

INSPECTORS REPORT

WASTE LICENCE REGISTER NUMBER: 167-1

APPLICANT: Indaver Ireland

FACILITY: Carranstown, Duleek, Co. Meath.

INSPECTOR: Peter Carey assisted by Maria Martin on emissions to air assessment.

INSPECTORS RECOMMENDATION: That a Waste Licence be granted subject to conditions.

(1) Introduction

The application by Indaver Ireland relates to a waste management facility, which comprises of a materials recycling facility and a waste to energy plant for non hazardous waste, at Carranstown, Co. Meath. The application also included provision for a community-recycling park but the applicant withdrew this element as it was refused planning permission by An Bord Pleanála.

The proposed facility is to be located on a c.25 acre green-field site in the townland of Carranstown approximately 3 km north-east of Duleek village (see Figure 1 Site Location Map and Figure 2 Adjacent Land Uses). The R152 secondary road between Duleek and Drogheda runs along the southern boundary of the proposed facility. The Platin cement factory and its associated quarry, which is operated by Irish Cement Ltd under Integrated Pollution Control (IPC) Licence Reg. No 268, is located to the north east of the proposed facility. 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 land use in the area is predominantly agricultural. There are approximately 22 houses within 500 m of the facility. The closest residential dwellings to the facility are a dwelling adjacent to the boundary at the eastern corner of the site and two dwellings located across the R152 to the south of the proposed facility. There is also a group of five dwellings located across the R152 road from the eastern corner of the proposed facility. Other buildings in the area include a primary school, Mount Hanover, which is located about 1 km to the east of the proposed facility. There are two commercial premises (tyre centre and garage) located across the R152 road from the eastern corner of the facility and a public house, Carranstown Lodge, is located approximately 500 m south west of the proposed facility on the R152. There is a football club located adjacent to Carranstown Lodge.

Classes 7, 8, 12 and 13 of the Third Schedule and Classes 2, 3, 4, 6, 9 and 13 of the Fourth Schedule were applied for in the application (Third and Fourth Schedules of the Waste Management Act are attached as Appendix 1).

The Recommended Proposed Decision (RPD), for the reasons set out in Section 9 of this report, permits the above waste disposal and recovery activities, subject to the conditions therein.

Quantity of waste applied for (tpa)	170,000 tonnes per annum (t/a) > 20,000 t/a Materials Recycling Facility > 150,000 t/a Waste to Energy Plant.
Prescribed date for application	01/05/97
Application received	05/12/01 – proposed new facility
Environmental Impact Statement Required & Valid	Yes
Number of Submissions Received	127
Planning Status	Permission granted on 03/03/03 by An Bord Pleanála (copy of permission attached as Appendix 2)
Most Recent Site Visit	22/08/03

(2) Waste Types and Quantities

(a) To be accepted at the facility

The applicant has applied to accept 170,000 tonnes per annum of non-hazardous waste at the facility. This breaks down into 20,000t/a to the materials recycling facility and 150,000t/a to the waste to energy plant. The applicant refers to this as nominal capacity and also refers to a potential design capacity of 210,000t/a with 30,000t/a to the materials recycling facility and 180,000t/a to the waste to energy plant. The RPD restricts the waste intake to the 170,000t/a (20,000t/a to the materials recycling facility and 150,000t/a to the waste to energy plant) as the applicant only addresses the acceptance of this waste tonnage in their application.

Materials Recycling Facility

The waste to be accepted at the materials recycling element of the facility includes paper, cardboard, plastic, glass, wood and metals from the commercial/industrial sector and from separately collected household waste. The applicant expects that some 16,000 t/a of the 20,000 t/a will be sorted for recycling with the remaining 4,000t/a going for incineration.

Waste to Energy Plant

The applicant has applied to accept household, commercial, and industrial non-hazardous wastes including sewage and industrial sludges and meat and bone meal. The applicant states that *'it is not possible at this stage to provide a detailed breakdown of the anticipated quantities of these types of wastes'* and that *'a grate incinerator is capable of accepting up to 10% sludges in the incoming waste stream'*. The RPD permits municipal waste (household waste and commercial/industrial waste similar in nature) to be accepted at the waste to energy plant. Other non-hazardous wastes may be accepted subject to prior agreement by the Agency.

(b) Residues from the Waste to Energy Plant

Solid waste residues generated from the operation of the waste to energy plant will include bottom ash, boiler ash, flue gas cleaning residues, gypsum and metals. Quantities of residues generated as estimated by the applicant are given in Table 1.

Table 1 Solid Waste Residues from Waste to Energy Plant

Waste Residue	Estimated Quantity
Bottom ash	30,000t/a (20% of throughput)
Boiler ash	1,500 to 3,000t/a (1 to 2% of throughput)
Flue gas cleaning residues	3,500 to 5,000t/a (2 to 3% of throughput)
Gypsum	1,000
Metals	2,100
Total	37,100 – 40,100 (25 to 27% of throughput)

The RPD provides for the storage/handling and disposal/recovery of the solid waste residues generated. Sampling and analysis of each residue is required and this will determine the ultimate disposal/recovery route of the waste stream. *Schedule D: Monitoring* of the RPD requires weekly monitoring of residues as per the application, it is expected that this frequency will reduce once the composition of the ash has been determined and provided it remains consistent. The applicant includes a proposal to solidify, through a process of chemically binding the ash to cement/iron silicate, the boiler ash (depending on its ash composition) and the flue gas cleaning residues, prior to disposal and this is provided for in the RPD.

(3) Facility Development

Condition 3 controls the installation of infrastructure at the facility. Infrastructure proposed by the applicant and which is required in the RPD includes the development of the materials

recycling facility and waste to energy plant. Other associated facility infrastructure includes security fencing; CCTV; two weighbridges; a wheel wash, which is to be installed for facility construction; and waste inspection and quarantine areas. An existing 200mm diameter gas main transverses the site and the RPD requires this to be clearly delineated on-site.

Materials Recovery Facility

Infrastructure for processing waste in the materials recycling facility will include a hopper, screens to grade the waste, an enclosed picking station and magnet for metal separation.

Waste to Energy Plant

Infrastructure for the waste to energy plant includes a waste reception area and an incineration plant which will consist of two incineration lines including moving grate furnaces, boilers, infrastructure for the treatment of exhaust gases (5 stage treatment system), on-site facilities for the storage of solid residues and waste water, energy recovery system, stack, devices and systems for controlling, recording and monitoring incinerator operating conditions. The plant will have a design capacity of 20 tonnes per hour (two feed lines at 10 tonne per hour), which equates to 150,000t/a at 7500 hours operation. The plant will use natural gas, which will be supplied from a low-pressure gas pipeline running along the road, for start up and if required for auxiliary firing. The heat produced from the process will be used to generate approximately 14MW of electricity of which 3MW will be used on site with the remaining 11MW being exported to the national grid. The waste to energy process flow diagram is presented in Figure 3. Table 2 highlights the main abatement/treatment systems at the waste to energy plant.

