Attachment-4-11-3-Waste-Incineration-Plant-Information IED Art 44 Compliance

Article 44

Applications for permits

An application for a permit for a waste incineration plant or waste co-incineration plant shall include a description of the measures which are envisaged to guarantee that the following requirements are met:

(a) the plant is designed, equipped and will be maintained and operated in such a manner that the requirements of this Chapter are met taking into account the categories of waste to be incinerated or co-incinerated;

The plant has been designed with the categories of waste intended for treatment as a central consideration. From an early stage in the project, alternative combustion and flue gas treatment systems were considered (see Chapter 3.6 and 3.7 respectively of the EIAR) in line with BAT for waste incineration. The performance of Indaver's sister plant in Carranstown, Co Meath was used as a benchmark as it is treating the same variety and combination of non-hazardous and suitable hazardous wastes. This plant has been treating this combination of wastes successfully since 2015.

As outlined in Chapter 4.3.1 of the EIAR submitted with this application, the principal design objectives for the waste-to-energy facility can be summarised as:

- the facility should treat industrial hazardous and non-hazardous waste and municipal solid waste with energy recovery.
- the facility's capacity should be selected to ensure that the incentive to minimise waste is maintained.
- the technology should be robust and adaptable to the small and changing Irish market.
- safety and environmental protection should be given the highest priority.
- the existing need for waste management facilities should be addressed, in conformance with Irish Government and EU policy, in a sustainable manner.
- the facility should meet all current and foreseeable future regulatory standards.
- the facility must be BAT in accordance with the Integrated Pollution Prevention and Control Reference Document on the Best Available Techniques for Waste Incineration (BREF) (EC 2006) and the requirements of the Industrial Emissions Directive 2010/75/EU.

- the facility's construction and operation should minimise resource consumption and the generation of waste.
- the facility should optimise existing site features and have the minimum feasible impact on the neighbourhood.

The plant will be equipped with sufficient storage capacities for incoming solid and liquid wastes, raw materials for use in the process and residues from the process (see Attachment 4-3-1 to this application). In all cases (for wastes, raw materials and residues), a minimum of 5 days storage capacity has been provided to allow for long weekends/holiday periods.

Waste acceptance and handling procedures are outlined in Attachments 4-3-5-2 and 4-3-5-3 respectively to comply with the requirements of Article 52 of the Directive. Attachment 4-11-5 also addresses this point.

The plant will be equipped with state of the art flue gas cleaning systems and emissions monitoring equipment to ensure compliance with Articles 48 and 49 of the Directive. The flue gas cleaning system is outlined in detail in the Operational Report in Attachment 4-8-1 and in Chapter 4.7.4 and Chapter 4.9 of the EIAR included with this application.

The plant will be operated and controlled from the control room which will be located above the bunker. The facility’s automated computer system will be controlled and monitored from there. Details of the control system are provided in the Operational Report in Attachment 4-8-1 and in Chapter 4.10 of the EIAR included with this application.

Regular preventative maintenance by the mechanical and electrical and instrumentation (E&I) technicians on site will ensure that the plant attains a high level of availability. The plant is contracted at an availability of 8,000 hours per annum (91.3%), but a typical benchmark for the maintenance teams will be 93%. A planned annual shutdown for approximately 2 weeks will ensure that essential equipment (grate system, refractory materials, superheater tube wall thickness, flue gas pathway and turbo generator) is monitored and future maintenance of these elements are planned well in advance for the next maintenance outage.

(b) the heat generated during the incineration and co-incineration process is recovered as far as practicable through the generation of heat, steam or power;

A conventional steam boiler will be provided and electricity will be generated from the steam in a conventional turbo-generator set. The possibility of future export of heat to local industrial users has been provided for in the design. The facility will be designed

to meet the criteria for R1 and will be a recovery plant. Of the 80MW_{th} energy input from the waste, approximately 84% of this will be converted into steam in the boiler and 21MW_e of electricity will be produced by the turbo-generator. Steam parameters of 53 bar and 420°C will be utilised in the superheaters to maximise the amount of energy recovered whilst at the same time protecting the boiler from excessive corrosion and wear.

The plant will also be designed to facilitate the possibility of exporting steam or hot water as part of a local heat network at some point in the future. This heat network is not part of the current application.

Further details on the energy recovery systems can be found in the Operational Report Attachment 4-8-1 and in Chapter 4.8 of the EIAR included with this application.

The plant will also be designed to meet the energy efficiency requirements of Annex II of the Waste Framework Directive in order to achieve R1 status for the installation.

(c) the residues will be minimised in their amount and harmfulness and recycled where appropriate;

This matter is addressed in the answer to Article 53 compliance in Attachment 4-11-6 to this application.

There will be three main residues from the treatment of 240,000 tonnes of waste annually; namely, bottom ash, boiler ash, and flue gas cleaning residues. Approximately 52,700 tonnes of bottom ash will be produced. The residence time and burnout of the waste will be controlled to ensure that the 3% TOC level in the bottom ash is easily met and that the tonnage of ash produced is kept to a minimum. Ferrous and non-ferrous metals will be recovered in a number of different stages from the bottom ash before the final bottom ash residue is produced. The metals recovered from the ash will be sent for recovery. Boiler ash and flue gas cleaning residues will be sent for recovery to a salt mine either in Northern Ireland or in Germany.

(d) the disposal of the residues which cannot be prevented, reduced or recycled will be carried out in conformity with national and Union law.

Refer to Attachment 4-3-8 which outlines how the waste hierarchy has been followed for all residues generated as part of the process. The destination of the residues will comply national and EU Regulations as outlined in Chapter 15.5.3.8 of the EIAR accompanying this application.