyres and tyres with an outside diameter above 1.4m.
Note 3: Landfill Directive requires these not to be accepted for disposal at 'existing hazardous waste' landfills from 16 July 2006
Note 4: Hazardous waste can only be accepted at landfills classified as landfills for hazardous waste from 16/07/02.

Attachment A5 included	**Yes** ☐	**no** ☐ ✓	**not applicable** ☐

ARTICLE 6				
WASTE TO BE ACCEPTED IN THE DIFFERENT CLASSES OF LANDFILL	**Hazardous Waste Landfill**	**Non-hazardous Waste Landfill**	**Inert Waste Landfill**	**Specify the date on which the facility will comply with this requirement and provide details on measures to meet the specific requirement.**
Waste to be treated prior to disposal	16/7/2004	16/7/2009	16/7/2009	*16/7/2009* *See Attachment A6*
Ban on any waste other than hazardous waste that fulfils criteria in Annex II being assigned to a hazardous waste landfill	16/7/2004	Not applicable	Not applicable	*Not Applicable*
Non-hazardous waste landfill may be used for: municipal waste, non-hazardous waste of any other origin and stable, non-reactive hazardous wastes	Not applicable	16/7/2009	Not applicable	***Compliant at present*** *Limerick County Council (LCC) are compliant with Condition 5.2 of Waste Licence 17-1 (hereinafter referred to as the Waste Licence). LCC may apply to the Agency for approval to dispose of asbestos in the future*
Inert landfills can only accept inert waste	Not applicable	Not applicable	16/7/2002.	*Not Applicable*

Attachment A6 included	**Yes** ☐ ✓ **no** ☐ **not applicable** ☐

ARTICLE 8	
CONDITIONS OF THE PERMIT	**Provide details on meeting compliance with the following requirements where relevant cross refer to your IPC/waste licence:**
The Management of the landfill site will be in the hands of a natural person who is technically competent to manage the site	*As described in Section 3.6, 8.10 and 8.12 of the Environmental Management Programme, 2001(hereinafter referred to as the current EMP) which was submitted to the Agency in February 2002.* *In addition, LCC are compliant with Condition 2.5 and 2.6 of the Waste Licence*
professional and technical development and training of landfill operators and staff are provided	
Necessary measures are taken to prevent accidents and limit their consequences	*As described in Appendix 2 of the current EMP. In addition all site staff must attend and pass the FAS Safe Pass Course. A copy of the Safety Statement for the site is adhered to and is attached for information.*
Adequate financial provisions will be made by the applicant	*An aftercare fund has been established and is added to based on the tonnages accepted at the landfill. The charge per tonne funds the operational and capital cost of the landfill as well as a range of recycling measures.*
Landfill project is in line with the relevant waste management plan	*The intention of LCC in the long-term is that the Gortadroma Landfill will only accept non recyclable and non-combustible wastes. The landfill may be used as a residual landfill in the future, which will require approval from the Agency. The Waste Management Plan highlights segregated waste collection, recycling and energy recovery as the primary method of waste treatment in the region. The objectives of the plan will be largely achieved within the stated timescales.*

Attachment A8 included	**yes** ☐ ✓ **no** ☐ **not applicable** ☐

ARTICLE 9 CONTENT OF THE PERMIT	**Provide details on the following requirements – where relevant cross refer to your waste licence:**
Class of landfill	*Non –Hazardous Landfill (Waste Licence 17-1)*
Waste type & Total quantity of waste to be deposited	*Waste Types have been submitted in Attachment E.1, Tables E.1.1, E.1.2. and E.1.3. of the Waste Licence Application which was submitted to the Agency in September 1997 and are listed in Condition 5.2 of the Waste Licence. The total quantity of waste deposited at the landfill in 2001 was 132,000 tonnes per annum, which was agreed with the Agency. LCC are currently preparing a Waste Licence Application Review which will be submitted to the Agency in the coming weeks. This Review proposes that the acceptable waste quantity should be raised from 130,000 tonnes per annum to 143,000 tonnes per annum. It is the expectation of LCC that there will be some short term growth in waste quantities, but the medium to long term waste volume deposited at landfill should reduce when various treatment and pre treatment technologies are introduced.*
Requirements for preparations, operations and monitoring and control procedures, provisional requirements for the closure and aftercare operations	*As described in Sections 3, 5, 6, 7 and 8 and Appendices 1,2,3 and 4 of the current EMP*
Obligation to report (waste types, quantities and monitoring)	*LCC comply with Condition 3 of the Waste Licence*

