

Appendix 1

Non-technical Summary of Waste Licence Application

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NON-TECHNICAL SUMMARY

1. INTRODUCTION

Indaver Ireland is submitting this application for a Waste Licence for a proposed waste management facility at Carranstown, Co. Meath. The application is being made to the Environmental Protection Agency (EPA) under the Waste (Licensing) Regulations 1997 as amended.

The principal class of activity at the facility is listed under the **Third Schedule** of the Waste Management Act, 1996, namely:

8. *Incineration on land or at sea.*

The following other activities will take place at the facility:

Third Schedule

7. *Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10 of this schedule (including evaporation, drying and calcination)*
12. *Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.*
13. *Storage prior to submission to any activity referred to in a preceding paragraph of this schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.*

Fourth Schedule

2. *Recycling or reclamation of organic substances which are not used as solvents.*
3. *Recycling or reclamation of metals and metal compounds.*
4. *Recycling or reclamation of other inorganic materials.*
6. *Recovery of components used for pollution abatement.*
9. *Use of any waste principally as a fuel or other means to generate energy*
13. *Storage of waste intended for submission to any activity referred to in a preceding paragraph of this schedule, other than temporary storage, pending collection, on the premises where such waste is produced.*

Indaver has received a notification from Meath County Council in July 2001 of a decision to grant planning permission for this proposed waste management facility. An Bord Pleanála granted planning permission for this facility in March 2003 subject to 31 conditions.

Indaver intend to apply their experience of waste management to construct a waste management facility consisting of the following elements:

- A materials recycling facility for non hazardous waste with an anticipated throughput of 20,000 tonnes per annum
- A waste to energy plant for non hazardous waste with a nominal capacity of 150,000 tonnes per annum

Indaver Ireland aims to reduce any potential emissions and environmental impacts by incorporating Best Available Technologies and Techniques. Indeed, Indaver NV has extensive experience of operating incineration plants which not only comply with the new EU Regulations, but operates to levels well below the regulatory limits. For example, two dioxin removal steps will be installed in the waste to energy plant to ensure that dioxin emissions are well below the new EU limit of 0.1 ng/m^3 .

1.1 SITE LOCATION

The proposed development will be located on a c.25 acre green-field site in the Carranstown, County Meath (see Figure 1.1 overleaf). A comprehensive site selection exercise was carried out. The Carranstown site was chosen due to its central location with respect to waste production, proximity to existing industrial activity, access to electricity export facilities and major access routes.

1.2 COMPANY PROFILE

Indaver is a company that specialises in Waste Management. Indaver recycle and treat both domestic and industrial waste and provide advice on how to prevent waste as an integral part of our service. 'Sustainable Waste Management' is Indaver's philosophy that demonstrates their commitment to establishing long-term relationships with customers and the community.

Indaver employs more than 800 people and handled over 800,000 tonnes of waste in year 2000. Of this, approximately 400,000 tonnes was recycled, approximately 350,000 tonnes went for waste to energy and approximately 50,000 tonnes went for treatment or disposal.

Since its establishment, Indaver has given a high priority to environmental management, quality and safety. Indaver has over 100 licences for the treatment of a broad range of waste materials. Complying with the most stringent standards all installations have been designed to minimise the residue burden on the environment.

Indaver is involved in a comprehensive range of waste management activities at their various plants in Flanders. A selection of such activities are as follows (see also Figure 1.2):

- Sorting and purification of packaging waste
- Sorting of paper and cardboard for recycling
- Glass recycling
- Physio-chemical treatment of liquid waste

- Solvent recycling
- Recovery of wood waste
- Composting
- Sorting and recovery of tyres
- Ash treatment
- Treatment of chlorinated waste
- Sludge treatment
- Landfill
- Hazardous waste incineration
- Non hazardous waste incineration

Indaver Ireland is a wholly owned subsidiary of Indaver NV, and is registered as a branch of Indaver NV at the Companies Registration Office in Dublin Castle. Indaver owns a 100% share of MinChem Environmental Services Limited, an Irish hazardous waste management company with offices in Dun Laoghaire, Dublin Port and Cork. MinChem has been operating in Ireland since 1977 and currently employ 35 people.

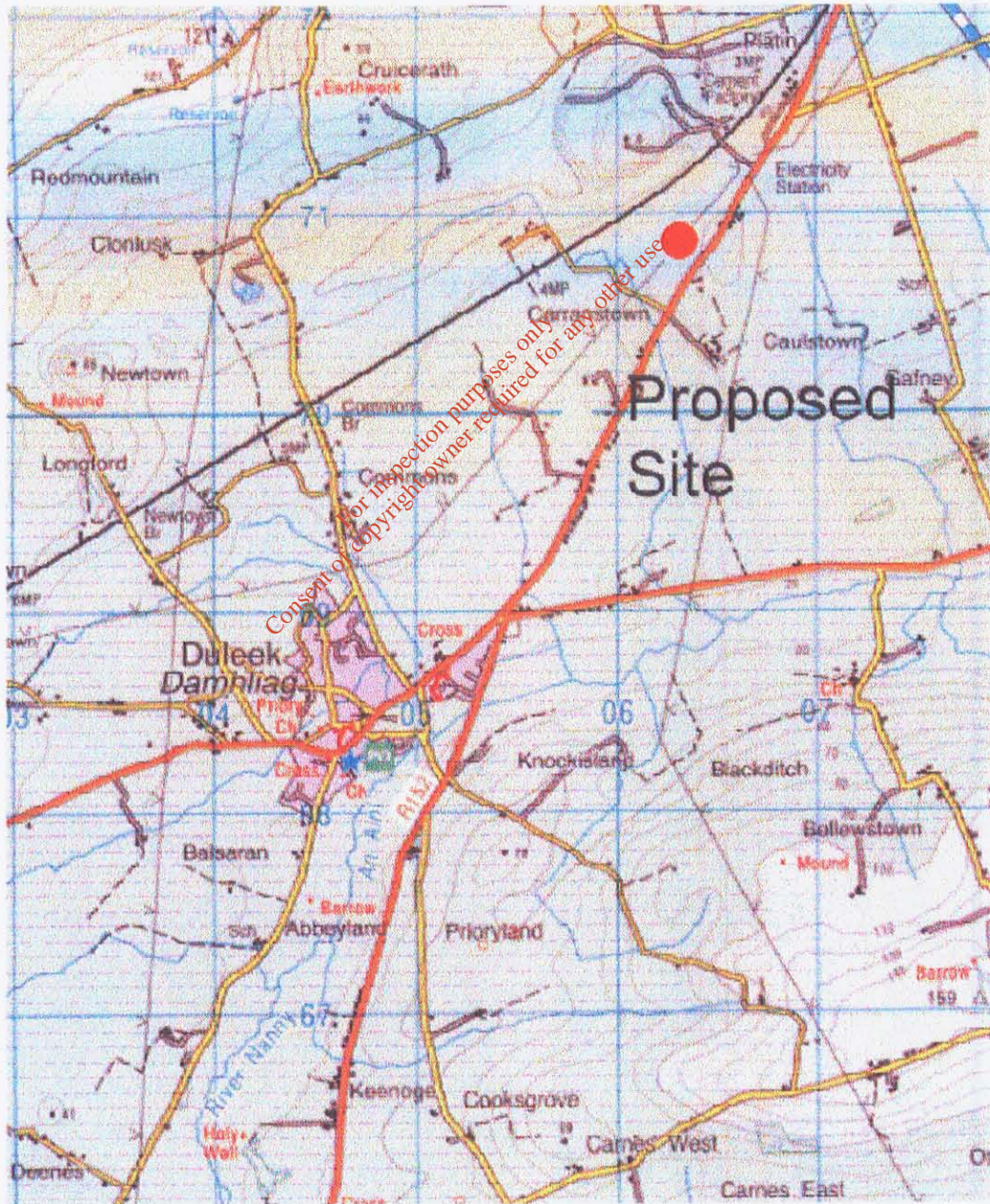


Figure 1.1 Site Location Map

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Composting



Paper Recovery



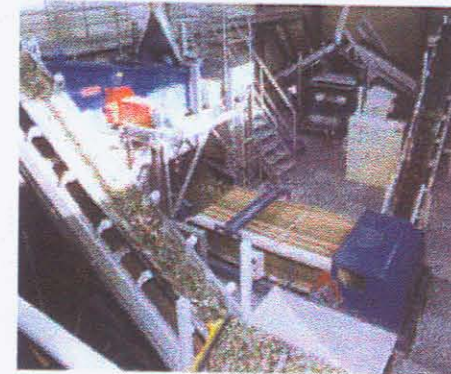
Solvent Recovery



Fluorescent Tube Treatment



Incineration



Glass Recovery

Figure 1.2 Some of Indaver's Activities

2. PLANT DESIGN

The waste management facility will consist of three separate areas, which are addressed in the following sections.

2.1 COMMUNITY RECYCLING PARK

As per response to Notice in accordance with Article 14(20)(b)(ii) of the Waste Management (Licensing) Regulations the Community Recycling Park is not being developed

2.2 MATERIALS RECYCLING FACILITY

The materials recycling facility will provide for deliveries of approximately 20,000 tonnes of unsorted dry recyclable commercial and industrial waste per annum. All waste delivery trucks will be weighed and recorded upon arrival at the facility. Each load arriving at the facility will be required to have a waste certificate, which will detail the name of the carrier/collector of waste and vehicle registration, a description of the waste, the quantity of waste collected and the name of the person inspecting the delivery.

