Waste to Energy Facility
at Ringskiddy
County Cork

Inspector’s Report
04. PA0010
OUTLINE

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   - Prof. Brian Broderick (air quality/emissions/climate)
   - Dr. Murphy (human health)

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1.0 Introduction

1.1 This application is for a waste-to-energy facility to be located at Ringaskiddy County Cork, in accordance with the provisions of Section 37 E of the Planning and Development (Strategic Infrastructure) Act, 2006.

The facility would receive hazardous and non-hazardous waste in the form of municipal, commercial and industrial waste and would include a waste transfer station. It would have a capacity of 240,000 tonnes and would produce 25MW of electricity.

1.2 On 15/01/2004 under reference no PL 04.131196 the Board granted permission for a waste-to-energy facility, waste transfer station and ancillary facilities at the same site with a capacity of 100,000 tonnes hazardous and non-hazardous industrial/trade waste. The facility received waste licence from the EPA to treat up to 50,000 tonnes of hazardous waste per annum (W0186-01).

1.3 The current application was subject to a number of pre-application meetings under the provisions of section 37 B of the Planning and Development (Strategic Infrastructure) Act, 2006. The Board determined that the proposed development would be a Strategic Infrastructure development. (File reference 04.PC0050)

2.0 Site and Locational Context

2.1 The site of the proposed development is located at the north-eastern end of Ringaskiddy Peninsular in a relatively central section within Cork Harbour. As such it is in close proximity of Haulbowline Island and Spike Island located to the north and east and in the visual envelopes of Monkstown Cove and Great Island to the north and Whitegate area to the east. The site is located at the northern slopes of a local hill which is punctuated by a Martello tower at its apex.

The access to the site is through continuation of N28 which changes to a third level road (L2545) after access to the car ferry, though it remains of a higher standard in terms of width and alignment as far as the right angle turn to Haulbowline Island.

A car park/bring site is located at the right hand turn which also provides access to the beach on the eastern side adjoining west channel.
The secondary access to the area is through R619 from Carrigaline a regional road which is quite narrow and is substandard in terms of horizontal and in some parts vertical alignment. It terminates at Ringaskiddy village.

The existing land uses in the area include National Maritime College located almost directly opposite the appeal site followed by a warehousing development. The Irish naval base is at Haulbowline Island.

The village is located approximately 1 kilometre west of the site though there is a detached dwelling in between. The commercial centre of the village is located on the southern side of the N28.

Further west there are industrial complexes, most notably Pfizer, on large campus.

The site itself stated to be 12 hectares is horseshoe shaped and wraps itself around an existing use “Hammond Lane Metal Company”. This is a scrap metal facility with access directly from the N28. The site is effectively divided into three sections. The first section at the eastern part of this site adjoins the shoreline and extends as far as the boundary of Hammond Lane scrap yard. This is the area allocated to the proposed waste energy facility. The second section is the waste transfer station site which is located to the front of the Hammond Lane property i.e. between the public road (third class road forming the extension of N28) and the Hammond Lane property. The third section is located behind the Hammond Lane property and extends in the westerly direction. There is stated to be a gas pipeline traversing the site, it is proposed to relocate this to a 4 metre wide way -leave running just inside the southern boundary of the site. There is another existing ESB way leave (46 metres) which runs along the southern boundary of the site and includes some section of the appeal site.

There is a row of trees inside the road boundary along the northern section of the site. The site levels rise at an increasing inclination in the southerly direction beyond these from 2.64 to 29.0 in the eastern section 41.0 in the western section. There is a deep drop along the rear boundary of the Hammond Lane property extending east and west to the extent of the site where the levels are changed from 8.43 to 24.48 in the western section and 8.33 to 16.9 on the eastern section. This drops turns at right angles.

In the transfer station site the level changes are less steep from 2.28 to 5.0 on the eastern side 7.0 on the western side.

The Martello tower is located in very close proximity to the southern boundary of the site at a location almost in line with the western boundary of the transfer station.

3.0 Planning History
Permission granted by the Board for a waste management facility comprising a waste-to-energy facility, a waste transfer station, community recycling park, warehouse, storage tanks, security buildings, electricity substation, service yards, car parks, roads, landscaping and site works including sewage treatment plants subject to 27 conditions.

Condition no. 2 restricted the development to the treatment of hazardous and non-hazardous industrial/trade waste as proposed in phase 1.

Condition no. 3 stated that no hazardous waste from outside the state shall be accepted for treatment at the site.

Condition no. 4 limited the annual tonnage of industrial/trade waste to be terminally treated to 100,000 tonnes.

The applicants were also granted an IPC licence by the EPA (copy attached).

4.0 The Proposed Development

The proposed development as described in the EIS would comprise a waste-to-energy facility and waste transfer station for the treatment of industrial, commercial and household waste and recovery of energy. (Fuller descriptions are provided in Sections 1.3 and 4.5 of the EIS).

4.1. Main Components

4.1.1 The main components of the facility would consist of

1. Waste-to-energy Facility
   a. A fluidised bed incinerator for the treatment of solid and non-hazardous industrial waste and other suitable wastes
   b. A liquid burner (post combustion chamber) for treatment of hazardous industrial solvent and aqueous waste including chlorinated wastes
   c. A grate incinerator for the treatment of residual municipal waste and other suitable wastes (it would also be suitable for treatment of residues from mechanical-biological treatment of waste)
   d. Waste transfer station for the bulking up and safe packaging of industrial and household waste
   e. The plant would operate 24 hours per day and seven days a week
   f. Waste acceptance would be limited to 09.00-19.00 weekdays and 09.00-14.00 Saturdays.

2. Waste transfer station
   a. Would bulk up the material to ensure efficiency of the plant
b. Material not suitable for treatment in the facility would be packaged for treatment off site

c. Waste would be accepted 09.00-19.00 weekdays and 09.00-14.00 Saturdays

3. Thermal energy
   a. Thermal energy generated by burning of waste would be transformed into electricity using a conventional steam cycle
   b. Steam/hot water would be distributed to local industrial heat demand via district heating network
   c. They further received funding to investigate the potential of CHP, which would be subject of a separate approvals process

4.2 **Plant capacity**

Application is for a max combined capacity for 240,000 tonnes per annum (tpa) for the waste-to-energy facility, based on waste streams in the market in 2013 and in future years. It is stated that the technology would allow for treatment of higher calorific value waste (such as bmt residue) in future in line with Cork Regional WMP, and that this would decrease the amount of waste needed to run the 50MW plant.

The waste transfer station facility would have a throughput of c. 15,000 tonnes of waste per annum.

**Site area**

The overall site area is 12 Ha. The waste-to-energy facility would cover an area of 4.74 Ha, while the waste transfer station would cover an area of 1.4ha.

4.3 **Buildings**

(These are described in the public notice)

**waste-to-energy facility**

<table>
<thead>
<tr>
<th>Building</th>
<th>Storey</th>
<th>Height</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main process building</td>
<td>4</td>
<td>42.5m high</td>
<td>19,103m2</td>
</tr>
<tr>
<td>Flue stack</td>
<td></td>
<td>85m high</td>
<td></td>
</tr>
<tr>
<td>Turbine Hall</td>
<td>1</td>
<td>18.5m high</td>
<td>875.5m2</td>
</tr>
<tr>
<td>Aerocondensor structure</td>
<td>1</td>
<td>20m high</td>
<td>772m2</td>
</tr>
<tr>
<td>Sampling Laboratory</td>
<td>1</td>
<td>?</td>
<td>91.5m2</td>
</tr>
<tr>
<td>Pump house</td>
<td>1</td>
<td>4.5m high</td>
<td>40m2</td>
</tr>
</tbody>
</table>

**Ancillary structures**
Solvent tank Farm
Water storage tank (8m high)
Fuel storage tank
Electrical compound

Tanker loading bays
Truck loading bays
Tanker sampling bays
Weigh bridges

Radioactivity detector,
Nitrogen generator
Pipe rack

Underground attenuation tanks
Packaged sewerage treatment plants
(Effect of effluent pipeline may be required)

Car parking spaces (Numbers ?)
2 site access points, boundary fence

**Waste transfer Station**

<table>
<thead>
<tr>
<th>Structure</th>
<th>Height</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drum Store building</td>
<td>9.2m</td>
<td>1,347.5m2</td>
</tr>
<tr>
<td>Solvent storage Bund</td>
<td>6.7m</td>
<td>25m2 each</td>
</tr>
<tr>
<td>Drum wash &amp; repack Bldg</td>
<td>4.3m</td>
<td>268m2</td>
</tr>
<tr>
<td>Administration building</td>
<td>11.2m</td>
<td>903m2</td>
</tr>
<tr>
<td>Fire water storage tank</td>
<td>10m</td>
<td>100m3</td>
</tr>
<tr>
<td>Contaminated water storage</td>
<td>5m</td>
<td>?</td>
</tr>
</tbody>
</table>

Tanker loading bay
Service yard
Truck / road tanker parking spaces

Packaged sewerage treatment plant
Underground attenuation tanks

2 weighbridges
44 car parking spaces
1 site entrance, boundary fence and landscaping

**Location and description of structures**

*Waste-to-energy plant*
Main processing building

The main processing building is described in section 4.5.2 of the EIS as an L-shaped structure measuring 190mx117m. The height would vary up to 42.5m high, with general ground floor level 5.77m above mOD, with a part lower ground floor at 0.77mOD. It would be located at the south-eastern end of the overall site.

It is stated that main part of the building would be a largely single space. The furnaces, post combustion chamber/liquid burner, boilers and gas cleaning equipment would be located in the building (the EIS provides details of equipment to be located on the eastern and western sides of the building).

A room to house the stack emission monitoring equipment would be located at high level under the roof, with a floor level of 21.77mOD, and would be adjacent to the stack.

Waste reception hall would be located at 21.77mOD in the southern section of the building (not shown on the plans, but shown on cross sections). Waste would be gravity fed into the waste bunker via 8 chutes.

There would be three separate compartments in the bunker for hazardous and non-hazardous waste. Bunker would be of reinforced concrete divided into several compartments each with a sump in the floor to collect leachate. The bunker capacity would be 3750-5000 tonnes, or equivalent to circa 5 days operation of the plant.

Stack

This would be 85m high and would comprise two flues in one shell. The floor plans do not show the exact location, but sections indicate central location.

The turbine hall and cooled condenser structure

These would be located along the south wall of the service yard, enclosing the same. They would be 19m and 20m respectively.

Water storage tank and pump house

(8m high) 18000 (?) would be located to the west of the main processing building. The pump house is a rectangular structure located near the water tank. Access to this area is via an access ramp located to the west of the main processing building.

Waste transfer station

This would have a warehouse building in which waste would be stored in segregated, bunded areas.
A tank farm would have four tanks for bulking of drummed solvent waste. This and drumwash and repack building would be located along the southern boundary of the compound, while the administrative building is located at the western end of the compound.

Fire water storage tank 12m dia and 10m high) is located at the south-eastern corner.

4.4 Processes

The processes in the waste-to-energy plant would comprise four main elements:

a. Waste acceptance /laboratory testing, followed by waste intake and storage
b. combustion process
c. energy recovery process
d. flue gas cleaning including dioxin and furan removal

Waste acceptance / waste intake /storage

Solid waste would arrive in compactor trucks or in skip trucks, and would pass through a scanner for detection of radioactive material (if detected would not be accepted at the facility, but would be quaranteed).

Accepted solid waste would proceed to the enclosed reception hall, and would be tipped into the bunker. The capacity of The effluent treatment plant sludge would be handled in a manner similar to solid waste.

Most of the industrial waste would be tipped into the hopper of shredder located at the pit adjacent to the bunker. Travelling grab cranes would mix the waste to achieve consistency. The average retention time of waste in the bunker would be three days. Waste would be transferred from bunkers to relevant furnaces by cranes.

Liquid waste would arrive in tankers. All would be tested at the sampling laboratory located near the security hut at the entrance to the compound. Those accepted would proceed to tanker unloading bays in the service yard for storage in storage tanks or for direct injection to the post combustion chamber. The tank farm would have 14 days storage capacity (1300m³)

Combustion process

The proposal provides for 2 separate lines.
Fluidised bed furnace
(For Hazardous waste, fine industrial waste and sludge)

This would work with or without PCC (post combustion chamber)
The waste would be introduced onto a bed of sand which would be agitated (fluidised) by upward movement of air through the nozzles of bottom plate below the sand bed. The heat of the sand at 600-700°C would initialise drying, carbonisation and partial combustion of waste. Residence time of waste in the fluidized bed furnace would be 10 minutes to 1 hour depending on the waste stream.

Bottom ash and sand would be removed from the base of the furnace at 600°C then would be sieved through to separate ash and sand (latter returned to storage silo)

Sand capacity of the furnace would be 25 tonnes, typical volumes added to the furnace would be 0-50kg/hr.

The maximum operating temperature of the fluidised bed furnace is stated to be 950°C

Oil would be used as a start up fuel and as auxiliary fuel to maintain temperature.

The PCC installed after the fluidised bed, would operate at a temperature of up to 1100 °C, depending on the characteristics of the waste. (maximum temperature in the case of waste containing 1% halogenated organic substances, expressed as chlorine). Residence time for wastes in the PCC would be a minimum of two seconds.

Fluidized bed furnace may be operated on its own. PCC may also be operated on its own, with the fluidised bed not in operation. All liquid wastes would be directed to the PCC.

The operating capacity of the fluidised bed furnace would be approximately 80,000 tonnes of hazardous and non-hazardous waste with a max particle size of 100mmm-300mm. (100 000 tonnes combined capacity of fluidised bed furnace and PCC)

Inputs into fluidised bed would be hazardous and non-hazardous waste including sludges and meat and bone meal/ specified risk material. (other inputs air, light fuel oil and sand)

Outputs would be bottom ash, sand entrained in combustion gases, and combustion gases.

Moving Grate Furnace

(For non-hazardous waste)
This would operate in a fashion similar to an escalator, where the grate would slowly transport the waste from the feed bunker to ash bunker. The waste would be held in the furnace approximately one hour to ensure complete combustion. The waste would be heated through contact with hot flue gases and radiated form the walls of the incinerator, initially at 100 °C to drive off the moisture for the waste. Next stage volatilisation where combustible gases and vapours would be driven off would take place within temperature range of 200 °C and 750 °C.

Volatile compounds of the organic material of municipal solid waste accounted for 70-90% of the flue gases (hydrogen, carbon monoxide, methane and ethane) the combustion of these would take place immediately above the surface of the waste in the combustion chamber above the grate, at temperatures of 850 °C and 1000 °C. Residence time of vapours in the combustion chamber would be 2-4 seconds.

The final section of the grate would be the final burn out section where ash would be held long enough to ensure sufficient burn out. The grate would discharge the bottom ash into a water bath, then via conveyor into an ash bunker. Finer ash which fell through the grates would be transferred by conveyor belt via wet deslagger to the bunker.

The max capacity of this line would be 140 000 tonnes per annum.

**Energy Recovery**

The hot flue gases from the PCC or moving grate furnace would be directed through a steam boiler to generate steam. There would be a boiler on each furnace line. The steam from the two boilers would drive a turbine, which would drive an electricity generator. Approximately 25MW electricity would be generated of which 22MW would be exported to the national grid (the plant itself would require 3MW).

Some 80% of the energy produced by the combustion of waste would be recovered as steam in the boiler, his would be due to need to keep the temperatures at levels to prevent reformation of dioxins, and limit excess oxygen to comply with Incineration Directive.

**Flue gas cleaning**

(including dioxin and furan cleaning)

All combustion processes lead to formation of NOx (nitrogen oxide), emissions of which are limited by the EU Incineration Directive, to 200mg/Nm³.

It is proposed to control NOx in two ways:
Optimal conditions in the furnace by mixing of waste to prevent localised high temperatures, and cladding materials with heat transfer properties

Selective non-catalytic reduction (SNCR) De-NOx’ technology (ammonia solution or urea is injected into the first section of boiler to produce nitrogen and water vapour. Ammonia solution would be injected into the flue gases in the first section of each boiler.

