

This report has been cleared for submission to the Board by the Senior Inspector Brian Meaney

Signed Aedon Date 22/9/10



OFFICE OF CLIMATE,
LICENSING & RESOURCE
USE

INSPECTORS REPORT ON A LICENCE APPLICATION

TO:	Directors	
FROM:	Aoife Loughnane	Environmental Licensing Programme
DATE:	22 nd September 2010	
RE:	Application for review of Waste Licence from Indaver Ireland (Branch of Indaver NV), 4 Haddington Terrace, Dun Laoghaire, Co. Dublin. Licence Reg. W0167-02.	

Type of facility:	Non-Hazardous Waste Incineration/Waste-to-Energy Facility
Classes of Activity (P = principal activity):	3 rd Schedule: 7, 8(P), 12 & 13 4 th Schedule: 3, 4, 9 & 13 (Note Class 8 is refused in the RD)
Quantity of waste managed (tonnes per annum, tpa):	200,000 tpa for incineration, 2,000 tpa for treatment in residue solidification plant.
Classes of Waste:	Non-hazardous household, commercial & industrial wastes
Location of facility:	Carranstown, Duleek, Co. Meath.
Licence review application received:	03/03/2009
Submissions:	3 Third Party Submissions & 1 Applicant Submission
EIS Required:	Yes
Article 14 Notices sent:	26/06/2009, 02/06/2010
Article 14 responses received:	23/07/2009, 31/12/2009, 18/06/2010
Additional information received:	04/08/2010, 17/08/2010
Site Inspection:	12/06/2009
Site Notice Inspection:	27/03/2009 (Patrick Morris, OCLR)

Summary

This report relates to an application received from Indaver Ireland for a review of existing Waste Licence W0167-01, granted on 24th November 2005, for a proposed Waste Incineration/Waste-to-Energy Plant at Carranstown, Duleek, Co. Meath.

Indaver are seeking an increase in the licensed maximum waste incineration capacity from 150,000 to 200,000 tonnes per annum (tpa). Other changes incorporated into the licence review application include a revised facility layout, new design features and the removal of the previously authorised materials recovery facility (20,000 tpa capacity).

Indaver Ireland is a wholly owned subsidiary of Indaver NV, a Flemish company specialising in integrated waste management. Indaver Ireland is currently developing this facility and also plans to develop a hazardous and non-hazardous waste incinerator at Ringaskiddy, Co. Cork (Waste Licence W0186-01). Indaver also operate a hazardous and non-hazardous waste transfer station incorporating a solvent blending plant at Dublin Port (Waste Licence W0036-02).

The history of planning permissions granted for this facility to date is as follows:

- (i) **PL17.126307** granted by An Bord Pleanála on 3rd March 2003 for a 150,000 tonnes per annum incineration plant with energy recovery and 20,000 tonnes per annum materials recycling facility;
- (ii) **PL17.219721** granted by An Bord Pleanála on 15th October 2007 for changes to the facility to accommodate a 200,000 tonnes per annum incineration plant with energy recovery; and
- (iii) **SA/901467** granted by Meath County Council on 10th November 2009 for changes to the main process building (reduction in overall size and change of shape), and changes to other site infrastructure (gatehouse, warehouse, turbine building, ESB compound, storage tanks) and services (drainage scheme, sewage treatment, internal road network).

An Environmental Impact Statement accompanied each of the above planning applications. The applicant has submitted the two most recent Environmental Impact Statements (referred to as the '2006 EIS' and '2009 EIS') in support of this licence review application. The current facility design is described in the 2009 EIS but many of the baseline and other studies provided in the 2006 EIS remain valid. I have examined and assessed both EISs and, having regard to the statutory responsibilities of the EPA, I am satisfied that they comply with Article 94 and Schedule 6 of the Planning and Development Regulations 2001 (S.I. 600 of 2001) and the Waste Management (Licensing) Regulations (S.I. 395 of 2004, as amended).

Site preparation works commenced in September 2008 and construction works commenced in September 2009. The applicant expects to start commissioning the incineration plant in early 2011, and to commence full plant operation in the third quarter of 2011.

1. Facility

The 10 hectare site is located approximately 2.5km north-east of Duleek and 3km south-west of Drogheda (see Figure 1 in the Appendix). The R152 regional road between Duleek and Drogheda runs along the southern boundary of the site. The Platin cement factory and its associated quarry, which is operated by Irish Cement Ltd. under IPPC Licence P0030-03, is located to the north-east of the site. A commercial freight railway line, used to transport freight for Tara Mines and Platin Cement, runs approximately 60 metres north of the site boundary. The land use in the area is predominantly agricultural.

There are approximately 55 residences within 1km of the site. The closest to the facility are two residential dwellings at the eastern corner of the site and two dwellings located across the R152 to the south of the facility. There is also a group of five dwellings located across the R152 road from the eastern corner of the site, an unoccupied house and a newly built house adjacent to the southern boundary, and two farm houses located 400 metres to the west of the site across the railway line. Other buildings in the area include a primary school (Scoil Colm Cille, Mount Hanover) which is located approximately 1km east of the site. There are two commercial premises (tyre centre and garage) located across the R152 road from the eastern corner of the site and a public house, Carranstown Lodge, is located approximately 500m south-west of the site. There is a football club located adjacent to Carranstown Lodge.

A 110kV power line traverses the site, a natural gas pipeline runs directly under the site and a low pressure gas main runs along the R152 road. Due to the proposed facility layout, there will be no requirement to divert the power line or gas pipelines.

The proposed buildings and structures on site will comprise the main process building (incorporating reception/tipping hall, waste bunker, furnace, boiler, turbine and auxiliaries, flue gas treatment system and 65m high stack), ash handling hall, air-cooled condensers,

transformer compound and ESB substation, water storage tank and pumphouse, surface water attenuation pond, security gatehouse, two weighbridges, two Puraflo waste water treatment systems and associated percolation areas. Figure 2 in the Appendix shows a comparison of the site layouts as approved under W0167-01 and as revised in this application.

There will be no change to the hours of waste acceptance and operation as authorised under the existing licence. The facility will accept waste between 08:00 and 18:30 Monday to Friday, and 08:00 and 14:00 on Saturdays. The incineration plant will operate 24 hours a day for approximately 7,500 hours per annum (i.e., approximately 312 days), depending on the energy content of the waste. When fully operational, the facility will employ approximately 50 permanent staff. The plant operators will work in three eight-hour shifts.

The applicant states that the proposed facility will operate to ISO 9001:2000, ISO 14001 and OHSAS 18001, the internationally recognised quality, environmental and health and safety standards respectively.

2. Operational Description

The proposed 70 Megawatt Waste-to-Energy (WtE) facility is designed to incinerate and recover energy from non-hazardous household, commercial and industrial waste. The WtE plant will consist of a single incineration line with a nominal capacity of 26.7 tonnes per hour, assuming an average calorific value of waste of 9.4 MJ/kg. The waste throughput, which depends on the calorific value of the waste, is controlled by the plant design thermal input. The plant design is based on moving grate furnace technology, with a horizontal steam boiler and an advanced flue gas treatment system. The plant will produce 17.6 MW of electricity, of which approximately 15.1 MW will be exported to the national grid.

Waste accepted at the facility will be tipped into the waste bunker prior to being loaded into the furnace, where the waste will be incinerated, producing heat, ash and combustion gases. The furnace control system will monitor a range of parameters and make adjustments to the process to ensure complete combustion and compliance with the emission limits for waste gases. The gases will be cooled, cleaned and filtered in order to capture pollutants, prior to discharge to atmosphere via a 65m stack. The heat produced by the waste combustion will be used to generate steam, which will drive a steam turbine and generate electricity. The incinerator residues (bottom ash, boiler ash and flue gas treatment residues) will be collected for disposal off-site. A schematic of the incineration, energy recovery and flue gas treatment processes is shown in Figure 3 in the Appendix.

In line with EU Directive 2000/76/EC on the incineration of waste (WID), the plant will be designed, built and operated to ensure that a temperature of 850°C will be maintained for at least 2 seconds after the last injection of combustion air at all times. The plant will be equipped with auxiliary burners (light fuel oil fired) which will be used to maintain these conditions where necessary, e.g. during start-up and when the furnace is operating at partial load.

Flue Gas Treatment System

The applicant states that the combustion process and flue gas treatment (FGT) system have been designed to ensure that emissions from the stack are well below the limits set in *Annex V: Air Emission Limit Values* of WID. The FGT system has been redesigned since grant of waste licence W0167-01, as a combined semi-wet and dry process with residue recirculation. The key treatment stages include:

- I. **First stage dioxin/furan and heavy metals removal** by the injection of expanded clay into a duct at the boiler outlet. Any dioxins/furans and heavy metals are adsorbed into the clay and removed in the baghouse filter downstream;

- II. **Spray drier absorber** in which a lime slurry is injected to cool the flue gases and react with acid gases such as hydrochloric acid (HCl) and hydrofluoric acid (HF). This forms reaction salts which are removed in the baghouse filter downstream;
- III. **Second stage dioxin/furan and heavy metals removal and acid gas treatment** by the injection of activated carbon, re-activated lime from the baghouse filter and fresh hydrated lime absorbent, where necessary. This ensures that any remaining pollutants are captured;
- IV. **Baghouse filter** for the removal of particulates. The residue is shaken off the filters into dust collection hoppers. As the residue still contains some unreacted lime, most of it can be recycled into the reaction duct to minimise the amount of residue for disposal;
- V. **Induced draught fan** to draw incineration gases through the treatment system; and
- VI. **A 65m stack** equipped with continuous emissions monitoring systems (CEMS).

In accordance with WID, the FGT system performance will be monitored and controlled by continuous monitoring of specific parameters in the stack, e.g. total dust, TOC, HCl, SO₂, NO_x, CO, temperature, O₂, etc. These continuous measurements can be reviewed in real-time in the control room. A continuous sampling system for dioxins/furans will be installed, with analysis every two weeks. Heavy metals emissions will be monitored on a quarterly basis. The RD specifies discharge limits and monitoring requirements for emissions to air from the stack in accordance with WID. The proposed abatement/treatment systems at the facility are shown in Table 1.

Table 1: Abatement/Treatment Systems at the Waste to Energy Plant

Emission	Abatement / Treatment / Recovery System
Odour	Primary air for waste combustion will be drawn from waste reception hall and waste bunker.
Oxides of Nitrogen (NO _x)	Injection of ammonia solution as selective non-catalytic reduction (SNCR) reagent in post combustion chamber.
Sulphur Dioxide (SO ₂), Hydrogen Chloride (HCl) and Hydrogen Fluoride (HF).	Lime injection in spray drier absorber and reaction duct, baghouse filter.
Dust	Baghouse filter
Dioxins and Furans	Minimum temperature of 850°C for 2 seconds after last injection of combustion air, injection of expanded clay, activated carbon and lime, baghouse filter.
Heavy metals	Expanded clay and activate carbon injections, baghouse filter.
Total Organic Carbon (TOC)	Combustion control system
Carbon monoxide (CO)	Combustion control system
Incinerator residues	Dry residues will be stored in enclosed containers, ferrous metals recovery from bottom ash, potential solidification of FGT residues and boiler ash.
Storm water run-off	Class I oil separator, attenuation pond, discharge rate controlled by hydrobrake.
Sanitary waste water	Two on-site package waste water treatment plants and engineered percolation areas.
Noise	Operation of plant and equipment below the specified noise limits.

Abnormal Operation / Shut-down

Any malfunction in the incineration process will be detected immediately by the control system which signals an alarm in advance of any exceedance of the emission limit values.

Article 13 of WID sets out requirements regarding 'abnormal operating conditions', which are considered to be *'technically unavoidable stoppages, disturbances, or failures of the purification devices or the measurement devices, during which the concentrations in the discharges to air of the regulated substances may exceed the prescribed emission limit values'*. Under these conditions, WID allows an incinerator to continue to operate where there are exceedances of prescribed ELVs for up to 4 hours, with a cumulative duration of less than 60 hours in any one year. This allows remedial action to be taken and thus avoid complete shut-down of the furnace. It is reasonable to provide for such circumstances as it is BAT to minimise planned and unplanned shut-down and start-up operations. The WID requirements regarding abnormal operations are specified in Condition 3.20 of the RD.

In the event of a power failure, waste will be prevented from entering the furnace and the incinerator will automatically shut-down. During shut-down, while there is waste in the furnace, all flue gases will pass through the gas cleaning system and discharge via the stack. The motors and equipment required for operation during the shut-down process will be powered by an emergency generator. The induced draft fan will keep operating, drawing air through the system, in order to maintain the reception hall and waste bunker under negative air pressure. This will enable odours to be controlled and discharged via the stack.

The applicant has stated that the capacity of the waste bunker will allow the acceptance of waste during shut-down for approximately 10 days. From their experience of operating similar plants in Belgium, they state that unplanned shut-down events typically require a maximum shut-down of one week per year. A planned shut-down for maintenance will take place once a year and will last typically from one to three weeks. However, Condition 9.4.1 of the RD requires that during shut-down, any waste arriving at the facility shall be transferred directly to another appropriate facility, and any waste stored in the bunker shall be transferred to an appropriate facility within three days of shut-down, unless otherwise agreed by the Agency.

Proposed Facility Design Changes

The principle proposed modifications to the facility which was approved under Licence W0167-01 include:

- (i) Increase in maximum waste incineration capacity from 150,000 to 200,000 tpa:**
 - Increase in capacity of the waste bunker (from 12,000m³ to 16,000m³), furnace, boiler and flue gas treatment system, in line with the increased plant throughput.
 - Increase in electricity production from 14 MW to 17.6MW and corresponding increase in electricity to be exported to the national grid from 11MW to 15.1MW.
 - Increase in quantity of incinerator residues from 25% of waste throughput (previously 38,000 tpa residues anticipated) to 31.5% (now 63,000 tpa residues anticipated). The increased generation of residues is due to changes to the plant design, in particular the selected grate type and the revised FGT system.

- (ii) Reconfiguration of plant from twin incinerator lines to single incineration line with a single furnace and boiler leading into a single flue gas treatment system:**
 - The nominal design capacity of the moving grate furnace is 26.7 tonnes per hour compared with the previous two lines operating at 10 tonnes per hour each.
 - The single incineration line will lead to a degree of reduced flexibility as the plant will cease to accept waste if the bunker reaches capacity during a shut-down.

