

EPA Application Form

4. Activity and Capacity

4.3.2 - Landfill Emissions and Controls - Attachment

Organisation Name: *

Bord na Móna Plc

Application I.D.: *

LA001696

Authorisation Application Form

Amendments to this Application Form Attachment

Version No.	Date	Amendment since previous version	Reason
V.1.0	July 2017	N/A	Online application form attachment
V.1.0	Mar 2018	Identification of required fields	Assist correct completion of attachment

For inspection purposes only.
Consent of copyright owner required for any other use.



Authorisation Application Form

Landfill and underground storage facilities (Class 11.5 and 11.7)

All landfills must comply with the requirements of the Landfill Directive (1999/31/EC). It is the applicant's responsibility to ensure that all relevant requirements of the Directive are addressed and information provided in the application.

Applicants should have regard to the requirements of the Landfill Manuals published by the Environmental Protection Agency.

In fulfilment of this requirement, complete the following sections and provide the required details and any other information you deem necessary in order to fully address the requirements of the Landfill Directive and associated legislation including Council Decision 2003/33/EC.

L.1 Landfill site

Full summary details of the landfill site should be submitted (to include inter alia, site selection procedures, location maps (no larger than A3), geology, hydrogeology, operational plan, containment, gas and leachate management, post-closure care) and shall comply with the requirements of the Landfill Directive (1999/31/EC) in Attachment L.1. Information can be cross-referenced to the Environmental Impact Statement (EIS)/Environmental Impact Assessment Report (EIAR) if appropriate and in order to reduce duplication of text.

For inspection purposes only.
Consent of copyright owner required for any other use.

Authorisation Application Form

L.2 Liner System

Complete Table L.2(I) checklist of items and describe items in greater detail in an Attachment L.2.

TABLE L.2(I) LINER SYSTEM

	Yes/No
Provide information in Attachment L.2 to fulfil Annex 1 of the Landfill Directive	See Section 3.5 of EIAR.
Is the type of liner system specified?	Yes
Has a Quality Control Plan been specified?	Yes
Has a Quality Assurance Plan been specified?	Yes
Has independent, third-party supervision, testing and controls been specified?	Yes
Have basal gradients for all cells and access ramps to the cells been designed?	Yes
Has a leak detection system been specified?	Yes

For inspection purposes only.
 Consent of copyright owner required for any other use.

* indicates required field

Authorisation Application Form

L.3 Leachate Management

Complete Table L.3(i) checklist of items that should be described in greater detail in Attachment L.3. Provide a list and illustrate on a site drawing the location of all leachate monitoring, extraction and lead detection boreholes or installations.

TABLE L.3(i) LEACHATE MANAGEMENT ARRANGEMENTS

	Yes/No
Is there a Leachate Management Plan?	Yes
Have annual quantities of leachate been calculated?	Yes
Has the total quantity of leachate been calculated?	Yes
Has the size of the cells been specified taking account of the water balance calculations?	Yes
Has a leachate collection system been specified?	Yes
Has a leachate storage system been specified?	Yes
Has a system for monitoring the level of leachate in the waste been designed?	Yes
Is leachate recirculation proposed/practised?	Yes
Has leachate treatment on-site been specified?	Yes
Has leachate removal been specified?	Yes

Consent of copyright owner required for any other use.

* indicates required field

Authorisation Application Form

L.4 Landfill Gas Management

Complete Tables L.4(i) to L.4(iv) and include in Attachment L.4 of the application. The tables provide a checklist of items that should be described in greater detail in Attachment L.4. Provide an estimate of the volume of landfill gas which will be produced by the waste for the next 20 years.