Activated carbon or activated clay would be injected into the flue gases leaving the spray towers, dioxins, furan and other trace organics and heavily metals would be absorbed into the carbon particles. The flue gases would then pass through a baghouse filter which would remove dust, salts and carbon particles form the gases

Each furnace would have a dedicated flue gas cleaning system using BAT. Two options are wet plus purge (with discharge) or semi-wet plus wet (without discharge). The gases would be cooled and pass through a wet scrubber system to remove sulphur dioxide, hydrogen chloride, hydrogen flouride and heavy metal residues. In the wet plus option the scrubber effluent would be collected and discharged off site

It is stated that as a result of the two stage removal system the emissions would be below EU limits. (single stage removal system would be sufficient to meet the EU requirements).

The Section 4.13 of the EIS provides details of emissions monitoring. These would consist of continuous monitoring of flue gases as required by EU legislation, and continuous monitoring of dioxin levels in the flue gases leaving the stack though not a requirement by either the EU or Irish legislation, on a fortnightly sampling basis.

The section 4.12 of the EIS describes the control system to be employed. The control room located above the bunker would allow visual inspection as well as automated computer system monitoring, and emission monitoring.

The flue gas monitoring equipment would consist of continuous monitors and regular grab sampling according to legislation. TOC, HCL, SO₂, NOₓ, CO, temperature and O₂ would be in real time. There would also be monitoring of HF and heavy metals Cadmium, Thallium, Mercury, Antimony, Arsenic, Lead, Chromium, Cobalt, Copper, Manganese, Nickel, Vanadium, and Tin. Storm water monitoring of water form paved areas (highest contamination risk) would be continuous.

Section 4.17 describes the secondary processes/activities. In the event of a power cut the plant will automatically shut down, preventing waste from entering the furnace, but an emergency generator would supply power for emergency lighting and operation of cooling plants.

Residues
There would be three types of solid residue:

- Bottom ash (5,232kg/hr)
- Boiler ash, 549 kg/hr
- Flue gas cleaning residues 1,611 kg/hr

Bottom ash would be non-hazardous and may be suitable for use in road construction. Ferrous materials such as steel would be recovered from bottom ash for re-cycling.

There would be no classification of residues as hazardous or non-hazardous. If residue does not contain the properties listed H1-H14 in Annex III of the hazardous Waste Directive 91/689/EEC it would be non-hazardous. A leachate test would be carried out on the residue and the results would be compared with the requirements of the Directive.

Boiler ash would be tested and if non-hazardous would be disposed to landfill. Flue gas residues would be classified as hazardous and would be exported (applicant owned and operated a hazardous landfill in Antwerp).

**Process inputs**

As the plant used an air cooled condenser rather than cooling towers it would have significantly lower water requirement. The major water requirement would be for flue gas cleaning. The water requirement would be supplied from Cork Councils water main and rainwater run-off collected from roofs. The plans indicate a 18 000

It is estimated that 400 tonnes of light fuel oil would be used per annum to raise the temperature at the start up and to maintain as required. It would be supplied from an on-site oil storage tank.

### 5.0 EIS

The EIS is presented in four volumes:

- Volume I – non technical summary
- Volume II – Main text
- Volume III – Figures
- Volume IV – Appendices

The written text is presented in ‘group format’ under a number of headings.

#### 5.1 Introduction

This chapter provides information in relation to the profile of the applicant, outline of the scheme, consultations, list of prescribed bodies and statutory bodies consulted.
The methodology adopted in the EIS includes description of the proposed
development, identification and assessment of likely significant effects,
measures envisaged to avoid, reduce and remedy significant adverse effects.
An outline of main alternatives studies and indication of main reasons for
choice taking into account the effects on the environment of particular aspect
of the development is also stated to be provided in compliance with the
statutory requirements under Schedule 6 of the Planning and Development

5.2 The need for the scheme

This issue is dealt with in chapter 2 of the EIS. Reference is also made to the
need for waste-to-energy as part of integrated waste management in the
context of policy covered in chapter 6.

In chapter 2 The EIS examines hazardous waste and non hazardous waste
separately.

In relation to hazardous waste, it refers to EPA report on National Hazardous
Waste Management Plan, 2008-2012 (NHWMP) and that the general trend is
for an increase in hazardous waste generation to 405,481 tonnes in 2016
compared to 314,072 tonnes in 2006.

In Ireland hazardous waste was managed in three ways: on site treatment at
integrated pollution prevention and control facilities, off-site treatment at
authorised facilities in Ireland or export to disposal and recovery facilities
abroad. In 2006 31% was treated on site, 21% in authorised facilities off-site,
and remaining 48% (47,854 tonnes) of hazardous waste was exported for
incineration, of which 56% was industrial waste generated by pharmaceutical
and chemical industry.

The EIS notes that a total of 47,854 tonnes of hazardous waste was exported
from Ireland for incineration in 2006.

Hazardous waste generation was considered at a national level in the
NHWMP. If the plan’s preferred treatment scenario (solvent recovery, co-
treatment in cement kilns and waste-to-energy) is achieved, there would be
minimum of 50,000 tonnes of hazardous waste which will need treatment in a
waste-to-energy facility in Ireland.

In estimating the amount of non hazardous waste that would be generated in
Cork region, the EIS refers to the National Waste Database 2006, National
waste Report 2006, for municipal waste generation and calculates that 447,675
tonnes and 475,216 tonnes of MSW (Municipal solid waste) would be
generated in Cork region in 2013 and 2016 respectively. Applying a 50%
recycling rate the figures is reduced to 223,837 tonnes, and 237,608 tonnes for
the same period.
Referring to the requirements of the landfill Directive regarding percentages of biodegradable waste that could be landfilled (50% in 2013 and 35% in 2016) the EIS calculates that 98,921 tonnes and 73,298 tonnes would be landfilled (same target dates), leaving 92,437 tonnes in 2013, and 121,588 tonnes in 2016 requiring alternative treatment.

Operational experience of MBT facilities in other European countries was thermal treatment of remaining dry fraction of the waste as a recovered fuel.

The EPA technical Guidance document ‘Municipal solid Waste- Pre-treatment and residuals management (Draft 2008)’ suggested landfilling of MBT residues may not be acceptable as it does not recover energy.

Referring to 48,000 tonnes of industrial biological sludge recorded in Cork Sludge Management Plan in 2000, and recommendation for sludge destruction technology, and restrictions on landfilling sludge, it is stated in the EIS that a significant portion of this waste stream is combustible in nature and suitable for acceptance at the proposed facility. (EIS refers to Belfast wastewater treatment plant which employs a dedicated sludge incinerator using same fluidised bed furnace)

A total of 438,403 tonnes of industrial waste was generated in Cork city and County in 2002, and allowing for on-site treatment and recovery there would be excess waste to be treated. As a significant portion of this waste was combustible, in their view 20,000 tonnes was not excessive.

The EIS states that thermal treatment has been used to remediate contaminated soils and sludges throughout Europe, and the proposed development could treat most of the contaminated soil from Halbowline Island.

In table 2.10 the EIS provides for predicted waste flow in Cork Region for 2013, and indicates total waste stream available for acceptance at the proposed facility to be 318,837 tonnes. (The proposed facility would have 240,000 tonnes capacity).

The EIS examines various scenarios for ‘MSW-driven’ fuels (RDF and SRF) from MBT such as power stations and cement kilns.

While none of the power stations reported used co-fired waste fuel, the EIS estimated that a short to medium term demand from power stations would be in the regions of 60,000-70,000 per annum. The use of waste as a fuel in cement kilns was low and in the short to medium term would be 120,000-175,000 tonnes.

Referring to table 2.15 it is stated that if no MBT is employed in the Cork region, there would be an excess of waste requiring landfill but not allowed to landfill due to BMW targets. In this case the flexibility of the facility would allow for an increase in MSW treated in the facility and a decrease in industrial waste treated. If MBT is employed, in conjunction with the
The EIS stresses that the quantity of waste allowed to landfill will decrease drastically from 2010 to 2016 at a rate that will require the immediate establishment of alternative waste treatment methods than landfill to process dramatically increased quantities of material requiring treatment.

The combined capacity identified in the regional waste management plans was 1.425 million.

Incineration capacity awarded planning permission was 900,000 tonnes, of which 50,000 tonnes was reserved for hazardous waste incineration. A further 515,000 tonnes was currently seeking statutory approval.

It is stated that MBT could not be considered a replacement for incineration but as a complimentary process (as it produced recovered material that went for thermal treatment afterwards). Conservative estimates indicated 1-1.25 million tonnes of waste-driven fuels in Ireland each year if an MBT-led strategy is implemented. Therefore, 1.3 million tonnes could potentially be required for thermal treatment.

EIS concludes that whether the required thermal treatment capacity would be delivered in six regional facilities as identified in waste plans, or in a smaller number of inter-regional facilities will be dependent on the intentions of regional authorities and statutory consents.

5.3 **Alternatives considered**

This is discussed in Chapter 3 of the EIS, and covers the areas of site selection, alternative waste management strategies, and alternative technologies.

**Alternative sites**

The EIS refers to the site selection process carried out during 1999-2000 for a proposed waste-to-energy facility to include thermal treatment of hazardous waste.

The need was identified in the National Hazardous Waste Management Plan 2001 by the EPA, which also identified that 60% of all hazardous waste was produced in Cork region by the pharmaceutical industry.

Five areas around Cork Harbour were examined. Of the ten sites identified, four were in the preferred area (Ringaskiddy). These were selected for further assessment, leading to the proposed site. The EIS refers to selection criteria including the WHO guidelines (1993), and Basel Convention (1997).
A review of this selection process was carried out in 2008, also reviewing to ascertain changes in the National waste management plans /guidelines between 2000 and 2008. The key considerations in these documents were:

- Inclusion of thermal treatment of hazardous waste as part of the future integrated waste management strategy for Ireland
- Volume of hazardous waste produced and demand for thermal treatment
- Locations of producers of hazardous waste

The EIS states that these three documents (Taking Stock and Moving Forward, National Hazardous Waste Management Plan and National Waste Report) clearly acknowledged the need for a thermal treatment of hazardous waste in Ireland/

The EIS gives details of the area screening in cork County, followed by in Ringaskiddy area, then describes the four step approach for selection of sites for hazardous waste facilities from exclusion areas, promising areas, promising sites, and ranking of sites in detail. This is followed by assessment against 16 point criteria.

The EIS states that the current site selection criteria is more extensive than the one applied in 2001 and that none of the internationally recognised criteria would render the current site unsuitable for the proposed development.

It further states that there have not been any changes (between 2000-2008), in relation to EPA approach to waste management which could impact on the location of a waste-to-energy facility at the Indaver site at Ringaskiddy.

While developments had taken place in the area, and further were being proposed none would have impact on the decision to locate at the appeal site

**Alternative Waste Management Strategies**


The order of preference in safe disposal was combustion as fuel, incineration and landfill.

Experience overseas indicated that 100% recycling (zero waste) was not feasible.

Landfill was the least preferred option because it generated methane, recovered least energy or material value form the waste deposited. The proposed development would minimise the need for landfill by providing an alternative solution which is higher up the waste hierarchy.
Alternative Technologies

In this section the EIS refers to alternative thermal treatment technologies, namely Pyrolysis and gasification or waste combustion with energy recovery (the only technologies in accordance with the requirements of the Incineration Directive).

Pyrolysis and gasification were the most promising alternative to grate incineration for thermal treatment of municipal waste.

These were at the point of transition between R&D and commercial development. These advanced technologies had prospects for lower emissions and higher levels of energy recovery, but had problems associated with the carbon contents of the char, and hazards associated with toxic and flammable gas. Given that they did not have sufficient track record in full scale commercial operation, they were not considered suitable for the multi-purpose requirements of the proposed project.

Waste combustion with energy recovery involved reduction of municipal waste to approximately 5-10% of its original volume, while recovering generated thermal energy as electricity, heat or combined hat and power. Principal technologies used were grate combustion or fluidised bed systems, while other types of furnaces included rotary kiln, liquid injection systems, starved air systems for hazardous waste and multiple hearth furnaces for non-hazardous waste.

Other treatment technologies included MBT (Mechanical-biological treatment), and alkaline hydrolysis.

In MBT residual waste could be treated before being sent for energy recovery or landfill, with the goal of removing certain recyclable materials, reducing the biodegradable potential of waste, preparing the waste for combustion by reducing particle size. In general MBT was either geared towards a fuel (RDF) for use in industrial processes like cement kilns or power plants, or towards producing a stable biotreated residue that can be sent to landfill. experience form Europe showed that reaching consistent fuel quality was difficult, therefore RDF was being sent to incineration plants for disposal. There were limited outlets for biostabilised material other than landfill. spreading over land gave rise to concerns about soil contamination. Sending it to landfill meant energy content of the material was not recovered.

Based on the characteristics of the Irish waste disposal market (relatively small and varied in composition) the chosen technology (with three components to include fluidised bed furnace, PCC and moving grate furnace) was considered most appropriate. These would provide safe and efficient thermal treatment of wastes that are not suitable for re-use and re-cycling, while allowing flexibility in responding to changes in market conditions and waste streams generated in the future.
Heat recovery alternatives considered included hot water generation and steam boiler. Most of the demand was for steam from the industries to be used in manufacturing processes (and was superior to demand for space heating which would be seasonal), and export of steam on such a basis would enable the plant to have a high rate of energy efficiency.

Dust removal technologies included cyclone, electrofilter and baghouse filter. The latter was chosen due to achievement of typical dust emissions of 2mg/Nm3 (Directive limit is 10mg/Nm3), and creation of a cake on the filter cloth acting as a reactor for the removal of acid gases and further removal of dioxins and heavy metals.

Fly ash separation (dust removal prior to gas cleaning) was not considered due to very low volume generated.

Selective Non catalytic Reduction (SNCR) was chosen over SCR because it was an option to combine deNOx with dioxin removal, efficient NOx removal and less effluent and residues. SNCR with urea or ammonia injection was considered safer, more flexible and consumed less energy, and was considered BAT.

The choice of flue gas cleaning equipment depended on the feasibility of a liquid purge from the site and on the pollutant load in the flue gases.

Two stage dioxin removal method was chosen and would achieve emissions well below the EU limits.

The technology chosen was BAT in line with BREF Notes on waste incineration.

5.6 Construction activities

Construction and phasing are discussed in chapter 5 of the EIS. Preliminary soil and hydrogeological investigation were carried out including drilling of boreholes and excavation of trial pits. The existing escarpment is thought to be result of removal of material used for reclamation purposes elsewhere.

The construction and commissioning is scheduled to be 30 months for the waste-to-energy facility and 8 months for the waste transfer station (may be constructed simultaneously). Site preparation would involve re-grading of the site. significant earth retaining structures would be required in the sections where the building is located, and also some at the site boundary. Location of the site compound will depend on whether the waste transfer station is constructed simultaneously.

Construction activities would be carried out 0700-1900 Mon-Fri, and 1700-1300 Saturday. A maximum of 320 construction workers is anticipated.
Potential construction phase impacts would be nuisance to the local community, including dust, noise, vibration, traffic including oversized deliveries and night time working, surface water run-off, leaks and spills from construction plant and equipment. A waste management plan would be employed during construction activities. CIRIA Guidance would be used to minimise risk of soil, groundwater and surface water contamination.

Commissioning phase would include installation compliance checks, commissioning tests and performance demonstration tests.