(iii) Reconfiguration of the flue gas treatment system:

- Movement of the first stage dioxin/furan and heavy metals removal to upstream of the spray drier absorber and the use of expanded clay rather than activated carbon/lime.
- Replacement of the wet scrubbing system/tail-end cleaning with a second stage dioxin/furan/heavy metals/acid gas removal in the reaction duct before the baghouse filter.
- Removal of the reheat of gases prior to discharge, as the temperature of the gases at the end of the treatment system will be sufficiently high to avoid the formation of a visible plume.
- An overall increase in energy efficiency and decrease in reagent consumption.

(iv) Re-design of the facility layout, infrastructure and services:

- Change in footprint, size and alignment of main process building.
- Removal of turbine building by situating turbine inside the main process building and relocating the air condensers to the north east of the process building.
- Replacement of ash bunker with an ash handling building.
- Relocation of waste quarantine area from the reception hall to the outdoor service yard, where any non-conforming waste will be fully contained in transport vehicles ready for movement off-site (the existing licence specifies that no waste shall be quarantined in the waste reception/delivery area for the incinerator).
- Revised drainage design to allow the discharge of surface water runoff from the site to an adjacent drainage ditch rather than recirculation within the process.
- Removal of proposed materials recovery facility (MRF). Since the original proposal in 2001, separate waste collection has been rolled out and a number of MRFs have been developed in the North-East Region. Therefore, the applicant no longer intends to develop an MRF at this facility.
- Integration of administration and visitor facilities into the main process building.
- Relocation of water tank, pumphouse, transformer compound and main sewage treatment system. Addition of a second smaller sewage treatment system to service the security gatehouse.
- The electricity connection to Rathmullan substation will now be made via a 38kV distribution network rather than a 20 kV network.
- The auxiliary burners will be fired with light fuel oil rather than natural gas.

Classes of Activity

The classes of activity applied for under the Third and Fourth Schedules of the Waste Management Acts, 1996 to 2010 are shown in Table 2 below. The principle activity is Class 8 of the Third Schedule (*incineration on land*). As authorised under the existing licence, Indaver have re-applied for Class 7 of the Third Schedule (*physico-chemical treatment*) in order to retain the option to install residues treatment equipment at the facility in the future, and Class 4 of the Fourth Schedule (*recovery of inorganic materials*) in order to retain the option of developing a bottom ash recovery facility in the future. The RD authorises these classes of activity. Any additional infrastructural requirements must be agreed with the Agency as engineering works under Condition 3.25 of the RD.

As outlined in Table 2, Classes 2 and 6 of the Fourth Schedule have been removed as they are no longer necessary for operation of the proposed facility. While the applicant has applied for Class 8 of the Fourth Schedule, the RD does not authorise it as the burning of waste oils is not permitted at this facility, based on their classification as hazardous wastes. The burning of recovered waste oils which are deemed to have achieved end-of-waste status is considered acceptable. However, Class 8 authorisation is not required for this purpose, as the use of fuel in the auxiliary burners is not considered a waste treatment process.

Table 2: Classes of Activity

Nature of Waste Activity	Classes Applied for	Changes from W0167-01	Reasons given by applicant
Third Schedule, WMAs 1996 – 2010: Disposal Activities	7, 8(P), 12 & 13	None	N/A
Fourth Schedule, WMAs 1996 – 2010: Recovery Activities	3, 4, 8, 9 & 13	Removal of Class 2: <i>recycling of organic substances</i>	No longer relevant due to removal of on-site MRF.
		Removal of Class 6: <i>recovery of components used for pollution abatement</i>	No longer necessary as gypsum will no longer be produced as a by-product in the FGT system.
		Addition of Class 8: <i>Oil re-refining or other re-uses of oil</i>	To operate the auxiliary burners on a re-usable oil product.

Waste Types & Quantities

The applicant has applied for the treatment of 200,000 tpa of non-hazardous residual municipal waste, commercial and industrial waste, aqueous wastes, sewage and industrial sludges, and construction and demolition wastes. The proposed waste types and quantities are presented in Table 3 below.

Table 3: Waste Types and Quantities for Incineration

Waste Type	Tonnes per Annum	EWC Codes
Non-hazardous residual municipal waste	0 – 200,000	269 waste types from EWC Chapters: 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 15, 16, 17, 18, 19, 20.
Commercial & Industrial non-hazardous waste	0 – 50,000	
Sewage & Industrial sludges	0 – 20,000	
Non-hazardous aqueous waste	0 – 10,000	
Construction & Demolition waste	0 – 50,000	
Total	200,000	

The applicant is seeking authorisation for the incineration of a wide range of waste streams (269 EWC codes compared to 9 currently authorised). They have also requested the provision that additional EWC codes may be agreed with the Agency in the future. WID requires that a licence explicitly lists, by EWC code, the categories of waste which may be incinerated at a facility. *Schedule A: Limitations* of the RL authorises the requested waste streams. Other types of waste may be incorporated into the licence in the future by means of technical amendment or licence review, as appropriate.

Sludges & Aqueous Wastes

The applicant proposes to accept up to 20,000 tpa of sewage and industrial sludges for incineration (expected dry solids content of 10 – 35% and calorific value of 15 MJ/kg). The sludges will be loaded into the waste bunker along with other wastes in order to facilitate mixing and the preparation of a homogeneous feedstock to the furnace. The applicant states that the moving grate furnace can handle up to 10% sludges in the waste input.

The applicant also proposes to accept up to 10,000 tpa of non-hazardous aqueous wastes, e.g., aqueous suspensions containing paint/varnish/ink/ceramic materials, rinsing liquids, landfill leachate, etc. All aqueous wastes will be tested at Indaver’s Dublin Port laboratory prior to arrival at this facility. Liquid waste tankers will drive to a separate dedicated

unloading area at the side of the main process building. Condition 3.11 of the RD requires the licensee to provide adequate tank storage on site for aqueous wastes delivered to the facility for treatment. Condition 3.14 requires appropriate drainage infrastructure at the aqueous waste unloading area to collect any potential spills or losses. All waste water from this area shall be diverted for collection and safe disposal.

The liquid wastes will be directly injected into the furnace via nozzles above the grate. The injection of liquid wastes will mitigate the effect of high calorific value wastes like refuse derived fuel that are likely to increase in volume in the future. The injection of liquid wastes would have the effect of cooling the grate, potentially reducing the amount of extracted groundwater required for grate cooling.

Construction & Demolition Waste

The applicant proposes to accept up to 50,000 tpa of C&D wastes for incineration, in order to destroy or 'clean' organic contamination from bulk inorganic materials. While such wastes may not have an energy value, there may be situations where they become contaminated with organic materials, e.g., soils contaminated with oil, and cannot be suitably managed in landfill. In such circumstances, processing the waste stream in the incinerator would remove any contamination and enable the safe recovery or disposal to landfill of residues via the bottom ash. While the applicant has applied for up to 50,000 tonnes of C&D waste acceptance, they do not envisage that significant volumes would arise for treatment.

Pre-Treatment of Municipal Solid Waste

The Agency's technical guidance document *Municipal Solid Waste – Pre-treatment and Residuals Management* (EPA, 2009), sets out pre-treatment obligations for municipal solid waste. The guidance requires the operator of a WtE incinerator to demonstrate that waste accepted for incineration has been pre-treated to an acceptable level. For WtE incineration, source separation of municipal waste (2 bin or equivalent) is a minimum pre-treatment requirement. For urban areas (>1,500 population) diversion or separate collection of biowaste (i.e. third bin) is expected. Mechanical treatment of the incinerator residues that will yield marketable recyclable (non-energy) fractions (e.g. metals) is also expected. Pre-incineration biological treatment of black bin residual waste is not mandatory.

The applicant has submitted a legal opinion, based on advice from Arthur Cox, on the Agency's Pre-treatment Guidance Note (the full text of the legal opinion is contained in Appendix 12.b of the revised waste licence application article 14 response received on 18/06/2010). The text states that WtE is part of the solution to the problem posed by the landfill diversion targets and the pre-treatment obligations cannot be applied to this WtE facility without breaching domestic and EU law. Six main points are argued, and are summarised below.

- 1. The Agency's Pre-treatment Guidance Note has no basis in domestic or EU law** as the only instrument that establishes a pre-treatment obligation and diversion targets is the Landfill Directive and, by definition, that instrument does not apply to the Meath WtE facility. The reference document on BAT (BREF) for waste incineration (European IPPC Bureau, August 2006) states: "*it is BAT to pre-treat incoming wastes to the degree required to meet the design specification of the receiving installation, noting that to treat waste beyond this requires balanced consideration of (possible limited) benefits, operational factors and cross-media effects*". BAT is relevant to whether the waste accepted for combustion has been pre-treated to the degree required to meet the design specification of the plant. It is not relevant to source separated collection systems and the number of bins used to collect waste from urban and other areas.

2. **It is premature to insist that a WtE operator must respect an obligation that does not yet exist in domestic or EU law.** The revised Waste Framework Directive (WsfD 2008/98/EC), under article 22 (Bio-waste), requires Member States to take measures to encourage, *inter alia*, “the separate collection of bio-waste with a view to the composting and digestion of bio-waste”. This provision does not provide the EPA with an obligation to impose, or a basis for imposing, a pre-treatment obligation or diversion target for WtE.
3. **It does not differentiate between landfill and WtE** despite the different priority order in the waste management hierarchy. Article 4 of the revised WsfD establishes a hierarchy to be applied as a priority order in waste management legislation and policy. The hierarchy distinguishes between:

- “(d) other recovery, e.g. energy recovery; and
- (e) disposal.”

The Meath WtE project falls within (d) as it will meet the energy efficiency criterion described at R1 of Annex II of the revised WsfD. Landfill falls within (e). Notwithstanding this different priority order, the Guidance subjects both landfill and WtE to the same minimum pre-treatment obligation. This offends the hierarchy and, if given effect in the Meath WtE revised licence, would represent a breach of EU law.

The Guidance fails to recognise one critical difference between landfill and WtE that is directly relevant to source separated collection systems. According to Indaver, almost every landfill operator, whether public or private, operates a parallel waste collection service and/or has control over the management of that collection service. Indaver does not. This presents Indaver with insurmountable practical difficulties that do not arise for landfill operators. The EPA must acknowledge relevant differences and cannot impose a disproportionate burden on waste operators who do not also collect waste or control waste collection services.

4. **It represents an unlawful and unjustified barrier to entry to, and will prevent, restrict or distort competition in, the market for waste infrastructure.** EU and domestic law requires effective competition and prohibits unjustified regulatory interference that would distort competition. The High Court has applied this logic to the waste collection market and prohibited a public authority from exercising regulatory powers to distort competition in that market (*Nurendale Limited t/a Panda Waste Services v. Dublin City Council & ors.* and *Greenstar Limited v. Dublin City Council & ors.*, unreported, High Court, McKechnie J., 21 December 2009).

The, perhaps inadvertent, advantage for landfill operators gives rise to the same competition issues. Specifically, the minimum pre-treatment obligation imposed on WtE requires a measure of control over collection services. It is possible that the necessary measure of control cannot be achieved without establishing waste collection services. This perverse outcome would represent an unlawful and unjustified barrier to entry to the market for waste infrastructure. Put simply, it would be unlawful to insist that Indaver enters the waste collection market as pre-condition to accessing the market for waste infrastructure.

Indaver’s competitors in the waste infrastructure market are responsible for the collection of waste from producers. These are the same persons with whom Indaver would have to make arrangements to satisfy the minimum pre-treatment obligation in the Guidance. Also, the Guidance provides an advantage to Indaver’s competitors in the waste market, whether public or private, as they can limit

source-separated collection systems to the extent necessary to deliver waste to their own landfill, to the exclusion of WtE facilities. All of these difficulties flow from the premature attempt to impose obligations that have no basis in domestic or EU law or policy.

5. **It is impractical, unclear and incapable of meaningful enforcement.** Assuming waste from third party collectors is accepted at the WtE facility, those persons would have influence (if not control) over how and whether the facility complies with the minimum pre-treatment obligation in the Guidance. This would be unacceptable and inconsistent with proper administration and enforcement of any licensing code.
6. **It is unnecessary** as there are alternative and more appropriate mechanisms for regulating the waste collection market. These include (i) primary regulation of waste producers, by requiring presentation of separate waste streams for collections; and/or (ii) primary regulation of waste collectors, by requiring separate collection, whether under law or through their collection permits. Both would provide meaningful control of persons directly responsible for waste production and collection. WtE is too far removed from the activity that requires regulation for the Guidance to be effective.

The legal opinion concludes that *“the Guidance represents current thinking of the Agency and no more. It is not listed as a relevant statutory consideration in the decision-making process on a new or revised licence. For all of these reasons, we are advised that there is no lawful basis for the EPA to impose the minimum pre-treatment obligation of the kind proposed in the Guidance”*.

Response: While the applicant has submitted this legal opinion as part of the licence application, they have also identified in Table H.1(c) *Expected Waste Types and Quantities for Incineration*, that the municipal waste which will be accepted at the facility will be ‘Non-hazardous Residual Municipal Waste’. Furthermore, Section 4 of the 2009 EIS ‘Planning and Policy Context’ states *“the facility will help landfills to meet the pre-treatment requirements. It will accept residual waste that has been pre-treated in line with the EPA guidance. This will also be a condition of Indaver’s waste licence from the EPA”*.

The Pre-treatment Guidance document sets out the EPA standard for minimum acceptable pre-treatment for MSW accepted for landfilling or incineration at EPA licensed waste facilities. The guidance document supports the EPA’s formal sectoral guidance on BAT for the waste sector. Indaver had an opportunity to make a submission on the guidance document during the public consultation period, prior to its publication in 2009. A submission on the guidance document was received and considered from CEWEP Ireland (Confederation of European Waste to Energy Plants, Irish branch). As it is Agency guidance, I have had full regard to the guidance document in drafting the RD. Condition 8.4 of the RD specifies that in the case of municipal waste, only waste that has been subject to pre-treatment shall be accepted for incineration. Pre-treatment shall reflect the published EPA technical guidance which itself reflects Government policy on the provision of 2- and 3-bin systems to householders (policy guidance circular WPRR 17/08¹ and circular WPRR 04/09² pursuant to section 60 of the Waste Management Acts) and the segregation of food waste from commercial premises.

¹ Circular WPRR 17/08 dated 31st July 2008 on National Strategy on Biodegradable Waste, Implementation of segregated “Brown Bin” collection for Biowaste and Home Composting.

² Circular WPRR 04/09 dated 29th May 2009 on progress in respect of implementing the waste management provisions of the Programme for Government.

