INDAVER IRELAND

Administration
Waste Management Licensing
Environmental Protection Agency
PO Box 3000
Johnstown Castle Estate
Co. Wexford

6th May 2003

Waste Licence Application 167- 1

Dear Sir/ Madam,

The attached information is being submitted following a request by the Agency on the 27th March in accordance with Article 14(2)(b)(ii) of the Waste Management (Licensing) Regulations.

Yours sincerely

Laura Burke
Project Manager

Reply To: 4 Haddington Terrace, Dun Laoghaire, Co. Dublin, Ireland, Tel +353-1-280 4534, Fax +353-1-280 7865
Tolka Quay Road, Dublin 1, Ireland, Tel +353-1-280 4534, Fax +353-1-280 7865
Unit 11, South Ring Business Park, Kinsale Road, Cork, Ireland, Tel +353-21-470 4260, Fax +353-21-470 4250
e-mail info@indaver.ie web www.indaver.ie

Indaver Ireland ▪ Registered in Ireland No. E4443 ▪ VAT Reg No. IE 9951105 W ▪ Registered Office: 4 Haddington Terrace, Dun Laoghaire, Co. Dublin, Ireland
Indaver nv ▪ Registered in Belgium No. 254912 ▪ Registered Office: Poldervlietweg B-2030, Antwerpen 3, Belgium

Article 12 Compliance Requirements

A1 Non- Technical Summary

[Environmental Protection Agency] – 1. Provide details in the non-technical summary of the licence application relating to financial provision.

The Non-Technical Summary of the licence application has been updated in relation to the financial provision and is attached in Appendix 1

B Waste Activities

[Environmental Protection Agency] – Clarify if it is your intention to proceed with the civic waste facility (community recycling park).

On 4th March 2003, An Bord Pleanala granted planning permission for the proposed Waste Management Facility at Carranstown. The board attached thirty-one conditions to this permission.

A copy of the Board Direction, the Decision by An Bord Pleanala is attached as Appendix 2, this Appendix is now an update to Attachment B3.1 of the licence application.

Condition 3 of the Decision states the following:

"The proposed community recycling park shall be omitted and the area shall be landscaped in accordance with the requirements of the planning authority".

Reason (An Bord Pleanla): It is considered that this aspect of the proposed development, which is to serve a local need only and would attract unnecessary car-borne traffic, would more appropriately be located in the local population centre of Duleek"

As a result of this condition Indaver Ireland will not be proceeding with the civic waste facility (community recycling park) as originally included in the waste licence application to the Agency.

The only significant effect this would potentially have on the Development is due to the proposal to use all rainwater falling on hardstanding areas of the site, in the incineration process for gas cleaning and cooling. The removal of the civic waste facility results in a reduction of 1,730m2 of hardstanding area from 40,000m2 to 38,270m2 and therefore a reduction in available intercepted rainwater. The daily water requirement of 336m3/ day would constitute some 8.8mm of rain over the hardstanding area (previously 8.4 mm). This small differential for process water requirements can be obtained from the groundwater supply. Pumping tests, as detailed in section 8.2.5 of the EIS have confirmed an average yield of 470m3/day groundwater availability from a single trial well, giving an ample supply of groundwater for process requirements. Therefore the removal of the civic waste facility has no environmental significance. Details of the hydrology runoff assessments are included in Appendix 3

The removal of the Civic waste facility from the proposed development will require the following amendments to the waste licence application.

Application Form – Table D.1. Civic Amenity Facilities will not form part of the infrastructure for the proposed development.

Attachment A1.1 – Chapter 2.1. This chapter is no longer relevant to the application.

Attachment A1.1 – Chapter 3.5. The removal of the civic waste facility from the proposed development will see a reduction in traffic movements. This amounts to a reduction in daily operational volumes (two way) of 134 cars. Ref: Chapter 7.4.1 of the Environmental Impact Statement and Attachment F8.1 of the licence application.

Attachment A1.1 – Chapter 3.9. Reference to the civic waste facility no longer relevant.