### 5.7 Policy

Chapter 6 of the EIS provides a list of relevant EU Directives, and Irish national Policies, objectives and Guidance on Waste management and Energy, and International commitments and Guidance on Climate Change as well as a list of regional and local policy Guidance Documents, and outlines how it is thought the proposed development conforms with the provisions of each. These include:

- As an alternative to landfill the proposed development would reduce emissions from biodegradable municipal waste and generate energy from non-fossil fuel source would help towards Kyoto emissions targets

- The report of the working group III for the Intergovernmental Panel for Climate Change finds that the main source of greenhouse gas emissions associated with waste management is landfill and these can be avoided through anaerobic composting and thermal processes such as incineration for waste-to-energy. The report also found that incineration and industrial combustion for waste-to-energy provide significant energy benefits and fossil fuel offsets. The proposed development provides an alternative to landfill and highly efficient option for residual waste treatment

- The proposed development would broadly reflect the objectives of the EU Sixth Environmental Action Programme, by operating to high standards, by dealing with wastes not suitable for reuse or recycling, by recovering energy and by achieving a significant reduction in the volume for waste going for final disposal

- The facility will treat hazardous waste and municipal waste much closer to the place of generation, and will reduce Ireland’s reliance on exporting hazardous waste internationally, and positively meets the underlying problems identified by the Commission

- The Thematic Strategy on the Prevention and Recycling of Waste is one of a number of EU policy statements that supports the principle of using thermal treatment as a key element of the waste management hierarchy

- The proposed development will help reduce the amount of residual biodegradable waste currently going to landfill (by 100,000 tonnes,
approximately 13%), in conformity with the Landfill Directive
requirements. The plant will reduce the volume of waste by 90%, and
weight by 70%

• The proposed facility will operate significantly below the emissions limit
values stipulated in the EU Directive 2000/76/EC – Incineration of Waste
and will promote the objectives of the Directive

• A significant proportion of the electricity generated by the facility will be
from biomass material (municipal waste, industrial waste, refuse derived
fuel and sludge) and conform with EU Directive 2001/77/EC – Renewable
Energy

• The proposed facility by reducing greenhouse gas emissions (by diverting
away from landfill) and by generation of electricity, will conform to the
policy objectives outlined in EU COM (2007)1 – An Energy Policy for
Europe

• The proposed facility with flexibility for treatment of a range of wastes in
accordance with the waste hierarchy or life-cycle assessment will help
achieve preferred environmental options and Recovery Code R1 which
was amended to include energy efficient incineration

• The proposed development will promote the objectives of the NDP, by
forming a major part of hazardous waste treatment infrastructure and
underpinning industrial development. It will also deal with a significant
amount of municipal waste by NDP’s preferred method of disposal, and
generate electricity

• The national climate strategy is supportive of waste-to-energy
developments. The proposed development will divert waste going to
landfill and generate electricity

• The proposed facility is a crucial part of an effective waste management
strategy by providing capacity to deal with waste without limiting efforts
to recycle, and operating to all necessary environmental standards and as
such in line with Waste Management – Taking Stock and Moving
Forward-2004

• The proposed development will recover energy form residual waste
materials and will be effectively co-firing biomass with non-biomass waste
resources, and as such conform with Bioenergy Action Plan

• By providing locally produced energy resource it will provide alternative
to fossil fuels, contain a fraction of biomass and contribute to the three
pillars of energy policy on enhancing security of energy supply,
environmental sustainability and economic competitiveness in conformity
with policy expressed in Delivering a Sustainable Energy Future for
Ireland – The Energy Policy Framework 2007-2020. It will also be
designed in line with region’s prevention and recycling targets and comply
The policy’s commitment to provide optimised waste energy solutions.

- The plant which could divert over 100,000 tonnes biodegradable municipal waste away from landfill in 2013 (13% of total residual waste capacity) would respond to the National Biodegradable Waste Management Strategy’s imperative to encourage such facilities.

- The EPA National Waste Report, 2006 specifically noted that incineration is a means of diverting biodegradable municipal waste away from landfill.

- The proposed development would also play a significant role in Nation’s disposal of hazardous waste helping reduce the amount sent abroad in line with policies towards self sufficiency and proximity principle and proposed National Hazardous Waste Management Plan, 2008-2012.

- The plan noted that incineration provided flexibility in management of combustible hazardous waste.

- The proposed development would meet the requirement identified in the National Hazardous Waste Management Plan to establish hazardous waste treatment facility in Ireland, as it would be able to provide the recommended 50,000 tonnes treatment capacity.

- The proposed facility capable of treating 100,000 tonnes of BMW annually will contribute towards achieving targets set out in the EPA discussion paper on Biodegradable Municipal Waste, 2008, and be flexible enough to accept either MBT residues or residual waste from three bin system, ensuring either outcome of the analysis recommended by the report into the role of MBT will be catered for.

- The proposed development will conform to the objectives of the Forfás report Waste Management Benchmarking Analysis and Policy Priorities, May 2008 through flexibility facilitating rational use of infrastructure and enhancing competitiveness.

- The ESRI Medium Term Review 2008-2015 which included research on the environment for the first time specifically considered waste management and climate change to be the most significant environmental challenges for Ireland, finding that the trends were in the opposite direction to stated policy targets, and that there would be an upward trend in the amount of residual waste arising despite increasing recycling rates, and even with planned infrastructure for recovering and incinerating biodegradable waste it appeared unlikely that Ireland would meet EU and national landfill targets. The proposed facility will help ensure Cork region can meet EU targets.

- The southwest Regional Planning Guidelines 2004 stated that energy recovery from waste needed to be built into the system along with polluter
pays, proximity and precautionary and shared responsibility principles, and as such supported the proposed facility in principle

- SWRPG highlighted that the efficient delivery of power and generating capacity is an essential requirement for economic development. The proposed development which would generate a flexible, constant renewable electricity supply in close proximity to industrial demand would conform to these policies

- The proposed development is closely aligned to the terms and objectives of the Cork Area Strategic Plan 2001-2020 (CASP), will meet its targets for the diversion of biodegradable waste from landfill, extend the lifespan of landfills by reducing residual waste and rendering them inert, provide a secure and reliable outlet for RDF produced in MBT facilities, and give more flexibility to waste management whilst reducing local authority costs

- It would approach self sufficiency, align its regional strategy with European experience and waste, climate change and energy policy, reduce greenhouse gas emissions, generate flexible but reliable rather than intermittent renewable electricity

- It would conform to the policy objectives of the current County Development Plan in particular policy INF 4-1, INF 3-1 and INF 4-3, and Draft County Development Plan, 2007 on waste management and energy, in particular policies INF 7-2, INF 7-1 and INF 7-3


- While the Waste Management Plan did not include thermal treatment at this time, it did not preclude provision by others or preclude use of the facility should it become available.

- Cork City Waste Management Plan 2004-2009 accepted the relevance of waste-to-energy technologies to the waste management hierarchy and did not preclude use of such capacity should it become available within the region

- Sludge Management Plan for County Cork, 2000 found that disposal of 67% of industrial biological sludge to landfill (pharmaceutical and waste treatment plant) is not suitable and should be minimised. The plan identified the need for destruction technology as some of the industrial sludge was not acceptable for use in agriculture.

- The proposed development would include destruction technology for the sludge from pharmaceutical plants and will have the capacity to divert approximately 20,000 tonnes per annum of industrial sludge from landfill. It is located very close to industrial sludge generators, minimising sludge transportation requirements. While the plan stated that the volume of
sludge was too small for a dedicated sludge incinerator, the use of incineration becomes economically feasible when sludge is treated together with other waste streams

- While the current and draft County Development Plan did not give clear guidance on where waste-to-energy facilities should be situated, An Board Pleánala in making its decision on the previous proposal considered the site acceptable

5.8 Human Beings

The impact of the proposed waste-to-energy facility on human beings is examined in chapter 7.

The principle potential receptors would be homes, schools and colleges, health and community care facilities. These included the Haulbowline Naval Base located on an island but linked to Ringaskiddy by a bridge, 19 primary and 5 post primary schools located in Rinkaskiddy, Shanbally, Passage West, Monkstown, Rushbrooke, Cobh, Whitegate and Crosshaven.

Local amenities included scenic routes, amenities around Cork harbour (beaches fishing, sailing, rowing), but Ringaskiddy itself was not a tourist destination but an important transit for tourists. The deepwater berth at Ringaskiddy port handled a range of cargo types and was a major economic importance to the region. Cruise liners using Cobh deep water berth made a contribution to the economy.

A considerable amount of the land in Ringaskiddy was zoned for industrial development, and a significant centre for pharmaceutical manufacture at international level. land use and development policy for the area for industrial and port development would continue. Commercial fishing and aquaculture took place around Cork Harbour.

The populations of the towns in the area increased substantially in the preceding ten year period.

Health impact Assessment

A health impact assessment was carried out by a firm of consultants Employment Health Advisors Limited (EHA) on the full effect on human health of the proposed Ringaskiddy waste-to-energy facility, and in particular the hypothesis that exposure to dioxins and furans is responsible for some cancers in communities around incinerators. (full details in appendix 7.1).

The assessment and conclusions were made in the context of EHA’s own knowledge and experience, and evidence from literature in both Ireland and the UK:
• The epidemiological studies on the older generation of incinerators with significantly greater amounts of dioxins have failed to identify such an effect. The emission levels from the new incinerators were much lower.

• The existing background dioxin levels in the area were relatively low by international standards.

• Nearly all studies which refer to toxic or industrial burning processes pre-dated modern technology and current restrictions on allowable emissions under EU Air quality Directive and EU Waste incineration Directive.

• Modelling for emissions of particulate matter in the form of PM$_{10}$, PM$_{2.5}$, did not support any likelihood of a detrimental effect.

• Health Research Board report on Health and Environmental Effects of Landfiling and Incineration of Waste (2003), did not draw any conclusions, but a report by the UK Department of the Environment, Food and rural affairs entitled ‘A review of the Environmental and Health effects of Waste management (2004)’ found no consistent or convincing evidence of a link between cancer and incineration, there was little evidence that emissions from incinerators made respiratory problems worse, and in most cases the incinerator contributed only a small proportion to local levels of pollutants.

The EIS referred to the hazard identification report prepared for the 2001 planning application and that it was reviewed by the Health and Safety Authority. This was reviewed and updated to take account of the current proposals and new SEVESO Regulations, S.I.476 of 2000. The current proposal was essentially the same, but with a smaller amount of solvent tanks and a reduced tank farm area and smaller inventory of SEVESO substances. These would result in lower levels of off-site impacts than in 2002. The separation distances were lower in the current analysis than computed in 2002, largely due to a refining by authorities such as HSA of the most appropriate end points to use.

Dioxin uptake

A baseline soil monitoring programme was conducted in 2001 and repeated in 2008. The report is presented in appendix 7.2. Soil PCDD/F concentrations have decreased in the last 18 years, and low when compared to other countries. PCB concentrations remained low, and PAH analysis data indicated that background soil concentrations for this group of analytes remained low at eight sampling locations and showed a marked decrease since 2001.

A dioxin uptake model was also updated and is presented in 7.3. It is concluded that the proposed municipal solid waste and hazardous waste-to-energy facilities will have no significant impact on dioxin and furan intake for even the theoretical MARI and that with respect to dioxin and furan intake, the facility will have no impact on human health.

There would be no significant odour impact.

Evaluation of impacts and mitigation measures
In evaluating impacts and mitigation measures, the chapter refers to ‘do nothing’ impacts, intensification of industrial and port activity and states that if the proposed development facility does not go ahead the site would be developed for pharmaceutical or chemical manufacturing, or port use.

The impact on residential amenity during operation of the facility would not involve activities new to Ringaskiddy area. The facility would be located adjacent to a facility which handles scrap steel for recycling. Handling of drummed waste liquids would be similar in scale to pharmaceutical plants in Ringaskiddy area.

Currently two pharmaceutical plants in Ringaskiddy operated incinerators licensed by the EPA which treat hazardous and non-hazardous waste. The proposed facility while larger in scale will use combustion technology to treat the waste. Experience in other countries had not indicated any particular impacts on residential amenity in their vicinity.

The facility will be an establishment to which articles 6 and 7 of the SEVESO II Directive will apply. As such it would be a lower tier establishment under the Directive. It is expected no off-site impacts or restriction on land use due to the facility’s status under the Directive.

There will be significant residual impact on the recreational amenity of the site and its immediate vicinity arising from its industrial character. There will be significant employment impact during construction and to lesser degree during operation periods.

### 5.9 Roads and traffic

This is discussed in chapter 8 of the EIS. The industrial uses together with Naval base, and Ferry port are the significant traffic generators in addition to the residential areas.

The main route into the area from Cork City N28 serves the ferry port and various industrial developments in the area. It is stated to experience congestion during peak periods.

The R613 linking Ringaskiddy to Carrigaline and to the lands further south provides access to a number of industrial uses along its route. It is stated to experience congestion during peak periods. It is stated to be narrow and substandard in certain sections, reducing HGV accessibility.

R610 coastal road to Douglas, through Monkstown and passage west and ferry to Cobh is stated to be used by those trying to avoid N28 (it is mostly used by commuters).
The EIS examines 6 junctions along these roads, and finds that there is congestion at Shannon Park roundabout (N28/R611), Raffeen Bridge junction (N28/R610), Shanbally junctions (two junctions at N28 with local roads connecting R610 and R613), and Ringaskiddy junction (N28/R613). No information given regarding Haulbowline bridge, though indicated as one of the junctions analysed.

As a result of an 18 hour traffic count taken on 2nd April, 2008, five time periods were identified as having the most significant impact by traffic generated by the proposed development, during construction and operation.

The first three are already congested and working over capacity or approaching capacity. The Ringaskiddy junction had sufficient capacity to accommodate traffic generated by the proposed development, both at construction and operation periods.

**Mitigation measures**

During construction the day shift would be set at 0700 and 1900 to avoid morning peak period. Some of the construction related vehicles (including HGVs) will arrive (34) and depart (55) during AM and PM peak hours.

During operation period there would be a max of 106 trucks entering /leaving the site (plant /waste transfer station). The peak period would be around 1300-1400 and would not correspond to road network peaks.

The waste transfer station and the plant would accept waste 0900-1900 to ensure arrival and departure outside the peak hours.

The works force would work office hours 0900-1800 set for arrival and departure outside the road network morning and evening peaks.

All trucking movements will occur within the confines of the site, and there would be no queuing

**5.10 Air Quality**

This is examined in chapter 9 of the EIS. The proposed facility with two furnaces and two flue gas cleaning lines would produce a number of emissions, discharges of which are regulated by the EU Directive on Waste Incineration (2000/76/EC). The EIS provides a list of these. It also states that in addition PAHs (Polycyclic Aromatic Hydrocarbons) have been assessed as incineration is a potential emission source for these group of compounds.

The scope of the study consisted a number of components, including review of maximum emission levels and other relevant information needed for the modelling study, identification of the significant substances which are released from the site, review of background ambient air quality in the vicinity of the plant, air dispersion modelling of significant substances released from the site,
modelling of particulate deposition of dioxins and furans, PAHs and heavy metals released from the site, identification of predicted ground level concentrations of released substances at the site boundary and sensitive receptors. A full cumulative assessment of significant releases from the site taking into account of releases from other significant industry in the area, was carried out as well as evaluation of the significance of predicted concentrations and whether they were likely to exceed most stringent ambient air quality standards and guidelines. Assessment of other air quality impacts such as construction dust and emissions form construction and operation traffic was also carried out.

The baseline surveys of the existing environment were carried out over two periods (Nov 2006-Feb 2007) and (April—July 2008) at selected monitoring stations. A summary of the results are provided in table 9.1, and are compared to ambient air quality standards. It is stated that the levels of the most compounds including SO₂, benzene, hydrogen Flouride (HFL), Hydrogen Chloride (HCL), are significantly below their respective limit levels. The concentrations of Sb, As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, TI and V are also significantly below their respective annual limit values.

It is stated that the results indicated compliance with NO₂ limit values over the three month monitoring period. No exceedence of the 1-hr limit value was observed whilst the mean over this period was 14% of the annual NO₂ limit value. NO₂ diffusion tube concentrations (ranging from 4-14 µg/m³) were below the EU limit of 40 µg/m³. The results indicated a weak NO₂ spatial concentration gradient in the region.