Waste to Energy Plant - Flue Gas Cleaning

The flue gases will be cleaned through a five-stage process involving cooling (in 2 evaporating spray towers), dioxin and heavy metal removal (through injecting activated carbon/lime mixture into the cooled flue gases exiting the spray tower, the resulting particulates will be removed in the baghouse filter), dust removal (in the baghouse filter), acid gas removal (the flue gas will enter a wet scrubbing system and either lime or limestone will be used to remove the acid gases) and a final stage of dioxin and heavy metal removal through the use of a second activated carbon/lime mixture injection with a baghouse filtration unit. An induced draught fan will draw the combustion gases through the flue gas cleaning plant and maintain the plant under pressure. Gases will be reheated via a heat exchanger in order to reduce the visibility of the plume at the discharge of the stack.

Hours of operation

The applicant applied for hours of waste acceptance from 08.00 to 18.30 Monday to Friday and from 08.00 to 14.00 on Saturdays for both the materials recycling facility and the waste to energy plant. These hours of operation are specified in Condition 1.7. The materials recycling facility will operate during these hours only. The waste to energy plant will operate on a continuous basis.

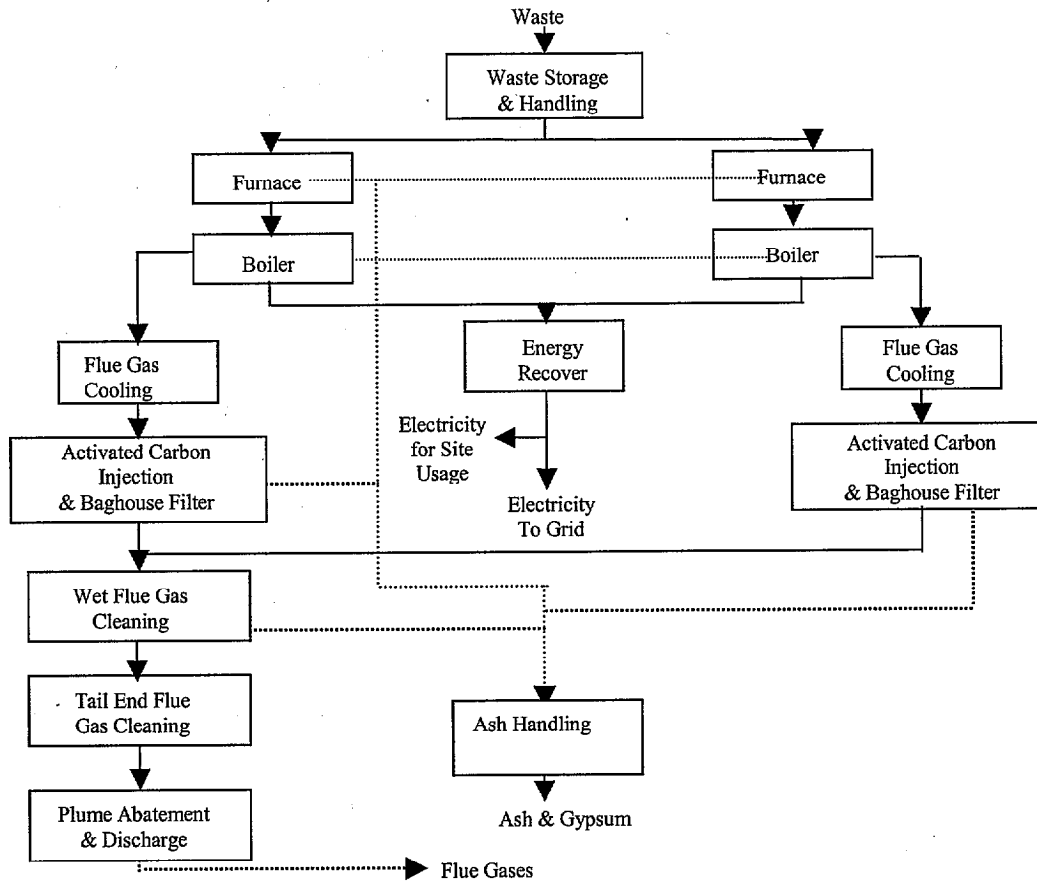


Figure 3 Waste to Energy Process Flow Diagram

Table 2 Abatement/Treatment Systems at the Waste to Energy Plant

Emission Treatment / Recovery	Abatement /Treatment /Recovery System
Odour	Primary Air Supply taken from Waste Acceptance Hall
Oxides of nitrogen (NO _x)	Injection of Ammonia Solution/Urea into Boiler
Hydrocarbons	Furnace
Dioxins and Furans	Minimum temperature of 850 °C for 2 seconds in first pass of Boiler
Energy Recovery	Boiler
Process Effluent	Evaporating Spray Tower
Hydrocarbons, Particulates (Dust), Dioxins and Furans, Heavy Metals	Activated Carbon/Lime Mixture Injection and Baghouse Filter and Tail End Flue Gas Cleaning
Sulphur Dioxide (SO ₂), Hydrogen Chloride (HCl), Hydrogen Fluoride (HF), Heavy Metals	Wet Flue Gas Cleaning
Plume Abatement	Heat Exchanger

(4) Emissions to Air

Emissions to air from the facility will include emissions from the waste to energy plant, dust, noise and odours.

Waste to Energy Plant

The waste to energy plant has one main emission point through which the combustion gases are discharged after cleaning. According to the applicant, the maximum emissions from the main exhaust stack will not exceed the emission limit values (ELV's) in Directive

2000/76/EC on the incineration of waste. Minor emissions will arise from the back-up gas fired electricity generator.

Air dispersion modelling was carried out for all significant emissions using meteorological data from Dublin Airport. Background concentrations of these parameters have been either measured or estimated and the predicted maximum ground level impacts added to these background values before comparison with appropriate Air Quality Standards (AQS) and guidelines.

Stack height selection:

The applicant screened several possible stack heights and concluded that a stack height of 40m would provide adequate dispersion. The Agency re-ran the model for a selection of stack heights as shown in Table 1 of Appendix 3. The stack height in the RPD is 65m; this is based on the following considerations:

- A comparison with permitted incineration plants in the UK indicates lower ground level concentrations (GLC's) for dioxins than that proposed by the applicant. The lower GLC's is partially achieved through increasing the stack height. For further detail see Section on Dioxins below.
- One of the buildings proposed at the facility is 30m high. It is not good practice to have a stack height less than 1.5 times the height of nearby buildings.
- The applicant used a NO_x to NO₂ ratio of 0.3 for short-term predictions of ground level NO₂ concentrations. The Agency uses a more conservative ratio of 0.5. Using this conversion factor a stack height of 40m would give a process contribution of more than 50% of the AQS. There are other sources of NO_x in the area or proposed for the area and traffic will also contribute substantially to NO₂ levels, it would therefore not be prudent to allow such a high contribution from one source.
- The ELV's for the heavy metals cadmium (Cd) and thallium (Tl) are already low in Directive 2000/76/EC on the incineration of waste (WID), at 0.05mg/m³. Using a stack height of only 40m requires that they be set at a lower limit than the WID ELV because at a stack height of 40m they exceed WHO air quality guidelines. Similarly a separate ELV for nickel (Ni) lower than in WID would have to be set at a stack height of 40 m in order to ensure compliance with proposed threshold assessment levels.

