

Indaver Ireland Limited

IE Licence Review Application

Recovery and Disposal Capacity Calculations

Reference: LA010332

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1. Introduction

1.1 Summary of Waste Recovery

Indaver Ireland Limited (Indaver) operate a waste to energy (WtE) facility in Carranstown, Duleek, Co. Meath. As per the sites Industrial Emissions (IE) Licence (Reg. No. W0167-03) the site is permitted to undertake the following activities:

Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants

- a) *for non-hazardous waste with a capacity exceeding 3 tonnes per hour, and*
- b) *for hazardous waste with a capacity exceeding 10 tonnes per day.*

Under Annex II of the Waste Framework Directive, the proposed waste to energy plant is deemed to be a Recovery Operation (R1) as long as the criteria set out in the footnote (*) to the Annex II and the guidance document on the R1 activity formula are met.

As the existing facility and proposed development are designed for the primary operation of municipal solid waste (MSW) treatment, which is non-hazardous, the activity concerned is a Recovery Operation. Other wastes, such as industrial hazardous and non-hazardous wastes, will be treated at the facility.

The treatment of smaller quantities of wastes other than MSW does not affect the overall status of the plant as long as the facility can maintain the overall energy efficiency criteria by including these waste types as input.

In relation to activity R13 *Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where the waste is produced)* calculations demonstrating the capacity of the site to temporary store third party boiler ash and flue gas cleaning residues is provided in Attachment 4-3-7: Waste Storage Capacity Calculations.

1.2 Issues with Eden Portal Input

Under Section 4.3 in the application form on the Eden portal, Indaver is required to identify “*all recovery/disposal activities and capacities relevant to the operation*”. The relevant recovery activity in this case is “*R01 - Use principally as a fuel or other means to generate energy*”. The form has been completed accordingly but when entering the List of Waste codes that are proposed to be treated in the facility (in the same section 4.3 of the application form on Eden), hazardous waste codes cannot be entered.

It is only when a waste disposal activity is selected in the form that the hazardous waste codes can then be added and saved. In order to complete the list of waste codes the disposal activity “*D10 - Incineration on land*” has been added.

Indaver would like to point out that **this activity (D10) is not required** for the operation of any part of the existing facility or proposed development and was merely entered to facilitate the completion of the entries for Recovery and Disposal activities on the Eden system **Section 4.3**.

The appropriate allocation should be:

R01 - Use principally as a fuel or other means to generate energy

R01 - Incineration plant (use as fuel) - non-hazardous waste

Capacity: 750 tonnes per day

Capacity Units: tonnes/day

Maximum Quantity: 250,000

Principal Activity: Yes

and

R01 - Use principally as a fuel or other means to generate energy

R01 - Incineration plant (use as fuel) - hazardous waste

Capacity: 3 tonnes per hour

Capacity Units: tonnes/hour

Maximum Quantity: 25,000

Principal Activity: Yes

2. Waste Recovery Capacity

2.1 Capacity Calculations

Following implementation of the proposed development the total amount of waste accepted at the site for treatment in the waste to energy facility will increase to 250,000 tonnes per annum (tpa) and up to a maximum of 25,000 tpa of hazardous waste.

Given the maximum amount of waste accepted at the site is 250,000 tpa and 8,000 operating hours per annum, the site will have a design capacity of 31.25 tonnes per hour

$$250,000 \text{ tonnes} / 8,000 = \mathbf{31.25 \text{ Tonnes per hour}}$$

This includes both non-hazardous and hazardous wastes which are described below.

2.1.1 Non-Hazardous Waste Recovery

The capacity has been calculated based on annual throughput divided by the number of operating hours per annum.

Based on a maximum of 250,000 non-hazardous waste accepted and 8,000 operating hours per annum, the Non-Hazardous Waste Recovery capacity will be:

$$8,000 / 24 = 333.33 \text{ days}$$

$$250,000 \text{ tonnes} / 333.33 = \mathbf{750 \text{ Tonnes per day}}$$

2.1.2 Hazardous Waste Recovery

The capacity has been calculated based on annual throughput divided by the number of operating hours per annum.

Based on a maximum of 25,000 hazardous waste accepted and 8,000 operating hours per annum, the Hazardous Waste Recovery capacity will be:

$$25,000 \text{ tonnes} / 8,000 = \mathbf{3.125 \text{ Tonnes per hour}}$$

3. R1 Code for the Facility

3.1 Compliance with R1

The existing facility and proposed development are designed to meet R1 efficiency criteria in order to be classed as a recovery operation pursuant to the waste hierarchy, a central tenet of EU waste policy (as set out in Annex II of the original Waste Framework Directive and as retained in the recently adopted revised Directive on Waste) and which sets out a non-exhaustive list of recovery operations which includes material recovery, energy recovery and biological recovery). It must meet or exceed an efficiency of 0.65 according to the R1 formula in order to be classed as a recovery activity (R1) according to the waste hierarchy.