The 24-hour PM₁₀ concentrations measures over the three month period were significantly below the EU value 50 µg/m³ (applicable since 2005). It is stated that since no exceedences were recorded over the three month period it was extremely unlikely that there would be 35 exceedances over 365 days.

The average PM₁₀ concentrations at 6µg/m³ were only 12% of the annual EU limit value, while the PM₂₅ concentrations measured over a three month period at 7µg/m³ was significantly below the EU limit value of 25µg/m³.

Background levels of PCDD /PCDFs (Dioxins / furans) occurred everywhere. In this case they were monitored over four one-week periods in April-May 2008. The mean concentration measures indicated the results are in line with measurements conducted elsewhere in Ireland with upper limit of 13.5 fg/ m³ compared to previous measurements ranging from 2.8-46 fg/ m³.

Section 9.3 of the EIS describes the characteristics of the proposed development at construction phase and operational phase. The former envisaged to last over 30 months would give rise to dust and exhaust emissions.

Table 9.4 provides air emission limit values and the emission values from the proposed facility, and states that the applicants are committed as minimum to meeting all the requirements of the Council Directive 2000/76/EC and expect
the average emission values to be lower than maximum values used in the study. The section 9.3.2 defines maximum operating conditions as facility operating at 50MW and with emissions at the limits defined in EU Directive. Abnormal operating conditions would be short term periods in which the limits detailed in the Directive would be exceeded.

Stating that the facility had two stacks, it is submitted that a cautious approach was adopted designed to over-predict ground level concentrations, to ensure over estimation of impacts and adoption of standards protective of air quality. These included:

- Assumption that all emission points were operating at their maximum emission level 24 hrs/day over the course of the full year
- Maximum predicted ambient concentrations for all pollutants within a 10km radius of the site though no residential receptors were near the location of the maximum ambient concentration
- Works-case background concentrations were used to assess the baseline levels of substances released from the site
- Worst case meteorological conditions have been used in all assignments

The air dispersion model used was US EPA model known as AERMOD applicable to both complex and simple terrain, urban or rural locations. While AERMOD was capable of modelling most meteorological conditions likely to be encountered in the region, it may not be adequate in modelling unusual meteorological conditions such as fumigation (when a plume is emitted into a stable layer of air which subsequently mixes to ground level). For these conditions the recommended model was CALPUFF.

Section 9.4 of the EIS summarises the air dispersion modelling results for a number of entries:

**Air dispersion modelling results**

Section 9.4 of the EIS summarises the air dispersion modelling results for a number of entries which are summarised in Table 9.7 and Figure 9.4:

**NO\(_2\) and NO\(_x\)**

Modelling results indicate that ambient ground level concentrations would be below the relevant air quality standards with no impact on public health or environment envisaged. (Emissions at maximum operations would lead to ambient NO\(_2\) concentrations which are 44% of the maximum ambient one hour limit value and 45% of the annual average limit value at the worst case receptors). The annual average NO\(_x\) concentration for protection of vegetation account for 60% of the annual limit value at the worst case receptor in the region of Lough Beg proposed NHA and the Cork Harbour SPA.
SO₂, CO, PM₁₀ and PM₂.₅ The modelling results indicated that the ambient ground level concentrations of these would be below the relevant air quality standards under maximum and abnormal operation of the facility. Emissions at maximum operations would equate to ambient concentrations ranging from 10% - 33% of the respective limit values at worst case receptors.

TOC, HCL and HF Modelling results indicated that ambient ground level concentrations would be below the relevant air quality guidelines under maximum and abnormal operation of the facility. Emissions at maximum operations would equate to ambient concentrations for HCL and TOC of only 18% and 31% respectively of the ambient limit values while the ambient HF concentrations would be 40% of the maximum ambient one hour limit value and 33% of the annual limit value.

PCDD/PCDF (Dioxins/Furans) Stating that currently no internationally recognised air quality concentration or deposition standard existed for these two both the US EPA and WHO recommended approach to assessing the risk to human health from dioxins/furans entailing a risk assessment analysis involving the determination of the impact in terms of the TDI (Tolerable Daily Intake) approach. The WHO currently proposed a maximum TDI of between 1-4pgTEQ/kg of body weight per day. Monitoring results indicated that existing levels were similar to rural areas in the UK and Ireland and contribution from the facility in this context would be minor with levels at the worst case receptor to the north-west of the facility under maximum and abnormal operation accounting for only a small fraction of the existing levels (less than 5% of the existing background concentration under maximum operating conditions).

PAHs Modelling results indicate that the ambient ground level concentrations would be below the relevant air quality target value with no adverse impact on public health or environment as envisaged at or beyond the facility boundary. (Emissions at maximum operations would equate to concentrations at 23% of the annual EU average target value at worst case receptor).
Hg

Modelling results indicated that the ambient ground level concentrations will be below the relevant air quality standards with no adverse impact on public health or the environment at or beyond the facility boundary. (Emissions at maximum operations would equate to 4% of the annual average limit value at the worst case receptor).

Cd and TI

Modelling results indicate that the ambient ground level concentrations would be below the relevant air quality standards. (Emissions at maximum levels would equate the concentrations at 74% of the EU annual target value.

It is stated that as the region around Ringaskiddy is partly industrialised and has several other potentially significant sources of pollutants a detailed accumulative assessment has been carried out using the methodology outlined by the USEPA.

Under the heading AERMOD Modelling Summary it is stated that the modelling results indicated that the ambient ground level concentrations are below the relevant air quality standards or guidelines for the protection of human health for all compounds under maximum and abnormal operation of the site, that this maximum occurs in the region between the northern and eastern boundaries.

It is further stated that an appropriate stack height has been selected to ensure that ambient air quality standards for the protection of human health would not be approached even under abnormal operating scenarios and the stack height determined by the air dispersion modelling for adequate dispersion was 85 metres for each of the two main stacks.

The spatial impact of the facility would be limited with concentrations falling off rapidly away from the maximum peak with short term limit values at the nearest residential receptor at less than 21% of the short term ambient air quality limit values. The annual average concentration would be less than 2% of the limit value at worst case sensitive receptors near the site.

The EIS outlines the advantages of the CALPUFF modelling over the AERMOD in areas of complex meteorology. These include

- AERMOD being a steady straight line plume model cannot respond to the terrain-in use spatial variability in wind fields.
• AERMOD is based on a single station wind observation and the wind fields do not vary spatially within the modelling domain.

• AERMOD cannot treat calm conditions and does not calculate concentrations during these hours.

Because of these limitations CALPUFF would be expected to more accurately reflect the meteorological and dispersion characteristics of the modelling domain and thusly to more accurate ambient air concentrations. As shoreline fumigation was also raised as a possible concern in the previous application and as AERMOD does not have the capability to model this phenomenon CALPUFF was selected as the most appropriate model which could assess all possible metrological conditions within the one air dispersion model.

Metrological data for the assessment was based on various sources of information using MM5 for the years 2006 and 2007 (5th generation penn state/NCAR messo scale model). The EIS indicates that no upper air observation stations were located within or near the modelling domain and upper air data was abstained from MM5 and extra pollution of surface observations.

CALPUFF modelling results were presented in comparison to the previously obtained AERMOD results in table 9.8. It is stated that these indicate that the maximum ambient ground level concentrations GLC occurred at or near the facility’s northern and north-eastern boundaries. The spatial impact of the facility would be limited with concentrations falling off rapidly away from the maximum peak. In the surrounding areas of Cove, Carrigoline and Monkstown the levels would be significantly lower than most background sources with concentrations from emissions at the proposed facility accounting for less than 2% of the annual limit values for all pollutants under maximum operations of the facility.

It is stated that a comparison on the proposed facility’s operations with obligations under the National Emissions Ceiling Directive indicates that the impact of the scheme is to increase SO\textsubscript{2} levels by 0.20% of the ceiling levels to be complied with in 2010, NO\textsubscript{x} levels by 1.2% of the ceiling levels where VOC would be increased by 0.03% of the ceiling limits.

Section 9.5 of the EIS refers to mitigation measures at construction phase and operational phase. The former would include Dust Minimisation Plan and monitoring an assessment of measures employed.

For the operational phase a number of measures are stated to be incorporated into the design of the waste energy plant to ensure that the emissions from the plant would not exceed regulatory emission values as outlined in the West Incineration Directive 2000/76/EC. As the air modelling predictions indicated that the ambient air quality levels from the proposed facility would be within the ambient air quality standards at all locations beyond the site boundary based on maximum operating conditions no specific additional mitigation measures would be required during the operations phase of this facility. This
section of the EIS concludes that based on the results of the air dispersion modelling of the process emissions the air quality impact of the proposed facility would be insignificant.

5.11 Climate

These issues examined in Chapter 10 of the EIS which refers to agreements gratified by Ireland in relation to climate change such as UNFCCC (United Nations Framework Conventional Climate Change) 1994 and quota protocol in 1997 and more recently Intergovernmental Panel on Climate Change (IPCC). The objective of the 1994 convention was to prevent dangerous anthropogenic interference in the climate which referred to greenhouse gas emissions and removals that are a direct result of human activities or area a result of the natural processes that have been affected by human activities. Burning fossil fuels is considered one such activity. Chapter 10 of the report by (IPCC) 2007 assessed the various waste management practices from the viewpoint of greenhouse gas emissions and concluded that “because landfills produce CH₄ and CH for decades, incineration, composting and other strategies at reduced landfill waste are complementary mitigation measures to landfill gas recovery in the short to medium term”.

The EIS refers to remarks in the report that “compared to land filling, waste incineration and other permanent processes avoid most of the GHD generation, resulting in only in minor emissions of CO₂ from fossil ‘C’ sources, including plastics and synthetic textiles”.

The main greenhouse gases with climate change potential which would be emitted by the facility are stated to be carbon dioxide (CO₂), methane (CH₄) and nitrogen dioxide. To assess the climate change impact the net effect of the facility on generation of these gases in Ireland was calculated. The EIS states that if the facility is not built, approximately 180,000 tonnes of this waste would be sent to landfill in Ireland with the remainder exported for incineration abroad. Organic waste in a landfill would produce methane and carbon dioxide and continue to emit gases for over 100 years long after the landfill has been closed. With incineration of waste prior to landfill the emission of these gases would be avoided.

If the facility is not built, 22mega watts of electricity would need to be produced in a power station in Ireland. Net emissions of greenhouse gases from the facility would amount to 0.014 of Irelands Kyoto Protocol target in 2013. No mitigation measures were proposed as there would be no significant impact on climate.

5.12 Noise and vibration

This issue is examined in Chapter 11 of the EIS, under the headings of
Receiving environment, characteristics of the proposed development, assessment criteria, forecasting methods, predicted impacts and mitigation measures.

Background noise levels were measured at four locations close to the site.
1. at the car park at the north-eastern corner of the site,
2. at the front gate of a residence on the local road connecting to N28
3. outside a residential property at a new housing development to the west of the site and,
4. within the mid western boundary of the site, adjacent to the Hammond Lane boundary.

The survey was conducted over the course of a weekday and weekend survey period and included both daytime and night time measurements. Throughout the day and night time survey period the weather is stated to have remained dry with calm wind conditions.

Section 7.2.7 of the EIS provides the results and discussion of the results. At location 1 during the daytime the noise levels were in the range of 52 – 54dB(A)\(L_{Aeq}\). During night time the noise levels were in the range of 39 – 49dB(A)\(L_{Aeq}\). During the weekend daytime noise levels were in the range of 49 - 53dB(A)\(L_{Aeq}\).

At location 2 the daytime noise levels were in the range of 56 - 60dB(A)\(L_{Aeq}\), night time noise levels were in the range of 41 - 57dB(A)\(L_{Aeq}\) with weekend noise levels in the range of 50 – 58dB(A)\(L_{Aeq}\).

At location 3 the noise levels were in the range of 49 - 58dB(A)\(L_{Aeq}\) with night time noise levels 42 - 50dB(A)\(L_{Aeq}\) with weekend noise levels 56 - 64dB(A)\(L_{Aeq}\).

In location no. 4 continuous noise levels were measured over a six day period. Average \(L_{Aeq}\) varied between 51 and 56 during day time and between 46-50 night time.

At all locations no significant source of vibration was observed. The daytime measurements were dominated by traffic noise. The night time measurements were influenced by the plant and process noises, ships, engines and distant traffic noise, rustling foliage and bird song.

Potential noise and vibration impact of the proposed development was considered in two distinct stages, namely short term impact of the construction phase and long term impact at the operational phase.

There would be four primary sources of noise: From process and building services plant, car parking, vehicle movements on site, vehicles on public roads.
In assessing noise, the criteria would be set in terms of \( L_{Aeq,T} \) the equivalent of continuous sound levels. For the vehicle movements on public roads a different parameter \( L_{A10} \) was used.

The EIS notes that the proposed facility would be licensed under the EPA Waste License and the license conditions from the currently approved facility set out the following criteria for the noise.

“Noise from the activity shall not give rise to sound pressure levels \( (L_{eq,T}) \) measured at noise sensitive locations which exceed the limit value(s).

The limit values set out in Schedule B for noise were

- **Daytime** \( L_{Aeq} \) 30 minutes apart from \( A \) 45dB
- **Night time** \( L_{Aeq} \) 30 minutes 55dB

The EIS anticipates that the above limit values will form part of any amended license documentation.

The assessment criteria for vibration referred to British Standard BS7385 (1993) and British Standard BS5228 (1992) as guidance documents. The predicted impact of the proposed development in terms of vibration would be associated with excavation and piling operations.

Under predicted impact of the proposal it is stated that due to the nature of the activities undertaken on a large construction site there would be potential for generation of significant levels of noise, but due to the fact that the construction programme has been established in outline form only it was not possible to calculate the actual magnitude of noise emissions to the local environment.

The EIS notes that impact due to construction activities would be transient in nature. In preparation of the noise model a proprietary noise calculation software was used which is stated to calculate noise levels in accordance with ISO9613.

Noise emissions from the plant and equipment were based on the measured emission levels from similar items of plant and equipment at in diverse waste-to-energy plants elsewhere. The noise levels predicted at the nearest residential receivers were 23dB(A)\( L_{eq} \) to 32 dB(A)\( L_{eq} \). The noise limits expected to be imposed in the waste license for the facility were a night time limit of 45dB(A)\( L_{eq} \) 15 minutes and a daytime limit of 45 dB(A)\( L_{eq} \) 15 minutes and a daytime limit of 55 dB(A)\( L_{eq} \) one hour. The EIS notes that these are standard noise limits which the EPA imposes on industrial facilities to protect residential amenity. The predicted noise levels at the residential receptors would be well within these limits.
The EIS notes that the noise at the nearest residential receptors when noise generated by truck movements is combined with a plant noise is predicted to be 40dB(A)_{eq} one hour.

In table 15 the EIS provides assessment of change in traffic noise levels due to vehicles on public roads, mainly on N28 and its junctions, and predicts increases ranging from 0 – 0.5dB(A)_{eq}. The EIS notes that an increase in noise levels of this magnitude is imperceptible.

### 5.13 Landscape and visual impacts

Landscape and visual impacts are examined in Chapter 6 of the EIS. This chapter sets out the methodology used which included a desktop study in relation to overall context locally, regionally and nationally and assessment of the site and its environs in terms of quality and type of use in the area and the extent of the visual envelope. The character and the quality of the surrounding landscape was assessed in relation to the proportion of residential, industrial and agricultural development, special landscape features, cultural and historical elements and landforms associated with the site.

The assessment includes baseline description of the receiving environment including the site and its landscape context and character following by description of the main elements of the proposed development which could give rise to landscape and visual effects followed by mitigation measures and any residual effects that would remain.

The EIS provides photomontages to illustrate the visual effects of the proposed development from key viewpoints chosen to represent the views from a variety of directions, distances and receptor types which may receive a view of the development.