Dry recyclable waste will be accepted into the recycling hall, where it will be stored prior to processing. The waste recycling area will be maintained under negative air pressure to prevent potential odours being released from the hall. Air drawn from outside through the main doors of the building will be used as part of the primary air source in the furnace of the waste to energy plant.

The typical composition of recyclable waste is as follows:

- Paper
- Cardboard
- Plastics
- Wood
- Metals

The dry recyclable waste will be discharged from the trucks in the recycling hall and large items, such as bulky pieces of wood or metal, will be removed and put directly into containers, which will be sent to licensed recycling facilities off-site.

The remaining waste will then be lifted onto conveyors and passed through a large rotating screen to remove small particles, which will be disposed of in the waste to energy plant. Paper, plastic and cardboard will be manually removed by sorters who will be located within a picking station. The manually removed items will be dropped through chutes within the picking station and will be collected in bunkers located at ground level. These materials will then be either put in containers or baled, and sent onwards for recycling.

Metals will then be removed from the waste stream. These metals will then be placed directly into containers or may be baled and sent for recycling. The remaining, residual fraction of the stream will be sent to the incinerator for disposal. The total residual waste will represent approximately 20% of the input.

Items of plant such as front loaders and forklifts will be diesel-powered while all other material handling equipment will be electrically powered. The material recycling facility will require no raw materials or preparations, however there will be a requirement for rolls of baling wire which will be used to hold compacted bales of material in shape during transport.

The plant will be designed to sort 20,000 tonnes of waste per annum. This plant will operate between 8am to 6.30pm Monday to Friday and from 8am to 2pm on Saturdays, however additional working hours may be required depending on incoming waste volumes. The sorting plant will be operated by up to 16 personnel consisting of 13 sorters, a foreman, a forklift driver and a front loader truck driver.

There will be no solid, liquid or gaseous emissions arising from this activity. The only potential emission that may be considered is that of noise, however owing to the fact that all items of plant will be located within a building, the impact arising from this will be negligible. Indaver Ireland will carry out noise monitoring at agreed intervals and locations around the site boundary.

As with the community recycling park, all materials leaving this process will be either within enclosed containers or will have to be covered to prevent the risk of litter during transport off site.

2.3 WASTE TO ENERGY PLANT

The waste to energy plant is based on conventional grate incineration technology, with modern flue gas treatment techniques employed. The plant will accept 150,000 tonnes of non-hazardous waste per annum and heat produced as a result of the incineration process will be used to generate approximately 14 mega watts (MW) of electricity, of which approximately 11 MW will be exported to the ESB distribution network, which is enough to power approximately 16,000 homes. The principle unit processes in the plant are described below.

2.3.1 Reception

All waste delivery trucks will be weighed and recorded upon arrival at the facility. Each load arriving at the facility will be required to have a waste certificate, which will detail the name of the carrier/collector of waste and vehicle registration, a description of the waste, the quantity of waste collected and the name of the person inspecting the delivery. Trucks will then drive into the enclosed waste reception hall where the waste will be tipped into the waste bunker. This area will be enclosed and maintained under negative pressure (air will be drawn into the building through the entrance doors and used as combustion air in the furnace) and as a result there will be no odours or littering outside this area.

The waste reception hall will be supervised to ensure that the waste arriving at the facility is in accordance with Indaver's waste acceptance procedures. The reception hall will contain a waste inspection area in which visual checks can be carried out on selected deliveries. In the event of material arriving at the facility that is not suitable for the process, this waste will be held in a waste quarantine area while transport off site is arranged. Any large or bulky items will be mechanically shredded prior to entering the bunker.

The waste materials will enter the storage bunker via one of five discharge chutes. The capacity of the bunker will be sufficient to allow waste deliveries to continue during periods of maintenance shutdown and during long weekends, etc.

The waste in the bunker will be mixed before it enters the furnace. The operation of mixing and loading will be carried out by a plant operator located in the control room directly above the bunker. The plant operator will use a semi-automatically controlled grab crane.

The only potential for unexpected emissions in the bunker would be due to a fire in the waste. In practice, the grab operator would remove this burning waste and place it into the furnace hopper where it will then enter the furnace. In the event of the fire becoming larger the operator would direct either one of two water cannons at the source. These cannons will have a flow rate of 300 cubic metres per hour which would be sufficient to extinguish a fire. In the event of large quantities of water being used, the bunker would contain this water prior to it being transported off-site for treatment at an appropriately licensed facility.

2.3.2 Combustion

The waste will be automatically lifted into the furnace feed hopper by the bunker's grab crane mechanism. The hopper will transfer the waste into the furnace using a ram system.

The furnace will be a "Grate" type and will continually move the waste from the entrance side to the ash discharge side. Gas-fired burners will be located within the furnace and will be used in start up situations. The burners will also provide auxiliary firing during normal operation to ensure the required temperature of 850 °C is maintained.

The waste will stay in the furnace for approximately one hour, which will ensure that the waste is completely burned. Air will be supplied to the furnace to assist burning, in addition parameters such as temperature and oxygen levels will be measured continuously in the furnace.

Small particles of waste or "siftings" that fall through the grate will be collected in a hopper, cooled using primary air for the furnace and returned by means of a conveyor system to the bunker. This will amount to approximately 1% of the input volume.

The residual ash that will represent approximately 20% of the total weight input is the solid by-product of the incineration stage. This ash will be quenched in a water bath upon leaving the furnace, where metals will be removed and sent off-site for recycling. The ash will be stored in an ash bunker prior to transport off site. This material may be used as a raw material in the construction industry, however if such an outlet is not established it will be disposed of to a non-hazardous landfill.

The waste to energy plant will have two furnace lines, which will allow one line to be shut down for maintenance without effecting the entire process.

2.3.3 Energy Recovery

The hot combustion gases leaving the furnace will enter a boiler to recover the heat generated by burning the waste, where the boiler water will be converted into superheated steam. The gas temperature at the inlet to the boiler is required, under the EU Directive on Incineration of Waste (2000/76/EC), to be a minimum of 850 °C with a residence time of at least two seconds.

The superheated steam will leave the boiler at a pressure of 40 bar, a temperature of 400 °C and will be expanded through a electricity generating turbine which will supply an output of approximately 14 MW. The steam exiting the turbine will pass through an air-cooled condenser where the remaining heat will be removed. The condensed boiler water will then pass through a re-heating economiser before re-entering the boiler.

This closed loop process reduces the requirement for large volumes of boiler make-up water and instead, smaller volumes of boiler blowdown will be regularly removed to prevent the build up of salts in the system, this boiler blowdown will be diverted to the evaporating spray tower for recycling. All water entering the boiler water system will be of a high purity, which will be achieved using a de-ionised system or a combined de-ionised/reverse osmosis system. In addition, chemicals will be added to the water to inhibit corrosion of the pipework.

NO_x will be removed in the first pass of the boiler by the injection of ammonia or urea. These chemicals will react with nitrogen oxides to produce nitrogen and water. As a result the plant is expected to operate below the EU limit of 200 mg/m³.

The only emission from the boiler will be boiler ash, which will represent approximately 1-2% or 1,500 to 3,000 tonnes per annum of the input weight. Depending on analysis of this ash, this material will go to either a hazardous or non-hazardous landfill. However, from Indaver's experience of operating a similar facility, it is expected that this ash will be classified as non-hazardous.

The waste to energy plant will have two boilers, which will allow the plant to shut down one line for maintenance without effecting the entire process.

2.3.4 Flue Gas Cleaning

The flue gases leaving the boiler will enter a five stage cleaning process involving cooling, dioxin and heavy metal removal, dust removal, acid gas removal and a final stage of dioxin and heavy metal removal. The final stage of flue gas cleaning will ensure that all emissions are well below the new EU limit values (EU Directive on Incineration of Waste (2000/76/EC)).

The plant will be equipped with a continuous dioxin sampler to provide records of any dioxin emissions from the plant.

Gas Cooling

The combustion gases leaving the boiler at a temperature of approximately 230°C will pass into an evaporating spray tower where they will be cooled to approximately 170°C. Cooling will be provided by spraying the liquid effluent from other process operations into an evaporating tower as the gases pass through, and therefore the

tower will serve as both a gas cooling stage as well a recycling stage for the plant's effluent.

The tower will require approximately 5m³ of water per hour. The required temperature of the flue gases will be achieved by controlling the rate of water to the tower. A small amount of solid residue will be deposited at the base of the tower due to evaporation. This residue will be removed and combined with the flue gas cleaning residues removed from the baghouse filter.

As with the furnace and boiler, the facility will operate two evaporating spray towers to avoid disruption to the process during times of maintenance.

Dioxin & Heavy Metal Removal

Activated carbon/lime mixture will be injected into the cooled flue gases exiting the spray tower. The activated carbon/lime mixture will be injected at a rate of 15kg/hr for each line when the plant is operating at a nominal capacity of 150,000 tonnes /annum. The activated carbon/lime mixture will adsorb heavy metals, organics and dioxins. The activated carbon/lime mixture will become entrained in the flue gases and will be removed along with other particulates in the baghouse filter.

Dust Removal

The baghouse filter will consist of 1,000 individual fabric filters, which will allow the flue gas to pass through while solid particulates will be captured on the filter sleeves. The removal of the solid cake from the sleeves will be undertaken at regular intervals using compressed air, and the cake now termed "flue gas cleaning residues" will be conveyed to a storage silo. The flue gas cleaning residues will amount to between 2-3% or 3,500 to 5,000 tonnes /annum of the input weight.