Attachment B5- Note: Indaver Ireland does not intend to amend the Disposal/ Recovery Activities applied for with the licence application (as amended further to a request from the Agency in April 2002) as these activities are covered under the activities of the Material Recycling Facility and Waste to Energy plant. Therefore, the original notices and newspaper advertisements as submitted in attachment B5 (as amended further to a request from the Agency in April 2002) remain valid.

Attachment B6.1 – This attachment has been updated to reflect the removal of the community-recycling park from the proposed development. As stated above the waste activities applied for remain unchanged. The revised Attachment B6.1 is attached in Appendix 4.

Attachment B8.1 – This attachment has been updated to reflect the removal of the community-recycling park. The revised Attachment B8.1 is attached as Appendix 5.

Attachment D1.1 – (D1.G) Reference to the civic waste facility no longer relevant.

Attachment D1.1 – (D1.J) Reference to the civic waste facility no longer relevant.

Attachment D1.1 – (D1.P) Reference to the civic waste facility no longer relevant. Note: A designated public education area will be provided within the administration building of the facility, where lectures, discussions and talks will take place with interested groups such as local schools and youth groups.

Attachment D1.1. (D1.R) Reference to the civic waste facility no longer relevant.

All drawings that were originally submitted relating to the civic waste facility (community recycling park) have been revised and are attached to this submission. These are attached in Appendix 6

Attachment D2.1 – Introduction. Reference to the civic waste facility no longer relevant.

Attachment D2.1 – Chapter 2. This entire chapter is no longer relevant to the application.

Attachment D2.1 – Chapter 5.3. The removal of the Community Recycling Park will result in a reduction of 1,730 m2 in hard standing area at the site as discussed above. Hydrology runoff assessments completed by K.T. Cullen & Co. Ltd. are attached as Appendix 3.

Attachment D2.3 – Layout Drawing of the Community Recycling Park is no longer relevant to the application.

Attachment D3.1 - This attachment has been updated to reflect the removal of the community-recycling park. The revised Attachment D3.1 is attached as Appendix 7.

Attachment E2.1- This attachment has been updated to reflect the removal of the community-recycling park. The revised Attachment E2.1 is attached as Appendix 8.

Attachment E3.1- Reference to the civic waste facility no longer relevant.

Attachment F1.1- Chapter 3. Reference to the civic waste facility no longer relevant.

Attachment F2.1 - Reference to the civic waste facility no longer relevant.

Attachment F4.1 – Chapter 4. Reference to the civic waste facility no longer relevant.

Attachment F5.1 – Chapter 2. Reference to the civic waste facility no longer relevant.

Attachment F6.1 – Reference to the civic waste facility no longer relevant.

Attachment F8.1 – Chapter 4. The removal of the community recycling park from the proposed development will result in a reduction in traffic movements at the facility. This reduction amounts in daily operational volumes (two way) to 134 less cars. Ref: Chapter 7.4.1 of the Environmental Impact Statement.

Attachment F9.1- Reference to the civic waste facility no longer relevant.

Attachment H1.1 – Chapter 2.3. Reference to the civic waste facility no longer relevant.

Attachment H5.1 Chapter 3.5. Reference to the civic waste facility is no longer relevant.

Attachment H6.1 Chapter 2.2. Reference to the civic waste facility is no longer relevant.

Attachment H8.1 Chapter 2.1. The emptying of skips at the community-recycling park was listed as one of the ten significant noise sources at the waste management facility. With the removal of the community-recycling park from the proposal, this source is no longer relevant.

Attachment H8.1 Chapter 2.2. Indaver Ireland carried out a noise modelling analysis for the licence application. The noise sources used in this model were based on a similar Indaver facility in Belgium. It is to be noted that noise emissions from the community-recycling park were not included in this model and therefore remodelling has not been undertaken.

Attachment H9.1 Chapter 2.1. The removal of the community-recycling park from the proposed waste management facility will reduce the amount of hard standing area by 1,730 m^2 at the site. Hydrology runoff assessments are attached as Appendix 3.

Attachment H9.5. Table 1.14 has been updated and is attached in Appendix 9.

D Waste to Energy Plant

[Environmental Protection Agency] – In relation to the Waste to Energy plant and requirements of best available techniques (BAT), provide details of alternatives considered specifically in relation to furnace type and gas cleaning.