ARTICLE 10 COST OF THE LANDFILL OF WASTE	**Provide details on measures to meet this specific requirement.**
Price charged by the operator must include setting up and operational costs, and the estimated costs of the closure and aftercare of the site for at least 30 years.	*The following figures show the percentage breakdown of the landfill charge per tonne of waste accepted at the Gortadroma Landfill.* *Operations* 25.71 % *Development* 51.63% *Aftercare* 5.68% *Recycling Initiatives* 11.29% *Waste Planning* 0.58% *Enforcement* 3.58% *Community Development Fund* 1.52% *LCC received advice on the closure and aftercare costs for the Gortadroma Landfill. It was decided that approximately 5% per tonne would be satisfactory in the short term. LCC may review this percentage in the medium to long term.*

ARTICLE 11 WASTE ACCEPTANCE PROCEDURES	Hazardous Waste Landfill	Non-hazardous Waste Landfill	Inert Waste Landfill	Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement
Measures must be place in order to enable holder/operator to show that the waste accepted at the site complies with the permit and fulfils the acceptance criteria set out in Annex II	16/7/2002	16/7/2009	16/7/2009	***Compliant at Present*** *Waste acceptance procedures submitted and agreed with the Agency are currently being employed under the Waste Licence (Condition 5.4). The waste acceptance procedures are described in Appendix 2 of the current EMP*
Measures must be in place to ensure the operator checks documentation, visually inspects the waste at entrance and point of deposit, keeps a register of the waste and provides written acknowledgement of each delivery.	16/7/2002	16/7/2009	16/7/2009	***Compliant at present*** *As described in the waste acceptance procedures in Appendix 2 of the current EMP*
Measures must be in place to ensure that the operator notifies the competent authority if waste not accepted.	16/7/2002	16/7/2009	16/7/2009	***Compliant at present*** *As described in the waste acceptance procedures in Appendix 2 of the current EMP*
Measures to provide for regular visual inspection of waste deposited at island or isolated settlement sites to ensure that only non-hazardous waste accepted	Not applicable	16/7/2009	16/7/2009	*Not Applicable*
Measures to ensure that a register on quantities of waste that are deposited at an exempted landfill site are kept	Not applicable	16/7/2009	16/7/2009	*Not Applicable*

Attachment A11 included	yes ☐	no ☐✓	not applicable ☐

ARTICLE 12	
CONTROL AND MONITORING PROCEDURES IN THE OPERATIONAL PHASE	**Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement**
Control and monitoring programme in operational phase as specified in Annex III of the Directive.	***Compliant at present*** *Environmental monitoring is carried out in accordance with Condition 9 of the Waste Licence and at frequencies specified under Schedule F of the Licence. A monitoring plan is produced and submitted to the Agency on annual basis in accordance with Schedule F of the Licence.*
Operator to inform competent authority of any significant adverse environmental effects and corrective measures to be taken.	***Compliant at present*** *Under Condition 3 of the Waste Licence, the Agency shall be informed of any significant adverse environmental effects and corrective measures to be taken. Corrective action/emergency response procedures are detailed in Appendix 2 of the current EMP*
Operator to report results of monitoring to competent authority at least once a year.	***Compliant at present*** *All monitoring results are reported as per Schedule D of the Waste Licence.*
Quality control of the analytical operations are carried out by competent laboratories.	***Compliant at present*** *Euro Environmental Services, which are ILAB accredited for a number of parameters, are contracted by LCC to carry out all monitoring. The Agency have approved Euro Environmental Services as a competent laboratory*

Attachment A12 included	**yes** ☐	**no** ☐ ✓	**not applicable** ☐

ARTICLE 13 [Note 1]	
CLOSURE AND AFTERCARE PROCEDURES	**Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement**
Measures must be in place to ensure closure procedures start when relevant conditions in the permit are met, or under the authorisation of the competent authority at the request of the operator, or by reasoned decision of the competent authority	***Compliant at present*** *All filled cells shall be capped in accordance with the Landfill Directive. The particular specification will be agreed with the Agency in accordance with Condition 4.23.1 of the Waste Licence. The capping of future cells will be in accordance with Condition 4.23.2 of the Waste Licence.* *The final heights of the capped cells will be in accordance with the contours outlined in Drg. No. 8 A (Proposed final contours on landfill cells) which was submitted to the Agency in May 2000.* *The boundary landscaping planting will be in accordance with the detail set out in Drg. No. 9 A (Proposed landscaping/planting for boundary screening was agreed) which submitted to the Agency in May 2000* *Section 7 of the current EMP summarises the closure and aftercare procedure for the site*
Measures to be in place to ensure that the operator is responsible for maintenance, monitoring & control in the aftercare phase, and informs the competent authority of any adverse environmental effects	***Compliant at present*** *A financial fund has been established by LCC to ensure that maintenance, monitoring and control in the aftercare phase will be carried out.* *The Agency will be informed of any adverse environmental effects outlined in Section 3 (Notification and Record and Record Keeping) of the Waste Licence.*
Measures to be in place to ensure that the operator is responsible for monitoring and analysing gas and leachate and the groundwater regime for as long as the competent authority considers that the landfill is likely to cause a hazard.	***Compliant at present*** *Resources will be made available by LCC to monitor and analyse gas, leachate and groundwater at frequencies agreed with the Agency in the aftercare phase*

1. Existing sites which have not closed by 16 July 2001 will be subject to closure requirements of the landfill directive (Articles 7(g) and 13).