The EIS also provides information on site significance within the provisions of Cork County Development Plan 2003, Draft Cork County Development Plan 2007 and Carrigaline Electoral Area Local Area Plan 2005. It notes that the town and close surrounds of Ringaskiddy are designated as a strategic industrial area in the CEALLAP 2005 and the site is contained within a large area zoned in the street/enterprise. It refers to designated landscapes around the Cork Harbour coast and the policies in relation to landscapes and designated scenic routes and policies pertaining views from these routes. It also refers to other designations in particular the Martello Tower to the south of the site as a protected structure.

The visual envelope of the site and the assimilated visibility of the proposed development is indicated. The visual envelope of the site is indicated in Figure 12.0 of the EIS. The site lies within the City Harbour and estuary landscape character type also defined as Cork City and Harbour landscape character type within the County Development Plan. A pilot study of the landscape character of Cork Harbour assesses the landscape states that overall the City and harbour
comprise a balance of intensely urban form, rural character and seascape. More locally the mixture of the harbour activity, water, industrial development, agricultural land and low density housing comprised the overall character of the local area. It is stated that although the site is Greenfield and scrubland it is fundamentally industrial in character and heavily influence both by the water and the industrial developments in the surrounding area and therefore the character can be described as an “industrial harbour” landscape.

In examining the characteristics of the development the main visible components are stated to be main process building, stacks, turbine building and storage tank area, main access road, emergency access car park and weighbridges, the security and laboratory buildings, the 38KV substation, lighting with waste transfer building, administration building, drum wash building and hard standing in the waste transfer site.

It is stated that in the event of no development occurring the site would continue to remain as open green scrubland in the shorter term with Hammond Lane scrap metal yard centrally within the site. In the wider context the housing within Ringaskiddy is not expected to expand as the Carrigaline LAP objective stated that housing should meet local needs only. With industry around the area expanding and possible new and improved transport links the overall character of the area is stated to remain and be reinforced as a harbour industrial landscape heavily influenced by the adjacent pharmaceutical plants infrastructure and industry surrounding the harbour.

The impacts of the proposed development on the landscape are described in Section 12.5. The direct impact on the landscape would arise from excavation of the land and construction of retaining walls though it is stated that the overall shape and levels of the high sections of the ridgeline would remain undeveloped and unchanged. There would also be earth mounding to the north and east to create additional screening and potential for some mounding to the south-west of the site and some additional clumps of tree planting to mitigate impacts on the Martello Tower.

While there will be no direct impacts on the areas designated as scenic landscapes there will be indirect or visual impacts on the views from a number of scenic landscapes such as “owenboy river valley,” scenic landscape at Monkstown, scenic landscape on Great Ireland, scenic landscape on the north and north-eastern coast of Cork Harbour, on the scenic landscape from Whitegate to Roches Point though these are considered to be slight or neutral. Visual impacts of the development on the settlements of Ringaskiddy, Cobh, Monkstown and Whitegate are examined in Section 12.5.2.

The main process building will be a very substantial building and the stack will be 85 metres high. The stack will be visible over a wider area than the site itself. It is stated that the overall visual effect on the settlement of Ringaskiddy would be moderate, negative and permanent upon completion. Similarly the impact on Cove will be moderate, negative and permanent upon completion with areas of significant effect around the white point area. The effects on
Monkstown and Whitegate will be similarly moderate, neutral and permanent upon completion.

The EIS examines the impact on the designated scenic routes, on the roads and railways and on the recreational areas of the harbour, Strand, Monkstown Golf Course, Curabinny Woods/forest trail, local amenity footpaths, cycle paths. In most the impacts would be significant, negative and permanent.

Section 12.5.2.4 examines ‘workplace’ receptors in particular National Maritime College, Hammond Metal Works. For the former the impact would be significant, negative and permanent while the impact on the latter would be profound, negative and permanent. The impact on the views from Haulbowline and Spike Island as well as boats and other commercial shipping on water would be significant, permanent and negative. The EIS examines each of these in detail providing photomontages.

The mitigation measures would include design of the built elements to reduce visual impact and planting to assist the visual integration of the development onto the site. It is stated that to mitigate the visual impacts the form, height and cladding of the building has been carefully chosen to reflect the shape of the existing natural ridgeline, and to sit within it. The sloped varying height of the roof are at minimum height to house the internal machinery and the cladding materials have been chosen to reflect the existing shades and tones apparent in the area with darker banded sections towards the bottom of the building and lighter sections towards the top with angled sections of different tones to reflect the angle to the ridge depending on whether the viewer is viewing from the north, south, east or west and what the predominant backdrop from that direction would be.

Grey colour pallet was chosen as it considered to work best against the sky and sea and the darker greys and blacks against the landform. The overall strategy for the landscape planting proposals throughout the site was designed to utilise and immolate the favourable species that are already present on the site. The landscape proposals including screen mounding along the eastern and northern boundaries of the whole site which would have an immediate screening effect.

The EIS considers that while the initial impacts would be significant and negative on the adjacent local landscape the cumulative impact would be moderate, neutral and permanent. The study is also stated to examine property prices in the vicinity of municipal solid waste incinerators in other European cities such as Vienna which is stated to have found that no evidence of any measurable impact on property values, the volume of transactions or the desirability of property neighbouring locations to the plans visited in Europe.

The EIS states that while there may be short terms impacts on adjoining assets and properties this is due to precautionary nature of the people and that it is unlikely that the proposed facility would impact on property prices other than
during the period of construction and that it is more likely that once the facility is operational impact on property values would be eliminated.

The EIS refers to a number of major businesses and industries located in Ringaskiddy area served by the N28 and states that the National Roads Authority proposes to improve the existing N28 from Bloomfield interchange to a new roundabout located on the east side of Ringaskidda as a result of which N28 would have greater capacity to cater for higher traffic volumes including the construction and operational traffic to the appeal site.

The construction of the proposed development would necessitate excavation of a large volume of material. While some of this would be reused as fill approximately 218,000m$^3$ will be surplus to requirements and would be removed off site for reuse or disposal to a permitted site.

During the construction phase the development would require a peek load of 300kVA. An existing electrical distribution line crossed the site north-south direction and transformers on the site will allow power from the electrical distribution system to be used to start up and shut down the plant if required. Of the 25 mega watt electricity generated by the plant 3 mega watt will be used by the plant itself and the remainder 22 mega watt will be exported to the local electrical distribution system via 28kV or 38 kV overhead lines to Ringaskidae substation about 2.5 kilometres west of the site which will be subject to a separate application and be the responsibility of the ESB.

During the construction phase of the project water will be required on an average daily basis of approximately 10m$^3$. During the operational phase maximum annual quantity of water required would be c.95m$^3$ per hour which will be supplied by local authority watermain and collecting and storing rainwater.

The EIS also refers to surface water drainage, foul water drainage and states that older images from site will be controlled and monitored as part of a discharge licence for the facility.

It is estimated that the proposed facility would use 400 tonnes of light fuel oil per annum which will be supplied from an on site storage tank and would be used at the start up to bring the furnaces to the required operation temperature and occasionally used as a supplementary fuel to maintain the required temperature. Stating that the proposed facility will have a significant positive impact on land capacity in that it will reduce the volume of municipal and other solid waste and sludge currently being disposed to landfill. It reiterated that during the construction phase there will be requirement for landfilling of excavated material (soil).

In section 17.10.3 the EIS refers to potential reuse of solid residues and in particular bottom ash but states that if no market can be found for the bottom ash it will be disposed of suitably licensed non hazardous landfill site.
The EIS reiterates that the applicants are investigating the possibility of supplying steam to nearby industries however its not part of the current application.

The EIS states that when the facility is in operation it will have significant beneficial residual impact in substantial reduction in the quantity of hazardous waste being exported to Europe for disposal, reduction in the quantity of non hazardous industry, commercial and municipal solid waste and sludge going to landfill.

5.14 Cumulative Impacts, Other Impacts and Interactions

Chapter 18 of the EIS provides definitions of these impacts based on the EU Guidelines May 1999 and EPA Guidelines 2003. Chapter 18 of the EIS provides a matrix of the effects showing potential interaction matrix at the construction and operational stages. In terms of potential effects in different media the EIS refers to other chapters of the EIS where individual effects are examined. Under the indirect effects it refers to provision of transmission lines for exporting of the power generated by the facility to the national grid (and the requirement for planning permission for overhead lines), and the indirect effects referred to in other chapters in particular chapter 7 human beings. So refers to a possible indirect effect arising from provision of district heating network to supply steam or hot water to Ringaskidae area in terms of reduction on the amount of fossil fuels.

In relation to cumulative impacts the EIS again refers to individuals chapters of the EIS and concludes that the overall cumulative impact of the development would be a reduction in the quantity of non hazardous waste for disposal to landfill, and a reduction in the quality of hazardous waste for export from Ireland as well as export of electrical energy and increased economic activity in Cork region during construction and operation of the facility. Increased traffic on the local road network and moderate to significant visual impact are also cited.

5.15 Flora and Fauna

This issue is examined in Chapter 13 of the EIS which describes the methodology, various consultations and the surveys carried out. The surveys were carried out in April to September 2008. Details of bat survey reports are provided in Appendix 13.3 and bird survey report in Appendix 13.4 and moth and butterfly survey report in Appendix 13.5. The EIS also provides a habitat map (Figure 13.1).

It is stated that there are no environmental designations pertaining to the site nor is the area likely to be designated in the future. While the site did not form part of any NHA, SPA, SAC, Statutory Nature Reserve and National Park
large areas of Cork Harbour had received formal designations primarily on the basis of its bird population. These areas are stated to be interrelated with bird populations moving between different areas at different times and the site of the proposed development is stated to be located within 10 kilometre of a number of these designated areas.

Table 13.1 provides a list of the designated areas and their location relative to the site of the proposed development. The closest is Lough Beg proposed natural heritage area site code 001066 at a distance of approximately 0.3 kilometres south. The Cork Harbour Special Protection Area (SPA) is stated to be located 0.5 kilometres south of the site and described as a large sheltered bay with several river estuaries. It is stated that on August 27th 2008 the Minister for the Environment proposed to re-designate the Cork Harbour SPA (Figure 13.6) which will extend the boundaries of the site to reflect more up to date bird usage later.

An active badger sett is stated to be located in the north-western section of the site and signs of badger activity were recorded in the southern section of the site. Surveys indicated that there were no suitable bat roosting areas within the site boundary. Night time bat activity surveys were carried out and common pipistrelle was recorded foraging and commuting during the surveys.

Due to proximity to the seashore the site could potentially be used by otters however no evidence of their presence was recorded.

Signs of foxes were noted within this site and one probable den was recorded in the southern section of the site. A breeding bird survey was carried out and a total of 35 bird species was recorded during the survey.

The predicted impact of the proposed development under flora and fauna are described in Section 13.10. In the case of terrestrial habitats (improved agricultural grassland, scrubs/woodlands, arable crops, brackens) are considered to be minor-moderate negative. For the badgers negative impact is predicted and a detailed mitigations measures are described (Section 13.11.3). Referring to the NRA publication “guidelines for the treatment of badgers prior to construction of a National Road Scheme (NRA 2006) and notes that badgers are protected under Wildlife Act 1976 and 2000. Relocation of the badgers would require a licence from the National Parks and Wildlife Service”

No suitable bat roosting sites were located within the area to be effected and the feeding areas were generally concentrated along better quality hedges and woodlands fringe which would not be directly effected. The EIS refers to a mature oak at the entrance to Martello Park housing estate as a potential support for bat roosts but states that it is considered unlikely that this tree would be significantly effected by the proposed development.

In general there would be loss of scrubs/grassland habitat and the section of the non native tree lying along the road reducing area available for feeding and/or roosting for birds, mammals and insects at local level but some additional habitats would be created by this sympathetic landscaping of the
Overall no significant negative impact on the flora and fauna is envisaged by the proposed development.

5.16 **Soils, Geology, Hydrology, Hydrogeology and Coastal Recession**

This issue is examined in Section 14 of the EIS.

The methodology included examination of geological and soil maps obtained from Geological Survey of Ireland and University College Cork, articles providing information on the site area geology, walk over survey completed by Arab in May 2008, preliminary soil and hydro geological investigations undertaken in November 2000 and January 2001 completed by a firm of consultants and coastal erosion and flooding study completed by ARUP in 2008.

The site is stated to be located on the northern side of one of the east-north-east to west-south-west trending ridges known as the Ringaskidae anticline. The site is stated to be under lying by lower carbon carboniferous marine interbedded grey/brown sandstone, siltstone and mudstone referred to as cuskinny formation of the Kinsale Group. As the bedrock geology at the site was not limestone it is stated that there is no potential risk of solution futures on the site. Boreholes and trial pits excavated on the sites indicated the bedrock to be between 0.3 metres and 5.5 metres below ground. 17 trial pits were completed during 2000 and 2001 investigations. Addition five trial pits were excavated in order to sample the overburden for environmental soil sampling which showed considerably lower results than detected concentrations from the 2000 site investigation.

Groundwater levels varied between 1 metre and 12 metres below ground level. At the proposed site the vulnerability of the groundwater is rated as “extreme” where the cover of overburden is less than 3 metres. Geological Survey Ireland Groundwater Protection Scheme indicated that there are no source protection areas on the site or in the immediate vicinity.

The soil and hydro geological investigation report prepared by the previous consultant concluded that there was no significant soil or groundwater contamination at the site and that the slightly elevated levels of ammonia and nitrate detected were most likely of agricultural origin (Appendix 14.1).

The main hydrological features in the vicinity of the site were the two rivers which flows into Cork Harbour approximately 2.5 metres south of the site. The surface water within the site appeared to drain through nationally occurring channels along the field boundaries following the national topography of the landscape at the northern boundary with the road. The areas adjacent to the road are stated to be poorly drained due to gradient and possible presence of thicker glacial deposits.
A Coastal Erosion Assessment was carried out using historical maps and aerial photography to determine the location of the top and toe of the cliff and the high waterline over more than 100 years. The study determined that the centre and southern parts of the cliff line had receded westwards while in the northern part there had been deposition and the shoreline had moved eastwards over the time period. While the rate of recession of the cliff line could not be determined very accurately due to the limited data available the rate of recession appeared to have increased over the last 50 years.

A desk study was undertaken to assess the likely level of potential flooding at this site. Data on several flood events in Ringaskidae and Cork City were reviewed. For a one in 200 year flood, a 1 metre rise in sea levels and 0.5 metre freeboard, the design platform level of +4.55mOD was determined. It is stated that this design level would be above the predicted future flood level.

The EIS notes that there will some works carried out below the existing ground level on the site including diversion of services, removal of topsoil, earthworks and site regarding, construction of earth retaining structures, foundations and construction of waste bunker basement and underground water tanks. Fill material would be required to raise the general site level in the area of the waste transfer station to 4.55mOD. The basement and service yard of the site would require significant earth retaining structures while excavation would be minimised at the high level along the southern edge of the site with some minor earth retaining structures at the site boundary.

Surface water would be collected in underground drainage systems designed to comply with the relevant regulations. The facility would have packaged sewage treatment plant (one each for the waste energy facility and waste transfer facility). The treatment effluent would be discharged via the proposed pumped main to be constructed for the process effluent.

The potential impacts during the construction phase would include excavation works below the existing ground level and an excavation methodology would be confirmed at the detailed design stage. Potential impacts would also include contamination of the soils through accidental spillage. During operational stage potential impacts on soil and geology would be limited to accidental spillage and potential polluting substances though there would be no direct discharges to groundwater. Construction and operation of the facility is not expected to have a significant potential impact on the rate of coastal retreat though potential impacts of possible coastal protection works would be assessed to minimise impacts. The ground level in the western station at 4.55mOD will be above the estimated future one in 200 year flood. Raising of the ground in the waste transfer station is not expected to have an impact on flooding in Cork Harbour.

