



## **APPLICATION**

**By**

**Donegal County Council**

**to**

**Environmental Protection Agency**

**for**

**Waste Licence Review**

**W0024-02**

**Ballynacarrick Landfill Site,  
Ballintra County Donegal**

**ATTACHMENTS TO SECTION E**

**Emissions**

**ATTACHMENTS TO SECTION E      EMISSIONS**

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**Appendix E**

Standard Forms Table E1 to E5

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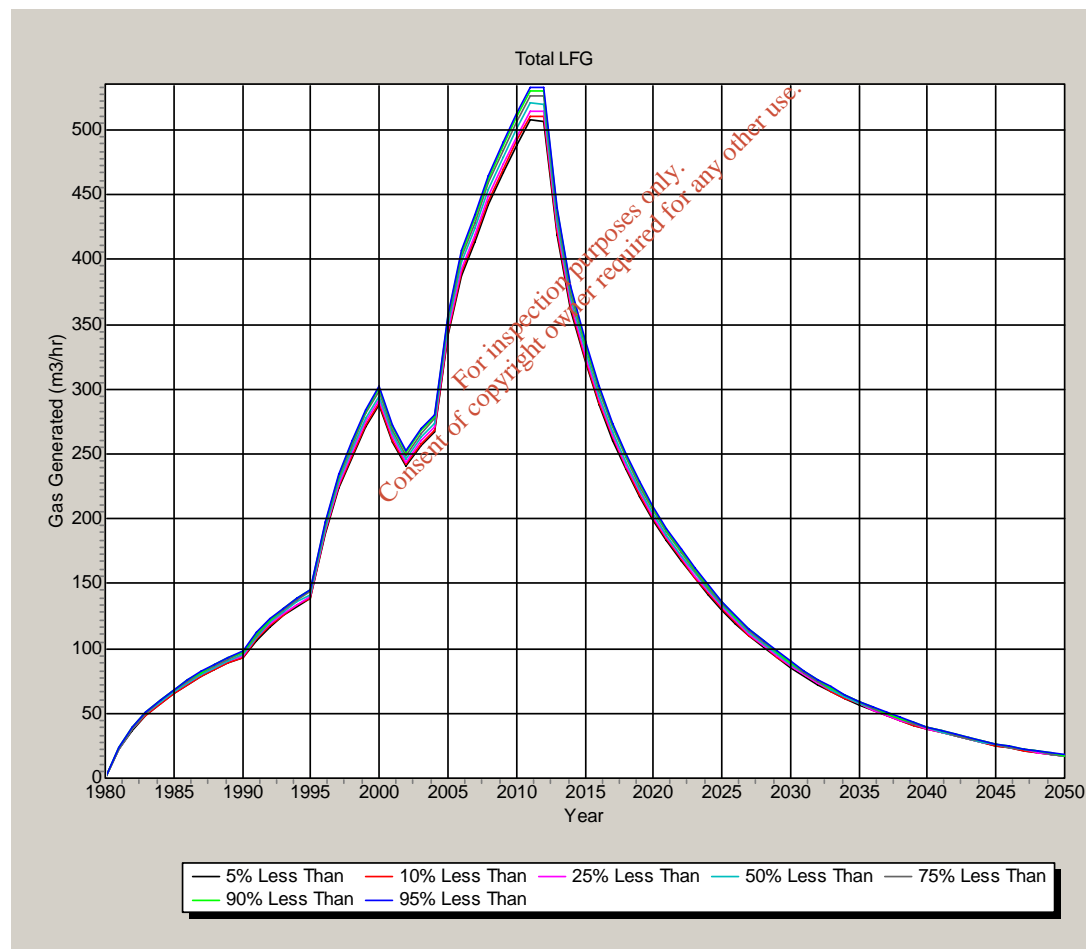
**ATTACHMENTS TO SECTION E**

**Attachment E.1 Emissions to Atmosphere**

The review will not impact on the existing licence conditions in relation to emission to atmosphere (Environmental Impact Statement previously undertaken in 2003 has been included as a reference document for information purposes only).

The GasSim model undertaken as part of the review of the licence in 2003 has been re-run to take into consideration the increased tonnage accepted and proposed for the remaining life span of the site. This has increased the estimated peak landfill gas production from 430m<sup>3</sup>/hr to 550m<sup>3</sup>/hr. Graph 1 shows the total production of landfill gas for Ballynacarrick.

**Graph 1 Total production of landfill gas.**



The current enclosed landfill gas flare on site is a 500m<sup>3</sup>/hr enclosed landfill gas flare.