The model was therefore re-run for all parameters using a stack height of 65m as proposed in the RPD.

Combustion gases and particulate matter

Table 2 of Appendix 3 summarises the results for the main combustion gases and particulate matter. For all combustion gases and particulate matter the predicted impacts are well within the relevant air quality standards.

Inorganic gases and VOCs

Table 3 of Appendix 3 summarises the impacts for inorganic gases and VOCs. The predicted impacts for inorganic gases (hydrogen chloride and hydrogen fluoride) are within the air quality guidelines to which they have been compared. The WID sets an emission limit for organic substances as total organic carbon, but no AQS or guideline exists for this parameter. The typical VOC composition from the proposed activity is unknown. The Agency has considered the impact if all emissions of VOC were toluene and compared the predicted GLC to the WHO guideline for toluene. The predicted emission concentration is well within this guideline.

Emissions of Heavy Metals to atmosphere

The applicant did not use sufficiently low levels of detection to determine existing background levels for arsenic, cadmium and thallium in the area of the proposed site, which means that some of the results quoted in the application are unusually high as they are based on the limit of detection value. In assessing the applicant's air quality modelling, the highest values encountered in other monitoring programmes in Europe (as cited in the proposal for the Fourth Daughter Directive on Air Quality (EU COM (2003) 423 final)), were used as background levels (for arsenic $0.003\mu\text{g}/\text{m}^3$ and for cadmium and thallium $0.0025\mu\text{g}/\text{m}^3$). These values reflect urban or industrial areas and therefore represent a worst-case scenario. In the application, the applicant also used expected maximum emission levels based on the upper limit of measured emission data from similar sites in Belgium for arsenic; nickel; cadmium and thallium rather than the ELV's in the WID.

The predicted impacts, based on a 65m high stack and ELV's as per the WID, have been calculated and are summarised in Table 4 of Appendix 3. The impact of mercury emissions at the maximum ELV is significantly less than the WHO guideline and the guideline value for elemental mercury given in the introduction to EU COM (2003) 423 final. The predicted environmental contribution from cadmium and thallium are within the WHO guideline value. The impact (as a 98 percentile of hourly values) of the combined sum of antimony, arsenic, lead, chromium, cobalt copper, manganese, nickel and vanadium was found to be less than the value of one hundredth of any of the occupational exposure limits (OEL) for these substances, of which antimony (Sb) has the most stringent OEL. If manganese alone was present at the ELV, the predicted annual average would be less than the WHO recommended guideline value of $0.15\mu\text{g}/\text{m}^3$. Similarly assuming lead was emitted as the only heavy metal, the National AQS for lead would not be breached due to the contribution from the process. If arsenic were emitted at the maximum ELV for the group, the predicted GLC would exceed the proposed assessment threshold value given in EU COM (2003) 423. A lower individual ELV of $0.2\text{mg}/\text{m}^3$ for arsenic has therefore been set in the RPD. According to the data submitted by the applicant, for a similar waste to energy plant in Belgium, compliance with the lower emission limit value will not be a problem.

The WID limits for cadmium and thallium, mercury, and the combined sum of antimony, arsenic, lead, chromium, cobalt copper, manganese, nickel and vanadium are given in the RPD.

Dioxins

The applicant predicted the maximum annual average contribution to the ground level concentration to be $0.005\text{pgTEQ}/\text{m}^3$ ($5\text{fg}/\text{m}^3$) and estimated annual background concentrations in the Carrantown region to range from $0.028\text{pg TEQ}/\text{m}^3$ to $0.046\text{pg TEQ}/\text{m}^3$, with an average of $0.038\text{pg TEQ}/\text{m}^3$, it should be noted that these values include limit of detection values taken as reported values. When the maximum predicted worst-case concentration is added to the background value, the cumulative value ranges from $0.033\text{pg TEQ}/\text{m}^3$ to $0.051\text{pg TEQ}/\text{m}^3$.

There are no air quality standards or environmental assessment levels for dioxins and furans. A comparison has been made with recently issued IPPC permits for new incinerators operating to WID standards in the UK (see Table 3 below). The stack heights are 60m or more and the predicted ground level concentrations of dioxins in the vapour phase are typically less than $1\text{fg}/\text{m}^3$ ($0.001\text{pg}/\text{m}^3$). The most significant pathway for the intake of dioxins by humans is through the food chain, which accounts for 95% of human intake. Inhalation is the next most significant pathway. In general, the UK permit applications conservatively assume both arable and pasture lands are present in the vicinity of the predicted maximum annual GLC. Risk assessment studies have been used to predict dioxin

intake and the results are then compared with the WHO tolerable daily intake (TDI) of 1-4pg I-TEQ/kg of body weight /day. Risk assessment studies, carried out as part of the UK permit applications and addressing dioxin intake from both inhalation and ingestion, have shown that at such GLC's the worst case tolerable intake of dioxins would be below the WHO's TDI of 1pg I-TEQ/kg of body weight /day. The RPD therefore is designed to ensure that the maximum predicted impact from the waste to energy plant is not of a greater magnitude. Given the level of abatement proposed by the applicant and their assertion that they can achieve a dioxin concentration of 0.01 ng/m³, a stack height of 65 m combined with a dioxin ELV of 0.1ng/m³ is proposed. This gives an average predicted GLC of 0.72fg/m³(see Table 5, Appendix 3). Predicted ground level concentrations of dioxins using a 65 m stack and an ELV of 0.1ng/mg³ are less than 2% of the measured background level.

Table 3: Comparison of GLC for dioxins and furans from permitted “new generation” incinerators in UK.

Facility name	Incineration Capacity tpa	Stack height (m)	Process contribution to GLC of Dioxins and furans as annual average (fg/m ³)
Onyx Hampshire Ltd. Integra North Energy Recovery Facility Chineham, Basingstoke	104,000	60	0.66
Surrey Waste Management Limited Horsham Road, Capel	116,000	70	0.76
Riverside Resource Recovery, Norman Road, Bexley, Kent	585,000	90	0.90
Waste Recycling Group, Foster St. Waste to Energy Plant, Hull.	150,000	80	0.77
Kent Enviropower Limited Waste Management Facility, Allington, Maidstone, Kent.	500,000	80	1.0

Cumulative assessment

The cumulative impacts of the proposed waste to energy plant and the nearby significant source of combustion gases (Irish Cement Platin Plant) were considered. According to the application the distance from the waste to energy plant emission point A1-1 to the main kiln stacks in the Platin Cement Plant is approximately 900 m. The modelling study predicts that the maximum ground level concentrations for the sources on the two sites do not coincide and where the maxima for pollutants from the Indaver source occur, the levels due to the other source are relatively low.