Table L.4(i). Landfill Gas Management

	Yes/No
Is there a Landfill Gas Management Plan?	Yes
Is there a passive venting system?	No
Does the passive system cover all of the filled area?	Not Applicable
Have gas alarm systems been installed in the site buildings?	Yes
Have measures been installed to prevent landfill gas migration (e.g. barriers)?	Yes
Has a time-scale been proposed for the installation of landfill gas infrastructure?	In Place
Is gas flaring undertaken at the site?	Yes
Is there an active (i.e., pumped) landfill gas extraction system?	Yes
Does the active system cover all of the filled area?	No. Excludes Hazardous Landfill
Is landfill gas used to generate energy at the site?	Yes
Have emissions from the flarestack and utilisation plant been	Yes

For inspection purposes only. Content of Copyright owner required for any other use.

* indicates required field

Authorisation Application Form

assessed for source, composition, quantity and level and rate? See section F of the application form for requirements.	
Has a maintenance programme for the control system been specified?	Yes
Has a condensate removal system been designed?	Yes

Table L.4(ii) Landfill Gas Monitoring for existing landfill gas flares and utilisation plants

Landfill Gas Flares (F1, F2 & F3) – Results for F1 Monitoring (Typical) (Inlet – 2017 results) (Outlet - 2018 Q3/Q4 results)

Parameter	Concentration (mg/Nm ³)	Frequency of Analysis	Method of Analysis
Inlet			
Methane (CH ₄) % v/v	45.6	Continuous	Infrared analyser or equivalent approved
Carbon dioxide (CO ₂) %v/v	35.5	Continuous	Infrared analyser or equivalent approved
Oxygen (O ₂) % v/v	1.9	Continuous	Infrared analyser or equivalent approved
Outlet			
Volumetric Flow Rate	388 Nm ³ /hr (average)	Continuous	Flow metre/ pump

* indicates required field

Authorisation Application Form

SO ₂	2,923	Biannually	Flue gas analyser/datalogger or equivalent approved
NO _x	35.87	Biannually	Flue gas analyser/datalogger or equivalent approved
CO	<1.7	Continuous	Flue gas analyser/datalogger or equivalent approved
Particulates	Not Applicable	Not Applicable	Not Applicable
Hydrochloric acid	Not Applicable	Not Applicable	Not Applicable
Hydrogen Fluoride	Not Applicable	Not Applicable	Not Applicable
Other *	Not Applicable	Not Applicable	Not Applicable

* Identify the parameter(s) if 'Other' is selected

Consent of copyright owner required for any other use.

Landfill Gas Utilisation Plan (E1, E2, E3 & E4) – Results for E4 Monitoring (Typical) (Inlet – 2017 results) (Outlet - 2018 Q3/Q4 results)

Parameter	Concentration (mg/Nm ³)	Frequency of Analysis	Method of Analysis
Inlet			
Methane (CH ₄) % v/v	45.2	Weekly	Infrared analyser or equivalent approved

* indicates required field

Authorisation Application Form

Carbon dioxide (CO ₂) %v/v	35.5	Weekly	Infrared analyser or equivalent approved
Oxygen (O ₂) % v/v	1.9	Weekly	Infrared analyser or equivalent approved
Outlet			
Volumetric Flow Rate	607 m3/hr (average)	Biannually	
SO ₂	2,241	Biannually	Flue gas analyser/datalogger or equivalent approved
NO _x	439	Biannually	Flue gas analyser/datalogger or equivalent approved
CO	972	Continuous	Flue gas analyser/datalogger or equivalent approved
Particulates	<1.99 (2018 Annual Result)	Annually	Isokinetic/gravimetric or equivalent approved
Hydrochloric acid	Not Applicable	Not Applicable	Not Applicable
Hydrogen Fluoride	Not Applicable	Not Applicable	Not Applicable
Other *	Not Applicable	Not Applicable	Not Applicable

Consent of Copyright owner required for any other use.
For inspection purposes only.