Consultation has been undertaken with the flare manufacture regarding capacity. The flare in its current configuration will handle up to 550 m<sup>3</sup>/hr at 50% methane with no long term implications. There may be an increase in the concentration of emissions from the flare stack above the current values being emitted; however, they should not exceed the EPA emission limits for CO, NO<sub>x</sub>, SO<sub>2</sub> and TOC. as per Waste licence. The flare stack has been designed to meet these emission limits.

If the flow rate increases to over 600 m<sup>3</sup>/hr the flare would need extra burners added to cope with the additional flow. Once new burners are fitted the flare would have a total capacity of 650 m<sup>3</sup>/hr and the emissions would be similar to present values. The manufacture would recommend the installation of a new burner train only if the gas flow rate was to exceed 600m<sup>3</sup>/hr.

Table E 1(i) has been completed for the enclosed landfill flare emissions. There are no other point emission sources on the site. Table E 1(iv) has been completed for minor /fugitive emissions points.

### **E.1 (a) Composting Emissions**

Not Applicable

### **E.1 (b) Particulate Emissions**

Particulate emissions will arise at the waste inspection area, working face and stock pile on the facility. These have been labelled as follows as shown on Drawing IBL0266/109 Environmental Emissions.

- A 2-1 Waste Inspection Area

The working face will cover a wide and varying area depending the development stage of the facility and therefore has not been allocated a label number.

### **E.1 (c) Landfill Gas Emissions (Process Gas, Stack Emissions)**

Landfill gas emissions will arise from the enclosed flare at the facility. This has been labelled as follows:

- A 1-1 Landfill gas flare

Refer to Drawing IBL0266/109 Environmental Emissions. The emission limits will be as per current licence. Please refer to Table E.1 (i).

### **E.1 (c) Landfill Gas Emissions (Fugitive Emissions)**

Fugitive landfill gas emissions to soil will arise in the areas which are not permanently capped and were an active gas extraction system, are yet to be installed. This will cover a wide and varying area depending the development stage of the facility and therefore has not been allocated a label number.

### **E.1 (d) Landfill leachate emissions**

Fugitive emissions from leachate to atmosphere will arise at the leachate holding tanks. These have been labelled as follows:

- A 2-2 leachate storage Tank 1
- A 2-3 leachate storage Tank 2

Refer to Drawing IBL0266/109 Environmental Emissions

### **E.1 (e) , (f) and (g)**

Not applicable

### **Attachment E.2 Emissions to Surface Water**

Emissions to surface water will remain unchanged and the review will not impact on the existing licence conditions.

Refer to Drawing IBL0266/110 Monitoring locations for emission points to surface water.

### **Attachment E.3 Emissions to Sewer**

Not applicable

### **Attachment E.4 Emissions to Groundwater**

Emissions to groundwater will remain unchanged and the review will not impact on the existing licence conditions.

### **Attachment E.5 Noise Emissions**

Noise emissions will remain unchanged and the review will not impact on the existing licence conditions.

Noise emissions arise at the landfill gas flare, leachate treatment tanks and at the working face.

These have been labelled as follows:

- N-1 Landfill Gas Flare
- N-2 Leachate treatment works

Refer to Drawing IBL0266/109 Environmental Emissions

The working face will vary in location depending on the development stage of the facility and therefore has not been allocated a label number.

Please refer to Table E.5 (i).

## Attachment E.6 Environmental Nuisances

The existing measures will remain in place to deal with environmental nuisances arising from the increased tonnage. Reference has been made to the letter dated 20<sup>th</sup> June 2007 Ref- Circular letter to all landfills from EPA regarding revision of strategies outlined in operation (Landfill Operational Practices) and design (Landfill Site Design Manuals) where applicable.

Birds, Dust, Litter, Traffic and Odours may cause or contribute to nuisances during the operation hours at the facility. Vermin and Fire may cause or contribute to nuisances at any time. The control measures undertaken are described below.

The facility is inspected on a daily and weekly basis for nuisances for vermin, birds, flies, mud, dust and odours. All litter control infrastructures are inspected on a daily basis and observations recorded.

### Birds

Birds can be a constant problem at landfill sites as they adapt to the environment in which they find food. The following measures are implemented at Ballynacarrick to interrupt the feeding activities of birds.

- The waste is covered daily.
- One wind powered constantly revolving scarecrow
- One Phoenix Wailer

### Pest Control (Vermin and Flies)

Insecticide is utilised on site when required and its effectiveness monitored. Fourteen permanent bait boxes have been installed around the site. Bait is laid every six weeks or when required.