Modelling results indicate, based on emission limit values, recognised air quality standards and guidelines, emission of substances from the main stack (including nitrogen oxides, sulphur dioxide, particulate matter, metals (including mercury, the combined sum of antimony, arsenic, lead, chromium, cobalt copper, manganese, nickel and vanadium, and the combined sum of cadmium and thallium), dioxins and furan) will not have an impact on air quality. Emission limit values are set in *Schedule C: Emission Limits*. Given the abatement systems proposed it is expected that typical emissions will be considerably less than the proposed limits

Consultation with the Planning Authority

The planning authority of Meath County Council was consulted in relation to the condition within the RPD to increase the stack height from 40m to 65m. Meath County Council subsequently advised the Agency that they carried out an extensive visual impact appraisal, in particular in respect to any potential impact of the World Heritage site at Newgrange/Bru na Boinne and would generally be satisfied that the proposed increase in stack would not

materially impact on same. Subsequent to the Agency consultation with the planning authority, the applicant also submitted additional information, which included air dispersion modelling from a 65m stack. The applicant stated that while they did not believe it necessary to increase the stack height, they had no objection to the raising of the stack height to 65m. The applicant's submission included a letter from the Irish Aviation Authority, which indicates that the increase in stack height does not alter any previous requirements relating to lighting of the structure, which is incorporated in the planning permission for the facility. The applicant's submission also included information relating to the UNESCO visit to County Meath and specifically air emission modelling which indicates that the proposed facility will not impact on the World Heritage Site Bru na Boinne.

Emissions Monitoring

Emissions from the stack are to be continuously monitored for particulate, carbon monoxide (CO), ammonia (NH₃), sulphur dioxide (SO₂), hydrogen chloride (HCl), oxygen (O₂), oxides of nitrogen (NO and NO₂ expressed as NO₂), and volatile organic compounds (VOCs as TOC). The applicant has proposed to carry out both periodic and continuous sampling, for which analysis will take approximately 10 to 15 days, of dioxins at the stack and this is provided for in the RPD. Periodic measurements will be carried out for metals (cadmium (Cd), thallium (Tl), mercury (Hg), antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni), vanadium (V)), hydrogen fluoride (HF) and nitrous oxide (N₂O). The frequency for periodic measurements is specified in *Schedule D: Monitoring*. Condition 8.18 requires the applicant to determine the size distribution (PM₁₀, PM_{2.5} and PM_{1.0}) of the particulate matter in the exhaust gas emissions. Environmental monitoring is set out in *Schedule D: Monitoring*

Noise & Dust

Noise monitoring results indicate that noise levels (LA_{eq}) at the boundary of the facility are in excess of 55dBA. The main noise impact can be attributed to passing traffic. Noise monitoring requirements from the facility are established under *Condition 8.1* and emission limits are set under *Schedule C*. Condition 7.4 provides for the control of dust emissions.

Odour Control

The waste reception area (waste bunker) of the waste to energy plant will be maintained under negative pressure to prevent any odorous emissions. Odour control is not necessary at the materials recycling plant as only dry recyclable wastes will be accepted, which will be processed in doors. Condition 7.1 requires that odours do not give rise to nuisance at or adjacent to the facility.

(5) Groundwater (GW) - Emissions, Abstraction & Monitoring

Site Hydrogeology

The applicant describes the overburden geology as consisting of silty clays (boulder clays), and states that the thickness of the boulder clays varies across the site, ranging from 5.0m towards the west of the site to greater than 20m towards the centre. Sand and gravel lenses are found throughout the boulder clays. Limestone bedrock is found beneath the overburden. The limestone bedrock constitutes a regionally important aquifer which displays both karst and fracture flow features. The groundwater within the limestone aquifer of the proposed site flows eastwards and discharges as base flow into the Nanny River by means of local tributaries of the Nanny. The applicant considers the aquifer vulnerability for this site to be moderate, but based on the varying thicknesses and type of overburden cover; I consider the aquifer vulnerability to be high. The RPD does not permit any discharges to groundwater, other than the effluent from the treatment of domestic sewage, for which the wastewater

treatment system must be constructed in accordance with the Agency's *Wastewater Treatment Manual, Treatment Systems for Single Houses*. The RPD requires that waste activities be carried out on hardstanding areas (*Condition 5*) with collection of any contaminated run off. The integrity and water tightness of all tanks, including the waste bunker for the incineration plant, must be checked on an annual basis.

Groundwater Abstraction

Irish Cement Ltd (IPC Licence Reg. No 268) abstracts some 4,400 – 6,300 m³/day of groundwater for quarrying activities. The dewatering has altered the groundwater flow direction, which currently flows towards the Irish Cement abstraction point. The applicant proposes to abstract some 336m³/day of groundwater for use in the incineration process. A pump test, which abstracted some 470m³/day of groundwater, indicated a drawdown of approximately 3m at the abstraction point. There are a number of domestic well users in the area. The RPD requires the applicant to provide an alternative supply of water in the event that monitoring of local wells indicate that the facility is having a significant adverse effect on the quantity and/or quality of the water supply.

Groundwater Quality

Groundwater monitoring indicates slight contamination (elevated levels of iron, manganese, nitrate, nitrite and ammonia), which the applicant attributes to agricultural practices on the site and surrounding area. Given the aquifer status, the RPD requires the installation/monitoring, in both the bedrock and overburden prior to commencement of waste activities, of 1 groundwater well upgradient and 2 groundwater wells downgradient of the facility buildings. Groundwater monitoring trigger levels are also to be established prior to acceptance of waste at the facility. Groundwater monitoring is required by *Condition 8.1*.

(6) Emissions to Surface Water

The applicant proposes to collect non-contaminated run-off from impervious hardstanding areas and to direct it into a storage tank. It is proposed to use this water with the on-site groundwater supply in the incineration process. The storage will be capable of accommodating all the run-off from storms up to and including a five-year return period. The applicant proposes that any excess water may overflow and discharge to the drainage network that feeds into the Nanny River, which is a tributary of the River Boyne. The applicant also proposes that any contaminated run off resulting from spillages be directed to the water storage tank to become feed water to the plant. The RPD does not permit any discharge, other than that from the wheelwash during facility construction, to the drainage network feeding the Nanny River and requires that excess water be handled and dealt with at the facility. Wheelwash water is required to pass a settlement chamber followed by an interceptor prior to discharge to the drainage network.

(7) Waste Management, Air Quality and Water Quality Management Plans

Waste Management Plan

The North East Regional Waste Management Plan, for which County Meath is a member and which includes thermal treatment as integral part of the management of the Regions waste, has been considered.

Air Quality Management Plan

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

Water Quality Management Plan

The draft River Boyne Water Quality Management Plan (1997) and The Three Rivers Project, Water Quality Monitoring and Management (2002) have been considered. There will be no discharges to surface waters from the facility. There will be groundwater abstraction and it is noted that the Three Rivers Project recommends that Local Authorities should maintain a register of all significant abstractions.

(8) Submissions

127 submissions were received in relation to this application and I have had regard to the submissions in making my recommendation to the Board. Two of the submissions are from the applicant, in which they respond to other submissions made in relation to the application. Detailed below are some of the main concerns that submitters had in relation to the application.