* indicates required field

Authorisation Application Form

Table L.4(iii) Landfill Gas Monitoring

Parameter	Proposed Frequency of Analysis		Method of Analysis
	Gas boreholes, vents, wells and perimeter locations	Installation Office	
Methane (CH ₄) % v/v	Monthly	Continuous	Infrared Analyser/FID or other agreed
Carbon Dioxide (CO ₂) % v/v	Monthly	Continuous	Infrared Analyser or other agreed
Oxygen (O ₂) % v/v	Monthly	Not Applicable	Electrochemical cell or other agreed
Atmospheric Pressure	Monthly	Daily	Standard Method or other agreed
Temperature	Not Applicable	Not Applicable	Not Applicable

For inspection purposes only. Consent of copyright owner required for any other use.

* indicates required field

Authorisation Application Form

Table L.4(iv) Landfill Gas Infrastructure

Equipment	Monitoring Frequency	Monitoring Action
Gas Collection System	As required	Visual
Gas Control System	Continuous - SCADA	System alarms and alerts operators if not functioning correctly.

For inspection purposes only.
Consent of copyright owner required for any other use.

* indicates required field



Authorisation Application Form

L.5 Capping System

Complete Table L.5(i) checklist of items that should be described in greater detail in Attachment L.5.

Table L.4(i) Capping System

	Yes/No
Has the daily cover been specified?	Yes
Has the intermediate cover been specified?	Yes
Has the temporary capping been specified?	Yes
Has the Capping System been designed and does it meet the requirements of the Landfill Directive Annex 1 (3.3)?	Yes
Does the Capping System include a flexible membrane liner?	Yes
Have all capping materials been specified?	Yes
Has a Method Statement for construction been produced?	To be prepared by Contractor prior to commencement of construction. Outline Method Statement in Section 3.5.3 of the Proposed Development EIA and Section 3.5.1 of the Existing Facility EIA.

For inspection purposes only. Consent of copyright owner required for any other use.

* indicates required field



Authorisation Application Form

Has a Quality Control Plan been produced?	Yes
Has a Quality Assurance Plan been produced?	Yes
Has a programme for monitoring landfill stability been developed?	Yes
Has a programme for monitoring landfill settlement been developed?	Yes

*For inspection purposes only.
Consent of copyright owner required for any other use.*

* indicates required field

Authorisation Application Form

L.6 Meteorological Data

State in Attachment L.6 what arrangements are proposed for the measurement of meteorological data at the landfill installation, or for the collation of relevant meteorological information from nearby facilities.

L.7 Cost of the landfill of waste

Describe in Attachment L.7 how all of the costs involved in the setting up and operation of the landfill, including the cost of financial provision, and the estimated cost of the closure and aftercare of the site for a period of at least 30 years will be covered by the gate fee to be charged for the disposal and recovery of waste.

L.8 Phasing of the landfill development

Describe in Attachment L.8 how the landfill will be developed over time. For licence reviews, in addition to future development, provide a description of how the landfill developed to date over time.

L.9 Imported materials quantification for landfill engineering

The following information is to be included in Attachment L.9.

In addition to the waste proposed to be accepted (as specified in the **Waste Activities section (Tab 4.3) of the application form**) state the quantity of materials, including waste (e.g., waste soil and stone) that will be used for landfill engineering at the landfill installation.

Ensure that this quantum of material is included and assessed in the Environmental Impact Statement (EIS)/Environmental Impact Assessment Report (EIAR).

Landfill engineering refers to activities such as liner construction, berm construction, cap construction and other large volume construction activities that form part of the landfill site design. It does not refer to daily cover or intermediate cover or landfill operational matters or incidental construction activities as may become necessary and take place from time to time over the lifetime of the landfill.

The wastes that can be specified for landfill engineering include soil and stone and similar materials that are necessary to build and complete the landfill. The wastes that cannot be specified include those that will occupy the landfill void, whether for disposal or recovery purposes.

Even if you intend notifying certain materials as by-product, they should be specifically identified, quantified and assessed in the application and EIA/EIAR. Note that any individual by-product notification might not be accepted. Therefore it is essential that the quantum of material is characterised, identified and assessed in the licence application and EIS/EIAR.