### Dust Control

The following measures are undertaken:

- Site roads and all other areas are sprayed as required to minimise airborne dust nuisance. A portable water tanker is utilised on site for this procedure.
- The access road is constructed with concrete, which allows debris to be shaken off vehicles prior to entering public roads.
- The access road is constructed with concrete, which will allow sweeping if required.
- All waste vehicles are required to use the wheelwash on exiting the site.

### Litter

The following measures are undertaken:

- Temporary litter netting has been installed around the active areas of the site to prevent windblown litter. The litter netting should be temporary repaired by the end of the working day and repairs to the standard of the original netting shall be undertaken within three working days.
- Litter patrols are also conducted on a daily basis.
- All vehicles entering and leaving the facility are required to be covered to prevent the potential of windblown litter.
- All loose litter or other waste, placed on or in the facility, other than in accordance with the requirements of the licence, shall be removed, subject to the arrangement of the landowners, immediately and in any event by 10.00am of the next working day after such waste is discovered.
- Once waste is deposited it is compacted and covered as soon as practically possible.

### **Traffic**

The main site access road runs in the westerly direction from the access gate to the vehicle queuing and turning area. This road also provides access to the weighbridge and wheelwash. This access is composed of concrete and will be maintained in good condition to allow all vehicles safe access to and from the site.

An asphalt access road to the leachate holding tank has also been constructed. The remaining surface consists of open textured crushed stone. Site signage is provided at the site office indicating direction to active tipping area and speed limit. No traffic queuing is allowed on the public road along the facility access road. All trucks must turn left (when leaving the site).

### **Fire**

Emergency procedures have been developed in relation to fire at the site as part of the Environmental Management System at the facility. These include the provision of fire extinguishers and fire hydrant on site.

### **Odours**

Odours occurring at landfill site can be due to waste or caused by landfill gas. The following measures are employed at Ballynacarrick to reduce the potential of odour:

- The waste is compacted by the steel-wheeled compactor as soon as practicable or at any rate prior to the end of the working day.
- The waste is covered daily.
- Should a complaint be received an investigation will be undertaken and record kept as part of the Environmental Management System for inspection by the EPA.
- An active landfill gas extraction system has been installed at the facility. Landfill gas will be extracted from operational lined phases/cells through the side slope riser and sacrificial pipework (Horizontal and Vertical wells).

## APPENDIX E

Standard Forms Table E1 to E5

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## ANNEX 1 STANDARD FORMS

Standard forms are provided in this section for the recording and presentation of environmental monitoring and site investigation results

**TABLE E.1(i) LANDFILL GAS FLARE EMISSIONS TO ATMOSPHERE**  
**Emission Point:**

Emission Point Ref. N <sup>o</sup> :	A1-1
Location :	Enclosed landfill gas flare
Grid Ref. (12 digit, 6E,6N):	193798 367573
<b>Vent Details</b>	
Diameter:	1.275m
Height above Ground(m):	6.65m
Date of commencement of emission:	Current landfill gas flare was installed in March 2005

**Characteristics of Emission :**

CO	<50 mg/m <sup>3</sup>
Total organic carbon (TOC)	<10mg/m <sup>3</sup>
NOx	<150 mg/Nm <sup>3</sup> 0°C. 3% O <sub>2</sub> (Liquid or Gas), 6% O <sub>2</sub> (Solid Fuel)
Maximum volume of emission	550-600 m <sup>3</sup> /hr
Temperature	As per licence 1000 °C(max)      °C(min)      °C(avg)

- (i) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up/shutdown to be included*):

Periods of Emission (avg)	<u>60</u> min/hr <u>24</u> hr/day <u>365</u> day/yr
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**TABLE E.1(ii) MAIN EMISSIONS TO ATMOSPHERE** (1 Page for each emission point)

Emission Point Ref. N <sup>o</sup> :	Not Applicable
Source of Emission:	
Location :	
Grid Ref. (12 digit, 6E,6N):	
Vent Details Diameter:	
Height above Ground(m):	
Date of commencement:	