The plant will operate two baghouse filters, to avoid disruption to the process during times of maintenance.

Gases generated from both furnace lines will be combined after the baghouse filtration stage.

Acid Gas Removal

The combined flue gases will now enter a wet scrubbing system to remove any hydrochloric acid (HCl), hydrofluoric acid (HF), sulphur dioxide (SO₂) and heavy metals in the gas stream. The acid gas removal system will use lime/limestone as the reagent. Either reagent will be equally effective and the decision to use either one will be made on the basis of potential suppliers. It is anticipated that approximately 1,600 tonnes/annum of limestone or approximately 900 tonnes/annum of lime will be required for this process. The lime/limestone will be mixed with water in a blending tank to form a solution prior to entering the scrubbers. There are two options for this treatment stage and both options are described below.

Option 1

The flue gases will pass through two wet scrubbers. The gases will enter the first scrubber from the bottom and pass up through the tower against the falling reagent liquid. This scrubber will remove hydrochloric and hydrofluoric acids (HCl and HF).

A controlled amount of reagent will be regularly removed from the circulating stream, which will pass through a neutralisation tank and will then be recycled in the evaporating spray tower. Lime/limestone will be used as the neutralisation solution in this scrubber.

In the second scrubber, lime/limestone will react with SO₂ to produce gypsum. A proportion of the circulating liquid from the second scrubber will be regularly removed and will pass through a vacuum belt filter to remove the gypsum. Approximately 1,000 tonnes/annum of gypsum will be produced from this treatment stage.

An alternative within this option would be to use water only in the first scrubbing tower. This would not effect the removal efficiency for HCl, HF and heavy metals. The balance of lime/limestone would, however, be required in the neutralisation tank.

Option 2

The second option for this treatment step would involve removing the first scrubbing tower and instead adding the lime/limestone solution into the evaporating spray tower.

The second scrubber would operate as per Option 1.

Tail End Cleaning

An Induced Draught (ID) fan will draw the combustion gases through the flue gas cleaning plant and maintain the plant in underpressure. This will ensure that no combustion gases escape from the process without going through the flue gas cleaning plant.

The tail end flue gas treatment will involve either (a) a second activated carbon/lime mixture injection with a baghouse filtration unit or (b) a fixed bed of lignite cokes known as a carbon bed.

In the case of (a) above, the principle will be the same as that mentioned above. In the case of (b) the flue gases will be forced through the bed of cokes, where the cokes will absorb trace dioxins, heavy metals and acid gases. Approximately once a week a small fixed amount of cokes will be extracted from the bottom of the filter. During commissioning of the plant, a rate of removal of the cokes will be established in order to ensure optimum performance of the bed. All removed cokes will be disposed of in the incineration process.

In the case of the carbon bed, the ID fan will be located between the wet scrubbers and the tail end flue gas cleaning system, as the carbon bed operates more effectively in overpressure. In the case of the baghouse filter, the fan will be located downstream of the tail end flue gas cleaning system as the baghouse filter operates more effectively in underpressure.

The use of wet scrubbers in the plant will both cool the flue gases and saturate them with water, which would result in a visible plume at the discharge of the stack. In order to reduce this plume the gases will be reheated from about 60 °C to 100 °C via a heat exchanger.

A tabulated summary of the expected stack emission concentrations from the waste to energy plant are included overleaf, along with a comparison to the appropriate EU limits.

Table 2.1 Comparison of Anticipated Stack Emissions versus EU Limits

Emission	Typical Emission Concentration (mg/Nm ³)	EU Emission Concentration Limits (mg/Nm ³)*
NO _x (as NO ₂)	150	200
SO ₂	20	50
Dust	1	10
CO	20	100
TOC	1	10
HCl	1	10
HF	1	1
PCDD / PCDF (ng/m ³)	0.01	0.1
Cd & Tl	0.025	0.05
Hg	0.025	0.05
Sum of 9 Heavy Metals: Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V	0.25	0.5

* These emission concentration limits are those specified in the EU Directive on Waste Incineration (2000/76/EC).

2.3.5 Operation

The waste to energy plant will generally operate twenty-four hours a day, seven days a week for approximately 7,500 hours per year. The plant when operating will generally run at full output, which results in optimum efficiency. However, for approximately 2 weeks each year, a single line will be shut down for maintenance while the other line remains operational.

2.4 RAW MATERIALS

The raw materials to be used in the waste to energy plant are ammonia solution (25%) or urea, activated carbon/lime mixture, lime or limestone, lignite cokes, cement or iron silicate, sodium hydroxide (caustic), hydrochloric acid, trisodium phosphate and marketed boiler water treatment chemicals.

2.5 FUEL SUPPLY/ELECTRICITY GENERATION

Waste that is not suitable for re-use or recycling will be incinerated in the proposed plant, with the objective being to recover as much of the energy content of the waste as possible, in line with EU policy. The proposed development contains energy recovery in the form of electricity production through use of a steam turbine, which is standard for waste incineration in Europe and is considered BAT (best available techniques¹). The electricity production from the waste to energy plant is expected to be approximately 14 MW, approximately 11 MW of which will be exported to the ESB distribution network. Efficient use of energy at the waste management facility will be a priority and will be a key objective of the Environmental Management Programme for the site.

The plant will use small quantities of natural gas for start up and potentially for auxiliary firing. However, the demand will not be large and gas can be supplied from the nearby natural gas supply.

There will be a gas-fired back-up electricity generator on site, which will only be used in the unlikely circumstance of both the plant not producing electricity and no power supply being available from the ESB distribution network.

3. PREDICTED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

It is Indaver Ireland's policy to avoid any release, disposal or emission that might harm the environment, and to minimise impacts including atmospheric emissions, discharges to water, solid waste and local noise nuisance. Compliance with national and European regulations will be achieved as a minimum expectation. Mitigation measures will be implemented in accordance with Best Available Techniques (BAT). The plant will be operated in accordance with the principles of an accredited Environmental Management System, e.g. EN ISO 14001 or EMAS.

3.1 AIR

The proposed waste to energy plant will have one main emission point through which the combustion gases will be discharged via a 40m stack after cleaning. The discharge, mainly carbon dioxide (CO₂) and water vapour, will potentially also contain a number of substances, the emissions of which are regulated by EU and Irish legislation, and for which ambient air quality standards are specified.

The proposed plant will achieve limits for air emissions well within strict EU legislative requirements by implementing various abatement technologies including ammonia/urea and activated carbon/lime mixture injection, wet scrubbers and filters.

¹ As defined in the EC Directive 96/61/EC concerning integrated pollution prevention and control.

A single stage of dioxin removal is sufficient to meet the new EU limit of 0.1 TEQ ng/m³. This is usually achieved by activated carbon/lime mixture injection, which adsorbs dioxins, hydrocarbons and heavy metals. However, the proposed plant will be also equipped with an additional dioxin removal process, which acts to reduce emissions even further. As a result, it has been estimated that, for an individual living at the point where dioxin concentrations are predicted to be highest from the waste to energy plant, the person's inhaled intake of dioxins would be equivalent to drinking less than an additional half glass of milk per month, assuming a glass volume of 300ml².

The Irish and US EPA approved Industrial Source Complex (ISC 3) computer model was used to carry out dispersion modelling to assess the potential impact of the emissions from the stack to atmosphere. The results of the modelling showed that the predicted ground level concentrations were significantly below the most stringent Air Quality Standards and therefore the impact of these emissions on the surrounding environment will be insignificant.

There will also be minor atmospheric emissions from the back-up gas-fired generator on site. This generator will never be in continuous operation as it will only be used when electricity supply is unavailable both from the ESB distribution network and from the plant. The back-up generator will also be in operation for a period of half an hour once per month for testing purposes.

The activated carbon/lime mixture silo located externally will be fitted with high quality dust filters which will effectively eliminate any dust emissions. The silos for the purposes of storage of flue gas cleaning residues and boiler ash will be located within the waste to energy plant and will also be fitted with high quality dust filters. Within enclosed areas, bottom ash will be discharged into trucks that will be covered to prevent windblown ash emissions.

Continuous monitoring of oxides of nitrogen (NO_x), sulphur dioxide (SO₂), particulates (dust), hydrocarbons (expressed as Total Organic Carbon (TOC)), carbon monoxide (CO) and hydrogen chloride (HCl) in the flue gases from the stack will be carried out. PCDDs and PCDF's (dioxins and furans) will be continuously sampled and analysed at least twenty times per year. Heavy metal and HF monitoring and analysis will be carried out four times in the first year and twice per annum thereafter.

3.2 CLIMATE

3.2.1 Acidification

The generation of sulphur dioxide (SO₂) and nitrogen oxides (NO_x), which are acid gases, can give rise to acidification and resultant environmental degradation. The power generation sector is the single largest contributor to emissions of SO₂ and is a significant contributor to total NO_x emissions. The problem of acidification and degradation of ecosystems arising from these emissions have long been recognised.

The proposed plant will produce SO₂ and NO_x emissions. However, it will produce less NO_x and SO₂ per unit electricity that is currently produced, on average, by power

² It has been assumed that the individual referred to above would be located at this point of highest dioxin concentration 24 hours per day, 365 days per year.

stations in Ireland (based on figures contained in ESB's Environmental Report, 1997) and will be below current EU limits.