Application of Best Available Techniques (BAT)

The European IPPC Bureau has issued a Draft Reference Document on Best Available Techniques for Waste Treatment Industries in February 2003. Waste characterisation composition, Acceptance Waste Procedures, reception facilities and management systems, utilities and raw material management are all designed in accordance with BAT as per the Draft Guidelines. All aspects of the waste management facility have been designed with due regard to the requirement to utilise BAT in the plant processes and the emission abatement systems.

Combustion technology:

Kalina Cycle

A number of novel technologies for waste treatment, to utilise the low-grade heat available from the use of waste as fuel, are at research stage. These include, for example, the Kalina cycle, a technology that uses a mix of ammonia and water rather than water alone to supply the heat recovery system for electricity generation in a power plant. This technology is however still in development stage.

Gasification/ Pyrolysis

By far the most promising technologies as an alternative to conventional incineration are advanced thermal conversion technologies of pyrolysis and gasification for energy from solid waste. Gasification is the conversion of a solid or liquid feedstock into gas by partial oxidation under the application of heat and sometimes water. The gas can then be used as fuel in boilers, combustion engines or gas turbines. Pyrolysis is the thermal degradation of a material in the complete absence of an oxidising agent (typically air). The by-products can then be used as a fuel for energy production.

The International Energy Agency (IEA) of which Ireland is a member, has published a booklet on Advanced Thermal Conversion Technologies for Energy from Solid Waste. The view concludes that pyrolysis and gasification technology is at the point of transition between research and development and commercial phases. It states that, from the data available, the indications are that advanced thermal conversion technologies will have similar costs, may have lower environmental emissions and there are prospects for higher levels of recovery.

These technologies are still being commercially proven, and indications are that they require a more uniform and pre treated waste stream than a typical residual municipal waste stream. To achieve the full potential for energy recovery from these advanced thermal technologies combustion of the char produced is required in a down stream waste to energy or similar facility. The carbon content of the char is also too high to meet future EU limits for land filling, and unless payment can be received for use of this char as a fuel substitute the operating cost of the facility is higher than with conventional waste incineration.

Furthermore, pyrolysis and gasification both produce toxic, flammable gas that can cause intoxication and explosive conditions in case of leaks. This increases the hazard associated with the plant and the capital investment costs. Given that these advanced thermal conversion technologies do not as of yet have a sufficient track record in full-scale commercial operation, they were not considered suitable for the multi-purpose requirements of the proposed project.

Refuse Derived Fuel (RDF)

This is a preliminary treatment step that can be carried out on waste that has a high calorific value. The waste is sorted and its chemical composition is analysed. This is followed by a two-stage process – the material is first shredded into approximately 5cm pieces and then it is fed into a granulator where the size is reduced still further. After this the material is palletised.

The concept of producing RDF is based on replacing other fuels such as coal as an energy source in power generation plants. RDF can also be used for co-incineration in various certified industrial kilns such as cement kilns and blast furnaces. It is of utmost importance that the kilns used for the treatment of this waste have adequate pollution control equipment.

Waste Drying and Separation

In this system the waste is not sorted at the source of generation. The commercial and domestic waste is stored in separate bunkers prior to undergoing a mixing and shredding phase. The waste is placed in sealed containers where it is dried by the heat generated due to the anaerobic digestion that takes place. After drying the waste is separated into its separate constituents, for example, glass, metal, plastics etc. These fractions, and other recyclables are then recycled. The remaining fraction is used as an industrial fuel, which can be burned in cement kilns or incinerators and used for energy production.

An example of this type of system is the Herhof Stabilate method. The quantity of industrial fuel (or stabilate) that remains after the waste has been processed is estimated to be 50%. The quality of the recyclable materials from this type of process can be poor due to contamination.

There are also a number of other furnace technologies available. The choice of technology is dependent to some extent on the types of waste streams to be treated.
Some of these furnaces are briefly outlined below.