1. Concerns over the impact the facility may have on humans and on the food chain.

- *Concerns over the health implications of dioxins and other emissions such as dust, flue gases, hydrocarbons, furans and metals from incinerators.*
- *The cement factory emits dioxins thus an incinerator would increase the overall amount of dioxins in the area.*
- *Query on how dioxins will be measured in the food chain.*
- *The Health Research Board (HRB) has found that emissions of dioxins and disposal of waste ash constitute health hazards. The HRB also found that Ireland has deficient monitoring systems for health and environmental effects of waste i.e. insufficient base data is available and measuring systems are not continuous.*
- *New research in the Journal of Epidemiology and Community Health (British Medical Journal 29/05/03) indicates the risk of spina bifida rose by 17% and heart disease by 12% for mothers living near incinerators.*
- *Concerns over possible adverse health effects caused by both particulate matter less than 10 microns in diameter, specifically the emission of particulate fine matter in the size range 2.5 microns from incinerators, and mixed brominated and chlorinated bi-phenyls.*
- *Safety concerns regarding the handling, transportation, location and disposal of various incinerator ashes.*
- *Incineration greatly enhances the mobility and bio-availability of toxic metals present in municipal waste incineration.*
- *Understanding of the adverse effects of incineration on the local population and environment is incomplete and therefore unsafe.*
- *A number of houses and Mount Hanover National School are located in the vicinity of the proposed site. The Town of Drogheda lies in the path of the prevailing south west wind which will blow pollution from the emissions towards the town and its environs. Duleek is 2km from the site and Donore is even nearer. The area already suffers from very high incidence of cancer, asthma, respiratory, and many more serious illness problems, building an incinerator will definitely increase these problems. There are 8 households with 24 people living within 500m of the centre of this site. 46 families (105 adults and 29 children) live within 2000m of the proposed site. A primary school is 1200m from the proposed development and playing grounds within 800 – 1000m. There is no mention of the 200 plus employees and contractors of Irish Cement Ltd who are in the vicinity of the area around the clock all year round.*

Inspector Response

The issues above relate in principle to the incinerator (waste to energy plant). The assessment of the application included a comparison of emissions from the incineration process to standards and guidelines set by the European Community and the World Health Organisation (WHO). Air dispersion modelling, for the ELV's in the RPD, has shown that predicted emissions from the incinerator will not cause a breach of air quality standards or guidelines.

Such standards and guidelines have been derived on the basis of health based risk assessment, taking into account human exposure, epidemiological and occupational exposure studies. The standards and guideline values are determined by experts and set at values to minimise the risk to public health and the environment. The article in the Journal of Epidemiology and Community Health (British Medical Journal 29/05/03) relates to a paper titled '*Adverse pregnancy outcomes around incinerators and crematoriums in Cumbria, north west England, 1956-93*'. The paper concludes that '*the authors cannot infer a causal effect from the statistical associations reported in this study*'. It is also noted that the applicant has responded to specific referenced health studies in their submission to the Health Research Board, and that this document was included as a submission, by the applicant, to the Agency. I consider that there is no conclusive evidence to indicate incinerators, operated as per Directive 2000/76/EC, have an impact on human health. I also consider such health studies to be within the remit of the Health Boards. I note the North Eastern Health Board has made two submissions. I have considered the matters within their submissions and note no issues were raised that indicated there was reason to reject the application on health grounds.

With respect to particulate matter less than 10 micron, air-dispersion modelling of the predicted emission indicates that it will not breach the air quality standard set by Directive 1999/30/EC on ambient air concentrations. Concerns have been raised in relation to emissions of particulates less than 2.5 micron. It should be noted that PM_{2.5} are a subset of PM₁₀. No European or WHO standards or guidelines exist for PM_{2.5}. The applicant has used air dispersion modelling to compare the predicted impact to that of a US standard and results indicated that the standard would not be breached. The RPD sets an emission level value for total dust emitted from the incinerator, requires monitoring of PM₁₀ and PM_{2.5} in ambient air and requires the applicant to determine the particle distribution being emitted from the incineration stack.

An assessment of the impact of brominated/chlorinated dioxins has been carried out by the applicant and it was concluded that these substances would not give rise to significant risk at modern facilities.

In relation to how dioxins will be measured in the food chain, I note that The Food Safety Authority of Ireland (FSAI) has recently published a paper titled '*Food Safety Authority of Ireland Discussion Paper: Waste incineration and possible contamination of the food supply with dioxins*'. In this paper, the FSAI state that: "*In relation to the introduction of waste incineration in Ireland, as part of a national waste management strategy, the FSAI considers that such incineration facilities, if properly managed, will not contribute to dioxin levels in the food supply to any significant extent and will not affect food quality or safety.*" The FSAI also state that it '*is vital however that rigorous monitoring programmes be maintained and that consideration be given to expanding environmental monitoring around any established incineration facilities. The FSAI will endeavour to ensure that such programmes are put in place.*' The applicant has obtained base line data and the RPD requires ongoing monitoring of the various media. In addition the RPD requires the applicant to consult with the FSAI and to include any subsequent monitoring as agreed with the Agency.

The RPD requires that ash be classified as hazardous or non-hazardous and be removed to an appropriate facility. The transport of the ash from the facility to its final destination will be in appropriate vehicles and should be no different to the transport of any other waste or material.

2. Tourism & Heritage

- *The proposed facility will damage tourism in the Boyne Valley area and Meath as a whole. The heritage site of Newgrange is in the locality. The proposed development will be situated in an area whose landscape character is essentially rural and agricultural.*
- *The proposed site is adjacent to Duleek Commons, which is a NHA.*

Inspector Response

There is no evidence to suggest that tourism will be impacted by the facility development. The predicted emissions from the facility will not breach relevant quality standards or guidelines. It is noted that An Bord Pleanála has approved planning for the facility development. Duleek Commons is over 2km from the facility and it should not be impacted by the facility, as there will be no discharge from the facility.

3. Ash Handling and Removal

- *Concerns over the disposal of the ash from the facility. The EPA or local authorities are at present unable to properly monitor or account for the movement of waste within or out of the State e.g. waste dumping in Wicklow or export of waste to Northern Ireland. It is doubtful that they will be able to account for the final destination or the known routes of all ash streams from the Invader Incinerator.*

Inspector Response

It is the Agency's responsibility to ensure the licensee carries on the waste activity as per the conditions of their licence and to carry out any subsequent enforcement actions as may be deemed necessary. The RPD requires that ash be classified as hazardous or non-hazardous and be removed to an appropriate facility, which must be agreed by the Agency in advance of the licensee using it.

Regarding the statement that the EPA are at present unable to properly monitor or account for the movement of waste within or out of the State, it should be noted that all licences issued by the Agency require licensees to maintain records of quantities of waste being handled and of where waste is being sent. If licensees do not maintain such records the Agency will and has taken appropriate enforcement actions. Further details of such actions can be obtained from the public files for licences or from the Office of Environmental Enforcement within the Agency.