3.2.2 Global Warming

There is a consensus in the scientific community that there is a real and existing problem arising from emissions of carbon dioxide (CO₂) and other greenhouse gases which give rise to global warming. When waste is disposed of to landfill, large quantities of methane are produced, which is an extremely potent greenhouse gas (15 times more powerful than CO₂). By treating the waste in a waste to energy plant, inert ash is produced, avoiding the formation of large quantities of methane. There will be an overall net reduction in greenhouse gases arising from this facility as compared to landfilling the same amount of waste material.

3.3 WATER

3.3.1 Surface Water

All surface water run-off, such as rainwater, from hard-surfaced areas and building roofs on the site will drain via petrol interceptors into a 1500 m³ storage tank located underground beneath the main building complex. This water will be used to supplement process water requirements. During flood conditions only (1 in 20 year storm), the capacity of the tank may be exceeded and it may be necessary to discharge to the wet drain currently to the west of the site, which in turn drains to the River Nanny. Therefore, the existing surface water flow regime will not be significantly altered by the proposed development.

All chemicals or other potentially polluting substances used during the operation of the facility will be stored within bunded areas and will also be handled in a manner to eliminate the risk of any spillages contaminating surface water (or groundwater).

Petrol interceptors will be installed on surface water drains draining hard-surfaced areas (car-parking and marshalling areas) to contain any leakages of petrol/oil from vehicles on site.

3.3.2 Trade Effluent

There will be no trade effluent generated on site.

3.3.3 Groundwater

A domestic effluent treatment system will be used to treat all the domestic effluent from the facility to a very high standard before discharging it to a percolation area. The quality of the water discharged will be well within set limits before entering the percolation area.

Groundwater will be regularly monitored during operation of the plant to ensure that there is no adverse impact on groundwater quality.

3.4 NOISE

During operation of the facility, there will be a number of external noise sources at the plant such as the stack, air-cooled condenser, turbine cooler and noise emitted through louvres from buildings. A noise modelling analysis was carried out based on the anticipated noise emissions from the main noise sources on the site. The anticipated noise emissions are based on a survey of noise sources carried out at a similar plant in Belgium. The predicted noise levels at the nearest sensitive receptors are significantly below the Environmental Protection Agency recommended limit of 45 dBA and therefore the impact from noise generated at the facility on the surrounding area is not considered significant. A noise monitoring programme will be put in place to confirm compliance with the limits.

3.5 TRAFFIC

A detailed assessment of the potential impacts of the traffic due to the proposed development up to 2020 was carried out as part of the environmental impact assessment. The increase in the predicted community recycling park affected two-way peak hour traffic volumes due to the proposed development will be no more than 7.1% on any of the roads in the vicinity of the development. The level of service within which these roads operate, will not be affected. The increase in predicted annual average daily traffic flows on the road network will be no more than 4.3%. Therefore it is predicted that the road network will not be adversely affected by the proposed development.

The removal of the community recycling park from the proposed development will see a reduction in traffic movements. This amounts to a reduction in daily operational volumes (two way) of 134 cars

The facility will be provided with a high quality entrance including deceleration lane and right-hand turning lane. A traffic management plan will be implemented to ensure that impacts during construction will be minimal.

3.6 LANDSCAPE & VISUAL IMPACTS

The proposed site is contained within a predominantly agricultural landscape, and is designated as an area of visual quality VQ 11 – Rural and Agricultural, as defined in the Meath County Draft Development Plan, 2000, which can effectively absorb development. The landscape within which the proposed site is located is not significant or valued in a regional or national context. The Boyne valley is not in the same landscape envelope as the proposed development site.

However, the site can be viewed from other vulnerable landscape areas with a low visual absorption capacity such as Bellewstown Ridge (V16 of the 1994 Development Plan and the Draft Development Plan). Given the industrial character of the area, and the distance to these elevated views, it is considered that the impact of the proposed development will not be significant.

During construction, there will be minor and temporary impacts due to constructional works, moving and storage of machinery, etc. This intrusion will be short term and will be typical of any construction site.

The waste to energy plant will be the largest structure on the site (30m tall and a 40m stack) and will be located at the lower, rear section of the site, reducing its apparent scale when seen from the surrounding area. The exhaust gases will be heated to approximately 100 °C to reduce the formation of a visible plume at the stack discharge.

Landscaping measures such as berms and planting of native species of trees and shrubs (50,000 saplings) will minimise the impact of the facility, and should render the facility unobtrusive to passing traffic after the planting has matured (see overleaf for Figures 3.1 to 3.3).

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Figure 3.1 Photomontage from R152, immediately south of the proposed entrance



Figure 3.2 Photomontage from R152, north of development



Figure 3.3 Photomontage from the R152 near Duleek

3.7 FLORA AND FAUNA

A baseline study carried out at the site found that flora and fauna present are represented by a few common species which are typical of the agricultural habitat. No rare, threatened or legally protected plant species or fauna of ecological significance were observed within the site. No part of the site or its immediate surroundings is covered by a scientific or conservation designation or proposed designation as recognised by Dúchas, the Heritage Service.

During construction, only on-site flora and fauna contained therein will be disturbed. The removal of this arable habitat during construction is not predicted to have significant ecological impacts. Mitigation measures will be taken to prevent any further damage to hedgerows and to protect the watercourses in adjacent fields.

Emissions from the facility are not predicted to have any significant negative impact on flora and fauna in the surrounding areas. The development will not therefore have any significant ecological impacts.

3.8 CULTURAL HERITAGE

In an archaeological survey of the site, it was established that the site is located in a region of historical importance, however no known archaeological monuments are recorded on the proposed site in the County Meath Sites & Monuments Record or elsewhere. No archaeological remains or artefacts were identified during the field walk, nor was there any evidence of archaeological remains in the trial pits dug on site as part of the soils survey.

It is therefore proposed that all topsoil stripping and groundworks be monitored by an archaeologist licensed under the terms of the National Monuments Act 1930, as amended. Any archaeological discoveries will be immediately reported to the Keeper of Irish Antiquities, National Museum of Ireland, and to Dúchas, The Heritage Service.

3.9 HUMAN ENVIRONMENT

The site is located in the townland of Carranstown approximately 3 km north-east of Duleek village. The land use in the area is predominantly agricultural with the exception of the Platin cement factory and its associated quarry located to the north-east of the proposed development site. A commercial freight railway line, used to transport freight for Tara Mines and Platin Cement, runs within 50-100 metres of the northern boundary of the site. The area does not have any specific land zoning in either the existing (1994) or proposed Meath County Development Plan and is considered rural and agricultural. The development plans allow for industrial development in unzoned areas. One of the development objectives in the Development Plan for rural areas is to 'ensure that commercial and industrial proposals for rural areas are sustainable'.

The construction and operational phases of the development will result in the change of use of some land (ca. 25 acres) that was previously used for agricultural purposes.

The facility will employ a permanent staff of approximately 50 people and will therefore have a positive impact on employment in the area. Goods and services required during the operation of the plant will be sourced locally where possible which will have a further positive impact on the local economy and employment in the area.

The provision of the community recycling park will add to the amenity of the area- *As per condition 3 of An Bord Pleanála's planning decision the community recycling park will not be included in the development*

The proposed plant will be designed in accordance with BAT and will be operated in an environmentally sound manner. All discharges from the plant will comply with the relevant regulatory limits designed for the protection of human health and the environment. Therefore, the operation of the development will not have any adverse impact on human health.

4. WASTE MANAGEMENT

While the type and quantity of ash produced from any solid waste incineration process is dependent on the nature of the waste feed, experience has shown that with a typical mix of industrial, commercial and municipal waste, approximately 250 kg of solid waste residue is produced per tonne of waste or 10% by volume. There will be four solid waste residues collected from the proposed waste-to-energy plant which will be collected from separate parts of the process:

- Bottom ash – collected from the grate of the furnace. Bottom ash will account for the majority of the solid residues produced by the plant (30,000 tonnes/annum or 20% of waste input by weight).
- Boiler ash – collected from the boiler. About 1-2% (by weight) of the waste input (1,500 to 3,000 tonnes) of boiler ash will be produced per annum.
- Flue gas cleaning residues – About 4,000 tonnes of flue gas cleaning residues will be collected from the flue gas cleaning plant each year.
- Gypsum – About 1,000 tonnes per annum of gypsum will be recovered from the flue gas cleaning plant per annum.

A large proportion of the bottom ash is suitable for use as construction material and if an outlet can be found in Ireland it will be used for this purpose. Otherwise it will be disposed of to non-hazardous landfill.

The boiler ash will also be solidified, either on or off site, and disposed of to a hazardous or non-hazardous landfill, depending on analysis.

The flue gas cleaning residues will contain a high percentage of soluble salts as well as some heavy metals and will therefore be classified as hazardous waste. It will be solidified, either on or off site, and will be disposed of to a hazardous waste landfill in accordance with regulatory requirements. If no hazardous waste landfills exist in Ireland, the solidification and/or disposal may take place either in Ireland or abroad.

The gypsum can be used in the construction industry, if a market exists, and is otherwise suitable for disposal to non hazardous landfill.

5. CONTINGENCY PLANNING

5.1 INCIDENT AND EMERGENCY MANAGEMENT

Management of environmental risk is a continuous process. An Environmental Management System (EMS), based on an accredited standard e.g. EN ISO 14001 or EMAS, will be implemented at the facility to continuously monitor and improve the environmental performance of the plant. A quality management system and a safety management system based on the ISO 9002 and OSHAS 18001 standards respectively will also be developed and implemented at the site. Indaver Ireland will regularly identify the hazards and assess, and hence prevent, the risks associated with site activities. The results of the identification and assessment process will be used to develop the necessary measures to prevent unauthorised or unexpected emissions as well as emergency response procedures to limit the potential outcome of such emissions.