While the application is for the treatment of residual waste, the applicant is also seeking to incinerate non-contaminated and separately collected recyclable wastes in the event that recycling outlets are not available, e.g., during a collapse in the recycling market such as that which occurred in 2008. This includes, for example, construction and demolition waste streams like wood and plastics. *Schedule A* of the RD authorises this request in principle, however, the licensee must obtain the prior agreement of the Agency in such circumstances.

Wastes for Treatment at the facility other than Incineration

The applicant also proposes to accept up to 2,000 tpa of industrial non-hazardous waste for treatment other than incineration. This proposal relates to the acceptance of materials like fly ash from other combustion processes, for waste-to-waste applications in the proposed on-site residue treatment facility. Fly ash could be used as a substitute for cement in the residue solidification process because it typically possesses excellent pozzolanic properties, i.e., it will react with water and calcium hydroxide (lime) to form cement. *Schedule A.2* of the RD authorises this proposal.

3. Use of Resources

The inputs to the process are waste for incineration, raw materials, water and light fuel oil. The major outputs are electricity, ash, flue gases and flue gas treatment residues.

3.1 Energy

WtE facilities provide a renewable source of energy and are in line with EU and national policy to promote renewable energy sources. The facility will be a nett exporter of energy and the waste to be combusted is its primary fuel. The revisions to the FGT system and the selection of a higher efficiency steam turbine/electricity generator has meant that the overall energy efficiency of the plant has improved. The electrical generation efficiency is 25.4% compared with the previous design of 23.8%. The 15.1 MW electricity to be exported to the national grid would provide power to approximately 22,000 homes.

Hot water generation (as opposed to steam generation), which is very energy efficient, is not proposed at this facility as it requires connection to a heat consumer which typically comprises district heating schemes. Such a network is not available in the North East Region, therefore it was not considered as an option for the proposed development.

The revised Waste Framework Directive (2008/98/EC) considers energy efficient WtE MSW incinerators as waste recovery operations rather than waste disposal. To qualify as a waste recovery operation, new incinerators must have an efficiency factor of 0.65 as a minimum, using the R1 formula¹ to calculate energy efficiency. The applicant has calculated an energy efficiency factor of 0.71 for this facility, therefore qualifying as a waste recovery operation. Condition 7 of the RD specifies the energy efficiency criteria in accordance with the Waste Framework Directive. The licensee is required to carry out an annual audit of the energy efficiency of the facility.

¹ Energy Efficiency = $(E_p - (E_r + E_i)) / (0.97 \times (E_w + E_i))$

In which:

E_p means annual energy produced as heat or electricity.

E_r means annual energy input to the system from fuels contributing to the production of steam

E_w means annual energy contained in the treated waste

E_i means annual energy imported

0.97 is a factor accounting for energy losses due to bottom ash and radiation.

3.2 Climate

Based on Ireland's Kyoto target of 62.8 million tonnes CO₂ equivalent in 2010, the predicted contribution of the proposed WtE facility to GHG emissions is equivalent to 0.041% of this target when energy recovery is taken into account. In the absence of the development, GHG emissions will occur from the landfilling of the waste. The contribution to GHG emissions from landfilling 200,000 tonnes of waste, including the generation of power from landfill gas, condensed to a 25-year period, is equivalent to 0.046% of Ireland's 2010 Kyoto target. Therefore, the overall annual impact of the proposed facility on climate is to produce a net benefit of approximately 0.005% of Ireland's 2010 Kyoto target. This will be imperceptible in terms of Ireland's obligations under the Kyoto Protocol, but is positive nonetheless.

3.3 Water

The anticipated water consumption is shown in Table 4. Despite the proposed increase in plant capacity, the total water requirement has decreased from 15m³/h to 8.5m³/hr, mainly due to the revised effluent-free FGT design. Potable water for staff facilities will be supplied from the public watermain. Process water will be supplied from a groundwater well on site. The plant has been designed for low water consumption by the use of air-cooled condensers and an effluent-free FGT system. Boiler blow-down will be recycled for use in the spray drier absorber.

Table 4: Water Supply & Consumption

Use	Source	Quantity (m ³ /hour)
Drinking water	Public mains supply	1.0
Flue gas cleaning	Groundwater well	3.3
Process (Steam cycle)	Groundwater well	1.0
Cleaning and domestic supplies	Groundwater well	3.0
Fire fighting	Groundwater well	0.2
Total		8.5

3.4 Other Materials

The anticipated raw materials usage is shown in Table 5. While the increased incineration capacity will lead to an increase in the consumption of some materials, there will be a decrease in ammonia, lime and limestone usage due to modifications in the FGT system.

Table 5: Raw Materials Consumption

Flue Gas Treatment:	Activated carbon (122 tpa), expanded clay (122 tpa), hydrated lime (1,000 tpa), quick lime (2,647 tpa)
SNCR reagent:	Ammonia solution (400 tpa)
Demineralisation plant:	Ammonia solution (30 tpa), sodium hydroxide (26 tpa), hydrochloric acid (29 tpa)
Incinerator residues solidification:	Hydrochloric acid (1,100 tpa), cement (1,650 tpa)
Auxiliary burners:	Light fuel oil (300 tpa)
Fuelling on-site vehicles:	Diesel oil (15 tpa)
Lubrication:	Hydraulic oil (5 tpa)

4. Emissions

4.1 Air

There will be one major emission to atmosphere from the 65m high stack, through which the treated flue gases will be discharged. The combustion of waste has the potential to produce a number of emissions which are regulated by EU Directive 2000/76/EC on the incineration of waste (WID), namely:

- Nitrogen Dioxide (NO₂);
- Sulphur Dioxide (SO₂);
- Total Dust;
- Carbon Monoxide (CO);
- Total Organic Carbon (TOC);
- Hydrogen Fluoride (HF) and Hydrogen Chloride (HCl);
- Dioxins and Furans (PCDD/PCDFs);
- Cadmium (Cd) and Thallium (Tl);
- Mercury (Hg);
- the sum of Antimony (Sb), Arsenic (As), Lead (Pb), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni) and Vanadium (V);
- Polycyclic Aromatic Hydrocarbons (PAHs) (although not covered by WID, incineration is also a potential source for this group of compounds).

The predicted emissions to atmosphere from the WtE facility have been modelled using the AERMOD dispersion model. The applicant undertook a revised air dispersion modelling assessment, in order to update the previous assessments following changes to the facility layout and design. The revisions to the model include (i) changes to the building layout, including the location of the stack (stack height remains unchanged), (ii) revisions to volume flow, maximum emission rates, stack internal diameter and emission temperature, (iii) use of updated AERMOD version, (iv) use of more recent meteorological data, (v) use of new US EPA guidance on the meteorological pre-processor AERMET and revised UK guidance on the addition of background concentrations to hourly and daily emissions concentrations, and (vi) use of updated emissions data from Irish Cement in the cumulative impact assessment, based on IPPC licence P0030-03. (It is noted that Irish Cement have applied for a review of IPPC licence P0030-03 in order to accept waste for combustion. While Indaver's air dispersion model did not incorporate heavy metals and dioxins from the Irish Cement plant into the cumulative assessment (only cumulative NO_x, SO₂, PM₁₀ and PM_{2.5} were considered), the model results are accepted on the basis that the predicted cumulative ground level concentrations arising from the process emissions from both sites are well within the relevant air quality and environmental assessment standards.)

A worst-case approach was taken for all model inputs including continuous emissions from the stack (24 hours per day, 365 days per year) at the maximum flow rate (147,000 m³/hr), and the maximum concentration limits set by WID. This is a conservative approach because typical emissions from the facility are predicted to be well within the WID limits. The model also assessed the impact of abnormal operations, using pessimistic assumptions about failure rates of the abatement equipment, e.g., malfunction of the DeNO_x system or baghouse filter. Abnormal operations have already been discussed under Section 2 of this report. WID provides for an incinerator to continue to operate where there are exceedances of prescribed ELVs for up to 4 hours, with a cumulative duration of less than 60 hours in any one year.

Baseline monitoring of NO₂, PM_{2.5}, benzene, SO₂ and heavy metals was carried out in 2005 to update the original survey carried out in 2000/2001. The background concentrations used in the assessment have been derived from a worst-case analysis of the cumulative sources in

the region in the absence of the development, i.e. the sum of baseline air quality, traffic emissions and industrial sources (Irish Cement plant and the previously licensed Scottish & Southern Energy plc power station¹). In arriving at the combined annual background concentrations, cognisance has been taken of the accuracy of the approach and the degree of double counting inherent in this assessment, e.g. in relation to NO₂, the baseline monitoring programme will have taken into account both the existing traffic levels and existing industrial sources. Hence, the worst-case background concentrations have been used in the assessment.

The worst-case meteorological conditions for Dublin Airport from 2001 – 2005 have been used in the model. The prevailing wind direction is generally from the W-SW direction with wind speeds averaging around 4-6m/s.

The revised air dispersion modelling results and relevant air quality standards are presented in Table 6 below. Overall, the model results show that the cumulative impacts on air quality will be well within ambient air quality standards for the protection of human health and the environment, even where the plant is operated at maximum or abnormal operating conditions.

As stated previously, the stack height remains unchanged at 65m above ground level (95.5m O.D.). A comparison of the maximum mass emissions (kg/hr) from the stack shows a 2.6% decrease in all specified parameters under the current proposal, compared to the mass emissions authorised in the existing licence. This is primarily due to the revised maximum volumetric discharge of 147,000 m³/hour compared to 151,000m³/hour previously (twin incinerator lines discharging through single stack). The lower mass loading rate effectively means a reduced impact on air quality than that authorised in the existing licence.

Schedule B of the RD specifies ELVs for emissions to atmosphere, in accordance with WID. Schedule C requires continuous monitoring of specific parameters and regular sampling and subsequent analysis of dioxins/furans present in the flue gases prior to discharge from the stack to ensure compliance with emission limit values.

Combustion Gases and Particulate Matter

At maximum emissions permitted in the RD, the air dispersion model predicts ground level concentrations well within the relevant air quality standards for NO₂, SO₂, PM₁₀ and PM_{2.5} (see Table 6). In addition, the process contribution is predicted to be very small for PM₁₀ and PM_{2.5}. No adverse impact on public health or the environment is envisaged to occur under these conditions at or beyond the site boundary.

VOCs, Inorganic Gases and Heavy Metals

For the purposes of this assessment, it has been assumed that all organic emissions from the site are composed of benzene (highest toxicity compared to other common hydrocarbons). Mercury, cadmium and thallium have been modelled separately, as per the WID limits. Of the remaining heavy metals, arsenic and antimony have been assessed using the model as these metals have the most stringent limits.

At maximum emissions permitted in the RD, the air dispersion model predicts worst case ground level concentrations for total organic carbon (TOC), hydrogen chloride (HCl), hydrogen fluoride (HF) and heavy metals that are well within the relevant air quality standards (see Table 6). No adverse impact on public health or the environment is envisaged to occur under these conditions at or beyond the site boundary.

¹ IPPC Licence P0683-01 granted to Scottish & Southern Energy plc on 10th September 2004 for a 400 MW CCGT plant. Licence ceased on 5th January 2010.

Table 6: AERMOD Air Dispersion Modelling Results under Maximum Operation

Parameter	Background Concentration ($\mu\text{g}/\text{m}^3$ unless otherwise indicated)	Process Contribution ($\mu\text{g}/\text{m}^3$ unless otherwise indicated)	Predicted Ground Level Concentration (GLC) ($\mu\text{g}/\text{m}^3$ unless otherwise indicated)	Air Quality Standard (AQS) ($\mu\text{g}/\text{m}^3$ unless otherwise indicated)	Predicted GLC as % of AQS
NO₂ ^{Note 1}					
1-hour (99.8%ile)	20	27.8	104.2 ^{Note 2}	200 ^{Note 3}	52%
Annual mean		1.1	21.1	40 ^{Note 3}	53%
SO₂					
1-hour (99.7%ile)	4	26.4	34.4 ^{Note 2}	350 ^{Note 3}	9.8%
24-hour (99.2%ile)		2.8	10.9	125 ^{Note 3}	9.7%
PM₁₀					
24-hour (90.5%ile)	20	0.25	37.3 ^{Note 2}	50 ^{Note 3}	75%
Annual mean		0.08	20.1	40 ^{Note 3}	50%
PM_{2.5}					
Annual mean	14	0.08	14.1	25 ^{Note 3}	56%
TOC (as benzene)					
Annual mean	0.7	0.08	0.78	5 ^{Note 3}	16%
HCl					
1-hour 98%ile	0.01	5.17	5.19	100 ^{Note 4}	5%
HF					
1-hour 98%ile	0.005	0.34	0.35	3 ^{Note 4}	12%
Maximum 24-hour		0.08	0.09	2.8 ^{Note 5}	3%
Annual average		0.008	0.013	0.3 ^{Notes 4 & 6}	4%
Hg					
max. annual mean	0.001	0.00038	0.0014	1 ^{Notes 4 & 6}	0.14%
Cd & Tl					
max. annual mean	0.001	0.00039	0.0014	0.005 ^{Note 7}	28%
Arsenic (As)					
max. annual average	0.001	0.00042	0.0014	0.006 ^{Note 7}	23%
Antimony (Sb)					
max. 1-hour	0.001	0.0176	0.0186	5 ^{Note 8}	0.4%
Dioxins/Furans					
max. annual average	(fg/m^3) 28 ^{Note 9} 46 ^{Note 9}	(fg/m^3) 0.79	(fg/m^3) 28.8 46.8	---	
PAHs (as benzo[a] pyrene)					
Annual mean	(ng/m^3) ^{Note 10} 0.09	(ng/m^3) 0.0024	(ng/m^3) 0.0924	(ng/m^3) 1 ^{Note 7}	9%

Note 1: 1-hour (99.8%ile) value assumes 50% NO_x conversion to NO₂. Annual mean value assumes 75% NO_x conversion to NO₂.

Note 2: Background added using UK DEFRA Guidance.

Note 3: Council Directive 2008/50/EC on ambient air quality and cleaner air for Europe.

Note 4: TA Luft immission standards.

Note 5: Dutch Emissions Regulations.

Note 6: World Health Organisation.

Note 7: Council Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

Note 8: Environmental assessment level derived from occupational exposure limits in the absence of statutory standard.

Note 9: 1 femtogram (fg)/m³ = 1 x 10⁻¹⁵ g/m³. Baseline results for dioxins given as sum of cumulative impacts (in the absence of the WtE facility) and baseline monitoring data firstly as (i) Non-detects = zero, (ii) Non-detects = limit of detection.

Note 10: 1 nanogram (ng)/m³ = 1 x 10⁻⁹ g/m³.