Attachment A13 included	yes ☐	no ☐ ✓	not applicable ☐

ANNEX I	GENERAL REQUIREMENTS FOR ALL CLASSES OF LANDFILLS
WATER CONTROL AND LEACHATE MANAGEMENT	**Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement**
Control water from precipitations entering into the landfill body	***Compliant at present*** *As outlined in the submission to the Agency under Condition 4.23.1 of the Waste Licence*
Prevent surface water and/or groundwater entering into the landfilled waste	***Compliant at present*** *As described in Sections 5.13 to 5.18 of the current EMP*
Collect contaminated water and leachate	***Compliant at present*** *As described in Sections 5.19 to 5.21 of the current EMP*
Treat contaminated water and leachate collected from the landfill to the appropriate standard required for their discharge	***Compliant at present*** *As described under Section 5.21 of the current EMP. It must be noted that the leachate management system will be reviewed as part of the current Waste Licence Review which will be submitted to the Agency in late July2002.*

Attachment B1 included	**yes** ☐	**no** ☐ ✓	**not applicable** ☐

PROTECTION OF SOIL AND WATER	Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement
By the combination of a geological barrier and a bottom liner during the operation/active phase	***Compliant at present*** *All lining systems used by LCC are first agreed with the Agency whom approves lining systems within the confines of the Landfill Directive. Also appropriate measures are described in Sections 5.13 to 5.18 of the current EMP*
By the combination of a geological barrier and a top liner during the passive phase/post closure	***Compliant at present*** *On completion of each phase, the cells will be restored as per the requirements of the Waste Licence and current best practices with prior agreement from the Agency. Also refer to reply to the Agency on 12 December 2001 (Ref: WL 17-1/AK25BD)*
Geological barrier no less than 0.5 meter thick giving equivalent protection to one of the following: 1. Landfill for hazardous waste: $K \leq 1.0 \times 10^{-9}$ m/s; thickness ≥ 5m. 2. Landfill for non-hazardous waste: $K \leq 1.0 \times 10^{-9}$ m/s; thickness ≥ 1m. 3. Landfill for inert waste: $K \leq 1.0 \times 10^{-7}$ m/s; thickness ≥ 1m.	***Compliant at present*** *Since the Landfill Directive came into force LCC have been compliant with the geological barrier requirement for non-hazardous landfill. In all future lining works, LCC will comply with the Landfill Directive. In all cases, the detail of the geological barrier will be agreed with the Agency prior to construction.*
Leachate collection and sealing system: Artificial sealing liner (e.g. geomembrane) Drainage layer ≥ 0.5m	***Compliant at present*** *Since the Landfill Directive came into force, LCC have been compliant with the leachate collection and sealing system. In all future cases, the detail of the leachate collection and sealing system will be agreed with the Agency prior to construction.*
Capping system	***Compliant at present*** *All previous capping arrangements have been agreed with the Agency. All current and future capping works will be compliant with the Landfill Directive and in all cases the works will be agreed with the Agency prior to construction*

Attachment B2 included	**yes** ☐	**no** ☐ ✓	**not applicable** ☐

GAS MANAGEMENT	Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement
Measures to control the accumulation and migration of landfill gas	***Compliant by 31/12/2004*** *The principal containment control measures for landfill gas migration employed by LCC are the lining and capping systems. The gas is then transported to a flare via a network of carrier pipes and treated to an acceptable standard (sent to the Agency in October 2001 – Condition 4.17.3). It is expected that a gas utilisation system will be installed prior to December 2003 and certainly* ***not later than December 2004*** *15 gas wells have been located around the perimeter of the site and are monitored on a monthly basis. Methane, carbon dioxide and oxygen are monitored and compared to trigger limits set out under Condition 7.5 of the Waste licence Measures are also described under Appendix 2 of the current EMP in particular the response procedure in the event of uncontrolled gas migration being detected in a monitoring borehole*
Landfill gas from landfills receiving biodegradable waste must be collected used to produce energy or flared in manner which minimises damage to or deterioration of the environment and risk to human health	***Compliant by 31/12/2004*** *As per the description outlined above*