Overall there will be no direct discharges to soil or groundwater during the operational phase of the development and a number of measures will be incorporated into the design to ensure that the soils and groundwater on the site are protected from any potential sources of contamination. All storage
tanks in the west facility will be bunded as will the drum storage areas and storage tanks in the waste transfer station.

Surface water runoff from the tanker unloading direct injection bays and solvent storage tank bunds in the Waste Energy Plant will be collected if contaminated will be directed to the furnace or be sent off site for disposal. Surface water from other hard standing areas of the Waste Energy Plant and Waste Transfer Station will be directed to stormwater retention tanks and tested before being discharged to County Council Surface Water Drainage System. The retention tanks in the Waste Energy Plant and Waste Transfer Station will also collect contaminated water that may result from a fire. Rainwater from the roofs of the Waste Energy Plant will be collected for use in the process. Surface water from the car parking areas in the Waste Transfer Station will drain via hydrocarbon interceptor to the local authority sewer. Regular monitoring of the groundwater will take place to detect any changes in quality during the operational phase of the development.

5.17 **Effluent Generation and Treatment**

This is that of Section 15 of the EIS. Two sources of effluent are stated to be considered namely

- Domestic type sewage effluent and
- Effluent from flu gas cleaning treatment system.

The EIS states that the applicants are obliged to consider best available techniques when assessing the potential technologies to be used in the proposed waste energy facility and that this has resulted in the necessity to consider a flu gas cleaning treatment system which results in a purge off site. Other options for flu gas cleaning system did not include an effluent but all suitable options are stated to have been considered and assessed.

The EIS states that the applicants have considerable experience at operating their facilities with minimum effluent generation and advanced water conservation. The latter included capture and reuse of rainwater runoff and reuse of in process sources. The process water requirements of the waste energy facility are indicated in figures 15.1, 15.2 and 15.3. Water is stated to fulfil a number of functions including acting as a heat transfer fluid for power generation, gas quenching, gas scrubbing fluid and as the agent for removing inorganic salts. In many cases it is stated that the process can be ‘dry’ in that no net effluent is discharged as the intake water is all evaporated in the process. ‘Wet’ process or purge process can be used to maximise the process efficiency in terms of minimising chemical inputs and would have the advantage of reducing chemical inputs while more efficiently removing salt form the process which would otherwise be generated as a solid residue requiring land filling. It is stated that while this is practiced widely within the EU and elsewhere the BAT BREF note states (Section 4.5.3) on application of
wastewater free gas cleaning technology that marine environment can be used as a receptor of post treated salty wastewaters without adverse impact. It is stated therefore that the wet purge option may be the best practicable environmental option (BPEO) of the best available technology options particularly when located adjacent to the sea which is the most appropriate end point for a saline stream.

It is stated that the various flue gas treatment processes options described earlier are BAT. The main difference between semi wet or semi wet plus wet system and the option that gives rise to an effluent discharge, the “wet plus purge” is basically that the “wet plus purge” option adds in a second tier of scrubbing of flue gases essentially as a polishing step and as a further gas cleaning assurance step. The EIS notes that the quantities of flue gas cleaning residues will be reduced with a purge option. In Section 15.2.3 it is stated that the effluent generated is only in contact with the flue gases after all of the primary flue gas cleaning technologies have been implemented including primary acid gas removal and neutralisation and Denox and Dioxin and Dibenzo furan prevention and removal, D-dusting (bag houses) and primary energy recovery. It is stated therefore that the flue gases are already compliant with the Dioxin and Dibenzo furan emission limit value requirements of the Waste Incineration Directive and stipulated Irish emission limit values as specified in the waste licence.

The residual constitutes would be residue oxides of sulphur (SOx) chlorine (CL) and carbon dioxide (CO2) which potentially contribute to the corrosivity of the flue gases and in trained salt in evaporated solids. It is stated that the main constituents of the purge demonstrated that the scrubber system captured these elements as their calcium salts which are all naturally occurring, non toxic and inert, principally by absorption and in the scrubber liquid which contains solubilised lime. It is stated that these simple salt in solution are suitable for discharge to the marine environment without any adverse impact after neutralisation.

In paragraph 15.3 under purge effluent treatment it is stated that the scrubber effluent will be physico-chemically treated to ensure pH correction to the specified range and to allow the precipitation of some of the insoluble salts that may form. A temperature is stated to be maintained below 42°C to ensure protection of the sewer fabric and human health and safety and under the waste licence under Section 52 agreement of the Waste Management Act 1996 executed by the Sanitary Authority.

The EIS states that the Dognose Bank discharge pipeline was originally built by the IDA and was granted then described simulative design capacity. The pipeline would now be subjected to wastewater discharge authorisation by the EPA to Cork County Council under wastewater discharge (Authorisation Regulations 2007).

In paragraph 15.4 it is stated that the proposed discharge from the waste generated facility would not adversely impact on the intended use of the pipeline and outfall for the intended treated domestic wastewater from the
proposed shamble municipal wastewater treatment plant. It is stated that at present similar effluents from incinerators quenches are discharged to Cork Harbour while the outfall pipeline and have been adjudicated upon by the EPA as being in conformity with the legislative requirements.

In paragraph 15.4.1 the EIS refers to comparison with the relevant EU and national standards and objectives under the Water Framework Directive. It states that the standards met by the effluent are well within the assimilative capacities and the mission limit values for relevant list 1 and list 2 substances based on the modified Dangerous Substances Directive and Regulations. Referring to Cork Harbour area study entitled “Dangerous Substances Screening Study of Water Sediments and Biota” first of its kind undertaken in Ireland under the National Dangerous Substances Expert Group established in 2003 with report issued in July 2008 concluded that a precautionary approach should be taken by nominating 28 substances for further review after findings of the initial study.

It is stated that specification and concentration of the substances of concern in the intended effluent and the overall mass emission are well below any recognised standards and will not cause any intended or current environmental quality standards or environmental quality objectives to be exceeded in the receiving water. It is further stated that the lengthy experience and independent assessment of the discharges and control and management systems also serve to address concerns reasonably expressed in consultations with some parties including the Department of Communications, Energy and Natural Resources commenting on behalf of Southern Regional Fisheries Board. It is stated that the intended discharge of treated purge water will not adversely impact on any of the aspirations stated.

5.18 Archaeological, Architectural and Cultural Heritage

Section 16 of the EIS states that there are no recorded archaeological sites within the proposed development site or along the route of the proposed effluent pipe. It states that a section of the southern parameter of the proposed development site falls within the zone of archaeological potential for a Martello Tower which is listed in the Records of Monuments and Places. The Martello Tower is stated to stand approximately 70 metres south of the site while the enclosing wall of the tower and the ditch is approximately 30 metres south. The EIS notes that while it is not proposed to develop the area within the zone of archaeological potential the area may be impacted during construction works if machinery is travelling through it. No vibration impact is expected on the Martello Tower.

The EIS also refers to a path extending north-east across the proposed development site from the enclosing wall surrounding the Martello Tower to ordnance stones at Gobby beach but refers to subsequent modifications and removal of the central section of the path noting that evidence of the path may still remain below the surface. Noting that there is no legal registered right-of-
way along this path, the EIS notes that the proposed development will impact directly on the area of the path.

The construction work on the proposed development site would involve ground disturbance that would impact on any potential archaeological material that may survive below the ground surface. The EIS recommends that a programme of targeted geophysical investigation should take place in order to access the potential for subsurface archaeological sites in the development site and that this programme of geophysics should be agreed with the National Monuments Section of the DoEHLG and that ground works associated with the pipe laying for the proposed effluent pipe should be archaeologically monitored.

The EIS recommends that the design of the proposed development should take into account the visual impact of any structures on the Martello Tower and that the new buildings should not obscure the outline of this impressive monument which overlooks Cork Harbour.

5.19 Material Assets

In Chapter 17 of the EIS examination of material assets is based on the EPA advice notes and concentrates on the economic assets.

In relation to potential impact on the local settlement and in particular on property values the EIS refers to an English study and a study commissioned by Dublin City Council in relation to Poolbeg incinerator which concluded that there were no negative impact on the residential property values following announcement of the project in 2001.
6.0 Submission by the Planning Authority

6.1 The submission by Cork County Council is quite extensive. The submitted documents include

- Views of the authority on the effects of the proposed development on the environment and proper planning and sustainable development of the area signed by the County Manager.

- Record of proceedings at Council meeting held on 9\textsuperscript{th} February 2009

- Managers report for the Council meeting’

- Report by Senior Planner’

- A number of appendices include

  - Appendix A suggested further information.

  - Appendix B suggested conditions.

  - Appendix C copies of internal technical reports, from

    - Environment Directorate

    - Forward planning and strategic development section-PPU

    - National Roads Office

    - Area Engineers Office

    - Water Services Investment Programme Office

    - Rural Water, Planning and Coastal South Cork Office

    - County Architects Office

    - Recreation and Amenity Section

    - Conservation Officer-Heritage Unit

    - Heritage Officer-Heritage Unit

    - Archaeologist-Heritage Unit

    - Chief Fire Officer-Fire Services
6.2 Views of the Planning Authority signed by the County Manager notes the following particular points:

- The proposal materially contravenes specific objectives zone 1-1 and zone 3-13 (contract incineration by the finishing excluded) of the County Development Plan 2003 together with INF3-1 (implement provisions of the Waste Management Plan) and similar objectives in the County Development Plan 2009.

- The Council questions the need for the facility, particularly in relation to the municipal waste incinerator aspect of the proposal. The Waste Management Plan for Cork County 2004 confirmed the decision to continue to implement the Waste Management Strategy adopted in 1995 which does not include incineration as an option for dealing with waste. The initial targets outlined in the Landfill Directive for 2010 and 2013 can be met without incineration. The development of such a facility could divert waste away from prevention, material recovery/re-use and re-cycling.

- It is considered that inadequate information is contained in the EIS to make an informed decision on the visual impact of the proposal. It will compromise the visual amenities of Cork Harbour and areas adjoining, including Cobh, Monkstown and Camden including views from scenic routes. Similarly a detailed comparison with a permitted facility is needed together with more photomontages and alternative design options. A replica scale model of the proposal should also be made.

6.3 The submission includes a resolution by the members of the Cork County Council recommending that An Bord Pleanala refuse permission for the following reasons:


3. It would have negative visual impact and would compromise the visual amenities of Cork Harbour and areas adjoining.

It is further recommended that the Board would address the health issues, relating to the development, and give them serious consideration.

6.4 The report of the Senior Planner provides a development description, planning history, justification for the proposal and in table 1 provided a summary of principle differences between the current proposal and its predecessor. These indicate that while the building size remains relatively similar, the height of the building would be increased by 8 metres and the stack height would be
increased by 30 metres. The electricity generation would also be increased from 8 mega watts to 22 mega watts.

The report provides the saline points of technical reports in Section E.

(i) Planning Policy Unit/Forward Planning and Strategic Development Section.

- Contract incineration is not an acceptable use
- There is no objective either in the CDP 2003 or the Carrigaline Electoral Area LAP 2005 which specifically supports such facilities.
- The importance of landscape of Cork Harbour is recognised especially with reference to scenic routes.
- In CDP 2009, emphasis is placed upon the tourism potential of the harbours of Cork County including Cork Harbour furthering the development of the marine leisure sector and the commitment to prepare a harbour study.
- County Development Plan 2009 identifies Ringaskiddy as a designated strategic employment centre which has successfully attracted major large scale high technology manufacturing plants”.

(ii) Environment Directorate

This reports to various management plans and placement of more emphasis on prevention of waste in the later Waste Management Plan than the earlier one. Main points include:

- A lot of progress has been achieved in minimising the amount of waste going to landfill both has in terms of hazardous waste and municipal solid waste keeping in line with the EU Landfill Directive.
- The Council’s obligations for 2010 and 2013 under the Landfill Directive can be achieved.
- Construction of a municipal waste incinerator will not be required because of the improvements in the integrated waste management systems as required under the Waste Management Plan 2004 and it could be counter productive in discouraging
prevention and recycling as such a facility would remove the incentive to reduce, re-use and re-cycle”.

(iii) Area Engineer

Concerns are expressed about the impact of the development on the existing road infrastructure especially the N28.

(iv) National Roads Office

Concerns expressed about the impact in advance of the upgrade of N28 though it is not considered a significant matter to warrant rejection of the proposal in the context of the quantum of fluctuating traffic movements in the area.

(v) The Chief Fire Officer

The CFO has identified four issues that he considers should be addressed: storage of hazardous materials, fire brigade access, provision of water for fire fighting, and fixed fire fighting systems.

(vi) Heritage Unit

The Heritage Unit has no specific difficulties in relation to ecology of the site as long as the measures outlined in the areas are carried out. Cork Harbour has both designations as an SPA and SAC.

- Martello Tower is listed in the Record of Protected Structures but the impact on the recorded monument is not considered excessive subject to measures outlined in the EIS being carried out.
- The impact on the archaeology is not considered excessive subject to measures outlined in the EIS being carried out

(vii) Architects Department

Very serious concern is expressed about the visual impact of the proposal and that it would dominate the landscape of Cork Harbour for the following reasons:

- Immense scale on the waters edge.
- Angular nature of the proposed structure.
- Location centrally in a national asset which is Cork Harbour.
- Competition with other large structures in the harbour.
- Close visual proximity to the populated historic and amenity areas.
- Breaking of the skyline because of the enormous size.

Alternative architectural approaches including going back with the original curvilinear design are suggested.
(viii) Water Services

Tidal flooding is addressed and the design platform is above the minimum OD level but the access roads and parts of the site would be subject to some tidal inundation. The engineer request details of the “in service condition flood assessment” referred to in Section 14.9 of the EIS.

(ix) South Cork Hinterland Division, Recreation and Amenity Section

Two conditions which are based on conditions imposed by ABP on the Poolbeg incinerator are recommended.

In Section F, and under ‘Planning Policy and Context’ it is stated that while 2003 and 2009 County Development Plans are similar in the case of County Development Plan 2009 more emphasis is placed on the strategic role of Ringaskiddy as an employment centre and the significant role Cork Harbour is expected to play as a recreational/marine leisure/heritage resource including significant role for Spike Island.

Referring to paragraph 2.28 of the EIS which states:

“Given the approval of the planning permission by the Board for the previous proposal, the land use zoning of the land in question has effectively been changed, even if the local policy framework has not responded to the implications of this decision”.

It is submitted by the senior planner that this is not the case as the proposal was ‘site specific’, the advantage or benefit lay with the specific proposal and not the site, and that there may be a confusion of ‘material contravention’ with ‘variation’ in the EIS.

It is further stated that the opportunity to change the zoning in 2005 in making the Carrigaline Electoral Area Local Area Plan was not acted upon by the Council (to allow waste-to-energy).

It is stated that the proposal contravenes the three critical objectives in the County Development Plan 2003 namely INF3-1 (Waste Management Plan), objective zone 1-1 (development and land use zoning), objective ZON3-13 (appropriate uses – industrial areas).

It is noted however, that because of the reference to ‘disposal with energy recovery of waste material’, it does not ‘materially’ contravene objective INF3-1.
In the Carrigaline Electoral Area LAP, the zoning designation was I-15 with specific objective

*Suitable for large, stand alone industry with suitable provision for landscaping and access points for provision for buffer planting, minimum 15m wide, open space buffer to Martello Tower and its associated pedestrian access.*

The proposal while strictly not in full accordance with this objective, was not materially contrary to the objective, but this had to be read in conjunction with the definition of ‘industry’ as outlined in the County Development Plan objective Zon 3-13.

In relation to ‘Visual impact’ the report refers to the CASP vision for the future of the harbour and notes that the current proposal is significantly higher in terms of main building (7.3m+) and Stack (30m+) and that it will impact not only from the established areas around Ringaskiddy but also upon those areas regularly frequented by the public especially for walking in Monkstown, Curribinny, Camden, Cobh and Crosshaven. The visual impact would be particularly acute for the residents of western Cobh town, and very significant on Spike Island and the users of the Harbour whether commercial or recreational including cruise liners.