The facility is designed to ensure that the criteria for achieving R1 status will be achieved. The guidance document on the calculation of the R1 formula states that as long as the facility is primarily for the treatment of MSW, then even though other waste types are treated (and permitted by the licensing authority), the R1 status is still applicable as long as the energy input from these other wastes is included in the overall calculation.

Hence the guidance tells us to look at the overall mix of the waste (some with high Cv and some with lower Cv) and its energy content and not the individual waste streams to decide on the applicability of the R1 status. This also makes sense from an operational perspective as there is constant variability in the incoming Cv of MSW and it is extremely helpful to have higher and lower Cv waste streams available in your portfolio of waste to help balance the overall Cv of the waste as fed into the furnace.

3.2 List of Wastes to be Recovered

List of wastes accepted to be treated on site for the existing and proposed development include the following:

Table 1 List of wastes to be recovered on site.

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
20 03 01	Mixed Municipal Waste Non-hazardous Residual Municipal Waste	250,000
20 03 02	Waste from Markets Non-hazardous Residual Municipal Waste	
20 03 03	Street Cleaning Residues Non-hazardous Residual Municipal Waste	
20 03 07	Bulky Waste Non-hazardous Residual Municipal Waste	
20 03 99	Municipal wastes not otherwise specified Non-hazardous Residual Municipal Waste	
19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11 Non-hazardous Residual Municipal Waste	
02 01 02 02 01 03 02 01 04 02 01 06 02 01 07	Wastes from rendering plants, slaughterhouses, veterinarians, farms, horse, stables, food factories, warehouse distributors, manufacturers, restaurants Commercial & Industrial non-hazardous waste	50,000

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
02 01 09		
02 01 99		
02 02 02		
02 02 03		
02 02 99		
02 03 02		
02 03 03		
02 03 04		
02 03 99		
02 04 99		
02 05 01		
02 05 99		
02 06 01		
02 06 02		
02 06 99		
02 07 01		
02 07 02		
02 07 03		
02 07 04		
02 07 99		
03 01 01	Wastes from furniture production, carpentry, forestry.	
03 01 05	Commercial & Industrial non-hazardous waste	
03 01 99		
03 02 99		
03 03 01		
03 03 07		
03 03 08		
03 03 99		
04 01 01	Wastes from leather, fur and textile industries	
04 01 02	Commercial & Industrial non-hazardous waste	
04 01 05		
04 01 09		
04 01 99		
04 02 09		
04 02 10		
04 02 15		
04 02 17		
04 02 21		
04 02 22		
04 02 99		
05 01 99	Wastes from petroleum refining, natural gas purification and pyrolysis of coal	
05 06 99		

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
05 07 02 05 07 99	Commercial & Industrial non-hazardous waste	
06 01 99 06 02 99 06 03 99 06 04 99 06 06 03 06 06 99 06 07 99 06 08 99 06 09 04 06 09 99 06 10 99 06 11 01 06 11 99 06 13 03 06 13 99	Wastes from inorganic chemical processes Commercial & Industrial non-hazardous waste	
07 01 99 07 02 13 07 02 15 07 02 17 07 02 99 07 03 99 07 04 99 07 05 14 07 05 99 07 06 99 07 07 99	Wastes from organic chemical processes Commercial & Industrial non-hazardous waste	
08 01 12 08 01 18 08 01 99 08 02 01 08 02 99 08 03 08 08 03 13 08 03 18 08 03 99 08 04 10 08 04 99	Wastes from paint / varnish / coating / glue manufacturers, painting companies, householders, printers waste, general maintenance contractors Commercial & Industrial non-hazardous waste	
09 01 07 09 01 08	Wastes from photographers, pharmacists, schools and colleges Commercial & Industrial non-hazardous waste	

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
09 01 10 09 01 99		
10 01 25 10 01 99 10 03 99 10 04 99 10 05 99 10 06 99 10 07 99 10 08 99 10 09 99 10 10 99 10 11 99 10 12 99 10 13 99	Wastes from thermal processes Commercial & Industrial non-hazardous waste	
11 01 14 11 01 99 11 02 03 11 02 06 11 02 99 11 05 99	Wastes from metal plating, engineering firms Commercial & Industrial non-hazardous waste	
12 01 01 12 01 03 12 01 05 12 01 13 12 01 99	Wastes from crane companies, jewellers, car manufacturers, engineering firms Commercial & Industrial non-hazardous waste	
15 01 01 15 01 02 15 01 03 15 01 04 15 01 05 15 01 06 15 01 07 15 01 09 15 02 03	Packaging wastes from companies, schools, hospitals, chemical industry, local authorities, householders. Commercial & Industrial non-hazardous waste	
16 01 03 16 01 06 16 01 15 16 01 17 16 01 18 16 01 19	Wastes from garages, maintenance of vehicles, farming, warehouse distributors, companies who produce a product / batch e.g. pharmaceutical, chemical, food manufacturing (off-specification products), schools, universities, hospitals. Commercial & Industrial non-hazardous waste	