Dioxins/Furans

The measured annual background dioxin/furan concentrations in the Carranstown region range from 28 fg/m³ to 46 fg/m³ TEQ (toxic equivalency). The predicted maximum annual average process contribution to ground level concentrations is 0.79 fg/m³ TEQ, compared to 0.72 fg/m³ TEQ under the previous licence application. This reflects a 10% increase of 0.07 fg/m³ TEQ and represents between 1.7% to 2.8% of the measured background levels. The modelled total dioxin deposition rate of 0.32 pg/m²/day under maximum operations and 0.44 pg/m²/day under abnormal operations is significantly less than that experienced in rural sites in Germany (5 - 22 pg/m²/day), and in urban locations (5.3, 12 and 28 pg/m²/day mean TEQ deposition flux in London, Cardiff and Manchester respectively). Therefore, no adverse impact on public health or the environment is envisaged to occur under these conditions at or beyond the site boundary.

There are no statutory air quality standards for dioxins/furans. Both the US EPA and WHO recommended approach to assessing the risk to human health is a detailed risk assessment involving the determination of the impact of dioxins/furans in terms of the TDI (Tolerable Daily Intake, defined by the WHO as '*an estimate of the intake of a substance over a lifetime that is considered to be without appreciable health risk*'). The WHO TDI is 1-4 pg TEQ/kg of body weight per day based on total exposure to the substance, including via air, water, soil, food and other sources. The EU Scientific Committee for Food established a tolerable weekly intake (TWI) of 14 pg TEQ/kg of body weight in order to protect human health. The TWI is based on applying a safety factor to the LOAEL (Lowest Observed Abnormal Effect Levels) for dioxins/furans. The EU TWI concurs with the lower end of the WHO TDI range.

Soil sampling and ambient air monitoring data was used to establish a baseline for dioxins/furans intake for a theoretical Maximum At Risk Individual (MARI) in the Carranstown area as part of the 2006 EIS. The MARI assessment is very conservative as it assumes the MARI is a subsistence farmer living at the point of maximum dioxin/furan deposition, who obtains all their meat, milk and vegetables from a 100m diameter site upon which the maximum deposition flux has impacted. It also assumes the WtE facility operates 24 hours per day, 365 days per year at the maximum emission concentration and flue gas flow rate.

The baseline dioxin/furan intake for the MARI was modelled using US EPA methodology and the Dutch Government approved model RISC HUMAN. The baseline intake was predicted to be 0.8519 pg/kg of bodyweight per day (5.96 pg/kg of bodyweight per week), significantly below the EU TWI of 14 pg TEQ/kg of body weight per week, which is considerably more stringent than the WHO intake criteria of 1-4 pg/kg body weight per day.

The annual average dioxin/furan emissions from the proposed WtE facility under maximum operating conditions were used to model soil dioxin/furan concentrations over the operating life of the facility. The modelled soil and air values were then added to the existing background values for dioxin/furan input to the RISC HUMAN model. The model predicted that the emissions from the facility would increase the daily dioxin/furan dose to a theoretical MARI by only 0.0371 pg/kg, from 0.8519 pg/kg to 0.8890 pg/kg of body weight per day (6.22 pg/kg of body weight per week). This predicted intake for the MARI is well below the WHO TDI of 1-4 pg TEQ/kg bodyweight per day and the EU TWI of 14 pg TEQ/kg body weight per week. It is therefore concluded that the proposed WtE facility will not have a significant impact on dioxin/furan intake for even the theoretical MARI.

Polycyclic Aromatic Hydrocarbons (PAHs)

EU Directive 2004/107/EC relating to Arsenic, Cadmium, Mercury, Nickel and PAHs in ambient air designates benzo[a]pyrene (B[a]P) as the reference chemical (being the most carcinogenic) for PAHs in general. The Directive sets a target value for the protection of human health for B[a]P of 1 ng/m^3 to be achieved prior to 2013.

Data from the monitoring of PAHs in Indaver facilities in Belgium indicates that B[a]P has never been detected above the detection limit of $100 - 300 \text{ ng/m}^3$. For the purposes of this assessment, the B[a]P emission rate from the facility has been assumed to be at the upper range of the detection limit (300 ng/m^3). B[a]P modelling results indicate that the ambient ground level concentrations are significantly below the EU target value for the protection of human health.

Minor Emissions

There will be one minor emission to atmosphere from an emergency generator, which will only be run in the event that there is no alternative power source for the plant, and for testing purposes. The total annual operation of the generator is not expected to exceed 12 hours per year. Condition 11.10 of the RD requires the licensee to maintain a record/log of the use of the emergency generator, and to report a summary of the log as part of the AER.

Fugitive Emissions

All waste handling and treatment will be undertaken in enclosed buildings. Condition 5.5 of the RD requires the waste reception hall and bunker to be maintained under negative pressure to ensure no significant escape of odours or fugitive dust emissions. Condition 5.7 specifies that all vehicles delivering waste to and removing waste from the facility are appropriately covered, and sealed in the case of hazardous incinerator residues.

Odour

Primary air for waste combustion will be drawn from the reception hall and waste bunker area to prevent fugitive emissions of odour. It is proposed to maintain negative air pressure and exhaust air through the 65m stack, even during periods of shutdown.

As part of the 2006 EIS, Odour Monitoring Ireland Ltd. completed an odour impact assessment of the proposed WtE facility. Based on odour emissions measured at a similar plant in Belgium, it was concluded that there will be no significant ground level impact of odours from the exhaust stack, with all predicted concentrations lower than an odour concentration of $3.0 \text{ Ou}_E / \text{m}^3$ as a 98th percentile of hourly averages. Currently there is no statutory odour standard in Ireland relating to industrial installations. The EPA has issued guidance specific to the intensive agriculture sector which has outlined the following standards; target value of $1.5 \text{ Ou}_E / \text{m}^3$ (as a 98th percentile of hourly averages) and limit value of $3 \text{ Ou}_E / \text{m}^3$ for new installations, limit value of $6 \text{ Ou}_E / \text{m}^3$ for existing installations. Guidance from the UK recommends that odour standards should vary from 1.5 to $6.0 \text{ Ou}_E / \text{m}^3$ as a 98th percentile of hourly averages at the worst case sensitive receptor based on the offensiveness of the odour and with adjustments for local factors such as population density. Based on the odour impact assessment, odour emissions from the facility are not expected to impact on the local community or the environment.

Condition 5.5 of the RD requires the licensee to maintain negative air pressure in the reception hall and waste bunker unless otherwise agreed by the Agency. Condition 6.11 requires the licensee to undertake a weekly inspection for nuisances, including odour.

4.2 Emissions to Sewer

There will be no process effluent emissions from the facility. Due to the redesign of the FGT system from wet tail-end cleaning to dry reagent injection, there will be no effluent from the FGT process. Any wash waters or spills inside the main process building will be directed to a 100m³ underground spill tank, and subsequently either re-used in the incineration process or transported off-site for treatment at an appropriate facility.

During shut-down there may be a need to drain the boiler which is filled with approximately 130m³ of clean de-mineralised water. Some of this water will be pumped to the spill tank for re-use in the process, and the remainder to the storm water network where it will pass through two sets of TOC monitors prior to discharge from the site (see next section).

4.3 Emissions to Surface Water / Storm Water Runoff

The existing licence does not permit any discharge, other than that from the wheelwash during facility construction, to the surface water drainage network feeding the Nanny River. Surface water falling on impervious areas of the site is currently required to be stored and re-used in the incineration process.

The applicant now proposes a redesigned surface water drainage system, where runoff will be collected, monitored and discharged to a drainage ditch on the western site boundary (emission point SW-1). The drainage system has been designed in accordance with Sustainable Drainage Systems (SuDs) principles which aim to mimic the natural drainage of a site in order to reduce the impact of flooding and water pollution. There has been a large reduction in the overall surface water attenuation volume from 4,700m³ to 1,900m³ due to a significant decrease in the total contributing area (the effective hardstand area for drainage purposes has been reduced from 5.46 to 2.2 hectares).

The site drainage infrastructure will consist of a 1,600 m³ storm water attenuation pond and a 300 m³ diverted water storage tank. A hydrobrake will be used to control the rate of discharge from the site to a maximum of 36.2 litres/second entering the external drainage ditch. This drainage design and discharge rate has been agreed with, and is in accordance with, the requirements of Meath County Council.

The drainage system will operate as follows:

- (i) All storm water drainage from impervious areas will pass through a Class I bypass oil interceptor prior to entry into the 1,600m³ storm water/firewater attenuation pond. A full retention forecourt oil separator will be provided for the diesel delivery area.
- (ii) The storm water runoff will be monitored at the inlet and outlet of the attenuation pond.
- (iii) If no contamination is detected, the runoff will be pumped to discharge via emission point SW-1.
- (iv) If contamination is detected at the first monitoring chamber, the flow will be diverted to the 300m³ diverted water storage tank and subsequently either re-used in the process or tankered off-site for treatment at an appropriate facility.
- (v) If contamination is detected at the second monitoring chamber, a shut-off valve will be activated, the discharge pumps will be shut down and the pond will be allowed to fill, with no discharge from the site. The contaminated storm water will either be re-used in the plant or removed off-site for treatment at an authorised facility.

Condition 6.17 of the RD requires the licensee to propose storm water trigger levels (pH, TOC and conductivity) for the agreement of the Agency. *Schedule C.2.3 Monitoring of Storm Water Emissions* specifies continuous monitoring of these parameters prior to, and at the outlet from, the attenuation pond.

The applicant states that the attenuation pond has been designed to retain the runoff from a 1 in 30 year storm, and will also be capable of containing a 1 in 100 year storm event. In the event of a greater than 1 in 100 year storm, the paving will be designed sloping away from the building to direct any flooding that may occur away from the building towards proposed and existing land drains.

Receiving Waters

The drainage ditch which will receive the surface water discharge from the site leads to the River Nanny, approximately 2km south of the site. The River Nanny rises in the south-east of Co. Meath and flows in an easterly direction through Duleek towards Laytown, where it discharges to the sea. Under the Water Framework Directive, the river is classified as moderate status and risk category 1a 'at risk of not achieving good status'. In the final draft Eastern River Basin Management Plan (April 2010), the objective is to restore good status in the River Nanny by 2027. This extended target date is due to wastewater point source pollution and naturally high level of nutrients in the ground.

The 2008 biological quality ratings show unpolluted (Q4) conditions upstream of the facility at station 0280 Bridge d/s Nanny Bridge (6.5km south-west of the facility) and moderately polluted (Q3) conditions downstream of the facility at station 0500 Bridge NE of Bellewstown House (2km south-east of the facility).

The controlled discharge of uncontaminated surface water runoff from the site is not expected to have any adverse impact on water quality in the River Nanny. *Schedule C* of the RD specifies requirements for the control and monitoring of storm water emissions.

Storage / Bunding

Fuels, oils, and aqueous wastes to be treated at the facility will be stored in tanks located in concrete containment bunds. Bunds will be designed in accordance with BS8007 'Design of Aqueous Liquid Retaining Concrete Structures'. The RD specifies the standard bunding requirements for tank, container and drum storage areas.

The waste bunker and underground spill tank have been designed as watertight structures in accordance with BS8007. The design has been strengthened to include a double containment system consisting of a welded high density polyethylene liner cast into the side walls which also runs under the bunker to form a secondary containment line rather than a steel plate in the bunker wall as previously proposed. This will ensure that any leaks are collected and removed.

Fire-water Retention

An 1,800m³ on-site water storage tank will provide fire-fighting water to the facility. The greatest potential for fire arises in the waste bunker where localised heating can occur due to decomposition of organic material. A localised fire in the bunker will be lifted, using the grab crane, into the hoppers which transfer the waste directly to the furnace. In the event of an extreme fire in the bunker, the bunker has a fire-water retention capacity of 3,300m³ and is designed as a watertight structure in accordance with BS8007 'Design of Aqueous Liquid Retaining Concrete Structures'.

If a fire occurs elsewhere in the process building or other buildings on site, the fire-water will drain either to the 100m³ underground spill tank in the process building, or be contained in the surface water drainage system. The latter will drain to the 300m³ diverted water tank and in turn by overflow to the 1,600m³ attenuation pond. The discharge pumps will be shut down and the attenuation pond will be allowed to fill, with no discharge from the site. The contaminated fire-water will either be re-used in the plant or removed off-site for treatment at an authorised facility.

The applicant has used the German LORURL methodology to calculate the required fire-water retention capacity in the event of a fire occurring outside the waste bunker. The German method is less stringent than the EPA *Draft Guidance Note to Industry on the Requirements for Fire-Water Retention Facilities* (1995). In particular, the German method requires storage of contaminated fire-water from a 2 hour fire event (1,800m³) plus rainwater from a 1 in 20 year storm for a total of 4 hours (200m³), compared to 24 hours rainwater (1,400m³) in the EPA guidance. The German method takes the position that a large storm occurring simultaneously with a fire is an unrealistic scenario and hence a conservative view is taken that the storm will occur for the duration of the fire plus another two hours after. The required storage volume is 2,000m³ using the German method and 3,200m³ using EPA guidance. The proposed storm water infrastructure & underground spill tank give a combined storage capacity of 2,000m³ and the waste bunker gives an additional capacity of 3,300m³. Therefore, the overall level of containment available on the site will satisfy the more stringent EPA Guidance. The applicant states that as part of the final design and in consultation with the Agency, a full fire-water retention study will be carried out.

The RD requires the licensee to establish and maintain a suitable fire-water risk management programme. In the event of a fire or spillage to storm water, the site storm water shall be diverted to suitable containment.

4.4 Emissions to ground/groundwater:

The existing licence authorises the discharge to ground of treated sanitary effluent from an on-site package waste water treatment plant and percolation area. This system will service the staff and visitor facilities in the main process building. The applicant now proposes the addition of a second package treatment plant (15 p.e. capacity) and percolation area to serve the security gatehouse. The treated effluent design standards are 20 mg/l BOD and 30 mg/l suspended solids. Condition 3.12.2 of the RD requires the effluent treatment systems and percolation areas be designed and maintained in accordance with the Agency's Waste Water Treatment Manual on *Treatment Systems for Small Communities, Business, Leisure Centres and Hotels (p.e. 10 – 500)* (EPA, 1999). Any references therein to *Treatment Systems for Single Houses* (EPA, 2000) shall be replaced by the *Code of Practice on Waste Water Treatment and Disposal Systems serving single houses (p.e. ≤ 10)* (EPA, 2009).

