

**Indaver Ireland Limited**

## IE Licence Review Application

IED Article 44 Compliance

Reference: LA010332

Issue | 28 February 2023

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 289377-00

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# 1. Compliance with Industrial Emissions Directive (IED) Article 44

## 1.1 Article 44

*“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*

Indaver Carranstown, Co Meath has been treating a combination of industrial hazardous and non-hazardous wastes and municipal solid wastes with energy recovery since 2011. The following design criteria have been considered and implemented on site in relation to the existing facility and proposed development:

- The facility's capacity has been selected to ensure that the incentive to minimise waste is maintained.
- The technology used has been chosen as it is robust and adaptable to the small and changing Irish market.
- Safety and environmental protection have been given the highest priority.
- The facility has been designed to meet all current and foreseeable future regulatory standards;
- The facility complies with 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 plant is 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 and 4-3-7 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 Attachment 4-3-5(1) and 4-3-5(2) to comply with the requirements of Article 52 of the Directive. Attachment 4-11-6 also addresses this point.

The plant is 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 included with this application.

The plant is operated and controlled from the control room located above the bunker, where the facility's automated computer system is controlled and monitored. Details of the control system are provided in the Operational Report in Attachment 4-8-1 included with this application.

Regular preventative maintenance by the mechanical and electrical and instrumentation (E&I) technicians on site ensures that the plant attains a high level of availability. The plant was contracted with an availability of 8,000 hours per annum (91.3%), but a typical benchmark for the maintenance teams is 93%. A planned annual shutdown for approximately 2 weeks each year ensures 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 is used on site from which electricity is generated from the team in a conventional turbo-generator set. Electricity produced is used to power the site (2.5 MW<sub>e</sub>) and the remainder exported to the national grid (19 MW<sub>e</sub>).

The facility has been designed to meet the criteria for R1 for the recovery plant. Up to 21.5 megawatts of electricity (MW<sub>e</sub>) is generated at the existing facility. Approximately 2.5 MW<sub>e</sub> is consumed by the equipment in the plant and the remaining 19 MW<sub>e</sub> is then available for export to the national grid. This will not change with the treatment of additional waste from the proposed development.

The proposed development will also see the development of a 10MW<sub>e</sub> hydrogen generation unit, for connection to the natural gas distribution network for mobile hydrogen transport and other potential applications. This will produce up to 1,930,000 Nm<sup>3</sup> or approximately 160 tonnes of hydrogen per annum, assuming that the unit runs for 1,000 hours per year. The overall efficiency of the process for the conversion of electrical energy into hydrogen is approximately 60% but the main advantage is that Hydrogen is generated from energy that would otherwise be lost.

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

*(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 4-11-7 to this application.

There are three main residues from the treatment of 250,000 tonnes of waste annually; namely, bottom ash, boiler ash, and flue gas cleaning residues. 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. It is the intention of Indaver to continue to identify potential uses for bottom ash.

The proposed development will also see the acceptance of up to 30,000 tpa of third party boiler ash and flue gas cleaning residues for pre-treatment on site at the proposed pre-treatment facility. These will also be recovered in accordance with practice already in place for boiler ash and flue gas cleaning residues.

Ferrous and non-ferrous metals are 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 are sent for recovery. Boiler ash and flue gas cleaning residues are exported for recovery.

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

The waste hierarchy is implemented for all wastes to minimise the disposal of residues as much as possible. Waste which cannot be prevented, reduced or recycled will be disposed of in a manner which will prevent or minimise any impact on the environment and in a controlled manner and in accordance with relevant licence conditions, the European Waste Framework Directive (WFD) and Landfill Directive and Circular Economy Package (CEP).

Attachment 4-3-8 outlines how the waste hierarchy has been followed for all residues generated as part of the process. The destination of the residues complies with national, and EU Regulations as outlined in the EIAR accompanying this application.