Attachment B3 included	yes ☐	no ☐✓	not applicable ☐

NUISANCES AND HAZARDS	Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement
Measures to minimise nuisances and hazards arising from the landfill through: • Emissions of odours and dust • Wind blown materials • Noise and traffic • Birds, vermin and insects • Formation and aerosols • Fires	***Compliant at present*** *Nuisance and Hazard measures are covered under Section 6 of the current EMP. Since the submission of the current EMP, the gas collection and flaring system has been installed.*
Landfill equipped so that dirt originating from the site is not dispersed onto public roads and the surrounding land	***Compliant at present*** *As described in Sections 6.49 to 6.53of the current EMP for appropriate procedures on mud and dust control.*

Attachment B4 included	yes ☐	no ☐✓	not applicable ☐

STABILITY	Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement
Emplacement of waste takes place in such a way as to ensure stability of the mass of waste and associated structures, particularly in respect of avoidance of slippages.	***Compliant at present*** *As described in Sections 6.15 to 6.23 (Waste Placement) of the current EMP*
Where an artificial barrier is established the geological substratum is sufficiently stable to prevent settlement that may cause damage to the barrier.	***Compliant at present*** *Prior to the construction of any cell, a site investigation is carried out to establish the underlying geology as well as stability conditions and is agreed with the Agency.*

Attachment B5 included	yes ☐	no ☐ ✓	not applicable ☐

BARRIERS	Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement
Landfill shall be: 1. Secure to prevent free access to the site, and 2. The gates shall be locked outside operating hours.	***Compliant at present*** *As described in Sections 5.32 to 5.35 (Fencing, Gates and Site Security) of the current EMP.*
The system of control and access to the facility contains a programme of measures to detect and discourage illegal dumping in the facility.	***Compliant at present*** *In addition to the above measures CCTV is located at key locations to deter illegal dumping*

Attachment B6 included	yes ☐	no ☐ ✓	not applicable ☐

ANNEX II	WASTE ACCEPTANCE CRITERIA AND PROCEDURES

WASTE ACCEPTANCE CRITERIA AND PROCEDURES	Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement
Guidelines for preliminary waste acceptance procedure. Acceptance procedure per Article 11 of the directive. For waste acceptance further requirements are likely to be issued by the Commission.	***Compliant at present*** *In accordance with Condition 5.4 of the Waste Licence, Waste Acceptance Procedures were submitted in May 2000 to the Agency and were subsequently agreed. A copy of the waste acceptance procedures is included in Appendix 2 of the current EMP*

1. Landfill Operator should Cross Refer to Article 11 to ensure requirements of the Directive are satisfied.

ANNEX III	CONTROL AND MONITORNG PROCEDURE IN OPERATION AND AFTER-CARE PHASES
METEOROLOGICAL DATA	
Is meteorological data collected onsite (y/n)	*Yes – Meteorological monitoring in the aftercare phase will be in accordance with the Landfill Directive*
If offsite name of station	*Not Applicable*
Is the following data collected daily (operation phase)	
Volume of precipitation;	*Yes (Daily)*
Temperature (min, max, 14:00 h CET);	*Yes (Daily)*
Direction and force of prevailing wind;	*Yes (Daily)*
Evaporation;	*Yes (Daily)*
Atmospheric humidity (14:00 h CET).	*Yes (Daily)*

Attachment D1 included	yes ☐	no ☐ ✓	not applicable ☐

EMMISION DATA: WATER, LEACHATE AND GAS CONTROL

Monitoring Locations

Landfill Gas Note 1	*As indicated on Drg. No.1 Rev. D (January 2002). Originally submitted as part of the Waste Licence Application in 1997. In addition two monitoring points per cell are now in place. There is also a permanent gas monitoring system located in the site office*
Surface Water Note 2	*As indicated on Drg. No.1 Rev. D (January 2002). Originally submitted as part of the Waste Licence Application in 1997. Monitoring point S5 is now redundant.*
Ground Water Note 3	*As indicated on Drg. No.1 Rev. D (January 2002). Originally submitted as part of the Waste Licence Application in 1997.*
Leachate Note 4	*There are currently four monitoring points in Cells 1-4 and two monitoring points per cell for all other cells*
Dust	*As indicated on Drg. No.1 Rev. D (January 2002). Originally submitted as part of the Waste Licence Application in 1997.*
PM_{10}	*As indicated on Drg. No.1 Rev. D (January 2002). Originally submitted as part of the Waste Licence Application in 1997.* PM_{10} monitoring takes place at dust monitoring points D1, D2 and D3
Noise	*As indicated on Drg. No.1 Rev. D (January 2002). Originally submitted as part of the Waste Licence Application in 1997.*
Other monitoring location Note3	*Biological Monitoring locations – Refer to Map 4 – Location of invertebrate sampling sites which was submitted to the Agency as part of Volume 3 of the EIS in 1997. Grid references as per Appendix 3 of EIS.* *Ecological Monitoring locations - Refer to Fig 1 – Map of habitat types within Gortadroma Landfill site and surrounding areas which was submitted to the Agency as part of Volume 3 of the EIS in 1997.*

Note 1: Include locations on boundary, within waste mass and emission points from landfill gas flare etc

Note 2: List locations on receiving waters (1 up and 1 down as a minimum)

Note 3: List locations (up and downgradient)

Note 4: Include details on the following where relevant (holding lagoon, lined cells, unlined areas). Sampling and measuring (volume and composition) of leachate must be performed separately at each point at which leachate is discharged from the site – the number of discharge points should be provided with relevant monitoring details.