The existing licence requires ambient groundwater monitoring to be carried out at one up-gradient and two down-gradient monitoring boreholes. These monitoring locations have since been established. The only change to the groundwater monitoring regime specified in the existing licence is the inclusion of microbiological monitoring (total and faecal coliforms) on a biannual basis.

Groundwater Abstraction

The proposed amendments to the facility will not have a significant impact on the hydrogeology of the development site or surrounding area. The site is located within the local groundwater regime established by the Platin Quarry dewatering programme. Groundwater flow beneath the site is northwards towards the quarry. The applicant now proposes to use 7.5 m³/hour (180 m³/day) of groundwater abstracted from a well on-site, compared to the previous proposal of 14 m³/hour (336m³/day). This planned abstraction will be located within the Platin cone of depression but will not alter its extent as it is minor in comparison. Rather, the planned abstraction is likely to result in a small net reduction in the amount of groundwater abstracted from beneath the quarry, with the total being abstracted from the aquifer remaining largely unchanged. A pumping test has indicated that a yield of approximately 300 m³/day could be sustainably abstracted from a well at the site.

The limestones found beneath the site are part of the Platin Formation. According to the GSI aquifer classification, the Platin Formation is classed as '*regionally important, diffuse karst*

aquifer with good development potential (Rkd). I have consulted with Matthew Craig, Office of Environmental Assessment, regarding the groundwater body status having regard to the requirements of the Water Framework Directive. The Platin Formation is part of the Bettystown groundwater body (GWB), which has been classified as 'poor' chemical status due to phosphate levels. The WFD objective is to achieve good status by 2027. In terms of quantitative status and risk assessment, the GWB is at 'good' status but is at risk of failing the status objective in the future as the current rate of abstraction (Platin quarry and a few water supply abstractions) is approximately 65% of recharge. The OEA are aware of planned abstractions from this GWB as part of the East Meath Water Supply Scheme in the next 5 years, which would have the potential to use up the remaining 15% capacity that would breach the 80% abstraction/recharge threshold. The OEA have had discussions with Meath County Council, and an agreement has been reached whereby abstractions shall not cause the status threshold to be breached. The proposed Indaver abstraction is fairly small and on its own would have little impact. However, Meath County Council need to be aware of it, as it may have implications for what they could abstract in the future.

Groundwater is used extensively by the local community as a water supply source. The applicant has identified 22 domestic wells within 3km of the site. The RD requires the applicant to provide an alternative water supply water in the event that monitoring of local wells indicates that the facility is having a significant adverse effect on the quantity and/or quality of the water supply.

4.5 Wastes Generated:

The revised quantity of incinerator residues has increased by 25,000 tonnes to 63,000 tonnes per annum, reflecting an increase in plant throughput as well as changes to the FGT system. Gypsum production, which was previously estimated at 1,000 tpa, will no longer be produced as a by-product of desulphurisation in the revised FGT system.

Table 7: Predicted Waste Generation at the Facility

Incinerator Residue	Quantity (tonnes per annum)	% of Waste input by weight	Classification	Treatment on-site
Bottom ash ^{Note 1}	50,000 (previously 30,000)	25%	Non-hazardous ^{Note 3}	Recovery of ferrous metals. Potential recovery of other constituents in the future.
Boiler ash ^{Note 2}	3,000 (previously 1,500 to 3,000)	1.5%	Non-hazardous ^{Note 3}	Potential solidification in the future
FGT residues ^{Note 4}	10,000 (previously 3,500 to 5,000)	5%	Hazardous ^{Note 3}	Potential solidification in the future
Total	63,000	31.5%		

Note 1: Inert materials such as sand, glass, metal scrap and stones.

Note 2: Light ash particles entrained in the flue gas.

Note 3: Subject to verification by testing in accordance with *Schedule C.4 Monitoring of Incinerator Residues* of the RD.

Note 4: Reaction salts, fly ash, heavy metals and dioxins/furans adsorbed onto activated carbon, expanded clay, and hydrated lime.

Monitoring requirements for waste residues are set out in *Schedule C.4 Monitoring of Incinerator Residues* of the RD, and all waste disposal off-site shall be to appropriately approved facilities and subject to the prior agreement of the Agency. Condition 5.7 requires that all vehicles delivering waste to, and removing waste from, the facility are appropriately covered, and sealed in the case of hazardous incinerator residues.

Bottom Ash

The revised facility design incorporates an ash handling building instead of an underground ash bunker. The ash building has the capacity to store 10 days of bottom ash production. All ash handling will take place indoors to prevent dust emissions. Bottom ash from the wet de-slagger will be transferred to the ash building by conveyors. The water content of the ash will be approximately 25%, which will also minimise dust emissions during storage. A metal separator (over-band rotating magnet) will remove approximately 5,000 tpa ferrous metals for recovery off-site. The remaining ash will be loaded into covered collection trucks and transported off-site for disposal. This waste stream is expected to be non-hazardous, based on international experience. This will be confirmed by annual testing, in accordance with *Schedule C.4 Monitoring of Incinerator Residues* of the RD. In line with WID, Condition 3.19 of the RD requires bottom ash to comply with the specified TOC limit of less than 3% by weight, in order to ensure that a sufficient level of incineration has been achieved.

The applicant wishes to retain the option of developing a bottom ash recovery unit at the facility in the future, in order to process the bottom ash for re-use as a construction material, e.g. in road building or block manufacturing. There is currently no bottom ash recovery operation in Ireland, nor any bottom ash re-use criteria or a market for such products. For this reason, Indaver do not plan to recover bottom ash components other than ferrous metals in the short-term. However, they intend to identify potential outlets for recovered aggregates and other ash-derived materials in the future. The facility design provides space in the ash handling building to accommodate more equipment if further processing of the ash is to take place. The preliminary proposal is for a 50,000 tpa bottom ash recovery unit involving sieving, removal of approximately 5,000 tpa ferrous metals and 1,000 tpa non-ferrous metals, mechanical separation and maturation of bottom ash to reduce the solubility of heavy metals (in particular chromium and copper) to achieve low leaching levels. The extent of these processes will depend on the quality of recovered material required for the outlets/uses which the applicant expects will be identified and developed.

The proposal for mechanical treatment of post-combustion bottom ash is in accordance with the pre-treatment obligations for WtE MSW incinerators outlined in *Municipal Solid Waste – Pre-treatment & Residuals Management, An EPA Technical Guidance Document (EPA, 2009)*. The RD provides for the proposed bottom ash recovery infrastructure, as engineering works to be agreed in advance by the Agency under Condition 3.25.

Boiler Ash & FGT Residues

Boiler ash and FGT residues will be separately collected from the boiler and baghouse filters respectively and transported by enclosed conveyors to dedicated storage silos in the main process building. The silos will be fitted with HEPA filters to prevent dust emissions. From the silos, these wastes will be loaded into enclosed containers prior to being transported off-site for disposal. The applicant expects the boiler ash to be non-hazardous and the FGT residues to be hazardous. This will be confirmed by annual testing in accordance with *Schedule C.4 Monitoring of Incinerator Residues* of the RD.

The applicant wishes to retain the option of installing residues treatment equipment at the facility in the future, in order to physically and hydraulically encapsulate the hazardous FGT residues and, if necessary, the potentially hazardous boiler ash.

At present there is no hazardous landfill capacity in Ireland. If this situation remains when the facility commences operation, residues will have to be exported abroad for disposal, and treatment will take place at the destination landfill. However, if hazardous landfill capacity becomes available in Ireland, and where there is no treatment available at the destination landfill, the residues will require treatment at this incineration facility.

The extent and nature of residues treatment at this incineration facility will depend on the residue properties and the landfill waste acceptance criteria. Treatment typically involves mixing residues with cement-based or other binders, acid and water, leading to solidification. The applicant estimates that about 19,000 tpa of solidified material would be generated from 13,000 tpa of residues.

This preliminary proposal is in accordance with the FGT residue treatment technique of cement solidification outlined in Section 4.6.11.1 of the BREF document on Waste Incineration. The RD provides for the proposed solidification plant as engineering works to be agreed in advance by the Agency under Condition 3.25.

Waste Quarantine Area

Condition 3.5.2 of the existing licence specifies that *"no waste shall be quarantined in the waste reception/delivery area for the incinerators"*. Therefore, the proposed waste quarantine area has been moved from the waste reception hall to the service yard, in the bunded delivery area for the diesel storage tank. The applicant anticipates that the use of the quarantine area will be limited and will not impede deliveries of diesel or other materials. All waste quarantined in this area will be fully contained in transport vehicles ready for movement off-site. Drainage from this bunded area will be collected in a sump and pumped out as necessary. The waste water will be tested for contamination and where possible, re-used in the incineration process.

4.6 Noise:

Noise levels in the vicinity of the site are influenced by traffic on the R152 regional road, distant traffic on the M1 motorway, and equipment operating at the Platin Cement plant and quarry. Updated baseline noise monitoring conducted in Oct/Nov 2005 at the southern corner of the site measured a weekday daytime noise range of 61 to 70 dB(A) LA_{eq} and a night-time noise range of 48 to 67 dB(A) LA_{eq}. Updated baseline monitoring at three noise sensitive locations (NSLs) close to the site measured a daytime noise range of 44 to 76 dB(A) LA_{eq} and a night-time noise range of 38 to 71 dB(A) LA_{eq}.

Given the revised site layout, the locations of noise emitting equipment have changed. There will be six main noise sources at the facility; the stack, air-cooled condensers, turbine cooling, grate cooling, pumphouse and emergency generator. Excluding background noise, the predicted noise emissions from the facility operations at 5 NSLs (residential dwellings) indicate daytime and night-time noise levels between 22 to 33 dB(A) LA_{eq}, which comply with the existing licensed noise limits (55 dB(A) LA_{eq} day-time and 45 dB(A) LA_{eq} night-time).

The predicted cumulative noise levels (noise emissions from the facility and existing ambient noise levels) have been assessed at receptor R1, i.e., the group of residential dwellings located 400m west of the site. This location currently experiences the lowest ambient noise levels due to its distance from major roads. Table 8 below shows that the lowest measured daytime noise levels at this location were 47 dB LA_{eq} during the week and 44 dB LA_{eq} during the weekend. The lower measured noise levels during the weekend can be attributed to the absence of noise from Platin Cement quarry and lower traffic volumes on roads in the vicinity. The assessment results show that no change in cumulative noise levels is predicted over and above the existing ambient noise levels. Subjectively, this is an imperceptible change in noise levels and the resulting impact on this receptor is negligible. The remaining four NSLs have significantly higher ambient noise levels due to their closer proximity to the R152 regional road. A similar assessment of cumulative noise impacts also results in negligible impact on these NSLs.

The RD maintains the existing noise limits and requires a noise survey within three months after the commencement of waste activities and annually thereafter, to be undertaken at four locations on the site boundary.

Table 8. Cumulative Noise Impact Assessment at Receptor R1

Period		Predicted/Measured Noise Levels, LAeq (dB)				Impact
		Predicted noise level from site	Existing ambient level	Cumulative level	Change	
Daytime	Weekday	28	47	47	0	Negligible
	Weekend	28	44	44	0	Negligible
Night-time	Weekday	28	38	38	0	Negligible
	Weekend	28	38	38	0	Negligible

4.7 Nuisance:

All waste delivery trucks will be enclosed and all waste activities will take place indoors. The waste reception hall and bunker will be maintained under negative air pressure to avoid any odour, dust and windblown litter problems. Standard BAT measures for vermin control and general nuisance mitigation are proposed.

Condition 6.11 of the RD requires the licensee to undertake weekly inspections of the facility and immediate surrounds for nuisances caused by litter, vermin, birds, flies, mud, dust and odours.

4.8 Unsolicited Additional Information

Indaver submitted unsolicited additional information on 4th and 18th August 2010, setting out a number of requests to be considered as part of the licence review process. Some of the items have already been discussed under previous sections of this report and have been incorporated into the RD. The items not already addressed are set out below.

A.1 Recovered Water for FGT System

Request: Indaver are seeking approval to accept recovered water from an unidentified off-site industrial facility for reuse in the FGT system (lime milk preparation), as a substitute for extracted groundwater. The recovered water would otherwise be discharged from its site of generation to a local watercourse or WWTP. Indaver state that the recovered water would be of high quality with very low inorganic or organic contaminant levels but may contain total dissolved salt (TDS) levels that are more elevated than levels naturally occurring in groundwater. There is no pre-treatment envisaged of the recovered water. Based on projected available volumes, it is anticipated that the substitution rate of off-site recovered water for groundwater would be initially in the region of 25% (thereby reducing the groundwater extraction rate by 10%) or 6,500 m³/year, with an associated reduction in energy usage in well water pumps. In the longer term, a higher substitution rate could be used if the quality of the recovered water is acceptable.

Indaver have highlighted a number of potential impacts of this proposal: blockage/scaling of FGT equipment if there are high TDS levels in the recovered water, potential to exceed TOC limits in the stack (the FGT system is not designed to treat TOC since this is eliminated in the furnace, therefore it is important that no recovered waters containing organic contaminants be accepted), reduced acid gas removal potential (if the recovered water contains significant quantities of chlorine, it would react with the lime in the spray drier reactor that was otherwise intended to remove chlorine in the flue gases, meaning that more dry lime injection would be required). Indaver state that the quality of the recovered water will be controlled to ensure that substituting groundwater with recovered water does not have any adverse impact on the operation of the incineration plant or on the environment.

A WtE facility at Avignon, France, equipped with a similar semi-dry FGT system installed by the same manufacturers/suppliers (LAB), currently uses recovered water for the semi-dry reactor in the same manner as proposed here. This is used to supplement freshwater and at low supplement levels, has not impacted on the normal operations of the plant.

Comment: While the proposal may be acceptable in principle, the extent of detail provided is not considered adequate to allow full consideration of the impacts of the proposal. In particular, the lack of information on the following; source(s) and chemical characteristics of the recovered water, storage arrangements on-site, assessment of impacts on the FGT system and on air emissions from the stack. These details would need to be established by the licensee to allow a full assessment of the impacts. For this reason, the proposal cannot be approved at this time and the use of recovered water in the FGT system is not provided for in the RD.

A.2 Condition 2.1.1 states “The licensee shall employ a suitably qualified and experienced (minimum 10 years in incinerator operation) facility manager who shall be designated as the person in charge. The facility manager or a nominated, suitably qualified and experienced deputy (minimum 5 years incinerator experience) shall be present on the facility at all times during its operation or as otherwise required by the Agency.”