A site emergency response plan will be prepared prior to start-up which will set out the response measures to be taken by Indaver personnel and the facilities available for use in the event of an emergency. These measures will be designed to ensure maximum protection for the site employees, site visitors and people in other premises near to the site, to minimise any impacts on the environment, to limit plant damage and to minimise the impact on site operations.

5.2 CESSATION OF ACTIVITY

The plant has a projected life span of a minimum of 20 years, however this can be extended with maintenance/replacement of items of equipment. Should circumstances arise whereby it becomes necessary to abandon the site, then Indaver Ireland will ensure that the site and buildings are left in a secure manner and that all equipment, chemicals and wastes are removed off site to avoid any pollution risk and return the site of operation to a satisfactory state.

5.3 FINANCIAL PROVISION

Indaver Ireland will be in the position to meet all financial commitments and liabilities that may be incurred in operating the Carranstown Waste Management Facility and in decommissioning the facility in an appropriate manner. An environmental liabilities risk assessment has been carried out to identify such financial provisions and it has concluded that Indaver's €12,500,000 insurance is sufficient to meet all financial commitments that may be incurred. This Environmental Liabilities Risk Assessment and financial provision have been submitted to the Agency for approval.

Indaver Ireland will have all the necessary insurances in place to meet public liability, product liability, legal expenses, environmental liability and on-site clean up costs.

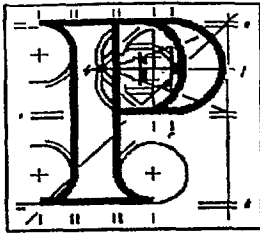
Confidential information relating to Indaver's audited accounts and the business plan for the Carranstown Waste Management Facility have been provided to the EPA under separate cover.

Appendix 2

An Bord Pleanála Direction

An Bord Pleanála Decision

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Board Direction

Ref: 17.126307

The submissions on this file and the Inspector's report were further considered at a Board meeting held on 27th February, 2003.

The Board decided, by a majority of 7 to 2, to grant permission for the following reasons:

Having regard to –

- (a) the provisions of Section 54(3) of the Waste Management Act, 1996 and Section 98 of the Environmental Protection Agency Act, 1992, which preclude An Bord Pleanála from consideration of matters relating to the risk of environmental pollution from the activities,
- (b) the national waste management policy framework and strategy as set out in Government policy statements “Changing Our Ways” and “Delivering Change” published by the Department of the Environment and Local Government in September, 1998 and March, 2002, respectively,
- (c) the waste management strategy for the North-East region as set out in the North-East Regional Waste Management Plan, 1999-2004, which includes thermal treatment as an integral part of the solution to the management of the region's waste and identified the need for one such facility in the region,
- (d) the provisions of the current Meath County Development Plan (which by virtue of Section 4 of the Waste Management (Amendment) Act, 2001, is deemed to include the objectives contained in the Regional Waste Management Plan),
- (e) the location of the proposed development in an area where there is an established and permitted industrial land-use pattern, and
- (f) the strategic location of the proposed development in terms of transport infrastructure,

it is considered that, subject to the conditions in the second schedule, the proposed development of a necessary public utility would not seriously injure the amenities of the area, would be acceptable in terms of traffic safety and convenience and would be in accordance with the proper planning and development of the area.

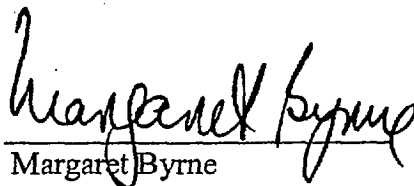
Conditions: See attached draft Second Schedule.

In deciding not to accept the Inspector's recommendation to refuse permission, the Board

- (a) recognised the special siting requirements of a thermal treatment facility,
- (b) had regard to the pattern of existing and permitted industrial development at this location,
- (c) had particular regard to the provisions of the Waste Management Plan for the North East Region 1999-2004 which recognised the role of thermal treatment in the management of the Region's waste and identified the need for one such facility in the region,
- (d) noted that the Regional Plan did not identify any particular site for such a facility but loosely identified four possible locations (one in each county of the region),
- (e) considered that the proposed site was generally suitable as a location having regard, inter alia, to the present and future distribution of waste arisings in the region and its proximity to the M1 and accessibility to the N2,
- (f) did not consider that the proposed development of a public utility with special siting requirements would conflict with the objectives of the Strategic Planning Guidelines for the Greater Dublin Area;
- (g) considered that while the development would have some visual impact the landscape is capable of absorbing the development particularly against the backdrop of the Cement Works and large scale quarry operation and the landscaping /screening measures proposed,
- (h) considered that while the development would have some impact on the residential amenities of property adjacent to the site this was not so serious as to warrant refusal of permission for a development of such public importance, and
- (i) agreed with the inspector's views regarding the unsuitability of the location for the proposed community recycling park and that such a facility should be located in Duleek, the nearest population centre.

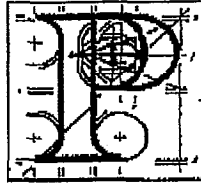
A copy of this Board Direction (excluding conditions) to be issued with Order.

Board Member


Margaret Byrne

Date 3rd March, 2003.

An Bord Pleanála



LOCAL GOVERNMENT (PLANNING AND DEVELOPMENT) ACTS, 1963 TO 1999

Meath County

Planning Register Reference Number: 01/4014

APPEAL by An Taisce of The Tailors' Hall, Back Lane, Dublin and by Indaver Ireland care of Frank L. Benson and Partners of Hainault House, 69-71 Saint Stephen's Green, Dublin and by others against the decision made on the 31st day of July, 2001 by the Council of the County of Meath to grant subject to conditions a permission to the said Indaver Ireland for development comprising a waste management facility consisting of a main process building of 13,480 square metres incorporating a waste reception hall, waste sorting plant, bunker, operations/turbine building, boiler, grate furnace, ash bunker, demineralisation unit, boiler feed pumps, flue gas treatment building solidification unit, AC unit, turbine cooler and 40 metre high stack, ancillary structures will consist of a pump house building of 200 square metres, water storage tank, warehouse building of 890 square metres incorporating security and drivers rest area, administration building of 770 square metres, transformer compound, laydown area, car parks and an on-site puraflo effluent treatment system. The facility will also include a community recycling park incorporating a security building, container storage area and canopied area, road access will be via a new entrance from the R152 approximately three kilometres from Duleek and four kilometres from Drogheda at Carranstown, Duleek, County Meath in accordance with plans and particulars lodged with the said Council:

DECISION: Pursuant to the Local Government (Planning and Development) Acts, 1963 to 1999, it is hereby decided, for the reason set out in the First Schedule hereto, to grant permission for the said development in accordance with the said plans and particulars, subject to the conditions specified in the Second Schedule hereto, the reasons for the imposition of the said conditions being as set out in the said Second Schedule and the said permission is hereby granted subject to the said conditions.

WJ

FIRST SCHEDULE

Having regard to –

- (a) the provisions of Section 54(3) of the Waste Management Act, 1996 and Section 98 of the Environmental Protection Agency Act, 1992, which preclude An Bord Pleanála from consideration of matters relating to the risk of environmental pollution from the activities,
- (b) the national waste management policy framework and strategy as set out in Government policy statements “Changing Our Ways” and “Delivering Change” published by the Department of the Environment and Local Government in September, 1998 and March, 2002, respectively,
- (c) the waste management strategy for the North-East region as set out in the North-East Regional Waste Management Plan, 1999-2004, which includes thermal treatment as an integral part of the solution to the management of the region’s waste and identified the need for one such facility in the region,
- (d) the provisions of the current Meath County Development Plan (which by virtue of Section 4 of the Waste Management (Amendment) Act, 2001, is deemed to include the objectives contained in the Regional Waste Management Plan),
- (e) the location of the proposed development in an area where there is an established and permitted industrial land-use pattern, and
- (f) the strategic location of the proposed development in terms of transport infrastructure,

it is considered that, subject to compliance with the conditions set out in the Second Schedule, the proposed development of a necessary public utility would not seriously injure the amenities of the area, would be acceptable in terms of traffic safety and convenience and would be in accordance with the proper planning and development of the area.

WTC

SECOND SCHEDULE

1. The development shall be carried out in accordance with the plans and particulars lodged with the application as amended by the particulars received by the planning authority on the 7th and 27th days of June, 2001 and the 23rd day of July, 2001, and in accordance with the provisions of the Environmental Impact Statement as amended, except as may otherwise be required in order to comply with the following conditions.

Reason: In the interest of clarity.

2. Appropriate arrangements for the connection of the proposed waste to energy facility to the E.S.B. National Grid transmission lines and the diversion of the 110 kV overhead power lines traversing the application site, to the satisfaction of the planning authority, shall be in place prior to commencement of development.

Reason: In the interest of orderly development.

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

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

4. Waste for acceptance at the waste management facility for incineration and recycling/treatment shall be strictly limited and confined to waste generated and produced in the North East Region area of counties Meath, Louth, Cavan and Monaghan. The annual tonnage for thermal treatment/recycling shall not exceed the quantities as identified in the Environmental Impact Statement on an annual basis, that is, 170,000 tonnes per annum.