Furnace types

Fluidised Bed

In a fluidised bed system the waste is pre-treated, usually by shredding, with the resulting particulates and fluidised sand bed suspended in an upward airflow in the combustion chamber. This ensures uniform combustion conditions and is particularly suitable for efficient combustion of low-grade fuels. An example being peat or sewage sludge combustion, where it is now the industry standard. For waste combustion, fluidised bed systems are common in Japan, and there are a number of examples in operation in Europe.

Fluidised Bed is particularly suited for a homogenous waste stream, such as pure sludge, which is not planned for the proposed plant. Furthermore, a fluidised bed typically requires a pre treatment of the waste. The technology also has a less extensive reference list than grate furnaces.

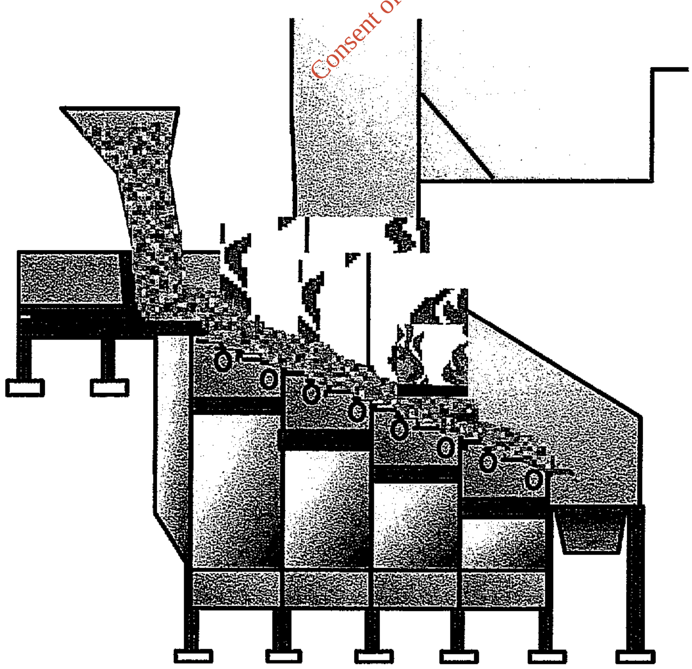
Multiple Hearth Furnaces

This technology is of an older design than grate furnaces, and this type of furnace has been used to burn chemical waste and sewage sludge. Multiple hearth incinerators consist of six to eight circular plates located in a 'cascade' formation around a central shaft in refractory lined vertical cylinder. Waste moves from the top grate downwards, by means of rabble arms that serve to continually expose fresh surfaces of the waste. The middle section of the furnace is where the main combustion of the waste takes place.
While burnout is usually good, gas phase combustion can be poor with elevated levels of carbon monoxide. The number of moving parts can lead to high maintenance costs and it can be difficult to maintain even temperatures.

Moving Grate Furnace

The World Health Organisation in its 1996 booklet on solid waste incineration describes movable grate incineration as the most widely used and thoroughly tested technology for the thermal treatment of solid waste. There are a number of different grate types available depending on the type of waste that is to be treated.