Stating that the planning authority has serious concerns regarding the immense scale of the proposed development on a prominent site, in close proximity to Cork Harbour and clearly visible form a number of points to the north, east and west and in particular from designated scenic routes, it is submitted that the proposed development would be detrimental to the scenic amenities of the area and contrary to the proper planning and sustainable development of the area.

The report recommends additional information/ revised design.

In section H the report refers to waste management Strategy for the County, and states that incineration is not included in the same. (It also refers to Action 51, studies being carried out into the possibility of employing thermal waste-to-energy treatment for the treatment of residual waste), and employment of consultants in relation to Materials Recovery Facility (MRF) incorporating MBT for the Cork Region.

In conclusion it is stated that

- The current proposal as set out is materially contrary to Cork County Development Plan 2003 and Cork County Development Plan 2009.

- Because of incorporation of municipal waste incinerator in addition to hazardous waste incinerator it is contrary to the County Development Plan 2003 and the Council’s Waste Management Plan 2004.
The report attaches a schedule of conditions as requested by An Bord Pleanala and suggested additional information in particular in relation to visual impact should the Board decide more detail is needed to adequately assess the physical impact.

The total general contribution requirement would be €2,386,715.60 based on 102.04P/SQM.

Also recommended is a special contribution towards the upgrade of the N28 though it is noted that it is a matter for the NRA.

7.0 Written Submissions by the Prescribed Bodies

7.1 Submission by the Department of the Environment, Heritage and Local Government.

This submission consists of three separate submissions as follows

7.1.1 Architectural Heritage

Stating that the assessment of impact on “architectural heritage” is now an integral part of the EIA process and has been included in the Planning and Development Regulations it is stated that it is not clear from the documentation forwarded with the application if consideration was made of the impact of the architectural heritage of the locality or if consideration was limited to impact only on protected structures.

It is further stated that given the location of the proposed development it may be that there will be a limited impact on the architectural heritage of the locality and that it is recommended that the Board authority should satisfy itself in its assessment of the application that this is the case thereby removing any grounds for challenge on that account.

7.1.2 Archaeology

Arising from the scale, extent and location of the proposed development it is considered possible that subsurface archaeological remains could be encountered during the construction phases which involve ground disturbance.

A number of measures are recommended as conditions in the granting of any planning permission. These include engagement of service of a fully qualified archaeologist, visual screening of the Martello with provision of an earth and berm and suitable planning and provision of an alternative path within the site from the Martello Tower to Gobby Beach.
7.1.3 **Nature Conservation**

This submission is quite lengthy and comes under a number of headings. Main points include:

### 7.1.3.1 Designated Sites

The proposed development is not located within a designated site or site notified or proposed for designation but is located within 1 kilometre of part of the legally protected Cork Harbour SPA and a number of designated sites lie within 10 kilometres and may therefore be effected by emission or discharges.

Providing a list of the designated sites and sites proposed to be designated the submission refers to European case law and that proposed SPAs must receive the same level of protection as the designated SPAs. Other entries include Great Island Channel (cSAC) where conservation objectives relate to habitat types, tidal mud flats, sand flats and Atlantic salt meadows. A set of proposed natural heritage areas (pNHA) are stated to be of primarily of bird conservation value.

The submission draws attention to Cork County Development Plan Objective ENV2-5 to maintain the conservation value of these sites. Two further proposed natural heritage areas were not included in any of the European sites but maintenance of conservation value of these sites were again County Development Plan objectives.

Cork Harbour is stated to be a ramzar site designated under the convention of wetlands of international importance especially as waterfall habitat.

### 7.1.3.2 Protected Species

Three types are stated to be required to be considered for the development


3. Species of flora are listed in the Flora Protection Order 1999 and protected under Section 21 of the Wildlife Acts 1976-2000: any species of protected flora likely to be adversely effected by increased NO\textsubscript{X} and SO\textsubscript{2} emissions.

### 7.1.3.3 Obligations under Birds Directive
The submission refers to Article 4(4) of the Birds Directive which states that outside the protected areas member states shall also strive to avoid pollution or deterioration of habitats.

7.1.3.4 Effects of Air Emissions

It is stated that due to their eco toxicological effects emissions of Pulley Chlorinated Debenzo-P-Dioxins (PCDDs), Pulley Chlorinated Dibenzo Furans (PCDFs), Thallium (TI), Mercury (Hg) and Cadmium (Cd) are of particular concern. It is further stated that these compounds and metals also bio accumulate effecting species such as piscivorous birds and otter which are high in the food web.

The submission states the EIS does not include an assessment sufficiently focussed on the effects of submissions on the European sites in Cork Harbour.

The flora and fauna section of the EIS accompanying the application does not assess the potential effects of air emissions on the conservation value of the above sites.

The submission refers to air dispersion modelling and the conclusion of no significant effect dried from modelling based on accedence values and states that “however there remain a number of questions relating to these accedence values and the translation of sediment deposition values into effects on ecological receptors has not been assessed”. The submission states that “although the air quality study concludes that in nearby areas which also have pSPA and pNHA designation (Cobh, Carrigaline and Monkstown) predicted levels are significantly lower than most background sources, it is nevertheless a requirement of the Habitats Directive Article 6 assessment procedure that “in combination” effects are taken into account.

7.1.3.5 Mercury and Bird Receptors

The EIS does not include any review of published scientific literature on incinerator-derived mercury emissions on birds and their habitats. Some recent studies conclude that detrimental effects on water birds of mercury emissions from incinerators have declined though it should be the function of the EIS to review this information in order to more precisely assess ecological risk.

Under the heading further information: ecological risk the submission refers to USEPA published pier review draft of screening level of ecological risk assessment protocol for hazardous waste combustion facilities and recommends further information in a number of areas.

- Does the air quality model take into account the combined emissions from both stacks.
- Can segregate data be provided for this proposed facility.
• How do the assumptions compare with the 3% of the year exceeding of the regulatory limit used in the abnormal scenario air quality modelling.

• Have fugitive emissions been taken into account in the air quality modelling in particular from handling and transport of site of fly ash.

• What is the statistical record for accidental releases in similar incinerator facilities to the proposal.

• What combination of waste minimisation and control technology options to reduce mercury emission rates are proposed for the operation of the facility.

• The submission includes further information in relation to other issues.

It further states:

Effluent discharge-the document indicates that discharge associated with the wastewater and purge effluent would exit through a proposed foul water sewer constructed to link in with an existing IDA file sewer and appears to indicate that the Shanbally treatment facility is still at the proposed stage and is to be considered by An Bord Pleanala.

Noting that the point of discharge at Cork Harbour for effluent discharge has not been identified clearly, that there is no indication that the proposed facility would be suitable to treat industrial effluent with a load comprising a range of metals and persistent organic hydrocarbons as indicated in table 15.3, and that the receiving marine environment has not been characterised by the applicant and that the marine flora and fauna of the receiving environment has not been described, the dispersion of the effluent and therefore the extent of impact has not been provided and no details are furnished relating to the existing effluent discharges to the area; it is stated “beyond stating a lack of impact without any clear justification presented and referring to a separate application process this EIS does not contain any transparent or reasoned assessment of the likely impacts individually or cumulatively of the proposed development on the marine environment of Cork Harbour and its resident flora and fauna.

Further information is recommended to detail whether the input of these effluents are likely to have an adverse impact on water quality within Cork Harbour and to whether there is a risk to flora and fauna from those elevated levels.

7.1.3.6 Bio Accumulation Estimates

The submission refers to the results of the air deposition modelling (table A9.46) and recommends further information on how this translates into cumulative sediment concentration using bio accumulation data, how this
translates into body fat and hence for birds to egg concentrations in the most susceptible species (list provided at the top of the food web).

7.1.3.7 APCS Performance

Review of the performance, location and frequency of measurements relating to that performance of hazardous and non hazardous waste incinerators with similar area of pollution control systems to that proposed would be very useful.

7.1.3.8 Accredited Data from Comparable Incinerators

It is recommended that accredited date from compliable air pollution control systems upon which the analysis is based be requested as further information in order to validate the conclusions of the EIS Section 9.8.2 similarly data is required in relation to mercury and heavy metal emissions.

7.1.3.8 Bird Collision Risk

As the site is on the coast between several parts of Cork Harbour SPA an estimate of the risk of collision to birds of conservation importance in the SPA with the proposed buildings and the structures is required in order to assess the potential effects of the bird populations of the SPA.

7.1.3.9 Potential Acidification of Limestone Grassland

Stating that Rock Farm quarry pNHA Little Island is of botanical conservation value for its calcareous grassland species. Nigh enrichment and acidification of the soils of the site would be detrimental to its conservation value.

In conclusion a more comprehensive assessment is recommended taking into account European commission guidance on Habitats Directive appropriate assessments (CECO, 2000) of the specific effects of effluent discharges and emissions from the proposed development on Cork Harbour and its protected areas.

7.2 Submission by the Environmental Protection Agency (EPA)

The submission states that the proposed activity is

1. That it is licensable by the Environmental Protection Agency. It further states that the agency shall not grant a waste licence under the Section 40(4) of the Waste Management Acts 1996-2007 unless it is satisfied in a number of areas. These include
• Non contravention of any relevant standards or emission limit values.

• Compliance with the requirements of the Landfill Directive if the activity involves land filling of waste.

• Use of best available techniques to prevent eliminate or limit, abate or reduce emissions.

• Consistency with the objectives of the relevant Waste Management Plan or hazardous Waste Management Plan and not being prejudicial to measures taken by the relevant local authority for the purpose of implementation of such plan. Other considerations include energy efficiency, compliance with noise regulations, measures to prevent accidents in the carrying out of one of the activities or where an accident occurs limiting its consequences to the environment, measures to be taken upon the permanent susation of the activity to avoid risk of environmental pollution.

7.3 Submission by National Roads Authority (NRA)

The submission by the NRA states that the authority does not have any objection in principle to the proposed development.

It continues to state

“However as acknowledged in the accompanying EIS the proposal has the potential to adversely contribute to existing unsatisfactory capacity issues on the N28 and the National Road Network Infrastructure which serves the proposals catchment. The authority would highlight that the latter has not been addressed appropriately in the environmental impact submitted.”

As an illustration of the issue the authority highlights Section 8.5 of the EIS where the traffic distribution was based on existing traffic patterns and states that it would be more appropriate if the origin of waste/destination of residual waste was identified giving a more robust analysis of traffic distribution.

In Section 8.4.2 estimated volume of HGV traffic generated by the proposed development was based on the anticipated volumes of waste coming into the facility but it is unclear if the table 8.5 includes all of the HGV trips.

The submission advises the Board that the land required for the proposed N28 is located within the development lands noting the Authority’s concern that these lands are designated for stockpiling material also as the construction site for the transfer station facility. They recommend that no works should be
included in this application within the route corridor of the N28 upgrade scheme without prior agreement of the NRA.

Referring to table 8.6 projected volumes of operational traffic they state that to avoid contributing to congestion at junctions it is recommended that it would be the hours of waste acceptance/removal should commence at 10am rather than 9am and that the acceptance removal between 4.30pm and 5.30pm should be excluded.

In their view traffic management plan should be agreed with both the Cork County Council and the NRA.

In the event of a decision to grant permission they recommend a development contribution of €564,321.01 towards the cost of proposed upgrading works on the N28 which they state will facilitate specifically this strategic infrastructure development application. They state that this sum is requested so as to protect the tax payer from the cost of inappropriate subsidisation of private development and provide breakdown for three separate areas namely link road from Lough Beg to Ringaskiddy, Lough Beg roundabout, Ringaskiddy traffic calming.

7.4 Submission by Health and Safety Authority (HSA)

In their submission of 22nd December 2008 the submission by the HSA states that the advice in relation to waste generation facility should be available by mid February 2009.

Add submission of 7th April

7.5 Irish Aviation Authority

The submission states that the authority has no observations to make on the proposals.

7.6 Submission by Bord Gáis Eireann

The submission states that they have reviewed the details of the application and that Bord Gáis has no comment to make in regard to either environmental impact statement or the proposed development.

Noting that there is a Bord Gáis network gas transmission pipeline within the Bord Gáis way leave partly within the site to be developed and that it is likely that this pipeline will have to be diverted at in-diverse course should a development proceed and that they have given an estimate for this work to adverse engineers.
7.7 Health Service Executive (HSE)

Stating that they were asked to make a submission as part of the scoping process for the Environmental Impact Assessment which resulted in the current EIS and attaching a copy of the Environmental Health Service (EHS), South Lee regarding recommendations of what should be included in the EIS.

The submission goes through the scoping report and nine recommendations and examination of whether these were carried out by the applicants. I note that while there seems to be some confusion regarding the position of the EIS in the EIA procedure, and use of the two terms interchangeably. Nevertheless examination of the EIS with reference to recognised standards and methodology is useful though overall the submission merely repeats what is contained in the EIS rather than commenting on whether the likely significant effects have been identified, whether methodology adopted in collection of data is appropriate, whether conclusions drawn are accurate and appropriate.

The submission concludes that the only recommendation that has not been adequately addressed was the development of the public participation stage of the process to a visibly meaningful level (recommendation no. 1) and advises that the Board attached conditions to any permission granted which basically require that the mitigation measures contained in the EIS are implemented in full.

7.8 Submission by Cobh Town Council

The submission by the adjoining Planning Authority states that they wish to object to the application on a number of grounds.

Zoning: The site is zoned for port related industries and an incinerator is not a port related industry. In addition commercial incinerators are excluded from being built on the site under the County Development Plan and Cork Area Strategic Plan.

Need: Only 10% of what is to be burnt in the hazardous incinerator comes from Cork area and this does not justify its location in Ringaskiddy. The minister for the Environment, Heritage and Local Government has stated that incineration is no longer a part of government policy.

Health/Environment: Cobh Town Council has serious concerns in relation to the health and environment issues connected with this application. Lower Cork Harbour currently contains a number of sites which give rise to worries for the people of Cobh and the harbour area generally. The
submission refers to Irish steel plant on Haulbowline Island and the most recent cancer register which indicated that Cobh has cancer rates 40% higher than the national average and states that incinerations causes health problems, increases incidents of respiratory illnesses especially in infants and children, can cause cancer, birth and heart defects and learning difficulties in children. It is further stated that the proposed incinerator will add hugely to CO\textsubscript{2} emissions and emit dioxins into the atmosphere.

Road infrastructure: Referring to their previous submission to the Board in respect of an application by Port of Cork for a container terminal at Ringaskiddy and the impact of the proposal on the road traffic the submission refers to the Board’s decision to refuse an inclusion as one of the reasons the adverse impact on the carrying capacity of the strategic road network and around Cork City and various interchanges it is stated that Cobh Town Council believes the current application should be refused on similar grounds.

It is further stated that in the event of a serious accident at the site which requires an evacuation from Great Island the existing road network off the Island is not capable of supporting a safe exit from the Island as Great Island is served by a single road which is in major need of upgrade and on which the main exit is by way of a hump back bridge.

In conclusion it is stated that Cobh Town Council is aware that their concerns are shared by a vast majority of residents in the lower harbour area and that it is a strong belief of Cobh Town Council that this application should be refused.

7.9 Submission by An Taisce

There are two submissions by An Taisce.

7.9.1 An Taisce – National Trust for Ireland

The submission is provided under six headings:

1. Legal title

Under this heading it is stated that the applicant has failed to address the status of a legal right of way running through a portion of the applicants landholding to demand Martello Tower, protect its structure. Referring to the arguments during the previous application that even if
the route is not registered as a right of way it is an established usage and no extinguishment of this right of way has been carried out by Cork County Council.

The submission refers to a formal written agreement between local residents Cork County Council, the IDA, the government in 1970s that no further waste disposal sites would be developed in the future in the Ringaskiddy and Monkstown. They state that documentation of this agreement was submitted on the previous planning application 04/131196.