4. Failure to comply with the EU Waste Management Priority Hierarchy

- *There should be more focus on waste recovery and an aim to have zero waste. Unsorted waste will be disposed of directly to incineration. There is a need to carry out a feasibility study on the sourcing of the waste for the incineration plant.*
- *Use safer alternatives to incineration such as landfill.*

Inspector Response

I note that waste recovery; incineration and landfill are all elements of the North East Regional Waste Management Plan. I consider that the applicant's proposal is consistent with the waste plan for the region and meets national and EU requirements on managing waste.

5. Site Selection

- *Alternative sites for this development shall be fully assessed and examined in accordance with EIS requirements.*
- *World Health Organisation's criteria for Site Selection for New Hazardous Waste Management Facilities specifically exclude areas with limestone deposits.*
- *The area has been designated a green belt so how can an incinerator be granted planning permission.*

Inspector Response

The environmental impact statement (EIS) has been assessed and I consider it to be valid in accordance with the regulations. I note the reference to the WHO criteria is for a hazardous waste management facility, while the facility under assessment is for non-hazardous wastes. The application has been assessed and I am satisfied that the waste activities, subject to the conditions of the RPD, will comply with the requirements of Section 40(4) of the Waste Management Act. Planning permission is a matter for the local authority and An Bord Pleanála.

6. Groundwater

- *The limestone bedrock constitutes a regionally important aquifer, which is susceptible to ground water pollution. The aquifer is the sole source of water for numerous houses in the vicinity.*
- *The effect of the development on the drawdown of local wells should be addressed.*

Inspector Response

The issues referred to above have been dealt with in Section (5) Groundwater of this report. I am satisfied that the waste activities, subject to the conditions of the RPD, will comply with the requirements of Section 40(4) of the Waste Management Act.

7. Waste Acceptance

- *The applicant should list explicitly the category and quantity of waste for incineration as required by the European Directive on Incineration (2000/76/EC)*

Inspector Response

The total quantity of waste to be incinerated is restricted to 150,000 tonnes per annum. The RPD restricts waste to be accepted for incineration to municipal waste and to other non-hazardous waste to be agreed by the Agency. The RPD requires, for any non-hazardous waste accepted at the facility, the recording of a description of the waste and associated European Waste Catalogue code.

8. Gas Main

- *The impacts of the development on the gas line running directly underneath the site should be addressed.*

Inspector Response

The applicant has responded to this matter in their submission dated 04/09/02. This includes that all works relating to the pipeline will be carried out to the satisfaction of An Bord Gais. The applicant also states that a way leave of width 20m each side of the mains will be provided. The RPD requires the pathway of the gas main to be clearly delineated on site.

9. Meteorological Conditions

- *The area is prone to foggy conditions. Have the cumulative effects of emissions from three plants (CRH, the proposed incinerator and Marathon Power Plant) in foggy conditions been considered.*

Inspector Response

The applicant has used worst-case meteorological conditions, from data which was gathered from Dublin Airport over a five-year period, for air dispersion modelling.

10. Nuisances

- *Living adjacent to Irish Cement Factory for the last 30 years and it has been a terrible nuisance with noise, dust and traffic. The proposed incinerator will add to these nuisances through litter, rats, dust, smells, traffic and noise.*

Inspector Response

The RPD (Condition 7) provides for nuisance control at the facility, including litter, vermin, dust and odour. The planning authorities (An Bord Pleanála and Meath County Council) have considered traffic.

11. Legal status of the waste licence application.

- *The submission refers to Irelands failure to implement Directive 85/337 EEC on the assessment of the effects of certain public and private projects on the environment and Directive 97/11/EC amending Directive 85/337 EEC and the Reasoned opinion from the European Commission dated 25/07/01 to Ireland in relation to this issue. The submission states that similar concerns apply to applications subject to the Waste Management (Licensing) Regulations 2000, SI 185 of 2000.*

Inspector Response

This submission relates to the legislative implementation of certain directives. I consider this issue to be outside of my remit. The application has been assessed and I am satisfied that the waste activities, subject to the conditions of the RPD, will comply with the requirements of Section 40(4) of the Waste Management Act.

12. Deferment of decision on important elements

- *Certain issues should be resolved at application stage e.g. facility/location to which ash will be removed, whether the ash is hazardous or not and treatment of gypsum waste.*

Inspector Response

I consider that sufficient information was provided in the waste licence application, EIS and subsequent responses to allow an assessment of the impacts on the environment. I am satisfied that compliance with the conditions of the RPD will ensure that the requirements of Section 40(4) of the WMA 1996 are not contravened. In addition all reports received from the applicant will be available for review by the public from the public file for licences at the Agency.

13. Additional hazardous waste generation

- *Given our existing difficulties in meeting EU Directives with regard to hazardous wastes, it is ill advised to initiate a waste processing facility, which generates additional hazardous waste of 4,500 – 6,000 tonnes per annum.*

Inspector Response

I note that prevention is the preferred method of management of hazardous waste. However, it is also recognised that as part of the incineration process hazardous waste will be generated. Incineration has been included as one of the elements to deal with the nations waste in a number of Regional Waste Management Plans. Based on the quantity of hazardous waste generated in Ireland in 2001 (491,669 tonnes), the quantity generated at this facility will add just over 1%. I note the Hazardous Waste Management Plan recommends that 'Ireland becomes self sufficient in the management of our own hazardous waste'. Until such facilities are developed the hazardous waste generated at this proposed facility will be exported.

14. Air Monitoring & Dioxins

- *Concerns over the testing frequency for dioxin emissions and the delay before results are known.*
- *Query on whom the EPA uses to carry out dioxin sampling and on whether the EPA has the ability to analyse samples taken to measure dioxin emissions.*
- *Query on who will pay for policing the installation.*
- *The EPA has failed to adequately monitor pollutants in the past – Askeaton in Limerick is the most obvious example.*

Inspector Response

The RPD requires both periodic monitoring every quarter and continuous monitoring with samples analysed every two weeks for dioxins. The applicant has stated that the typical turnaround time for analysis of dioxins will be 10 – 15 days. The Agency will contract a third party to undertake dioxin monitoring. This has been the case for the monitoring of incinerators at industrial facilities. The licensee is required to pay the Agency an annual contribution towards the cost of enforcing the licence. Monitoring of emissions will be carried out through a combination of compliance and self-monitoring. The RPD (Schedule D, Monitoring) lists the minimum number of parameters that must be monitored.

15. Impact on facility from activities at Platin

- *The applicant has failed to assess the impact of routine daily explosions in the Platin quarry to extract limestone on the incineration process. Such explosions will cause both vibrational and electrical interference.*

Inspector Response

The applicant instructed consultant acoustic engineers to comment on the above. In their report, they state that blasting will not give rise to electrical interference. In relation to ground borne vibration, they state that *'peak particle velocity and/or acceleration levels will be derived in considering the appropriate seismic design of the foundations for major items of plant'* and that vibration isolation techniques can be used to protect vibration sensitive equipment. The RPD requires appropriate seismic design of the foundations and vibration isolation of sensitive equipment in accordance with manufacturers specifications.