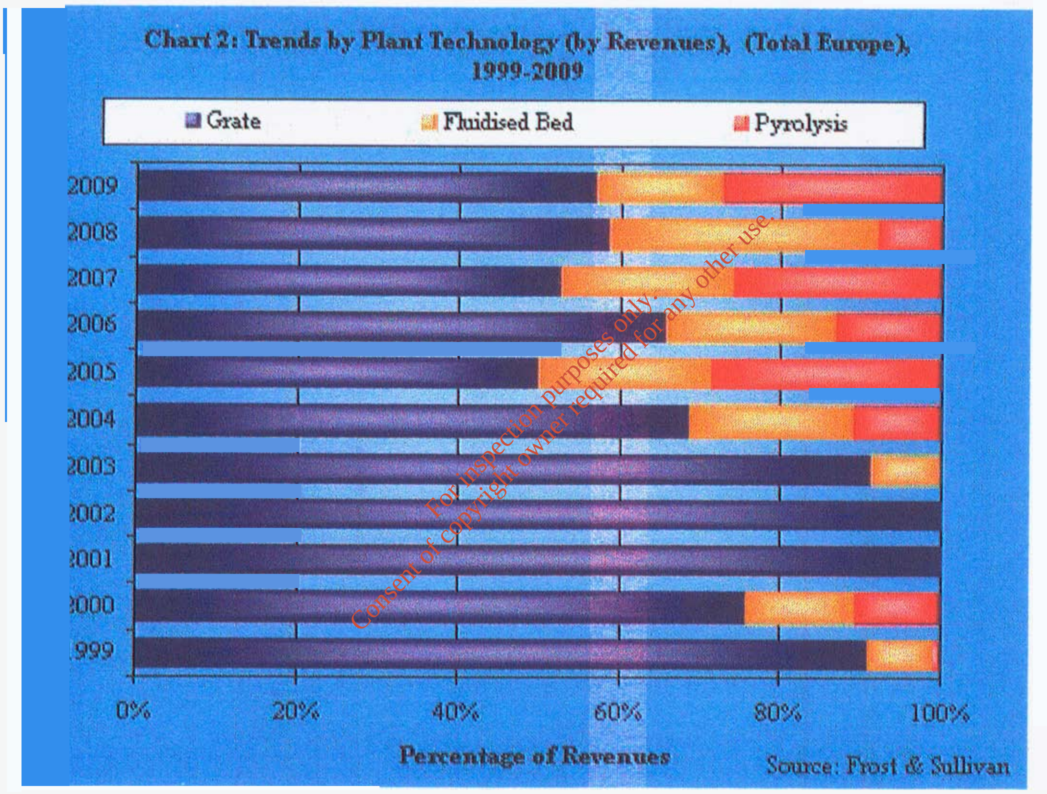
Illustration of a Moving Grate Furnace



The waste is distributed evenly on the moving grate, which is on an incline On the grate, the waste is dried and then burned at between 850°C and 1000°C in the presence of excess oxygen. The grate is designed to ensure efficient transportation and agitation of the waste and an even distribution of the combustion air.

It **was** on the basis of these considerations that the more established grate furnace technology was chosen for the proposed plant as representing the Best Available Technology (BAT).

Trends in incineration Technology in Europe (Source Frost & Sullivan)



Auxiliary Fuel:

Use of Natural Gas or LPG as the Auxiliary Fuel:

It will be necessary to bum fuel to heat up the furnaces after a shut down. and to maintain the temperature in the furnace if low calorific waste is being burnt. Natural gas or LPG. which will have low emissions, will be used as the auxiliary fuel.

Gas Cleaning:

Multi-stage Flue Gas Cleaning Systems

State of the art, multi-stage flue gas cleaning systems will be provided as described in Attachment D2.1 of the licence application. This will ensure that the emission limits, set by EU Directive 2000/76/EC on the Incineration of Waste, will be achieved consistently.

Boiler

In accordance with the Waste Hierarchy, any incineration facility proposed by Indaver includes a boiler for the generation of steam and therefore energy recovery.

Hot water generation, an alternative to steam generation used in other European Countries, was not considered for the proposed facility, as this would require a heat consumer such as district heating which is not used in Ireland.

Dust Filtration

Dust can be separated by means of:

- Cyclone
- Bag house filter
- Electro filter

The choice from the above is dependant on the objective of the filtration and the process conditions.

Cyclones
Cyclones can be used at temperatures up to 900 °C. The efficiency is dependant on particle size and density. For sand it can be over 90 %, for fly ash it is unlikely to have a separation of more than 60 %. Also, depending on the type of particulates wear can be high for such a system.

Electro Filter
Electro filters can be used up to 400 °C. The efficiency here is dependant on the number of "electrical fields" installed. Particulate removal efficiencies of 90% are common. However achieving emission levels for particulates of 5 mg/Nm3 is difficult.

Electro filters have also been linked to dioxin DeNOVO formation due to the operating temperature of 250C to 450C, sparks from the high tension system and residence time in the filter.

Baghouse filter

Bag house filters can operate at temperatures up to 200 °C and they are very efficient. Emission results of less than 1 or 2 mg/Nm3 particulates would be typical. Due to the creation of a cake on the filter cloth it is possible to consider a baghouse filter as a reactor after the injection of activated carbon for dioxin and heavy metal removal. Bag house filters are more expensive in maintenance (change of sleeves each 5 years) however because of the better efficiencies this technology was chosen for Carranstown.

