EPA Application Form

4. Activity and Capacity

4.3.2 - Landfill Emissions and Controls - Attachment

Organisation Name: * Knockharley Landfill Limited

Application I.D.: * LA004307

* indicates required field

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

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.

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	Y
Is the type of liner system specified?	Y
Has a Quality Control Plan been specified?	Y
Has a Quality Assurance Plan been specified?	Y
Has independent, third-party supervision, testing and controls been specified?	Y
Have basal gradients for all cells and access ramps to the cells been designed?	Y
Has a leak detection system been specified?	Y

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?	Y
Have annual quantities of leachate been calculated?	Y
Has the total quantity of leachate been calculated?	Y
Has the size of the cells been specified taking account of the water balance calculations?	Y
Has a leachate collection system been specified?	Y
Has a leachate storage system been specified?	Y
Has a system for monitoring the level of leachate in the waste been designed?	Y
Is leachate recirculation proposed/practised?	Y
Has leachate treatment on-site been specified?	Y
Has leachate removal been specified?	Y

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?	Y
Is there a passive venting system?	Y
Does the passive system cover all of the filled area?	Y
Have gas alarm systems been installed in the site buildings?	N
Have measures been installed to prevent landfill gas migration (e.g. barriers)?	Y
Has a time-scale been proposed for the installation of landfill gas infrastructure?	Y
Is gas flaring undertaken at the site?	Y
Is there an active (i.e., pumped) landfill gas extraction system?	Y
Does the active system cover all of the filled area?	Y
Is landfill gas used to generate energy at the site?	Y
Have emissions from the flarestack and utilisation plant been assessed for source, composition, quantity and level and rate? See section F of the application form for requirements.	Y
Has a maintenance programme for the control system been specified?	Y

Has a condensate removal system been designed?	Y

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

Parameter	Concentration (mg/Nm^3)	Frequency of Analysis	Method of Analysis
Inlet			
Methane (CH_4) % v/v		Flare – Continuous Utilisation plant - Weekly	Infrared analyser/flame ionisation detector
Carbon dioxide (CO_2) %v/v		Flare – Continuous Utilisation plant - Weekly	Infrared analyser/flame ionisation detector
Oxygen (O_2) % v/v		Flare – Continuous Utilisation plant - Weekly	Electrochemical cell
Outlet			
Volumetric Flow Rate			
SO_2		Flare & Utilisation plant – Annually	Flue gas analyser
NOx		Flare & Utilisation plant – Annually	Flue gas analyser

CO		Flare & Utilisation plant – Continuous	Flue gas analyser data-logger
Particulates		Utilisation plant only - Annually	Isokinetic/gravimetric
Hydrochloric acid		Flare & Utilisation plant – Annually	Impinger/ion chromatography
Hydrogen Fluoride		Flare & Utilisation plant – Annually	Impinger/ion chromatography
Other *		Utilisation plant only - **TA Luft Class I, II, III organics** - Annually Flare only - **TOC** - Annually	Adsorption/desorption/GC/ GCMS Flame ionisation

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

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/flame ionisation detector
Carbon Dioxide (CO_2) % v/v	Monthly	Continuous	Infrared analyser/flame ionisation detector
Oxygen (O_2) % v/v	Monthly	Continuous	Electrochemical cell
Atmospheric Pressure	Monthly	-	Standard
Temperature	Monthly	-	Standard

Table L.4(iv) Landfill Gas Infrastructure

Equipment	Monitoring Frequency	Monitoring Action
Gas Collection System		
Gas Control System		

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?	Y
Has the intermediate cover been specified?	Y
Has the temporary capping been specified?	Y
Has the Capping System been designed and does it meet the requirements of the Landfill Directive Annex 1 (3.3)?	Y
Does the Capping System include a flexible membrane liner?	Y
Have all capping materials been specified?	Y
Has a Method Statement for construction been produced?	Y
Has a Quality Control Plan been produced?	Y
Has a Quality Assurance Plan been produced?	Y
Has a programme for monitoring landfill stability been developed?	Y
Has a programme for monitoring landfill settlement been developed?	Y

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.