Each and every consignment of waste, howsoever arriving at the waste management facility, shall be accompanied by a waste certificate, which shall identify the following –

- Waste origin, source and area in which it was produced/generated.
- Waste collection schedules.
- Weight of each consignment.
- Waste collection contractor name and address.
- Composition and nature of waste.

The developer shall submit to the planning authority, on a monthly basis, records of all waste delivered to the site on a daily, weekly and monthly basis, in accordance with the aforesaid waste certificate.

Reason: In the interest of development control and to ensure that the principles of regional waste management as set out in the Regional Plan are adhered to.

5. Prior to commencement of development, the developer shall submit to the planning authority for written agreement details of the proposed public education area as outlined in the revised Environmental Impact Statement section 2.6.3. submitted to the planning authority on the 7th day of June, 2001.

Reason: In the interest of orderly development.

6. A Community Liaison Committee shall be established consisting of a minimum of eight representatives (two officials from the planning authority, two representatives for the developer, two local residents and two elected members of Meath County Council). The composition of the committee shall be subject to the agreement of the planning authority.

Reason: To provide for appropriate on-going review of waste disposal/recycling operations in conjunction with the local community.

7. The developer shall pay to the planning authority an annual contribution towards the cost of the provision of environmental improvement and recreational/community facility projects in the vicinity of the proposed waste management facility. The amount of the contribution, which shall be based on a payment per tonne of waste thermally treated and recycled calculated on annual waste inputs, shall be agreed between the developer and the planning authority or, in default of agreement, shall be determined by An Bord Pleanála. The identification of environmental/recreational/community facility projects shall be decided by the planning authority having consulted the Liaison Committee as provided for in condition number 6.

In the case of expenditure that is proposed to be incurred, the requirement to pay this contribution is subject to the provisions of section 26(2)(h) of the Local Government (Planning and Development) Act, 1963 generally, and in particular, the specified period for the purposes of paragraph (h) shall be the period of seven years from the date of this order.

Reason: It is considered reasonable that the developer should contribute towards the cost of environmental/recreational/community facility projects which will mitigate the impact of the waste facility on the local community in accordance with Government Policy as set out in the "Changing Our Ways" published by the Department of Environment and Local Government in September, 1998.

8. The developer shall pay a sum of money to the planning authority as a contribution towards the expenditure that is proposed to be incurred by the planning authority in respect of the provision of a community recycling park in Duleek. The amount of the contribution and the arrangements for payment shall be agreed between the developer and the planning authority or, in default of agreement, shall be determined by An Bord Pleanála.

Payment of this contribution is subject to the provisions of section 26(2)(h) of the Local Government (Planning and Development) Act, 1963 generally, and in particular, the specified period for the purposes of paragraph (h) shall be the period of seven years from the date of this order.

Reason: It is considered that the provision of a community recycling park, which is proposed as part of this development, would more appropriately be located in the local population centre of Duleek.

9. Prior to commencement of development, the developer shall submit to the planning authority for written agreement design details of the proposed new junction of the waste management facility access road with the Regional Road R152, to include the following –

- (a) Junction layout in accordance with Design Manual for Roads and Bridges,
- (b) surfacing and road construction materials,
- (c) junction marking, delineation and signage,
- (d) drainage details,
- (e) fencing/roadside boundary treatment and landscaping, and
- (f) lighting.

The full costs of the proposed new junction shall be borne by the developer and the works shall be carried out under the supervision of the Road Design Section of Meath County Council.

Reason: In the interest of traffic safety and development control.

10. (1) Prior to commencement of development, the developer shall submit to the planning authority for written agreement details of a Traffic Management Plan for the control and operation of the proposed new junction during the construction phase.
- (2) The proposed junction and access road inclusive of dust free surfacing shall be carried out and completed to the satisfaction of the planning authority within two months of the commencement of the development.

- (3) The Traffic Management Plan shall be subject to on-going review with the planning authority during the whole of the construction period with review periods being directly related to the levels of construction employees on site.

Reason: In the interest of development control and traffic safety.

11. The developer shall submit to the planning authority for written agreement details of a Traffic Management Plan which shall prohibit traffic associated with the proposed facility from travelling along Regional Road R150, between its junction with Regional Road R153 to the west and the N2 to the east.

Reason: In the interest of traffic and pedestrian safety and to protect existing educational and recreational facilities associated with the village.

12. The developer shall facilitate the planning authority in the archaeological appraisal of the site and in preserving and recording or otherwise protecting archaeological materials or features which may exist within the site. In this regard, the developer shall:-

- (a) notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development, and
- (b) employ a suitably-qualified archaeologist prior to the commencement of development. The archaeologist shall assess the site and monitor all site development works.

The assessment shall address the following issues:-

- (i) the nature and location of archaeological material on the site, and
- (ii) the impact of the proposed development on such archaeological material.

Prior to commencement of development, a report containing the results of the assessment shall be submitted to the planning authority. Arising from this assessment, the developer shall agree with the planning authority details regarding any further archaeological requirements (including, if necessary, archaeological excavation) prior to commencement of construction works.

In default of agreement on any of these requirements, the matter shall be determined by An Bord Pleanála.

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation of any remains which may exist within the site.

13. The developer shall fully comply with the "Special Requirements in Relation to Bord Gais" conditions relating to the executing of any works in the vicinity of the Bord Gais distribution mains, which traverse the site.

Reason: In the interest of development control.

14. Water supply and drainage arrangements, including the disposal of surface water, shall comply with the requirements of the planning authority for such works and services.

Reason: In the interest of public health and to ensure a proper standard of development.

15. Prior to commencement of development, the developer shall submit to the planning authority for written agreement details in relation to temporary car parking facilities for construction employees to include –

- (a) Location and number of spaces to be provided,
- (b) construction details in include road base materials, surfacing details and markings,
- (c) surface water drainage details,
- (d) proposals for the reinstatement of the area on completion of the construction phase.

Reason: In the interest of traffic safety and development control.

16. In addition to the landscape proposals submitted with the application, the proposed screening mounds and landscaping on the perimeter of the waste management facility site shall be carried out during the initial construction phase. Prior to commencement of development, the following shall be submitted to the planning authority for written agreement –

- (a) detailed landscaping of proposed screening mounds to include the proposed types/variety of native species, density of planting, maintenance programme and planting to supplement and strengthen hedgerows and tree belts that are to be retained, and
- (b) a programme outlining the timescale for the implementation of the proposed landscape scheme.

Reason: In the interest of visual amenity.

Wf

17. All permanent screening bank side slopes, unless otherwise agreed with the planning authority, shall be topsoiled and grass seeded as soon as practicable after their construction. Dust suppression sprays shall be used during periods of dry weather until a stable grass covering has been established.

Reason: In the interest of orderly development and the amenities of the area.

18. Prior to commencement of development, the developer shall submit to the planning authority for written agreement, a detailed lighting design and layout on drawings at scale 1:1,000 for the lighting of the waste management facility to include all internal roads, storage and hardstanding areas, circulation areas between buildings and pedestrian walks.

Details to accompany the above shall include numbers and type of light fittings, locations and orientation of fittings, wattages and height of lighting standards and a planned maintenance programme.

Reason: In the interest of public safety and the amenities of property in the vicinity.

19. Prior to commencement of development, the method and type of markings and the provision of aviation warning lights for the emissions stack shall be agreed in writing with the Irish Aviation Authority and the planning authority. The co-ordinates of the as constructed position of the stack and the as constructed elevation shall be submitted to the Irish Aviation Authority.

Reason: In the interest of public safety, development control and the protection of light aircraft using the surrounding area.

20. The site construction working hours shall be confined to between 0700 and 1900 hours Monday to Saturday, inclusive (excluding public holidays and Sundays) unless otherwise agreed in writing with the planning authority.

Reason: In the interest of residential amenity.

21. During the construction phase of the proposed development noise levels at the site when measured at noise sensitive locations in the vicinity shall not exceed 65dB(A) between 0700 and 1900 hours Monday to Saturday inclusive, excluding public holidays and Sundays, and 45dB(A) at any other time.

Noise monitoring locations for the purposes of the construction phase of the proposed development shall be agreed in writing with the planning authority prior to commencement of any development on site.

Reason: To protect the amenities of property in the vicinity of the site.

22. Dust deposition during the construction phase shall not exceed 130 mg/m²/day measured at the site boundaries and averaged over 30 days.

Reason: To prevent airborne dust and to protect the amenities of the area.

23. Prior to commencement of development, the developer shall submit to the planning authority for written agreement, details of temporary settlement ponds/silt traps/oil interceptors to control discharges of site surface water run-off during the construction period in advance of the construction of the proposed permanent attenuation tanks. The concentration of suspended solids (SS) of the surface water run-off from the site construction works, for discharge to surface waters, shall not exceed 30 mg/litre.

Reason: To prevent surface water pollution and to protect the amenity value of watercourses.

24. The developer shall monitor noise, dust deposition and suspended solids of surface water run-off associated with the construction phase and shall submit to the planning authority on a monthly basis a summary report of all such monitoring. The developer shall pay a contribution to the planning authority towards the cost of supervision of check monitoring the development for the duration of the initial construction phase. The amount of the contribution shall be agreed between the development and the planning authority or, in default of agreement, shall be determined by An Bord Pleanála.

Reason: To ensure a satisfactory monitoring of the development. It is considered reasonable that the developer shall contribute towards the cost of check monitoring of the development in the interest of prevention of pollution.