Dry / Semi Wet Acid Gas Cleaning

Indaver Ireland are proposing to install a wet scrubbing system to remove acid gases (HCL /SO_2) from the flue gases. The alternative to this proposal would be to install a dry / semi wet system. This involves injecting lime / limestone in solid form into the scrubbers to remove the acid gases. This system involves dosing with a set amount of lime, which unlike the wet system is not as capable of fluctuations in acid levels.

In addition, both of these alternatives have demonstrated to be not as efficient as the wet system. For example, both scrubbing processes require a much greater consumption of lime than the wet system resulting in a greater volume of residues produced for disposal.

In addition these systems are not suitable for the evaporation of plant wastewater, removing the option of an effluent free incinerator. Also, gypsum recovery is an option for the wet systems.

An example of the emissions comparison between a wet system and a dry/ semi wet system are provided below.

Parameter	Dry / Semi Wet System	Wet System
HCL	5-6mg/ NM^3	1 mg / NM^3
SO_2	30 mg / NM^3	10 - 20 mg / NM^3

Two Stage Dioxin Removal

As described in chapter 4 of Attachment D2.1 of the licence application, there will be two stages of dioxin removal. Activated carbon and lime mix will be injected into the flue gas streams prior to the bag house filter. There will be a second dioxin removal step prior to discharge. The second stage will use either activated carbon and lime mix and bag house filters or a lignite coke filter. Dioxin emissions will be significantly below the limit in the EU Directive 2000/76/EC on the Incineration of Waste, even with single stage dioxin removal, however this two stage system will allow for emissions to be up to 90% below the limit.

NOx Removal

This can be done by Selective Catalytic Reduction (SCR) or Selective Non Catalytic Reduction (SNCR)

SCR

Catalytic Converters can be used as an alternative to ammonia /urea injection into the flue gases to reduce NO_x emissions. This technology requires fossil fuel, more attention to fire safety and complicated process control.

SNCR

This involves the injection of Ammonia into the Boiler. The Ammonia is consumed in excess and then removed as part of the flue gas cleaning. SNCR was chosen for Carranstown.

Cleaner Technology

In accordance with BAT where feasible, cleaner technologies will be utilised in the waste to energy plant in order to minimise wastes and reduce resource consumption. Examples include:

Reuse of all process water, eliminating process effluent

Collection of rainwater from roofs for use in the process

Air-cooled condensers

Use of natural gas as the auxiliary fuel

Maintaining the reception hall and waste bunker at negative pressure.

[Environmental Protection Agency] – Clarify whether metal recovery prior to incineration has been considered and provide details on why it is not proposed at this facility.

As part of the North East Waste Management Plan there are plans for a number of civic waste facilities (community recycling parks) throughout the region. One of the waste streams accepted at these recycling parks is scrap metal from householders. Householders are encouraged to separate this waste stream at source rather than dispose of it with their residual household waste. From experience in other European countries it is not expected to receive much metal waste as part of the residual waste stream for incineration, approximately 2,000 tonnes per annum in a facility accepting 150,000 tonnes per annum or approximately 1.3% of the waste input.

We consider the recovery of metals from the bottom ash produced from the incineration plant as being a more efficient and cleaner process than removing metals from the incoming municipal waste stream. This is the common practice in incineration plants throughout Europe, including our own in Belgium.

In regard to energy use it is much more efficient to recover ca. 2,000 tonnes of metal from ca. 30,000 tonnes of bottom ash (6% by weight) than it would be to recover the same amount from 150,000 tonnes of municipal solid waste.

Also, the recovered metal from bottom ash is free of contaminants such as organics and plastics and is therefore more acceptable at recycling facilities than those metals that would be removed directly from the municipal waste stream.

Emissions from the incinerator will not be effected by the small quantity of metal in the waste stream and the multi-stage gas cleaning system is suitable for the treatment of the flue gases from the furnace. The emission concentrations from the incinerator, based on a similar facility in Belgium are expected to be well below the required emission limits in the incineration Directive 2000/76/EC.