Request: Indaver propose their solution to the requirement to have the facility manager or deputy manager on site at all times during the operation process. They state that to have two persons working 12 hour shifts, 7 days a week, is not in compliance with the *Organisation of Working Time Act 1997*. Therefore, they propose that a manning level system is introduced, where supervisors or their deputies are deemed the competent person on site during operation, should the facility manager or his deputy be unavailable. There is also an on-call system whereby one of the five managers (facility manager, deputy manager, maintenance manager, quality and environmental manager and the process engineer) are on call 24 hours a day on a 5-week rotation basis.

Comment: Condition 2.1.1 allows for more than one deputy to be nominated as the person in charge when the facility manager is not present. Indaver have not demonstrated how their proposed manning level system will satisfy the requirement for each of the nominated deputies to have a minimum of 5 years incinerator experience. No change is recommended to the condition.

A.3 Condition 2.3.2.7(b) states “Co-incident with the commencement of development of the facility, the licensee shall establish and maintain a Public Awareness and Communications Programme to ensure that members of the public are informed and can obtain information at the facility, at all reasonable times, concerning the environmental performance of the facility. The Communications Programme as a minimum shall include the following:

(a) Maintain information at the facility as required in Condition 11.2 which shall be available for inspection at all reasonable times;

(b) Maintain the following information via the internet:

- **Real time data from on-line process monitoring of the incinerator (the parameters, format and start date for this condition shall be agreed by the Agency but as a minimum shall include combustion chamber temperature as outlined in Schedule C.1.1)**
- **A weekly summary of continuous emissions monitoring data.**

(c) Establish a Community Liaison Committee and facilitate regular meetings of that Committee at a frequency to be agreed with the Committee. The Agenda for the meeting shall be prepared and circulated in advance.

Request: Indaver request that the requirement to provide real time data via the internet should be removed as this is not standard practice for similar facilities in Europe. This data will be monitored in accordance with the conditions of the licence but Indaver believe that having this information available to the public on the internet is of limited benefit and could cause unnecessary confusion due to lack of knowledge in interpreting the raw data.

Comment: This has been a requirement of all incinerator licences issued by the Agency to date. I have consulted with OEE colleagues regarding this matter. It is considered that this requirement should remain in the licence as an enabling condition, to be implemented if required by the Agency. The condition should be amended as follows:

(b) If required by the Agency, maintain the following information via the internet:

- *Real time data from on-line process and emissions monitoring of the incinerator...*

A.4 Condition 3.4.1 states “Security and stockproof fencing and gates as described in Attachment D1.a – Facility Security Arrangements, of the application shall be installed and maintained. The security fence and gates shall be at the locations shown on Drawing No. 266-22-DR-006 of the licence application – ‘Site Layout Plan’, revision D and dated 28/04/03. The base of the fencing shall be set in the ground.”

Request: Indaver request the removal of the last line of this condition as hares are accessing the site by getting under the stock-proof fencing (the chain-link fencing is supported by concrete posts which are set into the ground, however the base of the chain-link itself is not set into the ground, leaving a gap of a few inches, enough to be exploited by the hares). Indaver wish to facilitate the movement of these protected mammals throughout the site, in the interest of maintaining the biodiversity of the local area.

Comment: The fencing, in its existing condition, is considered to provide adequate security to the site and is ‘stock-proof’ in that no livestock (cattle, sheep, etc.,) can get through it or under it. This request is approved and has been incorporated into the RD.

A.5 Condition 3.4.2 states “Prior to the acceptance of waste at the facility, CCTV shall be provided and maintained at the facility as described in Attachment D1.A – Facility Security Arrangements of the licence application.”

Request: The site will be fitted with a CCTV system for security purposes to monitor areas around the site. The CCTV will be monitored from the control room only.

Comment: Section D.1.a *Site security arrangements* of the licence review application states that the CCTV system will be monitored from the security gatehouse during daytime hours and from the control room on a 24 hour basis. The new proposal is to monitor the CCTV from the control room only. It is considered that the condition may be amended, in accordance with the most recent incinerator licence issued by the Agency (Dublin City Council W0232-01) to specify “*Prior to the acceptance of waste at the facility, the licensee shall install a CCTV system which records all truck movement into and out of the facility, as well as operations in the waste reception hall, bunker and ash storage areas. The CCTV system shall be operated at all times and copies of recordings kept on site for a period to be agreed by the Agency. Copies of these stored recordings shall be made available to the Agency on request.*”

- A.6 Condition 3.5.3 states “Drainage from the Waste Inspection and Quarantine Areas shall be directed to a storage tank and used as process water in the incineration plant.”**

Request: The drainage for the waste inspection area will be sloped towards the bunker rather than into a dedicated storage tank. This water is mixed with the waste, helping to minimise dust and ensuring a homogeneous waste mixture to the incinerator from the bunker.

Comment: This condition has already been amended in the RD in light of new waste quarantine area arrangements. The condition now reads **“Drainage from these areas shall be diverted for collection and safe disposal. The collected water shall be either used as process water in the incineration plant, or if unsuitable, tankered off site for treatment at an authorised waste or wastewater treatment facility.”**

- A.7 Condition 3.9 states “Prior to the date of commencement of the waste activities at the facility, the licensee shall install and provide adequate measures for the control of odours and dust emissions, including fugitive dust emissions, from the facility. Such measures shall at a minimum include the following:-**

3.9.1 Dust curtains or equivalent, subject to the agreement of the Agency, on the entry/exit points from the buildings where waste is accepted and stored. All other doors shall be kept closed where possible.

3.9.2 Installation and maintenance of negative pressure at the waste reception area of the incineration plant and waste storage areas (as required in Condition 3.8) to ensure no significant escape of odours or dust.

Request: Indaver propose not to use dust curtains on health and safety grounds as they have proved troublesome in their Belgian plants, with hauliers complaining that they cause visibility problems and that they get caught in the trucks and cause damage. Indaver propose the following measures as being equivalent to installing dust curtains; the building will be maintained under negative pressure and the reception hall will have a tipping hall operator, who will ensure the area is kept tidy and clear of any litter.

Indaver state that the bottom ash building will be a completely enclosed building, separate from the main process hall, and will also be maintained under negative air pressure. Access for trucks will be through a sectional roller door located in the north-west corner of the hall and they shall exit through a different sectional roller door located in the north-east corner. These doors shall only be opened to allow the movement of trucks in and out of the building, and shall remain closed at all other times.

Comment: Changes to condition 3.9 are recommended and have been incorporated into the RD as follows:

- 3.9 Prior to the date of commencement of the waste activities at the facility, the licensee shall install and provide adequate measures for the control of odours and dust emissions, including fugitive dust emissions, from the facility. Such measures shall at a minimum include the following:-**

3.9.1 Installation and maintenance of negative pressure at the waste reception, waste bunker, waste storage and incinerator residue storage/loading areas of the incineration plant, to ensure no significant escape of odours or dust.

3.9.2 Doors at the entry/exit points from the buildings where waste is accepted and stored, shall be kept closed where possible.

3.9.3 Implementation of an odour and fugitive dust management system to include periods when the incinerator is not operational.

A.8 Condition 3.16 on Waste Acceptance / Removal Hours and Hours of Operation

Request: Indaver propose the removal of the condition restricting the hours of waste acceptance and operation. They state that current practices in the waste industry mean that waste collection trucks are on the road early in the morning, usually having been loaded the night before. This practice can result in queues at waste facilities, waiting for gates to open.

Indaver state that traffic flow counts carried out for the EIS show that the peak hour traffic period is 07.45 to 08.00 on the R152 Regional Road linking Drogheda and Duleek. This coincides with the opening hours in the existing licence, which may lead to possible congestion problems. The R152 already has a large number of trucks using it, 24 hours a day, to access Irish Cement next door to the site, as well as HGV traffic to and from Drogheda and the M1 motorway. A condition limiting the opening hours is not included in Irish Cement's IPPC Licence P0030-03. Indaver state that removing this condition from their licence will not increase the impact of vehicle movements or the number of vehicles using the R152 any more than what has been assessed in the EIS. Regarding noise levels, as the plant will operate 24 hours a day and the number of vehicle movements to the site won't change as a result of the removal of this condition, there is no expected noise level increase.

Comment: The hours of waste acceptance and operation specified in condition 3.16 of the existing waste licence were proposed by Indaver in the licence review application and have been assessed in the EIS. It is not considered appropriate to remove this condition at this late stage in the licence review process, as the impact of 24 hour waste acceptance has not been fully assessed, in particular the noise impact associated with early morning vehicle movements on site and on the R152 road. The early morning period before 8am is considered night-time for the purposes of the licence, therefore the 45 dB(A) noise limit applies during this period. The queuing of waste delivery trucks on the public road can be avoided by queuing the trucks inside the entrance gates of the facility at the designated truck siding areas indicated on the site plan (Drawing No. 18081\WL\005 Rev. B). No change is recommended to the condition.

**A.9 Condition 3.22.10 states "The waste bunker shall be equipped with the following:-
(a) a smoke detection system with alarm and water cannon for fire control; and
(b) a detector for the presence of explosive gases."**

Request: In relation to item (a), Indaver have installed a flame detection system instead of a smoke detection system. They state that due to the height and design of the bunker, the best and most effective solution to detect fire are the UV / IR combined fire detectors (ultra violet easily detects a flame with less smoke than conventional smoke detectors and infra-red detects the heat of the fire) . These systems are used in Indaver's plants in Belgium and have proven to have very effective results. They are also advised and approved by their insurance company. Smoke detectors would only detect a fire in the bunker when the smoke is really dense and the fire at an advanced stage. Smoke detectors will be used in the office buildings and other areas where appropriate.

In relation to item (b), Indaver state that a detector for the presence of explosive gases should not be necessary as they will not be accepting hazardous waste or large amounts of sludge, the air above the bunker will be used as combustion air (30,000 to 40,000 m³/hour), the explosion limits are 5% - 15% methane/air, so the minimum amount of methane production to form an explosive mixture would be approximately 1,500 m³/hour which Indaver state is impossible. During shut-down of the incinerator, the ID fan will continue to

draw air from the bunker so ventilation is ensured and there will be no build-up of an explosive atmosphere. Indaver also state that there are no recordable incidents in the bunker area due to the formation of methane in waste incinerator installations.

Comment: The change to item (a) is approved, as the proposed UV / IR combined fire detector is considered a higher standard than a smoke detector. Part (a) of the condition should be amended to *“a smoke detection system (or equivalent) with alarm and water cannon for fire control”*.

No change is recommended to item (b) as it is considered reasonable to require monitoring of explosive gases in the bunker of a MSW incinerator. Such a detector would also indicate if there was a problem with the air extraction system. It is a standard requirement in all incinerator licences issued by the Agency and Indaver have not proposed an alternative method/system for monitoring for the presence of explosive gases in the bunker.

A.10 Condition 3.29.2 states *“Following the completion of infrastructural works and prior to operation, the licensee shall commission an independent construction quality assurance validation and submit the validation report to the Agency on completion. The report shall, as appropriate, include the following information:-*

- (a) a description of the works;***
- (b) as-built drawings of the facility;***
- (c)”***

Request: Indaver request that as-built drawings of the facility should not be required to be submitted to the Agency due to the volume of information. Indaver also request that as-built drawings are treated as confidential information and are not available to be viewed by the public in the interests of site security and to comply with contractual agreements with the suppliers/contractors of the plant and equipment. Instead, they propose to store them on site and if required, they will be available to be viewed by Agency personnel.

Comment: The extent of drawings and level of detail to be provided on the drawings can be agreed with the OEE. No change is recommended to the condition.

A.11 Condition 8.2.3(a) on inspection of incoming waste

Request: Indaver wish to clarify the point of inspection of incoming wastes. On entry to the facility a truck is directed to the security gatehouse where the documentation is checked. The driver will then proceed to the weighbridge where the waste is weighed and the truck proceeds to the waste reception hall. Indaver state that the physical inspection of the load, when required, is performed in the reception hall.

Comment: Condition 8.2.3(a) of the existing licence requires waste inspection at the point of entry to the facility. Indaver’s request proposes that waste inspection will take place in the reception hall. However, the licence review application states that the majority of residual waste will be discharged directly into the bunker via discharge chutes, and any bulky residual waste will be shredded in the reception hall before being discharged into the bunker. The waste reception hall will be supervised to ensure that the waste arriving at the facility is in accordance with the waste acceptance criteria.

It is considered that this condition should be amended to *‘waste inspection prior to discharge into the bunker’*. This way, the waste loads can either be inspected at the security gatehouse, weighbridge, or reception hall. The important point is that every waste load is inspected prior to being tipped/discharged into the bunker.

A.12 Condition 8.2.3(d) on bunker management procedures

Request: Condition 8.2.3(d) on bunker management procedures refers to mixing, periodic emptying and cleaning. Indaver wish to advise that the bunker will not be periodically emptied, due to the design and function of the bunker. The bunker is designed to have an amount of waste present at all times so that a good mix of waste is available to produce a homogenous waste stream. This is important for the optimum and safe operation of the plant. Good bunker management procedures involve the mixing and turning of waste. Emptying the bunker would not ensure a constant stream of suitable waste available nor a good mix. Continuous use of the bunker and regular mixing of waste are the primary recommendations for good bunker management.

Comment: The condition has been updated in accordance with the most recent incinerator licence issued by the Agency (Dublin City Council W0232-01). The reference to periodic emptying and cleaning of the bunker has been removed, and the condition now refers only to *'procedures for the handling of waste and incinerator residues including bunker and silo management'*.

A.13 Condition 9.4.1 states "In the event of a complete breakdown of equipment or any other occurrence which results in the shutdown of the incineration plant or process line, any waste:-

- (a) arriving at the facility shall be transferred directly to an appropriate facility;**
- (b) stored or awaiting processing at the facility shall, subject to the agreement of the Agency, be transferred to an appropriate facility within three days of the shutdown."**

Request: Indaver request that this requirement does not apply to waste already in the bunker, as they state that it is not practicable (without involving extraordinary measures and cost) to remove waste out of the bunker via any other route apart from via the grab cranes into the incinerator feeding hopper. There will be no odour issues with waste remaining in the bunker, as a negative air pressure system will be in place. All waste that is awaiting unloading from trucks in the tipping hall will be sent off-site in accordance with the condition.