Note 5: Site Specific monitoring may be required e.g. ecological etc.

Frequency of Monitoring (Some details are provided in Annex III of the Landfill Directive)

Landfill Gas Constituents.

	Operational Phase	After-Care Phase
Boundary Locations	*As outlined in Schedule F.1 of the Waste Licence*	*every six months*
Within Waste	*As outlined in Schedule F.1 of the Waste Licence*	*every six months*
Landfill Gas Flare/ Combustion Plant	*Proposed CO continuously*	*every six months*

Surface Waters & Groundwaters

	Operational Phase	After-care Phase
Surface Water Volume/Flows	*As outlined in Table F.4.1 of the Waste Licence*	*every six months*
Surface Water Composition Note 1	*As outlined in Table F.4.1 of the Waste Licence*	*every six months*
Groundwater Level	*As outlined in Table F.4.1 of the Waste Licence*	*every six months*
Groundwater Composition Note 1	*As outlined in Table F.4.1 of the Waste Licence*	*every six months*

Note 1: Include details of parameters to be tested in Attachment D2.

Leachate Levels and Composition Note 1

	Operational Phase	After-care Phase
Leachate in Active Cells	*As outlined in Table F.4.1 of the Waste Licence*	*every six months*
Leachate in Closed Cells	Half the frequency specified in *Table F.4.1 of the Waste Licence*	*every six months*
Leachate Wells in unlined areas	*As outlined in Table F.4.1 of the Waste Licence*	*every six months*
Lagoon / Holding Tank	*As outlined in Table F.4.1 of the Waste Licence*	*every six months*

Note 1: Include details of parameters to be tested in Attachment D2.

Other Site-specific Monitoring Note 1

	Operational Phase	After-care Phase
Other monitoring stations	*As outlined in Schedule F of the Waste Licence*	*PM_{10}, noise, ecological and biological assessments will be completed biannually*

Note 1: Examples include dust, PM_{10}, noise, ecological. Include details of parameters to be tested in Attachment D2.

DATE for COMPLIANCE

Specify the date on which the facility will comply with the monitoring location and frequency requirements:

DATE FOR COMPLIANCE	*Compliant*	(dd/mm/yy)

Attachment D2 included	yes ☐	no ☐ ✓	not applicable ☐

TOPOGRAPHY OF THE SITE: DATA ON THE LANDFILL BODY	Specify the date on which the facility will comply with these requirements and provide details on measures to meet the specific requirement
Structure and composition of landfill body to be done yearly consisting of: 1. Surface occupied by waste; 2. Volume and composition of waste; 3. Methods of depositing; 4. Time and duration of depositing; 5. Calculation of the remaining capacity still available at the landfill.	***Compliant at present*** *A topographical survey of the entire site is conducted on an Annual basis and is submitted to the Agency.* *The surface area occupied by waste, the volume and composition of the waste, the remaining capacity available at the landfill and the method, time and duration of depositing is reported on an annual basis in the Annual Environmental Report.*
Settling behaviour of the level of the landfill body measured yearly	*Settlement of the refuse and cover material is estimated at 17 %. Settlement will be calculated based on subtracting the height differences of the topographical survey from one year to the next taking into account filling*

Attachment D3 included	yes ☐	no ☐ ✓	not applicable ☐

DECLARATION

Declaration

I/we hereby submit a Conditioning Plan, pursuant to the provisions of the **European Council Directive on the Landfill of Waste (1999/31/EC)** and Regulations made thereunder.

I/we certify that the information given in this Plan is truthful, accurate and complete (see note below).

I/we have no objection to the provision by the Agency or local authority of a copy of the Plan or parts thereof to any person.

Signature:	Thomas Tarpey
Print name:	Tom Tarpey
Date:	15/July/2002
Position in organisation:	Senior Engineer
On behalf of (name of organisation):	Limerick County Council

Note:

- *in the case of a partnership, all partners should sign the declaration; and,*
- *if the application is signed by an agent/consultant, the proposed licence holder must also sign and date the declaration.*

Company/local authority stamp or seal:

Environmental Section
16 JUL 2002
LIMERICK
COUNTY COUNCIL

Attachment A6

Details on treated waste requirements

Attachment A6 - Details on treated waste requirements

With the advent of waste collection permitting, Limerick County Council has required that waste will be treated for certain populations within stated timescales. The following outlines the type of treatment, the population centres and the date of implementation. It must be noted that the date of implementation is an approximation. Further methods will be utilised as per the Waste Management Plan. All of these proposals will have a major impact on the type and quantity of waste being disposed of at the Gortadroma landfill.