25. The developer shall submit to the planning authority a monthly report of all monitoring in relation to the construction of the development.

Reason: In the interest of development control.

26. During the construction phase of the development, oil and fuel storage tanks, chemicals and all other materials that pose a risk to waters if spilled, shall be stored in designated storage areas, which shall be bunded to a volume of 110 per cent of the capacity of the largest tank/container within the bunded area(s). Filling and draw-off points shall be located entirely within the bunded area(s). Drainage from the bunded area(s) shall be diverted for collection and safe disposal. The use of bunded pallets for storage of drums is acceptable.

Reason: In the interest of orderly development and the prevention of groundwater and surface water pollution.

27. During the construction phase, all vehicles, other than private cars and vans, exiting the construction site shall pass through a wheel-wash facility, the details of which shall be submitted to the planning authority for written agreement.

Reason: In the interest of development control.

28. Prior to commencement of development, the developer shall submit to the planning authority for written agreement, detailed plans and proposals for the restoration and reinstatement of the entire site following de-commissioning of the plant. The restoration works shall be completed within two years of the closure of the plant.

Where the planning authority is of the opinion that the plant has ceased to operate for a period in excess of one year and where the developer can offer no reasonable grounds to dispute this opinion, the planning authority shall be empowered to notify the developer to activate the restoration plan as provided for in this condition. In the event of the developer's failure to activate the restoration works, the planning authority shall be empowered to notify the developer of their intention to activate the restoration plan and of their intention, within a period of 60 days, to call upon the financial guarantees referred to under condition 29 hereof.

Reason: To ensure satisfactory restoration of the site in the interest of the amenities of the area and proper planning and control.

29. Prior to commencement of development, the developer shall lodge with the planning authority a bond of an insurance company, a cash deposit or other security to secure any final restoration measures required to be undertaken under the terms of condition number 28, coupled with an agreement empowering the planning authority to apply such security or part thereof to the satisfactory completion of any part of the restoration plan. The form and the amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be determined by An Bord Pleanála.

Reason: To ensure satisfactory completion of the restoration plan in the interest of orderly development.

30. The developer shall pay a sum of money to the planning authority as a contribution towards the expenditure that is proposed to be incurred by the planning authority in respect of road improvement works facilitating the proposed development. The amount of the contribution and the arrangements for payment shall be agreed between the developer and the planning authority or, in default of agreement, shall be determined by An Bord Pleanála.

Wt

Payment of this contribution is subject to the provisions of section 26(2)(h) of the Local Government (Planning and Development) Act, 1963 generally, and in particular, the specified period for the purposes of paragraph (h) shall be the period of seven years from the date of this order.

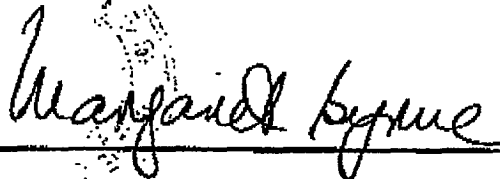
Reason: It is considered reasonable that the developer should contribute towards the expenditure proposed to be incurred by the planning authority in respect of works facilitating the proposed development.

31. The developer shall pay a sum of money to the planning authority as a contribution towards expenditure that was and/or that is proposed to be incurred by the planning authority in respect of the provision of a public water supply facilitating the proposed development. The amount of the contribution and the arrangements for payment shall be agreed between the developer and the planning authority or, in default of agreement, shall be determined by An Bord Pleanála.

In the case of expenditure that is proposed to be incurred, the requirement to pay this contribution is subject to the provisions of section 26(2)(h) of the Local Government (Planning and Development) Act, 1963 generally, and in particular, the specified period for the purposes of paragraph (h) shall be the period of seven years from the date of this order.

Reason: It is considered reasonable that the developer should contribute towards the expenditure that was and/or that is proposed to be incurred by the planning authority in respect of works facilitating the proposed development.

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Member of An Bord Pleanála
duly authorised to authenticate
the seal of the Board.

Dated this 3rd day of March 2003.

Appendix 3

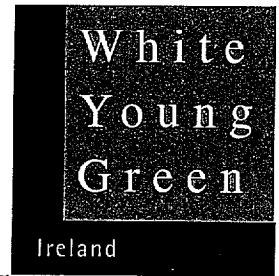
Hydrology Runoff Assessment Sept 2002

Hydrology Runoff Assessment April 2003

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K.T.Cullen & Co. Ltd.



Environmental

Indaver Hydrology Runoff Assessment.

September 2002

The Carranstown site is located at the upper end of a tributary of the Nanny.

The catchment area of the Nanny at Duleek Village is 181 km² (181,000,000 m²).

The catchment area of the tributary close to the site is 1.57 km² (1,570,000 m²).

The area of the proposed development site is 1.01 km² (1,010,000 m²).

The hardstanding area which will be used to provide process water from rainfall is 0.04 km² (40,000 m²).

The 20 Year 24 hour rainfall for Dublin Airport is 63 mm (0.063m).

It is proposed that the non-hardstanding area will drain as it always has in the past. In-situ flow measurements were carried out in Spring 2002 where no flow was observed in the weir installed in an on-site drainage ditch. The only change in the drainage regime after development will be increased rate of runoff from the 40,000 m² of hardstanding. It should be noted that this constitutes only 0.02% of the catchment of the Nanny at Duleek Village (c. 1km upstream of the point of confluence) and 2.5% of the catchment of the nearby tributary. Thus the impact on runoff flowing to the tributary would be immeasurable within the River Nanny catchment.

The water usage is calculated to be 360 m³/day of which 24 m³/day will be supplied by Meath Co Co for potable water. The remaining 336 m³/day (3.88 l/sec) will be supplied by a combination of intercepted rainwater from the hardstanding areas and groundwater by means of a well. It is proposed to utilise the rainwater where possible and top up with groundwater when necessary. The daily water requirement of 336 m³/day (3.88 l/sec) would constitute some 8.4 mm of rain over the hardstanding area. A standby for the groundwater supply will be provided by a second well and pump. The aquifer itself acts as the storage reservoir.

There is some 1,500 m³ of storage available for rainwater. If we assume that the tank is empty prior to the storm a total of 1,836 m³ (storage and daily usage) of runoff must accumulate before any discharge will take place to the ditch. This would require 46 mm of rain in 24 hours (a return period of 5 years based on data from Dublin Airport). If the 20 year 24 hour storm were to occur and there was an empty tank to start with then the total runoff would be 2,520 m³ resulting in an overflow of 684 m³/day.

There is in addition 700 m³ storage available at groundwater storage tank (allowing for the required 1,300m³ to be retained for firefighting water).

A suggested mitigation would be that surplus overflow could be directed to the 2,000 m³ storage tank for groundwater. Therefore, the additional 700 m³ can be used for the overflow during the 20 year 24hour storm event, providing a total storage of 2,200 m³ and allowing for the daily usage of 336m³/day.

The storage tanks should be regarded as storm attenuation tanks and as such their levels should be kept as low as possible at all times to provide storage for the unforeseen storm. For each day where the rainfall is greater than 8 mm the water level will rise as rainwater goes into storage. Similarly, for each day where the rainfall is less, process water can be drawn from rainfall storage and/or the groundwater standby well.

It will require 4 (3.7) consecutive days with rainfall greater than 25 mm before any runoff from the hardcore area will be directed to the surface water drainage ditch and ultimately to the River Nanny.

It is clear from this that there will be no impact arising from the runoff from the paved area of the development. The peak runoff that would have occurred from the pre-paved area no longer discharges to the ditch as the rate of runoff from the site will be less than at present by use of storm attenuation/storage tanks. The run off from the remainder of the site will be as before.

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K.T.Cullen & Co. Ltd.



Ms. Laura Burke,
Indaver Ireland,
4 Haddington Terrace,
Dun Laoighaire,
Co. Dublin.

Environmental

30th April 2003.

Re : Indaver Hydrology Runoff Assessment.

Dear Laura,

Further to the reduction in hardstanding area in Carranstown as a result of the removal of the community recycling park will amount to 1,730 m² I have altered our September 2002 runoff assessment as detailed below.

The Carranstown site is located at the upper end of a tributary of the Nanny.

The catchment area of the Nanny at Duleek Village is 181 km² (181,000,000 m²).

The catchment area of the tributary close to the site is 1.57 km² (1,570,000 m²).

The area of the proposed development site is 1.01 km² (1,010,000 m²).

The original hardstanding area was 0.04 km² (40,000 m²). Removal of the community recycling park results in the reduction of the hardstanding area which will be used to provide process water from rainfall to 0.038 km² (38,270 m²).

The 20 Year 24 hour rainfall for Dublin Airport is 63 mm (0.063m).

It is proposed that the non-hardstanding area will drain as it always has in the past. In-situ flow measurements were carried out in Spring 2002 where no flow was observed in the weir installed in an on-site drainage ditch. The only change in the drainage regime after development will be increased rate of runoff from the 38,270 m² of hardstanding. It should be noted that this constitutes only 0.02% of the catchment of the Nanny at Duleek Village (c. 1km upstream of the point of confluence) and 2.4% of the catchment of the nearby tributary (previously 2.5%). Thus the impact on runoff flowing to the tributary would be immeasurable within the River Nanny catchment.

If the 20 year 24 hour storm were to occur on the original 40,000 m² of hardstanding then the total runoff would be 2,520 m³/day. The reduction of the hardstanding area to 38,270 m² reduces the available run-off to 2,411 m³/day.