Comment: In the case of a planned shut-down (e.g. annual maintenance), the bunker should be emptied prior to shut-down. In the case of an unplanned shut-down, it is not feasible for the licensee to have anticipated emptying the bunker prior to shut-down. This means there could be any amount of waste, up to 16,000m³, stored in the bunker. It is considered that the condition could be amended to allow for a degree of flexibility with regard to the requirement to move waste out of the bunker, subject to OEE agreement. In this way, if the incinerator is due to re-start within a reasonable time period, e.g. within a matter of days, an agreement could be reached with OEE to allow the continued storage of waste in the bunker for longer than the specified 3 days. However, it is not reasonable for the Agency to allow unlimited storage of waste in the bunker during an extended shut-down, due to potential odour emissions, which despite being vented through the stack, will still be emitted unabated. It is recommended that part (b) of the condition be amended to read: *"stored or awaiting processing at the facility shall, subject to the agreement of the Agency, be transferred to an appropriate facility within three days of the shutdown, unless otherwise agreed with the Agency."*

A.14 EPA Pre-Treatment Obligations - Roll out of a Three Bin System

Indaver have previously set out their position on the EPA Pre-Treatment Guidance requirement that in urban areas (>1,500 population), the diversion or separate collection of biowaste (i.e. third bin) is expected for WtE facilities. In particular, they have highlighted

their concern that they would be reliant on their competitors to roll out the third bin in order to comply with the obligations.

Indaver state that since their Article 12 information was submitted in December 2009, the DoEHLG has published draft household food waste regulations for consultation (*Waste Management (Household Food Waste Collection) Regulations 2010*). These propose to require that waste collectors provide or arrange for the provision of a separate collection service for food waste from households from 1st July 2011 for all households situated within agglomerations >50,000 population, and from 1st January 2012 for all households situated within agglomerations >1,500 population. Similar obligations have already been placed on commercial food waste producers through the *Waste Management (Food Waste) Regulations 2009*, which require source separation and treatment of all food waste arising. If the draft food waste regulations for householders are published without modification, they will ensure that the onus on separate collection remains in the most appropriate place (according to Indaver), that is, with the waste collection service providers. Similarly, it is likely that in order to take account of these new regulations, the Waste Framework Directive and other changes which may result from the Draft Statement of Waste Policy published recently by the Minister for Environment, Heritage and Local Government, the Waste Collection Permit Regulations, or at the very least, collection permits will be reviewed. Indaver believe that this would provide the opportunity to re-enforce the provision of three-bin collection service.

Indaver also re-iterate their concern that the pre-treatment obligations do not differentiate between options at different tiers of the waste hierarchy. That is, the same obligations are applied to WtE (as a recovery operation) and landfill (as a disposal operation). Indaver state that there is no apparent reason for applying these obligations to WtE, a residual waste treatment option, and not to MBT which also manages residual waste. At the very least, WtE and MBT should be treated on par in terms of residual waste source separation to ensure maximum materials recovery in line with the waste hierarchy.

Request: Indaver re-iterate that it is not necessary or meaningful, and likely to be in breach of EU law, to include a pre-treatment condition similar to that proposed in the current EPA Pre-Treatment Guidance document in the revised Waste Licence.

Comment: The requirements for pre-treatment of MSW prior to acceptance at this facility have been discussed earlier in this report. No further change is recommended.

A.15 Classification of Bottom Ash

Indaver refer to the recently issued DoEHLG Draft Statement on Waste Policy based on the outcome of the International Review of Waste Policy, published in November 2009. One of the proposed policy measures in the Draft Statement is:

“in line with the recommendation of the International Review, the classification of incinerator bottom ash as hazardous will be examined in conjunction with the EPA which is charged with the licensing of such facilities. In particular, the application of ecotoxicity testing to the material will be examined”.

The European Waste List classifies waste in hazardous and non-hazardous waste codes. For this classification, 15 hazard criteria have been derived from Council Directive 91/689/EEC on hazardous waste. One of these criteria, H14, identifies materials as ecotoxic. The H14 criteria are designed to assess the impact of materials on the reproduction and growth of freshwater and terrestrial flora and fauna. Work is currently underway at EU level to determine suitable test methods and thresholds for the H14 criteria.

The International Review states that “*there is an increasing body of evidence which suggests that bottom ash from incineration is ecotoxic*”. According to Indaver, CEWEP Ireland has been unable to find a body of evidence suggesting bottom ash is ecotoxic.

Request: Indaver request that until more information has been gathered on different types of waste materials, and the EU has made a decision regarding testing methods or thresholds for different waste streams, that any condition regarding ecotoxicity in the waste licence would be premature and would unfairly discriminate against incineration.

Comment: *Schedule C.4 Monitoring of Incinerator Residues* of the RD requires annual testing of bottom ash to determine whether it is hazardous or non-hazardous in nature. Ecotoxicity testing is a standard element of testing under the hazardous waste classification tool, and is therefore included as an implicit requirement in the RD.

5. Decommissioning

There are no changes to the facility decommissioning or aftercare requirements as a result of the licence review. The facility has a design life expectancy of 30 years. In the event of decommissioning, measures will be taken by the licensee to avoid any pollution risk and return the site to a satisfactory state. Condition 10 of the RD specifies decommissioning and residual management requirements, in the event that waste activities cease at the facility.

6. Cultural Heritage, Habitats & Protected Species

Four proposed Natural Heritage Areas (Duleek Commons, Thomastown Bog, Boyne River Islands and Dowth Wetland) and one candidate Special Area of Conservation (River Boyne & River Blackwater) occur within 5km of the site. It is not anticipated that there will be any impact on any designated sites as a result of the licence review.

7. Waste Management, Air Quality and Water Quality Management Plans

The *North Eastern Regional Waste Management Plan 2005 – 2010* identifies the need for a 150,000 to 200,000 tonnes per annum WtE facility to serve the Region’s future waste management requirements. The overall waste management targets established in the plan are 43% recycling, 39% thermal treatment and 18% landfill. The scale and nature of the proposed facility is consistent with the requirements of the plan.

There is no Air Quality Management Plan for the North East Region or for County Meath.

The final draft Eastern River Basin Management Plan (April 2010) has been considered in the assessment of this licence review application. Under the Water Framework Directive, the River Nanny is classified as moderate status and risk category 1a ‘*at risk of not achieving good status*’ by 2015. The objective is to restore good status in the Nanny River by 2027. The surface water discharge from the facility will be monitored on-site to ensure it is free from contamination and the hydraulic discharge rate will be controlled in order to prevent flooding downstream of the site. The groundwater body is classified as poor chemical status and is at risk of failing the quantitative status objective in the future as the current rate of abstraction (by other parties) is approximately 65% of recharge. The proposed Indaver abstraction (180m³/day) is relatively minor in comparison to the neighbouring Irish Cement abstraction. However, Meath County Council need to be aware of it, as it may have implications for what they could abstract in the future.

8. Environmental Impact Statement

I have examined and assessed both the 2006 and 2009 Environmental Impact Statements submitted in support of this licence review application and having regard to the statutory responsibilities of the EPA, I am satisfied that they comply with Article 94 and Schedule 6 of the Planning and Development Regulations 2001 (S.I. 600 of 2001) and the Waste Management (Licensing) Regulations (S.I. 395 of 2004, as amended).

9. Best Available Techniques (BAT)

BAT for the proposed activity is taken as the techniques set out in the European IPPC Bureau Reference (BREF) Document on BAT for Waste Incineration (July 2006). I have examined and assessed the application documentation and I am satisfied that the site, technologies and techniques specified in the application and as confirmed, modified or specified in the attached Recommended Decision (RD) comply with the requirements and principles of BAT. I consider the technologies and techniques as described in the application, in this report, and in the RD, to be the most effective in achieving a high general level of protection of the environment having regard - as may be relevant - to the way the facility is located, designed, built, managed, maintained, operated and decommissioned.

10. Compliance with Directives/Regulations

The application documentation and proposal has been evaluated having regard to the requirements of EU legislation as may be relevant, and within the statutory competency of the EPA, including:

- The Integrated Pollution Prevention and Control Directive (2008/1/EC);
- The Incineration of Waste Directive (2000/76/EC);
- The revised Waste Framework Directive (2008/98/EC);
- The Water Framework Directive (2000/60/EC);
- The Habitats and Birds Directives (1992/43/EEC & 1979/409/EEC);
- The Environmental Liability Directive (2004/35/EC); and
- The Environmental Impact Assessment Directive (1985/337/EEC).

The application complies with the requirements of these Directives, in addition to EU requirements given effect in national legislation and covered under the scope of the EPA's statutory functions under the Environmental Protection Agency Acts 1992 to 2007 and the Waste Management Acts 1996 to 2010.

Annex I of Directive 2003/87/EC on greenhouse gas emissions trading exempts municipal waste incinerators from the directive requirements. In relation to the general obligations under the Kyoto Protocol, the application of BAT, energy recovery, and emissions scrubbing for NO_x at the proposed incinerator site comply with the general principles of the Protocol.

The facility proposal meets the obligations and technical requirements defined under the Stockholm Convention on Persistent Organic Pollutants.

The applicant has given details of the assessment of on-site storage of materials, having regard to the European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, S.I. No. 74 of 2006 (the Seveso Regulations). The assessment concluded that the facility was not one to which the Seveso Regulations apply. The Health & Safety Authority (HSA) is the competent authority responsible for administration and enforcement of these regulations.

11. Cross Office Liaison

I have consulted with Inspector Ian Marnane, OEE Air Thematic Team, in relation to several aspects of this licence review application. Inspector John McEntagart (Environmental Licensing Programme) and Philip O'Brien (Climate Change Unit) assisted in verifying the applicant's air dispersion modelling assessment. I have also consulted with Inspector Mary Gurrie, the Office of environmental Enforcement (OEE) inspector for this facility, and with Matthew Craig, Office of Environmental Assessment (OEA), regarding groundwater issues.

In June 2009, I visited Indaver's municipal waste incinerator at Doel, Belgium, with senior licensing Inspector Brian Meaney and colleagues from the OEE Air Thematic Team. During the visit, we also met with the Flemish regulators to discuss licensing and enforcement of incineration activities. All costs were paid for by the Agency.

12. Compliance Record

I have consulted with the Agency's Office of Environmental Enforcement (OEE) regarding the licensee's compliance record under the existing waste licence. No complaints have been received to date. The OEE undertook site inspections in February and June 2010. Construction works were underway during the visits. The licence conditions which took effect from the commencement of construction were reviewed and the works were deemed to be compliant. In accordance with the licence requirements, a Community Liaison Committee has been established and a quarterly newsletter is issued by Indaver.

13. Fit & Proper Person Assessment

The legal, technical and financial standing of the applicant qualifies them to be considered Fit and Proper Persons for the purposes of this licence review application.

14. Submissions

Three submissions were received from the Health Service Executive:

- (i) Carmel Lynch, Environmental Health Officer, HSE, Navan, Co. Meath (01/05/2009);
- (ii) & (iii) Sinead McNally, Environmental Health Officer, HSE, Navan, Co. Meath (19/01/2010 and 12/07/2010).

The HSE set out seven issues for consideration. The applicant (first party) submitted a response to the issues on 03/02/2010. For clarity, the first party comments are dealt with in association with the item to which they relate and thereafter the inspectors response is presented.

(1) The previous licence outlined a system of monitoring to be conducted by the licensee. The licensee would be given full responsibility for monitoring, assessing results and formulating reports on all environmental emissions from the development. The HSE suggest that independent monitoring should be a requirement of the licence and should be conducted by the EPA or consultants employed on behalf of the EPA.

First party comment: A suite of air emissions from the stack will be continuously monitored in line with EU Directive 2000/76/EC (WID) via automatic sampling and testing equipment. It would not be practicable to independently monitor these emissions on a continuous basis. Grab samples will also be taken by external accredited laboratories to monitor some stack emissions that cannot be continuously monitored (heavy metals), ambient odour, groundwater quality, etc. All sample points will be made accessible for independent inspection and monitoring as required. All monitoring will comply with the European Standards EN 14181:2004 and EN 13284-2:2004 for quality assurance of automated measuring systems to measure stationary source emissions and dust in flue gases.

Response:- Monitoring of emissions will be carried out through a combination of the licensee's self-monitoring and compliance monitoring undertaken by the Agency, or by an independent contractor on behalf of the Agency. The licensee is required to pay the Agency an annual contribution towards the cost of enforcing the licence, which includes compliance monitoring and sampling costs.

(2) The World Health Organisation fact sheet on 'Dioxins and their effects on Human Health' states that dioxins tend to bio-accumulate in the food chain. The Food Safety Authority of Ireland Report 'Waste Incineration and Possible Contamination of the

Food Supply with Dioxins', 2003, recommends in order to maximise consumer protection, rigorous monitoring programmes must be maintained. A monitoring regime for dioxins in the surrounding environment should be incorporated into the licence.

First party comment: Indaver will continuously sample dioxin emissions from the stack. Samples will be analysed on a fortnightly basis by an independent laboratory. All sampling equipment and analysis results will be available for independent auditing. In addition to this, the EPA carries out regular environmental monitoring for dioxins in cows' milk. Carranstown is identified in this survey programme as an area of perceived potential risk. Samples from this area have been taken in four surveys since 2004.

Emission limits under the WID are among the most stringent of any industry. The EPA's Irish dioxin inventory¹ estimated that in 2000, 75% of dioxin emissions to air were from uncontrolled combustion processes compared with 0.02% from the nine existing hazardous waste incinerators. Projections for 2010 estimated that even with the development of an additional 1,000,000 tpa capacity MSW incineration and 500,000 tpa capacity hazardous waste incineration, only 1.8% of dioxin emissions to air would be from waste incineration processes. This is based on incinerators operating at EU WID emission limits, whereas facilities typically only operate at 20% of this limit or less. These figures compare with an estimated 84% of dioxin emissions to come from uncontrolled combustion processes, 8% from the power generation and heating sector and 3.9% from the road transport sector.

Response:- The RD requires continuous monitoring of dioxin emissions from the stack. The Agency has been carrying out monitoring for dioxins in cow's milk in the Carranstown area for several years. Colman Concannon, Office of Environmental Assessment, has confirmed that dioxin monitoring will continue to be carried out in this area as part of the national dioxin survey.

(3) According to the WHO 'Site Selection for New Hazardous Waste Management Facilities 1993', areas with limestone deposits and areas critical for aquifer recharge are deemed unsuitable. These characteristics apply to this site. The applicant has not addressed this matter.

First Party comment: Areas with limestone deposits and areas critical for aquifer recharge are considered to have low applicability to the selection of a site for a WtE facility because they are mainly applicable to landfill sites of a hazardous nature. In granting planning permission, both Meath County Council and An Bord Pleanála agree that the chosen site is a suitable location to operate a WtE facility.

Response: The selection of the subject site for a WtE incinerator has been approved in principle in the planning permissions and waste licence granted to date. The applicant proposes to handle all waste within a contained building and watertight bunker. There are no significant changes in circumstances in the interim to affect that approval.