Pay-by-Use Collection

Population Centre	Expected Date of Implementation
Limerick City Environs	1 April 2003
Newcastle West	1 April 2003
Rathkeale	1 April 2003
Abbeyfeale	1 January 2004
Castleconnell	1 January 2004
Kilmallock	1 January 2004
Adare	1 January 2004
Patrickswell	1 January 2004
Croom	1 January 2004

Household Organic Waste Collection

Population Centre	Expected Date of Implementation
Limerick City Environs	20 October 2003
Newcastle West	20 October 2003
Rathkeale	20 October 2003

Dry Recyclable Collection

Population Centre	Expected Date of Implementation
Limerick City Environs	1 April 2003
Newcastle West	1 April 2003
Rathkeale	1 April 2003
Abbeyfeale	1 January 2004
Castleconnell	1 January 2004
Kilmallock	1 January 2004
Adare	1 January 2004
Patrickswell	1 January 2004
Croom	1 January 2004

Attachment A8

Gortadroma Landfill Safety Statement

I. CONTINGENCY ARRANGEMENTS

Describe the existing or proposed measures, including emergency procedures, to prevent unauthorised or unexpected emissions and minimise the impact on the environment of any such emissions. Provide information to show that the necessary measures are taken to prevent accidents and limit their consequences. Information should be provided on Conditions other than normal operating conditions. Thus, where there is a risk that the environment may be affected, appropriate provision shall be made for start-up, leaks, malfunctions, momentary stoppages and definitive cessation of operations. Additional advice on completing this section is provided in the *Guidance Note*.

Attachment I.1 should contain the documentation requested above. The information should be summarised in the standard form supplied. Emergency procedures should be numbered and referenced to in the standard form.

Attachment I.1
Emergency Response Procedures
Emergency Response Procedures will be put into action in the event of one of the following incidences occurring or being imminent.

- Fire/ Explosion –Both within the cells and outside the cells but within the facility.
- Migration of landfill gas- within the site office, elsewhere within the facility or off-site.
- Spillage of leachate during transport and/or discharge at the waste treatment plant.
- Damage to the integrity of the onsite leachate management system which would consist of either-damage to the liner within the cells or leachate lagoon, leachate discharge with in the site, leachate discharge outside the site.
- Contamination of stormwater and settling lagoons.
- Person falling into leachate lagoon.
- Contamination of local wells.
- Failure of side slope of the landfill.

A brief synopsis of Emergency Response Procedures to be taken in the case of any of these events occurring are given below. More detailed information can be found in the Environmental Management Plan (Attachment H.1).

Fire/ Explosion
The following actions will be followed in the event of a fire within the facility area:

1. On discovery of a fire the landfill will be immediately closed and the Safety Supervisor informed of the situation
2. Any refuse vehicles remaining within the site at the time of the incident will be permitted to leave.
3. The Safety Supervisor or representative will:

    - Assess the situation and decide whether or not to use fire extinguishers/water hoses on site to quench any minor fire incident or any inert material to smother any minor fire incidents. For all other situations the Fire Brigade or Ambulance or Gardaí will be contacted by dialling the Emergency 999 number.
    - Ensure that the site entrance and facility roads are not obstructed or blocked by parked vehicles, which could prevent the emergency vehicles gaining access to the site.
    - Prevent all vehicles from entering the site.

4. All personnel on the site will report to the Designated Assembly Point where the safety supervisor can confirm that all personnel are accounted for.
5. Inform the Emergency Services on their arrival of the fuel storage area on site and the presence of any hazardous wastes on site.

All areas of the site shall remain closed until the Chief Fire Officer gives the all clear

If a fire occurs after normal opening hours the local Fire Station shall have access to the site and all necessary contact details. Fire drills will be carried out by arrangement with the local fire station on a regular basis.

Migration of Landfill Gas

A permanent gas monitoring system located in the site office monitors the levels of methane, carbon dioxide and oxygen within the building. The monitoring system will detect any serious increases in the levels of methane and carbon dioxide around the site and an alarm will be activated to alert all site staff to the situation. If the levels rise above 1%v/v for methane or 1.5%v/v for carbon dioxide an alarm system will be raised to evacuate the building. In the case of such a situation the EPA and the Environment Section of Limerick County Council will be notified immediately.