16. Drainage

- *The periodic discharge of effluent, during times of heavy rainfall, to a ditch that drains to the river Nanny, will contain a cocktail of silt, toxic ash and heavy metals from dust accumulations that are washed off roof and paved surfaces. Discharges to the river Nanny will affect a wetlands area and coastal system.*
- *The applicant does not detail how water used for cleaning (floors, heat exchanger surfaces, screens and filters, vessels after desludging or clean down) will be disposed of.*

Inspector Response

The RPD does not permit direct emissions to surface water. All used water must be reused in the incineration process.

17. Air dispersion modelling.

- *The Platin cement silo farm should be considered as a ridge as the 12 silos are higher than the proposed stack, neither of these conditions were applied in the ISC 3 dispersion model. The degree of absorption/radiation – transfer of heat will be different for the limestone quarry than the surrounding agricultural grasslands, at the interface of these two system there is a greater degree of air movement/turbulence which has not been considered in the dispersion model.*

Inspector Response

The above issues were considered by the Agency, but due to the distance involved the silo farm does not impact on dispersion of emissions from the proposed stack.

18. Seveso Site.

- *If the ash on site is classified as toxic or class 9, it falls into the category of exceeding the Lower Tier Threshold and is thus classified as a Seveso Site under SI 476 of 2000. The natural gas in pipeline that runs through the site and the potential for a sudden mass release of gas and subsequent catastrophic event qualifies this facility as a Seveso Site.*

Inspector Response

Consultants on behalf of the applicant carried out an appraisal and concluded that the site is not one to which the Seveso Regulations apply. The National Authority for Occupational Safety and Health, who are responsible for ensuring compliance with the Seveso Regulations, are one of the statutory bodies notified in relation to the application and they did not make any submission on the application.

19. Acid and greenhouse gas

- *The acid and greenhouse gas emissions, as detailed in the Indaver EIS, contravene the Kyoto agreement which Ireland signed up to.*

Inspector Response

The applicant responded to the above in their submission on 04/09/02. The applicant estimates that there will be an overall net reduction in greenhouse gases arising from the proposed facility compared to landfilling the same amount of waste and also notes that acids are not covered by the Kyoto agreement.

20. The applicant - Indaver

- *Indaver have found to be in breach of licensed limits for dioxins at one of their incineration plants in Belgium. The Belgian Federal Agency for the Safety of the food chain found dioxins value levels of 11pgTEQ/gfat in chicken eggs, more than two times the acceptable level of 5pgTEQ/gfat.*

Inspector Response

The applicant responded to the above in their submission received on 23/01/03. The applicant confirmed that a static kiln, used to dispose of highly chlorinated hydrocarbons and PCB waste, was operating outside its emission licence limits and once discovered the relevant authorities were notified immediately and the kiln was switched off. The applicant also states that there was no measurable effect in the environment and attached a press release from the Belgium Authorities to confirm this. In relation to the increased dioxin concentrations found in free-range eggs, the applicant states that the authorities have concluded that there is no direct relationship between the emissions from the applicant facility and the dioxin present in the eggs. The RPD specifies actions to be taken if abnormal operating conditions occur.

21. Request that the following be conditions be attached to the licence:

- a) If there is any breach of the emission limits, the incinerator plant will be shut immediately, closed down by the EPA until such time that there is a full environmental impact study carried out.*
- b) A condition which would place full liability on the operators of the incinerator for any cost or any losses of any nature, either direct or indirect that may be incurred or suffered by landowners, farmers or the food sector arising from the operation of the incinerator whether the operation is in full compliance with, or, not in compliance with any or all of the conditions set down in the planning permission and the EPA licence or where there is wilful action or inaction by the operators, or where there is accidental or incorrect operation of the incinerator.*
- c) The operators should indemnify and keep indemnified landowners, farmers and food processors against any liability arising from product liability obligations to third parties.*
- d) There should be an aftercare monitoring plan for dioxin levels in soil, community and milk in the locality. This should be benchmarked against the current levels, such an exercise should be undertaken before the plant is licensed. A similar exercise should be undertaken for other pollutants Indaver propose to introduce or increase in the locality.*

Inspector Response

The RPD specifies actions to be taken if abnormal operating conditions occur. The RPD also requires that a fully costed environmental risk assessment be carried out for the facility and that financial provision requirements be put in place prior to acceptance of waste at the

facility. The RPD requires the applicant to consult with the FSAI and to include any subsequent monitoring (operational and baseline if required) as agreed with the FSAI and the Agency

22. Communicating facility environmental performance

- *Query on how the public will be informed of any test results and real time data.*

Inspector Response

All reports received from the applicant will be available for inspection by the public at the Agency's office. The RPD requires the applicant to establish a communication programme to ensure that members of the public can obtain information concerning the environmental performance of the facility. The RPD also requires that the applicant make available on the Internet continuous monitoring data.

23. Emergency shutdown / start up

- *The emergency shutdown and start up operations significantly reduce the emission control systems. This leaves the local environment exposed to major pollution episodes, when the monitoring systems may not be in use.*

Inspector Response

The applicant responded to the above in their submission received on 04/09/02 and notes that there will be no emergency start up operations. The RPD specifies actions to be taken if abnormal operating conditions occur and requires the applicant to develop an Emergency Response Procedure (ERP).

(9) Recommendation

It is recommended that a licence with conditions be granted for all Classes of waste activity applied for in the application (Class 7, 8, 12 and 13 of the Third Schedule and Classes 2, 3, 4, 6, 9 and 13 of the Fourth Schedule).

In coming to this recommendation, I consider that these activities would, subject to the conditions of the Recommended Proposed Decision, comply with the requirements of Section 40(4) of the Waste Management Act 1996.

Signed: Peter Carey
Peter Carey,

Dated: _____
28/04/2004

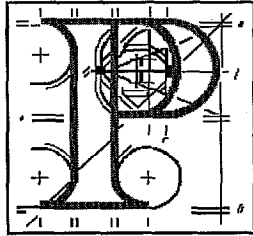
Appendix 1 – Third and Fourth Schedule of the WMA

Third and Fourth Schedules of the Waste Management Act 1996

THIRD SCHEDULE Waste Disposal Activities		FOURTH SCHEDULE Waste Recovery Activities	
1. Deposit on, in or under land (including landfill).		1. Solvent reclamation or regeneration.	
2. Land treatment, including biodegradation of liquid or sludge discards in soils.		2. Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).	
3. Deep injection of the soil, including injection of pumpable discards into wells, salt domes or naturally occurring repositories.		3. Recycling or reclamation of metals and metal compounds.	
4. Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.		4. Recycling or reclamation of other inorganic materials.	
5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.		5. Regeneration of acids or bases.	
6. Biological treatment not referred to elsewhere in this Schedule 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.		6. Recovery of components used for pollution abatement.	
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).		7. Recovery of components from catalysts.	
8. Incineration on land or at sea.		8. Oil re-refining or other re-uses of oil.	
9. Permanent storage, including emplacement of containers in a mine.		9. Use of any waste principally as a fuel or other means to generate energy.	
10. Release of waste into a water body (including a seabed insertion).		10. The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.	
11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.		11. Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.	
12. Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.		12. Exchange of waste for 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.		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.	