**Characteristics of Emission :**

(i) Volume to be emitted:			
Average/day	m <sup>3</sup> /d	Maximum/day	m <sup>3</sup> /d
Maximum rate/hour	m <sup>3</sup> /h	Min efflux velocity	m.sec <sup>-1</sup>
(ii) Other factors			
Temperature	°C(max)	°C(min)	°C(avg)
For Combustion Sources: Volume terms expressed as : <input type="checkbox"/> wet. <input type="checkbox"/> dry. _____% O <sub>2</sub>			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____ min/hr _____ hr/day _____ day/yr
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**Table e.1(iii): Main emissions to atmosphere - Chemical characteristics of the emission** (1 table per emission point)

**Emission Point Reference Number:** Not Applicable

Parameter	Prior to treatment <sup>(1)</sup>				Brief description of treatment	As discharged <sup>(1)</sup>					
	mg/Nm <sup>3</sup>		kg/h			mg/Nm <sup>3</sup>		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max

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1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

**TABLE E.1(iv): EMISSIONS TO ATMOSPHERE - Minor /Fugitive**

Emission point Reference Numbers	Description	Emission details <sup>1</sup>				Abatement system employed
		material	mg/Nm <sup>3(2)</sup>	kg/h.	kg/year	
A 2 - 1	Dust Particulates (Waste Inspection Area)				NM	A portable water tanker is utilised on site to reduce dust particles.
A 2 - 2	Fugitive Emission from tank				NM	No abatement is employed
A 2 - 3	Fugitive Emission from tank				NM	Aeration is only undertaken at set hours each day. A freeboard is maintained in the tank.

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- 1 The maximum emission should be stated for each material emitted, the concentration should be based on the maximum 30 minute mean.
- 2 Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C/101.3kPa). Wet/dry should be clearly stated. Include reference oxygen conditions for combustion sources.



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**TABLE E.2(i): EMISSIONS TO SURFACE WATERS**  
(One page for each emission)

**Emission Point: not applicable**

Emission Point Ref. N <sup>o</sup> :	
Source of Emission:	
Location :	
Grid Ref. (10 digit, 5E,5N):	
Name of receiving waters:	
Flow rate in receiving waters:	<p>Not Measured _____ m<sup>3</sup>.sec<sup>-1</sup> Dry Weather Flow</p> <p>_____ m<sup>3</sup>.sec<sup>-1</sup> 95%ile flow</p>
Available waste assimilative capacity:	_____ kg/day

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**Emission Details:**

(i) Volume to be emitted Information not available			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>		



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(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	60__min/hr 24__hr/day 365__day/yr
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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Not Applicable

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	

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TABLE E.3(i): EMISSIONS TO SEWER (One page for each emission)

Emission Point: Not Applicable

Emission Point Ref. N <sup>o</sup> :	
Location of connection to sewer :	
Grid Ref. (10 digit, 5E,5N):	
Name of sewage undertaker:	

Emission Details:

(i) Volume to be emitted			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____ min/hr	_____ hr/day	_____ day/yr
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TABLE E.3(ii): EMISSIONS TO SEWER - Characteristics of the emission (1 table per emission point)

Emission point reference number : Not Applicable

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	

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**TABLE E.4(i): EMISSIONS TO GROUNDWATER** (1 Page for each emission point)

**Emission Point or Area: Not Applicable**

Emission Point/Area Ref. N <sup>o</sup> :	
Emission Pathway: (borehole, well, percolation area, soakaway, landspreading, etc.)	
·	
Grid Ref. (10 digit, 5E,5N):	
Elevation of discharge: (relative to Ordnance Datum)	
Aquifer classification for receiving groundwater body:	
Groundwater vulnerability assessment (including vulnerability rating):	
Identity and proximity of groundwater sources at risk (wells, springs, etc):	
Identity and proximity of surface water bodies at risk:	

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Emission Details:

(i) Volume to be emitted			
Normal/day	m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	m <sup>3</sup>		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (start-up /shutdown to be included):

Periods of Emission (avg)	_____ min/hr	_____ hr/day	_____ day/yr
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**Table E.5(i): NOISE EMISSIONS - Noise sources summary sheet**

Source	Emission point Ref. No	Equipment Ref. No	Sound Pressure <sup>1</sup> dBA at reference distance	Octave bands (Hz) Sound Pressure <sup>1</sup> Levels dB(unweighted) per band								Impulsive or tonal qualities	Periods of Emission	
				31.5	63	125	250	500	1K	2K	4K			8K
Landfill Gas Flare	N1		65dB (A) at 10m										Continous	
Leachate treatment	N2		69 dB (A) at 10m										During operational hours	
Working face	Not allocated as depending on operational phase		83 dBL <sub>Aeq</sub>										During operational hourss	

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1. For items of plant sound power levels may be used.