Accidental Spillage of Leachate/Contaminant

In the event of a contamination spill on site the following procedures will be followed:

1. Contact the facility manager and advise them that a chemical/contamination spill has occurred.

2. The facility manager will assess the situation and decide on the appropriate action. If necessary other emergency bodies such as the Fire Brigade, the Gardaí, Ambulance, Eastern Regional Fisheries Board or Wicklow County Council Drainage Department will be contacted.

3. In the event of a major spillage, a temporary bund will be constructed to contain the spillage. The area will be then treated with spill/contaminant absorbing material. When all contaminants have been absorbed the material will be removed from site and the area thoroughly cleaned. If any spillage enters the stream containment booms should be put in place to prevent dispersion of the contaminant.

4. In the event of a major leachate spillage, a temporary bund will be constructed and the liquid will be pumped to the leachate collection system.

5. In the event of minor spillages a temporary bund may not be required. Spill absorbing material/containment booms should be used as required and the area thoroughly cleaned afterwards.

6. All major spillages will be reported to the EPA and Limerick County Council. In the event of leachate being discharged to the White River a report will also be forwarded to the Shannon Fisheries Board.

Damage to the Leachate Collection Chamber

All leachate is collected from the lined cells and pumped to the Collection Chamber. The leachate collection chamber will contain a sensor alarm system which will be triggered when high leachate levels are reached. In the event of a breach in the liner system containment measures will be put in place. Leachate will be pumped to a tanker and transferred to the wastewater treatment works. Spill absorbing material or containment booms should be used as required and the area thoroughly cleaned afterwards.

Contamination of Stormwater and Settling Lagoons

In the event of contamination of the water in the stormwater lagoon the discharge of surface water runoff to the White River will be temporarily stopped. The outfall from the lagoons to the White River is

controlled by penstocks. In the event of the water being contaminated the penstocks will close and all the contaminated runoff will be pumped or tankered to the leachate treatment plant.

Emergency Response Procedure if a person falls into the leachate lagoon

All personnel involve in the maintenance and monitoring of the leachate lagoon are required to wear lifejackets. In addition, personnel shall be required to wear a safety harness when working in close proximity or within the leachate lagoon. An adequate number of life buoys are provided on the perimeter of the lagoon to be used in the event of unauthorised personnel trespassing onto the landfill site and accidentally falling into the leachate lagoon. Four life jackets are held at reception building for use by site personnel.

The facility has an impact on the quality and/or quantity of water in Local Wells

If such an event occurs the following procedures will be followed:

1. The facility manager will advised of the situation who will then assess the degree of contamination of the well and determine the appropriate source of the contamination.
2. If it is found that the wells are contaminated the residents affected would be notified of the contamination and advised to boil or cease usage of the water supply as appropriate. The Mid Western Health Board would be kept advised of all notifications issued.
3. The EPA and local representatives will also be informed of the situation.
4. Where the source of contamination is found to be from the facility, Limerick County Council will contact the Newcastle West area office to commence the temporary supply of water to affected residents. The Emergency Response Procedure for Damage to the Integrity of the Leachate Management System would also be put in place.
5. Once the source of contamination is identified Limerick County Council will make recommendations on how to handle and remove the contaminants from the well while consulting with the Agency.
6. Where the quantity of water supply to the wells is affected by landfill operations, e.g. where pumping of groundwater is being undertaken, temporary supply of water to affected residents would similarly commence.
7. Ongoing monitoring of the affected wells will be carried out to ensure the source of contamination had been resolved and it has been accepted, by both the Mid Western Health Board and the EPA, that the supply has returned to an acceptable standard.

Failure of Side Slope of the Landfill

1. If a failure in the side slope of the landfill is identified by site personnel the Facility Manager will be informed immediately and the agency notified of the incident.
2. The area will be made safe by erecting a barrier around the risk area and by placing a sign warning personnel of the danger.
3. Site management will agree on corrective actions to be taken following an assessment of the slope failure and a method statement for the works required to make the area safe would be prepared. This statement would incorporate the potential health & safety risks associated with the works and will be submitted to the Agency for approval.
4. The Facility Manger will instruct the relevant staff members on the proposed method statement and works would proceed under the supervision of the Facility Manager.

Attachment included	yes ☒	no ☐	not applicable ☐

J. STATUTORY REQUIREMENTS

This section refers to the applicant's compliance with s40(4) of the Waste Management Act. Additional advice on completing this section is provided in the *Guidance Note*.

Applicants should describe how the proposed facility will comply with the requirements of BAT and BAT(NEEC). In particular reference should be made to the considerations referred to in Annex IV of Council Directive 96/61/EC concerning integrated pollution prevention and control.

J.1 Offences and Convictions

Note: this section only applies to applicants who are not local authorities

Has the applicant or another relevant person(*) been convicted under the Waste Management Act 1996 of offences as prescribed in Regulations.