Therefore, the removal of metals prior to the incineration was not considered by Indaver Ireland for the proposed facility.

E2 Proposed Waste Types

[Environmental Protection Agency] – In relation to the waste to energy plant, clarify if it is the intention to accept sewage and industrial sludges.

Indaver Ireland intends to accept sewage and non-hazardous industrial sludges at the waste to energy facility. As stated in Note 2 of Table E.2.1 it is not possible at this stage to provide a detailed breakdown of the anticipated quantities of these types of waste, however a grate incinerator is capable of accepting up to 10% sludges in the incoming waste stream.

H1 Air

1. *[Environmental Protection Agency] – Provide completed Tables 1.1 Air emissions and 1.2 Air Emissions Characterisation for the back up generator (emission point reference A2.1 given in attachment H1.4, Drawing No. 2666-22-DR-009). Provide details on any emissions and the impact of such emissions on the environment from operating this generator. Provide details on the monitoring of any such emissions from this generator.*

Completed tables 1.1 Air emissions and 1.2 Air emissions characterisation for the back up generator are attached as Appendix 10.

An impact assessment for the back up generator air emissions on the environment are provided in Appendix 11.

As stated in the licence application the proposed Waste to Energy facility will be self sufficient in relation to electrical requirements. However, in the event of the plant not producing electricity (i.e. maintenance shutdown), power will be supplied from the national grid. The back up generator will supply electricity to the proposed facility only in the unlikely event of both the incineration plant and the national grids are unable to supply power. Indaver Ireland proposes to run this generator for approx. 1-hours/ month for routine testing which will be equivalent to 12 hours per year. It is proposed that monitoring will be carried out once per annum on the air emissions from the generator.

2. *[Environmental Protection Agency] The maximum air volume to be discharged from emission point reference A1.1 appears to be listed differently in different sections of the application (i.e. Table 1.1 lists 232,237m^3 /h; Section D2.1, p.50 lists 142,000 Nm^3 /h; Section D2.1, p.21 lists 2 x 63,000 Nm^3 /h; Table 1.5 of H2.1, p.16 lists 126,000 Nm^3 /h typical and 150,980 Nm^3/h maximum). Please reconcile these figures and confirm that the dispersion modelling used the correct value.*

The correct air volume discharge can be confirmed as 126,000 Nm^3 /h at nominal operation of the incinerator and 150,980 Nm^3/h at maximum operation. Indaver Ireland confirms that these figures were used for the air dispersion modelling.

Please note that the figure of 232,237m^3 /h is the actual flow rate at the stack at 100°C. When this flow rate is normalised to a dry gas at 11% Oxygen it amounts to 150,980 Nm^3/h at maximum operation.

The flow rate of 2 x 63,000 Nm^3 /h indicates the two lines of the incinerator operating at nominal capacity. As stated in the licence application, both lines are combined prior to the wet flue gas cleaning process to become one stream at 126,000 Nm^3 /h.

The flow rate given on p.50 of section D2.1 is an error and should read 126,000 Nm^3 /h.

3. *[Environmental Protection Agency] The cumulative impact assessment in section H2.1 was carried out for NO_2 and SO_2. This should also be carried out for particulate and Dioxin.*

This assessment has been carried out and is attached as Appendix 11.

4. [*Environmental Protection Agency] An assessment of the annual average impact of SO_2 from emission point reference A1.1 should be included in Section H1.2.*

An assessment of the annual average impact of SO_2 is attached as Appendix 11.

The following electronic files relating to the air dispersion model are attached with this submission.

Input data

Output data

Meteorological data

5. [*Environmental Protection Agency] Please indicate what reference 28 refers to on p/8 of 35 of Appendix 1.2 of section H1.2.*

Reference 28 refers to UK DETR (1998) Review & Assessment: Pollutant-Specific Guidance, The Stationary Office - see Appendix 11.

Placeholder

This page has been inserted to indicate that content has been extracted from this location in the document and has been stored in a separate file. (This is due to file size issues.)