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
16 01 20 16 01 22 16 01 99 16 02 16 16 03 04 16 03 06 16 05 09 16 07 99 16 11 02 16 11 04 16 11 06		
18 01 01 18 01 02 18 01 04 18 01 07 18 01 09 18 02 01 18 02 03 18 02 06 18 02 08	Wastes from healthcare / hospitals, universities, veterinarians Commercial & Industrial non-hazardous waste	
19 02 03 19 02 10 19 02 99 19 05 01 19 05 02 19 05 03 19 05 99 19 06 04 19 06 06 19 06 99 19 08 01 19 08 02 19 08 09 19 08 99 19 09 01 19 09 04 19 09 05 19 09 99 19 10 01 19 10 02 19 10 04 19 10 06	Wastes from waste management facilities, transfer stations, water treatment facilities (e.g. local authorities, pharma industry), mechanical-biological treatment, plants, landfills Commercial & Industrial non-hazardous waste	

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
19 11 99 19 12 01 19 12 02 19 12 03 19 12 04 19 12 05 19 12 07 19 12 08 19 12 10 19 13 02		
20 01 01 20 01 08 20 01 10 20 01 11 20 01 25 20 01 30 20 01 32 20 01 38 20 01 39 20 01 40 20 01 41 20 01 99 20 02 01 20 02 03 20 03 06	Wastes from waste management facilities, transfer stations, waste collectors, local authorities, septic tank companies Commercial & Industrial non-hazardous waste	
02 01 01 02 02 01 02 02 04 02 03 01 02 03 05 02 04 03 02 05 02 02 06 03 02 07 05 03 03 02 03 03 05 03 03 10 04 01 07 04 02 20 05 01 10 05 01 13 06 05 03	Wastes from industrial and municipal wastewater treatment plants, washing and cleaning at commercial and industrial sites Sewage and Industrial Sludges	20,000

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
07 01 12		
07 02 12		
07 03 12		
07 04 12		
07 05 12		
07 06 12		
07 07 12		
08 01 14		
08 01 16		
08 02 02		
08 03 07		
08 03 15		
08 04 12		
08 04 14		
10 01 21		
10 02 15		
10 11 18		
10 12 13		
11 01 10		
12 01 15		
19 02 06		
19 08 05		
19 08 12		
19 08 14		
19 09 02		
19 09 03		
19 09 06		
19 11 06		
19 13 04		
19 13 06		
20 03 04		
08 01 20	Wastes from pharmaceutical industry, paint / varnish / coating / glue manufacturers, painting companies, engineering firms, printers waste, general maintenance contractors, metal plating Non-Hazardous Aqueous Wastes	10,000
08 02 03		
08 03 08		
08 04 16		
11 01 12		
16 10 02		
16 10 04		
19 04 04		
19 06 03		
19 06 05		
19 07 03		
19 13 08		

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
20 01 28		
17 02 01 17 02 02 17 02 03 17 03 02 17 05 04 17 05 08 17 06 04	Construction and Demolition Waste	50,000
07 01 01* 07 05 01* 07 07 01* 16 10 01* 16 10 03* 19 02 08*	Aqueous wastes Hazardous Waste	25,000
15 01 10* 15 02 02*	Contaminated packaging and clothing Hazardous Waste	
07 05 13* 16 03 03* 16 03 05* 16 05 07* 16 05 08*	Off-specification materials and unused products Hazardous Waste	
03 01 04* 17 02 04* 17 09 03* 19 12 06* 20 01 37*	Treated or contaminated wood Hazardous Waste	
07 05 11* 19 08 11*	Industrial sludges Hazardous Waste	
17 05 03* 17 05 05* 19 13 03*	Contaminated soils, spoil and sludges from soil remediation Hazardous Waste	
19 10 03*	Contaminated wastes from waste treatment facilities Hazardous Waste	
08 03 17* 20 01 27*	Paint and inks Hazardous Waste	
16 01 07*	Oil filters Hazardous Waste	
13 07 01*	Waste oil Hazardous Waste	

List of Waste (LoW) Code *	Applicant's Description of Waste Accepted (not the description from the List of Waste) *	Maximum Quantity (Tonnes per Annum)
10 01 01	Wastes from thermal processes	30,000
10 01 02	Industrial Hazardous and Non-Hazardous Waste	
10 01 03		
10 01 15		
10 01 17		
10 01 19		
19 01 07*		
19 01 13*		
19 01 15*		