The water usage is calculated to be 360 m³/day of which 24 m³/day will be supplied by Meath Co. Co. for potable water. The remaining 336 m³/day (3.88 l/sec) will be supplied by a combination of intercepted rainwater from the hardstanding areas and groundwater by means of a well. It is proposed to utilise the rainwater where possible and top up with groundwater when necessary. The daily water requirement of

336 m³/day (3.88 l/sec) would constitute some 8.8 mm of rain over the hardstanding area (previously 8.4mm). A standby for the groundwater supply will be provided by a second well and pump. The aquifer itself acts as the storage reservoir.

There is some 1,500 m³ of storage available for rainwater. If we assume that the tank is empty prior to the storm a total of 1,836 m³ (storage and daily usage) of runoff must accumulate before any discharge will take place to the ditch. This would require 46 mm of rain in 24 hours (a return period of 5 years based on data from Dublin Airport). If the 20 year 24 hour storm were to occur and there was an empty tank to start with then the total runoff would be 2,411 m³ resulting in an overflow of 575 m³/day.

There is in addition 700 m³ storage available at groundwater storage tank (allowing for the required 1,300m³ to be retained for firefighting water).

A suggested mitigation would be that surplus overflow could be directed to the 2,000 m³ storage tank for groundwater. Therefore, the additional 700 m³ can be used for the overflow during the 20 year 24hour storm event, providing a total storage of 2,200 m³ and allowing for the daily usage of 336 m³/day.

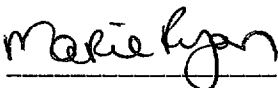
The storage tanks should be regarded as storm attenuation tanks and as such their levels should be kept as low as possible at all times to provide storage for the unforeseen storm. For each day where the rainfall is greater than 8.8 mm the water level will rise as rainwater goes into storage. Similarly, for each day where the rainfall is less, process water can be drawn from rainfall storage and/or the groundwater standby well.

It will require 4 consecutive days (as previous) with rainfall greater than 25 mm before any runoff from the hardcore area will be directed to the surface water drainage ditch and ultimately to the River Nanny.

It is clear from this that there will be no impact arising from the runoff from the paved area of the development. The peak runoff that would have occurred from the pre-paved area no longer discharges to the ditch as the rate of runoff from the site will be less than at present by use of storm attenuation/storage tanks. The run off from the remainder of the site will be as before.

I hope this meets your requirements.

Yours sincerely,
White Young Green



Marie Ryan
Project Manager



Kieran O'Dwyer
Project Director



Water Balance Calculations

	Community Recycling Centre	
	With	Without
Nanny Catachment at Duleek (m ²)	181,000,000	181,000,000
Tributary Catchement (m ²)	1,570,000	1,570,000
Total Area of Site (m ²)	101,200	101,000
Site Hardstanding Area Development (m ²)	40,000	38,270
Site Area % of Nanny Catchement at Duleek	0.02%	0.02%
Site Hardstanding Area % of Tributary Catchement	2.55%	2.44%
20 year 24hour rainfall (mm)	63	63
Water infiltrating on site (m ³ /day)	6,376	6,363
Water Collected on Development area (m ³ /day)	2,520	2,411
Water Requirement (m ³ /day)	360	360
Mains Supply (m ³ /day)	24	24
Deficit to be met by Rainwater and/or Groundwater (m ³ /day)	336	336
Rainfall amount required (mm)	8.4	8.8
Rainwater Storage (m ³)	1,500	1,500
Water deficit requirement (m ³)	336	336
Total available storage prior to run-off (m ³)	1,836	1,836
Balance before discharge to tributary (m ³ /day)	684	575
Additional Groundwater Storage (m ³)	700	700

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Appendix 4

B6.1 Type of Activity

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B6.1 TYPE OF ACTIVITY

1. PRINCIPAL ACTIVITY

The principal class of activity under the Third Schedule of the Waste Management Act, 1996, as amended, will be as follows:

8: Incineration on Land or at Sea

The proposed waste to energy plant to be located at the site will be based on conventional grate incineration technology. This technology is proven and reliable and has been widely used in many countries worldwide. In summary, the incineration process will involve non-hazardous municipal and industrial solid waste material firstly being tipped into a bunker prior to being fed into the furnace. In the furnace the waste will be incinerated, producing heat, ash and combustion gases. The flue gases will then be cooled, filtered, passed through scrubbers and reheated prior to discharge via the stack. The waste liquids produced by the scrubbers will be used in the cooling process and a solid waste produced, rather than an aqueous liquid, thereby eliminating any process effluent from the facility. The heat produced by the combustion of the waste will be used to generate steam, which will be used to drive a steam turbine and electrical generator.

2. OTHER RELEVANT ACTIVITIES

The following other activities will take place at the site under the Third Schedule of the Waste Management Act, 1996:

7. Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcinations), which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule (including evaporation, drying and calcinations)

This activity may take place onsite for the solidification of Boiler Ash and Flue Gas Cleaning Residue prior to Landfill offsite.

12. *Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.*

This activity will occur on site if, for example, hazardous items such as cylinders or other non conforming waste materials are discovered in the reception area for the waste to energy plant. In this instance it may be necessary to repackage this material prior to sending it off site for disposal.

13. *Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.*

Waste may be stored in the bunker in the waste to energy plant for a period of 3 to 4 days prior to incineration. Materials, such as concrete blocks, may be delivered as part of a load to the materials recycling facility that are not suitable for recycling or incineration and must be sent off site for disposal. All of the ashes and gypsum will be temporarily stored on site prior to off-site disposal. If a market exists for recycling

of gypsum or bottom ash, these activities will be covered under activities 6 and 13 of the fourth schedule, as discussed below.

The other activities that will take place at the site under the Fourth Schedule of the Waste Management Act, 1996, are as follows:

2. *Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).*

In the materials recycling facility, paper, cardboard, wood and plastics will be separated, baled where applicable and transported to appropriate licensed facilities for recycling.

3. *Recycling or reclamation of metals and metal compounds.*

The sorting process in the materials recycling facility will also involve the separation of metals. The metals will then be baled or put directly into containers and sent to appropriately licensed facilities for recycling. Metals will also be recovered from the bottom ash in the waste to energy plant and sent off site for recycling.

4. *Recycling or reclamation of other inorganic materials.*

Glass may be separated in the materials recycling facility and transported to appropriate licensed facilities for recycling.

6. *Recovery of components used for pollution abatement.*

Gypsum will be recovered from the wet flue gas cleaning system within the waste to energy plant. It can be used in the construction industry, and the gypsum recovery facility will be designed to comply with the standards required if a market exists, depending on the sulphur content of the waste.

9. *Use of any waste principally as a fuel or other means to generate energy*

The heat produced by the combustion of the waste will be used to generate steam, which will be used to drive a steam turbine and electrical generator. The plant will produce approximately 14MW of electricity, approximately 11MW of which will be exported to the ESB distribution network, which is equivalent to supplying electricity to approximately 16,000 homes

13. *Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.*

The segregated waste streams at the materials recycling facility will be stored on site prior to transport off-site for recycling by a permitted waste contractor. The bottom ash that will be produced in the furnace of the waste to energy plant is suitable for use in road construction and may be recycled if a market exists. If this material is suitable for recycling it will be temporarily stored on site prior to removal off site.

Appendix 5

B8.1 Annual Quantities and Nature of Waste

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B8.1 ANNUAL QUANTITIES AND NATURE OF WASTES**1. MATERIALS RECYCLING FACILITY****TABLE B8.1 ANNUAL QUANTITIES AND NATURE OF WASTES**

Year	Nominal Capacity			Maximum Capacity		
	Non-hazardous waste (tonnes/annum)	Hazardous waste (tonnes/annum)	Total annual waste quantity (tonnes/annum)	Non-hazardous waste (tonnes/annum)	Hazardous waste (tonnes/annum)	Total annual waste quantity (tonnes/annum)
1	18,000	-	18,000	27,000	-	27,000
2	20,000	-	20,000	30,000	-	30,000
3	20,000	-	20,000	30,000	-	30,000
4	20,000	-	20,000	30,000	-	30,000
5	20,000	-	20,000	30,000	-	30,000

2. WASTE TO ENERGY PLANT

TABLE B8.1 ANNUAL QUANTITIES AND NATURE OF WASTES

Year	Nominal Capacity			Maximum Capacity*		
	Non-hazardous waste (tonnes/annum)	Hazardous waste** (tonnes/annum)	Total annual waste quantity (tonnes/annum)	Non-hazardous waste (tonnes/annum)	Hazardous waste** (tonnes/annum)	Total annual waste quantity (tonnes/annum)
1	135,000	-	135,000	162,000	-	162,000
2	150,000	-	150,000	180,000	-	180,000
3	150,000	-	150,000	180,000	-	180,000
4	150,000	-	150,000	180,000	-	180,000
5	150,000	-	150,000	180,000	-	180,000

* The proposed maximum design capacity of the waste to energy plant is 180,000 tonnes based on maximum plant availability and calorific value of waste.

** Small quantities of household hazardous waste may be treated in the waste to energy plant if items such as batteries are placed in domestic rubbish. The design of the waste to energy plant means that it is capable of handling this material. However, it is anticipated that a household hazardous waste collection system will be in operation in Ireland to remove the majority of household hazardous waste from residual waste.

Appendix 6

A0 Planning Drawings

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