The extracted content can be found in the following electronic pdf file:

Requested Information-Drawing-1

Licence: W0167-01

6. [*Environmental Protection Agency] The impact of assessment in Section H4.1 refers to maximum annual ground level concentrations inconsistent with the air dispersion modelling. This assessment should be redone with the correct values used. Specific reference should be made in this assessment to potential impacts on pNHAs, SACs (flora and fauna) etc already identified.*

Attached as Appendix 12 please find confirmation from Biosphere Environmental Services that the ecology assessment has been completed and is consistent with the air dispersion model completed by AWN as part of the Waste Licence Application. An amended Section H4.1 has also been included in Annex 12.

7. *[Environmental Protection Agency]* Provide details on heat emissions, including source, location, nature, composition, quantity, level and rate; the impact of such emissions on the environment; and details on the monitoring of any such emissions.

For a 31.2 MW waste thermal input per incineration line the following heat balance is expected :

Heat loss by radiation from the hot equipment (furnace, boiler, steam cycle) is approximately 0.6 MW (2 %) and this heat is not recovered but heats the building. This heat is evacuated through the natural draft building ventilation to the atmosphere.

24.2 MW is converted to steam. The remaining heat of 6.4 MW is released from the boiler to the flue gas cleaning.

The 24.2 MW steam is converted to 7.3 MW electricity, 15.7 MW hot air from the aerocondenser and 1.2 MW steam for flue gas reheating prior to release from the stack. Steam at 40 bar / 400 °C enters the turbine and steam at 0.15 bar / 50 °C and only 10 % condensed leaves the turbine. The remaining 90 % steam is condensed in the aerocondenser using indirect cooling. So the steam is condensed in a closed loop and the ambient air is heated.

The 6.4 MW at the outlet of the boiler is reduced to 4.4 MW in the evaporating spray tower. The difference of 2 MW represents the evaporation of water in the spray tower. Sensitive heat of 2 MW is converted in latent heat.

The 4.4 MW at the entrance of the wet flue gas cleaning becomes 1.3 MW at the outlet because once again water is evaporated. Sensitive heat of 3.1 MW is converted in latent heat.

Finally 1.2 MW is added to the 1.3 MW coming from the wet flue gas cleaning by mean of flue gas reheating with steam. (tapped from the turbine at some 8 bar).

A heat balance is included in Appendix 13.

L3 Financial Provision

1. [Environmental Protection Agency] – Provide information to show compliance with section 40 (7) (C) of the Waste Management Act of 1996. This information should include the following:

(a) The two most recent years audits.

This is attached as confidential information

(b) A copy of the business plan for the company (or relevant parts thereof) including income and expenditure projections with particular reference to the facility at Carranstown, Duleek.

This is attached as confidential information

(c) The manner by which funds will be available for site development, operation, closure, and restoration.

This is attached as confidential information

(d) A fully costed Environmental Liabilities Risk Assessment for the facility which addresses liabilities arising from the carrying on of the proposed waste activities9to include all proposed waste activities);

An Environmental Liabilities Risk Assessment has been undertaken by Bord na Mona and is attached in Appendix 14

(e) A proposal for Financial provision to cover the liabilities incurred in carrying on the proposed waste activities.

As per the attached Environmental Liabilities Risk Assessment, Indaver have €12,500,000 Insurance Cover, which is sufficient to cover any potential liabilities incurred in carrying on the proposed waste activities.

Unsolicited Information:

1. Throughout the waste licence application Indaver Ireland have referred to the Waste to Energy Facility as having a nominal annual throughput of 150,000 tonnes of waste, with a maximum of 180,000 tonnes per annum. However the Thermal Capacity of the plant (61MW) is the limiting factor for the operation of the facility. Indaver Ireland are therefore submitting a "Combustion Diagram" demonstrating the effects of calorific value on the waste input tonnage. This diagram including a descriptive text is attached as Appendix 15.

2. Indaver Ireland have expanded the Emergency Shutdown Procedure originally submitted as part of Attachment K1.1. In addition expanded details on potential abnormal operating conditions for each section of the plant and furnace start up and shutdown procedures, originally submitted as part of Attachment D2.1, section 4

The updated submission is attached in Appendix 16.

3. Indaver – Information on Indaver's Static Kiln incident and recommisioning of the kiln are provided in attachment 17.