Appendix 2 – Planning Permission as granted by An Bord Pleanála on 03/03/03

An Bord Pleanála



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 _____ Date 3rd March, 2003.
Margaret Byrne

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 Dulceek. 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.

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.

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.

Appendix 3 – Air Dispersion Modelling Results

Table 1: Maximum predicted process contribution to GLC for a range of stack heights

Pollutant ($\mu\text{g}/\text{m}^3$)	NO ₂				Total NO _x		Dioxins (at 0.1ng/m ³)		
	Averaging Period/Percentile	Annual average	%AQS	1 hour/99.8	%AQS	Annual average	%AQS	Annual average	% over Background
Stack height (m above base)									
40	5.06	12.65	109	54.50	10.12	33.73	5.06E-09	13.32	
47	2.5	6.25	40.9	20.45	5	16.67	2.5E-09	6.58	
50	2.2	5.50	33.5	16.75	4.4	14.67	2.2E-09	5.79	
55	1.7	4.25	24.8	12.40	3.4	11.33	1.7E-09	4.47	
60	1.2	3.00	19.6	9.80	2.4	8.00	1.2E-09	3.16	
65	0.72	1.80	16.6	8.30	1.44	4.80	7.2E-10	1.89	
70	0.43	1.08	13.7	6.85	0.86	2.87	4.3E-10	1.13	
AQS	40		200		30		Background = 38 fg/m ³		

Predicted impacts using a stack height of 65 m above base level:

PEC = Predicted Environmental Contribution = Modelled Concentration + Background.

Hourly background levels are estimated to be twice the annual or period average.

Table 2: Emission of combustion gases/particulate to atmosphere

Parameter	Modelled Impact	Modelled Concentration ($\mu\text{g}/\text{m}^3$)	Typical background levels ($\mu\text{g}/\text{m}^3$)	PEC ($\mu\text{g}/\text{m}^3$)	Comparison AQS $\mu\text{g}/\text{m}^3$
NO ₂ (Assumes 50% NO _x converts to NO ₂)	99.8%ile of hourly values	17	20	37	200 ^{Note 1}
	98%ile of hourly values	11	20	31	200 ^{Note 2}
	Annual Average	0.7	10	10.7	40 (for protection of human health) ^{Note 1}
Total NO _x	Annual Average	1.4	10	11.4	30 (for protection of vegetation) ^{Note 1}
SO ₂	99.7%ile of hourly values	8.2	8	16.2	350 ^{Note 1}
	99.2%ile of daily values	3.3	4	7.3	125 ^{Note 1}
	98%ile of daily values	2.5	4	6.5	350 ^{Note 2}
	Annual Average	0.4	4	4.4	120 ^{Note 2}
	Annual Average and Winter (1 October to 31 March)	0.4 0.5	4 4	4.4 4.5	20 (for protection of ecosystems) ^{Note 1}
Total Dust referred to PM ₁₀	90.5%ile of daily values	0.29	20	20.29	50 ^{Note 3}
	98%ile of daily values	0.5		20.5	
	Annual Average	0.07	20	20.07	40 ^{Note 1} 20 ^{Note 4}
Total Dust as PM _{2.5}	98 %ile of 24-hr means	0.5	10	10.5	65 ^{Note 5}
	Annual Average	0.07	10	10.07	15 ^{Note 5}

Note 1: SI 271 of 2002 NO₂ AQS to be met from 2010, NO_x from 19 July 2001

Note 2: SI 244 of 1987

Note 3: SI 271 of 2002 - As a 90.5 percentile of 24-hour averages from 1/1/2005 and an indicative limit as a 98 percentile of 24-hour averages from 1/1/2010

Note 4: SI 271 of 2002 - Indicative limit from 1/1/2010

Note 5: USEPA NAAQS

Table 3: Emissions of Inorganic/Organic gases to atmosphere

Parameter	Modelled Impact	Modelled Concentration ($\mu\text{g}/\text{m}^3$)	Typical background levels ($\mu\text{g}/\text{m}^3$)	PEC ($\mu\text{g}/\text{m}^3$)	Comparison AQS/ EAL ($\mu\text{g}/\text{m}^3$)
HCl	99%ile of hourly values	1.3	0.01	1.31	50 ^{Note 1}
	Annual Average	0.07	0.01	0.08	
HF	Annual Average	0.007	0.005	0.012	0.3 ^{Note 2}
TOC	Weekly average	0.44 (as toluene)	100 ^{Note 3}	100.4	260 (Toluene ^{Note 4})
	Annual Average	0.07			

Note 1: Danish C-value for HCl

Note 2: TA Luft 2002 Immission value for protection of highly sensitive animals, plants and material goods.

Note 3: Reported by applicant. True background values are likely to be much less than this.

Note 4: WHO 2000 guideline for toluene.

Table 4: Emissions of Heavy Metals (HM) to atmosphere

Parameter	Modelled Impact	Modelled Concentration ($\mu\text{g}/\text{m}^3$)	Typical background levels ($\mu\text{g}/\text{m}^3$)	PEC ($\mu\text{g}/\text{m}^3$)	Comparison AQS/ EAL ($\mu\text{g}/\text{m}^3$)
Cd and Tl	Annual Average	0.0004	0.0025 (urban) ^{Note 2}	0.003	0.005 (Cd) ^{Note 1}
Mercury	Annual Average, (vapour phase)	0.0004	0.005	0.005	1 ^{Note 1} 0.050 ^{Note 2}
	98%ile of hourly values, (vapour phase)	0.006	0.005	0.011	0.13 ^{Note 3}
Sb+ As +Pb +Cr+Co+Mn+ Ni + V	Annual average	0.004	0.012 (Mn)	0.016	0.15 (Mn) ^{Note 1}
	Maximum 1 hour	0.15	0.012 (Sb)	0.162	5 (Sb) ^{Note 4}
Pb (at 100% of total HM limit)	Annual average	0.004	0.13	0.134	0.5 ^{Note 5}
As (at ELV of 0.2 mg/m^3)	Annual average	0.001	0.003 (urban) ^{Note 2}	0.004	0.006 ^{Note 6}
Ni (at 100% of total HM limit)	Annual Average	0.004	0.006	0.010	0.02 ^{Note 6}

Note 1: WHO Air Quality Guidelines for Europe 2nd Edition 2000

Note 2: As cited in EU COM (2003) 423 final

Note 3: Based on 'S' value from TA Luft 2002

Note 4: Based on Occupational Exposure Limit (OEL)/100.

Note 5: SI 271 of 2002

Note 6: Proposed Assessment Threshold EU COM (2003) 423 final

Table 5: Emissions of dioxins and furans to atmosphere

Parameter	Modelled Impact	Modelled Concentration ($\mu\text{g}/\text{m}^3$)	Typical background levels ($\mu\text{g}/\text{m}^3$)	PEC ($\mu\text{g}/\text{m}^3$)	Comparison AQS/ EAL ($\mu\text{g}/\text{m}^3$)
Dioxins and furans (at ELV of 0.1 ng/m^3)	Annual Average	$7.2 \times 10^{-10} = 0.72$ fg/m^3	38 fg/m^3	38.7 fg/m^3	N/A