Yes ☐ No ☐

If yes, give full details of each offence:

Offence	Person/Body Corporate	Date	Court	Fine	Costs

* Examples of persons who fall within the definition of "another relevant person" are employees of the applicant or directors, managers, secretaries or other similar officers of the applicant. A relevant person should be the applicant and other persons in the applicant's employment who will direct or control the carrying on of the activity proposed.

The possession of significant offences may preclude an applicant from successfully applying for a waste licence. Hence an applicant possessing convictions under the 1996 Act should carefully set down any factors which the Agency should take into account in assessing whether the applicant should be allowed to hold a licence.

Attachment J.1 should contain the documentation requested above, along any relevant additional information.

Attachment included	**yes** ☐ **no** ☐ **not applicable** ☒

J.2 Technical Competence and Site Management

Details of the applicant's experience and qualifications, along with that of other relevant employees, statements of duties, responsibilities, experience and qualifications should be submitted for each relevant person*. It should also take account of staff requirements and technical competence required in relation to any composting and/or construction and demolition waste recovery activities. The management structure and an organisational chart should be submitted and should include details of the proposed facility manager and deputy manager. This information should be included in Attachment J.2.

*A relevant person should be the applicant and other persons in the applicant's employment who will direct or control the carrying on of the activity proposed.

Attachment included	**yes** ☒	**no** ☐	**not applicable** ☐

Attachment J.2

Limerick County Council has overall responsibility for the management and operation of the Gortadroma Landfill Site. The Limerick County Council senior engineer is responsible for the management of municipal waste and waste facilities in the county. The facility manager has responsibility for operations and the executive engineer has responsibility for contracts and both report to the senior engineer directly. In the absence of the senior engineer, the executive engineer acts as facility manager in his absence. Both the facility manager and executive engineer are based at Gortadroma landfill site while the deputy facility manager is based in HQ but is familiar with site operations and visits the site regularly to keep advised of ongoing operational issues. Refer to flow chart below detailing the site management.

Limerick County Council have appointed the following consultants to provide technical management and site engineering support.

- RPS-MCOS Ltd
- TMS Environmental Ltd.

The contact details for the site management team are as follows:

Senior Engineer, Environment Section
Tom Tarpey 061 496000

Facility Manager
John O' Carroll 069 82339

Executive Engineer
Sinead Kennedy 069 82339

Deputy Facility Manager
Colm Morrissey 069 82339

Attachment J.2
Technical Management and Technical Competence

Site Management

Limerick County Council
Site Management Team
Senior Engineer (Environment)
Tom Tarpey

Facility Manager

John O'Carroll

Executive Engineer

Sinead Kennedy

Deputy Facility Manager

Colm Morrissey

Foreman

Weighbridge Operators

1 Tractor Driver
1 Bulldozer Driver
1 Compactor Driver
2 Excavator Drivers

Consultants

RPS-MCOS Consulting Engineers

Site Engineering
Infrastructure
Leachate Management
Landfill
Gas Management
EPA Communication

TMS Environmental

Environmental monitoring and reporting.
Annual Environmental Report

J.3 Financial Provision

The Waste Management Act 1996 requires all applicants to demonstrate to the Agency that they are in a position to meet any financial commitments or liabilities incurred by the carrying on of the disposal activities relating to this application or in consequence of ceasing to carry on that activity. Information to show compliance with section 40(7)(c) of the Waste Management Act of 1996 should be provided and should include details as set out in the *Guidance Note*.

Attachment J.3 should contain the documentation requested above and any relevant additional information.

Attachment included	**yes** ☒ **no** ☐ **not applicable** ☐

Attachment J.3 Financial Provision

The applicant is a local authority and is in a position to meet all short and long term liabilities arising from the activity.

K. DECLARATION

Declaration

I/we hereby make application for a licence/revised waste licence, pursuant to the provisions of the Waste Management Act 1996 and Regulations made thereunder.

I/we certify that the information given in this application is truthful, accurate and complete (see note below).

I/we have no objection to the provision by the Agency or local authority of a copy of the application or parts thereof to any person.

Signature:	
Print name:	ANNE HAUGH
Date:	25/6/04
Position in organisation:	COUNTY SECRETARY
On behalf of (name of organisation):	LIMERICK CO. COUNCIL

Note:

- *in the case of a partnership, all partners should sign the declaration; and,*
- *if the application is signed by an agent/consultant, the proposed licence holder must also sign and date the declaration.*

Company/local authority stamp or seal:

Note: Applicants are advised that a person who makes a statement in a licence application which is false or misleading is guilty of an offence under s45 of the Waste Management Act 1996. The contravention of this section may lead to a fine or, if convicted on indictment, imprisonment or a fine or both.