(4) A large scale dewatering scheme is in operation at Platin Cement Works adjacent to this site. The applicant has stated that groundwater beneath the site is influenced by the cone of depression in the quarry. Further groundwater pumping from this body is proposed to supply the East Meath and South Louth public water supplies. Further abstraction, as proposed by the applicant, may have a serious impact on this ground water body. Perhaps the applicant should explore the feasibility of supplying water to the site from the dewatering operation at Platin Cement Works.

¹ Hayes, F. and Marnane, I., *Inventory of Dioxin & Furan Emissions to Air, Land and Water in Ireland for 2000 and 2010*

First Party comment: Indaver state that the abstraction will not have a serious impact on the groundwater body. The 2009 EIS states: *“The proposed abstraction will not alter the extent of the Platin cone of depression as the planned abstraction is relatively small in comparison to the Platin extraction. Also, as the amount Platin abstracts is varied to maintain the water table level at or just below the quarry floor, the proposed abstraction will not materially add to the total amount of groundwater abstracted from the aquifer. Rather the planned abstraction will result in a small net reduction in the amount of groundwater abstracted from beneath the quarry excavation with the total being abstracted from the aquifer remaining largely unchanged.*

However, if the planned abstraction were to impact on the groundwater levels in nearby private wells, the Company would remedy the situation by deepening the impacted well(s).”

Response: The applicant, in this application, proposes to use 7.5 m³/hour (180 m³/day) of groundwater compared to the previous proposal of 14 m³/hour (336m³/day). The proposed amendments to the facility will not have a significant impact on the hydrogeology of the development site or surrounding area.

(5) The Agency should consider implementing a strategy for monitoring local wells in the area to ensure the development does not have a significant adverse effect on the quantity or quality of local private water supply wells.

The location and depth of the required groundwater boreholes, necessary in order to obtain representative samples, should be specified in the licence.

The groundwater monitoring regime should include analysis of microbiological and hydrocarbon parameters. The monitoring frequency and scope of sampling should be sufficient to permit a full assessment of the quality of groundwater in the area.

First Party comment: Groundwater quality monitoring will be carried out at three permanent monitoring wells located on the site. Two of the wells will be located downgradient of the waste bunker, the main potential source of contamination, and would therefore detect any potential contamination before it can reach wells off-site.

The 2009 EIS notes that in the event of an unmitigated accidental groundwater discharge, any resulting plume would move in the direction of the Platin groundwater abstraction. It is therefore unlikely that such discharges would impact on local well water quality.

Response: The on-site groundwater monitoring regime specified in Schedule C.6.1 of the RD requires monthly monitoring of TOC (which will detect any hydrocarbons present) and biannual microbiological monitoring (total and faecal coliforms), which was not required under the existing licence. While it is not considered a likely scenario, Condition 9.4.4 of the RL requires, in the event that monitoring of local wells indicates that the facility is having a significant adverse effect on the quantity or quality of the water supply, the licensee shall provide an alternative source of water to those affected.

(6) The applicant carried out background noise monitoring which indicated that noise levels already exceed EPA guideline limits. The applicant states the development will operate within EPA limits at nearest noise sensitive locations. The applicant should clarify this matter.

First Party comment: The updated noise modelling exercise based on revised building layouts found that no change (0 dB L_{Aeq}) to ambient noise levels could be anticipated for both daytime and night-time periods. This indicates that subjectively, the development

will result in an imperceptible change in noise levels, with the resulting impact on NSLs being negligible.

Response: The impact of noise emissions from the facility is discussed under Section 4.6 of this report. The predicted noise levels from facility operations range between 22 to 33 dB(A) LA_{eq} during daytime and night-time at the 5 NSLs. The cumulative noise impact assessment predicts no change in noise levels over and above the existing ambient levels at all the NSLs. The noise impact from the facility on the local community is therefore not deemed to be significant.

(7) The main wastes arising from the proposed facility would be bottom ash, boiler ash and flue gas residues. Given the nature of municipal solid waste and the diversity of its components, how will the applicant determine the hazardous nature of waste for appropriate treatment/disposal?

First Party comment: Indaver will conduct full composition and leachate testing on the bottom ash, boiler ash and FGT residues in the initial stages of operation of the plant to characterise the residues. Once initial characterisation tests indicate the composition and classification for disposal of the various ash types, monitoring of ash will be conducted in line with the licence requirements.

Response: *Schedule C.4* of the RD specifies the monitoring requirements for incinerator residues, which will establish the physical and chemical characteristics and polluting potential of the residues. This will determine the nature of the residues, i.e. hazardous/non-hazardous, prior to determining the appropriate route for disposal or recycling.

15. Charges

The annual financial charge in the current licence is €65,513. The RD recommends an annual charge of €58,660, which takes account of the inspection, audit, report evaluation, sampling and analytical costs associated with enforcement of the recommended decision.

16. Recommendation

I am satisfied that the conditions set out in the Recommended Decision will adequately address all emissions from the facility and will ensure that the carrying on of the activities in accordance with the conditions will not cause environmental pollution.

I have considered all the documentation submitted in relation to this application and recommend that the Agency grant a licence subject to the conditions set out in the attached RD and for the reasons as drafted.

In making this recommendation, I consider that the proposed waste activities would, subject to the conditions of the RD, comply with the requirements of Section 40(4) of the Waste Management Acts, 1996 to 2010.

Signed



Aoife Loughnane

Inspector

Office of Climate, Licensing & Resource Use

Procedural Note

In the event that no objections are received to the Proposed Decision on the application, a licence will be granted in accordance with Section 43(1) of the Waste Management Acts 1996-2010.

Figure 1: Site Location

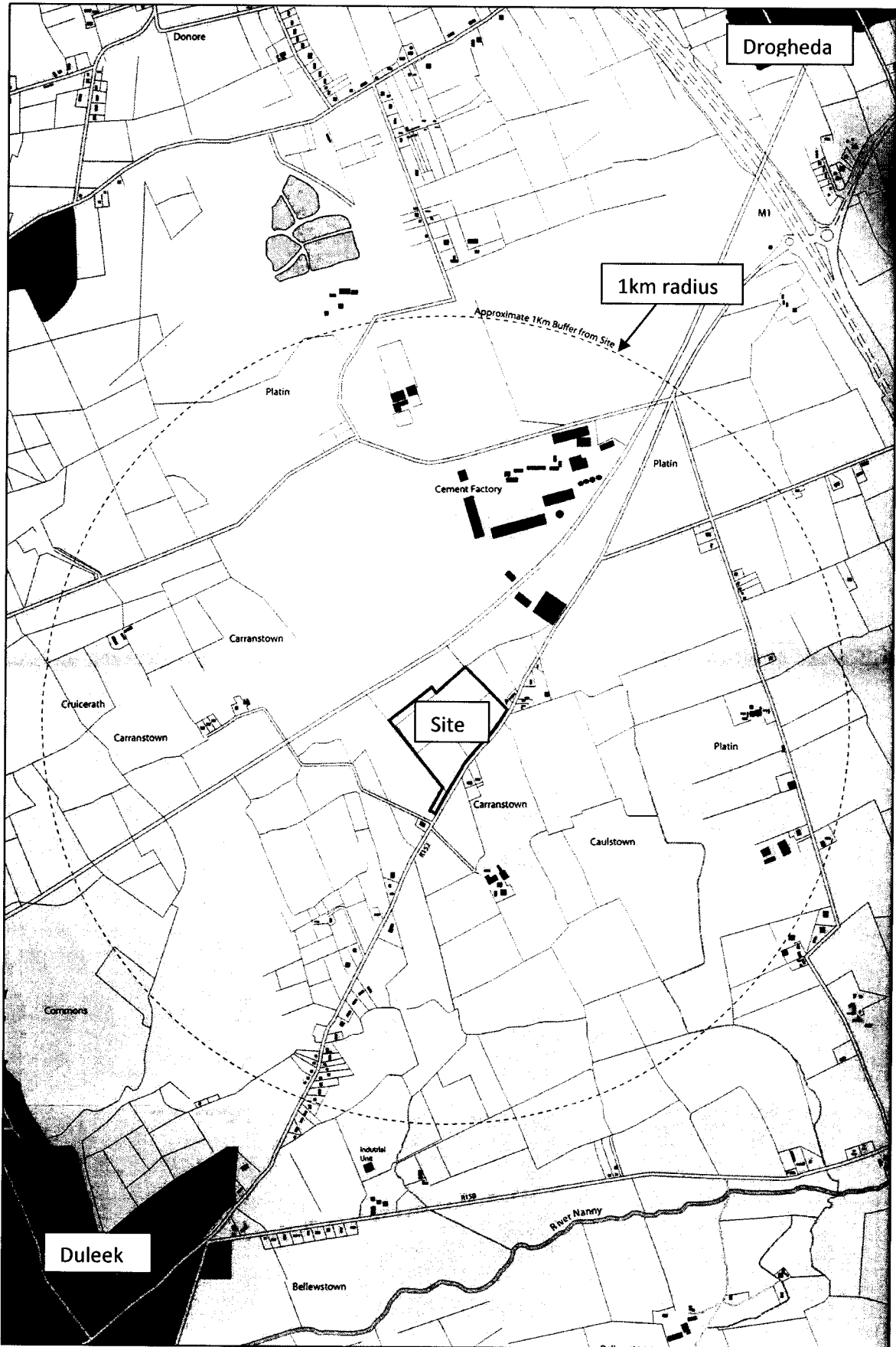


Figure 2. Site Layout Comparison

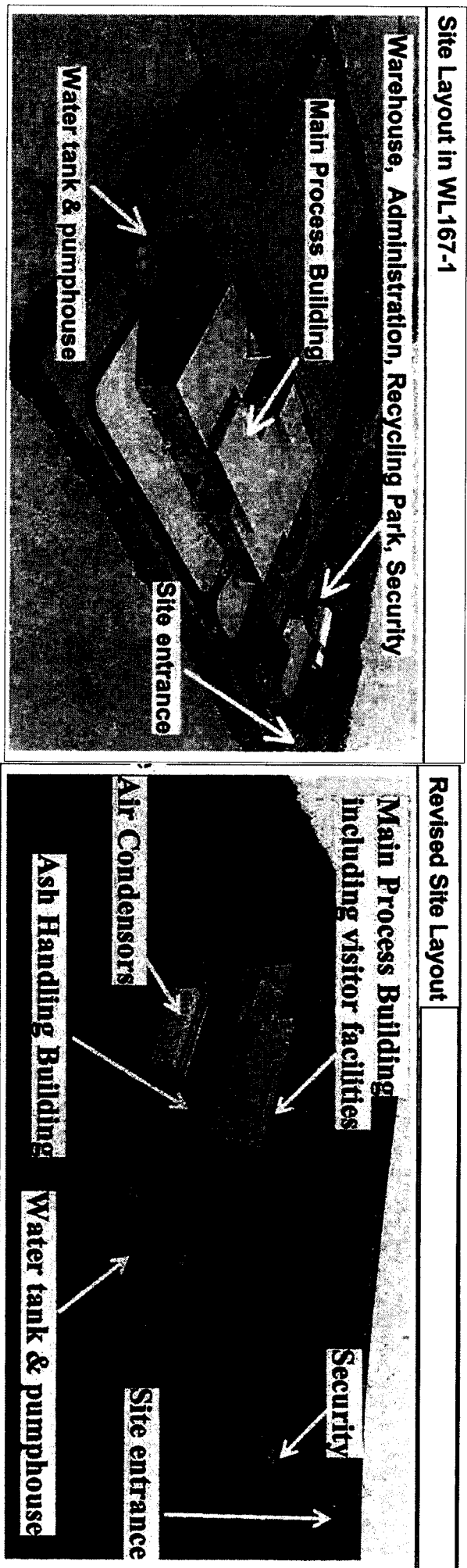


Figure 3. Incineration Process

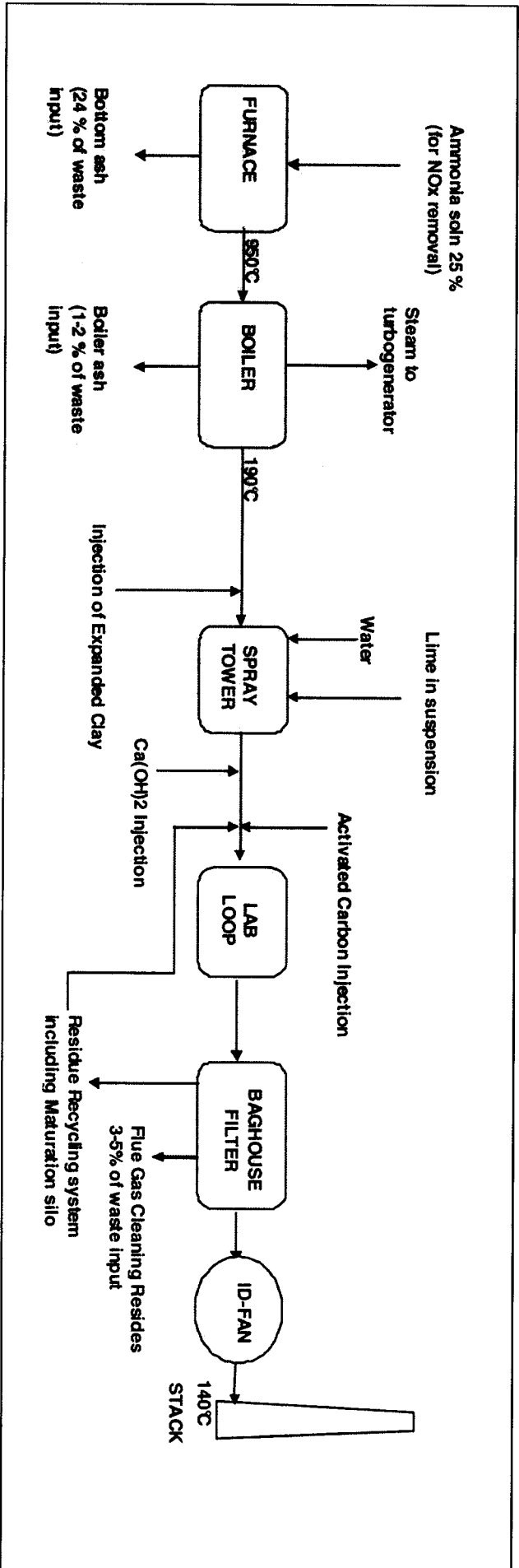


Figure 4. Process Overview