2. Contravention of Cork County Development Plan

The submission states that while An Bord Pleanala are entitled to contravene a local County Development Plan arising from an appeal or an application under Section 34 of the Planning and Development Act 2000 no such entitlement arises in the case of an application directly lodged to the Board under the Strategic Infrastructure Act.

They submit that the proposed development constitutes a contract incineration as defined in the zoning objective ZON3/13 and paragraph 9.3.36 of the Cork County Development Plan 2003 which restricts incineration facilities whose primary role is to manage waste that are generated on the site itself e.g. by an industrial complex to the incineration of waste generated elsewhere and that accordingly the application contravenes terms of ZON3-13B which is the applicable zoning objective. The proposal would further contravene the specific objective set out under the land use classes in the Cork County Development 2003 as it is not a “large stand alone industry” specified under Objective I-15.

The proposal contravenes Development Plan objective 1-22 to safeguard lands in the vicinity of ports and harbours against inappropriate use that could compromise the long term potential (including access of the port and harbour). The proposed development would impede development and complementary development to the National Maritime College opposite the application site and the future appropriate and sustainable development of the east part landholding in the ownership of Port of Cork.

3. Contravention of Regional Policy of the Cork Area Strategic Plan (CASP)

CASP identifies Cork Harbour as the natural asset for the development of employment, amenity, recreation and tourism and makes particular reference to Ringaskiddy. In chapter 7 it states “the future focus of activities for the Port of Cork will be at Tivily and Ringaskiddy” and that “Ringaskiddy benefits from deep water birthing but suffers from a mixture of roles which constrains current operations”.
4. **Waste and Emission Generation**

The proposal is presented as a waste management “solution” that would result in the generation of ash material for which no treatment on disposal method is provided.

5. **Contravention of Quota Protocol**

The proposal represents an unsustainable management of resources which would increase CO\(_2\) emissions. The energy recovery benefit from the proposal is negated by the effects of the proposal in maintaining and sustaining the development of unsustainable waste streams and this incentivises the reduction of plastic, organic, paper and packaging waste and unsustainably encourages the unsorted inclusion of both biological and plastic waste in the mixed waste stream being incinerated.

Section 10.2.3 of the EIS fails to quantify greenhouse gas emissions.

6. **Unsuitability of the Site**

The site selection is inappropriate on the following grounds.

- Location at the end of a peninsular with road access only through a residential area. The site is not accessible from the national road network and requires that all traffic has to travel in one direction past residential areas to a cul-de-sac location at the end of a peninsular.

- The main facility extends to the eastern end of the peninsular with inadequate buffering as the site is located at the end of the peninsular directly facing the shoreline and below the ridgeline to the immediate south.

- Exposure of site to seawater ingress

- The geology and hydrogeology of the site is such that there is an inflow of seawater into groundwater. Cork Harbour is the location of major oyster fisheries and pollution of the harbour waters is a real possibility. Since the last decision of the Board there has been mounting data through IPPC UN panel on global climate change as well as EPA and Met Eireann. The exposure of groundwater on the site to increased seawater ingress and risk of erosion to the eastern foreshore part of the site will accordingly increase. Appendix 14.2 of the EIS is deficient in evaluating the impact of the sea ingress on groundwater.
• Conflict with development of National Maritime College of Ireland. The proposal represents an irreconcilable conflict with the location of the National Maritime College of Ireland and creates a serious impediment to the further development of this college including the development of a residential campus on the site.

• Adverse impact on visual amenity. The photomontages submitted by the applicant provide for a scale of development structure to the east of the original proposal and with significantly greater impact on amenity including the views across the harbour and from Cork Cove. The application particularly fails entirely to mitigate these impacts.

• Adverse impact on recreational amenity. The application site is on a cul-de-sac road with an established right of way to the foreshore for recreation amenity and for access to the Martello Tower. The proposal would be entirely incompatible with the continued enjoyment of these areas for recreational amenity and would generate direct conflicts between recreational amenity access.

• Inadequate infrastructure for emergency evacuation. The application site because of its cul-de-sac location at the eastern end of the Ringaskiddy peninsular and opposite the National Maritime College represents serious emergency evacuation and fire fighting or emergency worker access problems because of the lack of alternative road access. The evacuation of the National Maritime College and Ringaskiddy village area would create a potential conflict with the emergency vehicles arriving at the site.

7.9.2 Submission by An Taisce – Corcaigh

The principle reasons for the objection of An Taisce Corcaigh are stated to be:

1. Site selection-WHO guidelines ignored.

2. Site unsuitable-by reason of topography, climate conditions, proximity to sensitive, historic and protected structures.

3. Public safety-major accident hazard.

4. Scale and size of the proposal.

5. Inadequate infrastructure (and no current plans to build new prerequisite infrastructure).

6. No convincing economic case to justify the facility.
7. Conflicts with current government policy and international treaties.

The submission states that An Taisce supports the zero waste approach to solving Ireland’s waste management issues and consider avoidance of waste creation as a first step. It is stated that waste is considered a resource that is surplus the requirements only at a particular stage in its life cycle. It is submitted that before and after that stage it has or had its useful purpose and that their goal is to strive to avoid the waste of resources at all points in the life cycle of products. They submit that preference should be given treatment where resources are not destroyed but rather recovered, reused or recycled.

The submission state that the proposed development is in conflict with the Sustainability Strategy.
8 Submissions by Observers

8.1 Excluding submissions cited under the prescribed bodies there are 285 written submissions (with 1099 signatures) all objecting to the proposed development. Some of these submissions are made by umbrella groups (membership numbers not provided, though I note references to representation of 30,000 people living around Cork Harbour).

In view of the considerable number of submissions (and repetition in some), I propose to outline the main points common to the submissions, rather than referring to individual submissions.

8.2 Non-Compliance with policies and Provision of excess capacity

- The proposed hazardous waste incinerating capacity is far greater than warranted by reference to demand. IPPC licensed incinerators installed in the Ringaskiddy area within the existing pharmachem plants deal with a bulk of the waste from those plants suitable for incineration.

- Excess capacity will disincentivise the primary objective of the NHWMP reduction of waste arising.

- The excess capacity will lead to monopoly within Ireland and will render it unlawful for hazardous waste producers to export the waste for disposal overseas.

- The excess capacity will act as a magnet for import of hazardous waste from outside (particular Northern Ireland/UK) in contravention of proximity principle.

- The proposed development will frustrate achievement of national Hazardous Waste management targets

- The minister has stated that incineration is no longer a key part of government policy

- Under previous decision the Board granted permission for the previous proposal stating that it was government policy. The government policy has changed and the minister has stated that mass burn is not government policy.

- Government policy has elevated the mechanical and biological treatment of waste and downgraded the importance of incineration as a preferred method of waste incineration.

- The Department of the Environment, Heritage and Local Government’s policy preference is for disposal of residual waste by way of mechanical or biological treatment (MBT).
The department has stated that in its view the quantity nationwide that would require disposal by other means possibly some form of thermal treatment would be 400,000 tonnes per annum. Therefore there is no need to add a further 240,000 tonnes incineration capacity as there is already 800,000 tonnes capacity permitted all under construction.

The proposed development would lead to gross over capacity in view of already authorised waste incineration capacity in Ireland (600,000 tonnes per annum in Poolbeg, 230,000 tonnes per annum in Carranston, and available capacity at existing cement kilns).

There is over provision of incineration with huge over capacity and it is difficult to see how all these facilities can be run on an economic basis.

The waste stream that is required to make the facility viable cannot be sourced within the Republic of Ireland.

There is no facility (existing or proposed) to take the hazardous ash which would be produced by the proposed facility.

Ireland will not be self sufficient as a result of the proposed development as ash along with any waste that is not accepted at the site will still have to be exported.

The hazardous waste incineration facility would not significantly reduce Ireland’s export of such waste in fact would likely to import of the same in order to provide for the design capacity.

Waste generation should be minimised and this will not happen if there is a mass-burn facility available which needs a waste stream to keep it going 24 hours a day

The proposed facility will not be in line with the polluter principle nor will it be in compliance with proximity principle as waste will be brought from all corners of the country

Incinerators do not replace landfill, but will be in addition to landfill

The proposal contravenes existing EU Directives in relation to conservation, energy and the environment. The proposal is in contravention of the National Spatial Strategy.

The proposed development would inhibit waste prevention due to amount of waste which it would require if it were to operate anywhere near its normal capacity. It would also inhibit development of other more sustainable waste management technologies.
• Incinerators waste energy as by burning materials they render them unsuitable for re-use/recycle and lead to requirements for making newer things from raw materials

• Greenhouse gas emissions from the proposed development will be contrary to the efforts to combat climate change. Relatively small amount of energy recovered would not compensate for the loss of energy expanded in the production of unsustainable products especially those incorporating fine art resources.

8.3 Inconsistency with Cork County Waste Management Plan.

• The application would undermine the objectives of Cork County Waste Management Plan and is premature.

• Waste Management Plan does not require reliance on incineration of waste.

• Disposal of domestic waste is more than adequately provided for in the Cork region already by the large modern landfill at Bottlehill, with a capacity of 5 million tonnes and a design life of 20 years, it is about to come into operation.

• The proposed incinerator will compete with and tend to undermine the economic viability of the publicly funded facility at Bottlehill.

• Proposed development will encourage more waste, as incinerators need regular feed

• There is adequate capacity to address the needs of Cork for quite some time.

8.4 Inconsistency with County Development Plan policies.

• The County Development Plan specifically opposes location of contract incineration at this location. Distinction is drawn by the County Development Plan between this type of incineration and a dedicated in-house incineration plans of which there are five operating around Cork Harbour.

• The application contravenes development objective I-22 of County Development Plan to safeguard lands in the vicinity of ports and harbours against inappropriate uses that would compromise the long term potential of the port and harbour.
The proposed development would have adverse impact on an area designated for tourism, clean industry and water based businesses and recreation under the Cork Area Strategic Plan.

The proposed development is contrary to the zoning of the site.

Location of the proposed development would contravene County Development Plan, Cork Waste Management Plan, Cork Area Strategic Plan, Regional Development Plan and National Spatial Strategy in terms of the intended use of the land in the area.

Incineration is not a port related industry and merchant incineration is specifically excluded from this site.

8.5 Site suitability

The site is unsuitable in planning and environmental terms.

The applicant has not demonstrated that any rational or coherent site selection process was adhered to.

National and international best practice advises against locating hazardous operations in vulnerable coastal locations. The site is vulnerable by virtue of its low elevation and location next to a crumbling coastline and is vulnerable to flooding even under present day sea level conditions. In October 2004 adverse weather conditions lead to flooding on site.

The EIS does not in any way deal with the consequences of increased storm that is likely to accompany climate change.

The application does not comply with WHO site selection guidelines for hazardous waste management facilities.

There are no national guidelines for citing hazardous waste plants.

Location of a SEVESO-scale hazardous waste storage facilities immediately across the road from National Maritime College is unacceptable.

Ringaskiddy site has failed 13 out of 14 of the WHO guidelines of the site selection for hazardous waste incinerators.

Part of the WHO guidelines of citing toxic waste incinerators is that they have to be accepted by the community in which they wish to locate.

Hammond Lane metal company facility located on adjacent site processes waste steel and has a by-product known as fragg. Fragg is by its nature self combusting and is on its own a fire hazard.
• The proposed site is at risk of flooding.

• During the previous hearing the applicants did not accept the idea of flooding at site.

• The site is also prone to coastal erosion.

• The site is unsuitable to accommodate the proposed facility due to its location bordering an area of coastal erosion which is also prone to flooding.

• Groundwater vulnerability at the site is ‘extreme’. The aquifer is ‘locally important’

• Expert opinion by Professor John Sweeney (NUI Maynooth) refers to the report on the intergovernmental penal on climate change and notes that the 2007 estimates for sea level rise may be conservative and the risk is on the upside and values in excess of 1 metre rise by 2090 would not be a surprise. The opinion also raises concern regarding history or erosion at the site and that coastal protection measures will most likely be envisaged for the development.

8.6 Transport infrastructure/Traffic generation

• Existing road infrastructure is inadequate and prone to serious congestion

• The proposed development will increase the number of vehicles, in particular HGVs and level of traffic hazard on an already inadequate road network.

• The Boards decision not to give permission to the Port of Cork company due to insufficient transport infrastructure which is unlikely to be upgraded in the immediate term equally applies to the proposed development.

• The site does not have rail transport to deliver waste particularly hazardous waste which is dangerous to transport by road

• The road infrastructure in the area including road to Ringaskiddy, Shanbally roundabout, Carr’s Hill and Jack Lynch tunnel are full to capacity already. The proposed development would result in at least 200 extra trucks on the road per day.

• There is no funding for the N28 upgrade.
• The proposed development will increase traffic levels at Jack Lynch tunnel and areas surrounding Ringaskiddy including Monkstown and Carrigaline roundabout lengthening the rush hour queues.

8.7 Injury to residential and recreational amenity

• The development will be unacceptably harmful to residential amenity by reason of its nature, function, location in close proximity to high density housing development at Ringaskiddy and to the residential quarters located at naval service at Haulbowline.

• All the traffic going to the site will have to pass through the village twice. (Some vehicles will have to carry hazardous material).

• The proposed development will have adverse impact on walking routes, beach activities, rowing fishing and other water recreational activities

8.8 Public safety/major accidents

• The plant poses a risk of major accident hazard under the SEVESO 2 Directive.

• There were explosions in two hazardous waste incinerators (Argentina 2004, and Arkansas 2005 ) which resulted in death of people and required evacuation

• The development is served by a single substandard road. Evacuation of National Maritime College and naval service at Haulbowline Island will pose significant risks to public safety in the event of a major accidents.

• There is also risk of explosion at the waste transfer station

• There is further risk of explosions from the transit and storage of volatile materials. Important State facilities in National Maritime College and Irish naval base are most at risk.

• There is only one exit off Cobh Island. In the event of an accident it will be very difficult and hazardous to evacuate people.

• Jack Lynch tunnel will become overly busy with lorry loads of hazardous waste and ash being dropped through it. It will also be hazardous for other drivers.
According to the ‘Hazid Report’ the main risk of impact off site is posed by flammable and toxic liquid waste and not from the operation of the incinerator.

At the previous oral hearing emergency services stated that they would not be able to get to the site in the event of a major fire due to lack of road infrastructure and its location at the end of a peninsular. This puts lives and safety of the people using Maritime College naval base and UCC at unacceptable risk.

Storage of flammable toxic liquid just off Gobby beach will put the lives of children and parents at risk.

8.9 Emissions/ impact on human health

Use of Cork Airport wind models is inappropriate. There are currently four wind stacks in Ringaskiddy area measuring wind patterns. Data should be taken from them.

Lower harbour area is prone to thermal inversions. This will result in increased levels of air pollutants in the surrounding area

Even under normal operations the development will be harmful to human health and environment which will be intensified in the event of accidental or abnormal operations.

Cobh located 1700 metres north of the site and downwind from the site in terms of prevailing winds has cancer rates of 43% in excess of the national average. As such it is already vulnerable to add further pollution would make matters worse.

According to WHO fact sheet in relation to particulate matters (NLCC6, and NLCC7) the operation of the plant will be a significant source of particulate matter even at perfect compliance with licence conditions. This will pose a new additional burden worsening existing air quality in the vicinity.

The local population health status has been found to be under serious stress and it is singularly inappropriate and unjustifiable to impose any additional stressors in the circumstances.

Waste incinerators are accepted to be the most polluting technologies on the planet and they are concerned about the cumulative effects of toxic dioxins, heavy metals and other chemicals that would emanate from the proposed plant.
• Monitoring by EPA appears to be based on what is technically achievable rather than what is safe and bridges of regulation in the plans appear to be self-regulating by the operator.

• The emissions from the proposed development can become very quickly concentrated in the food produced in the area.

• The proposed development will adversely effect the image of Ireland as a country that produce clean, healthy and wholesome food. The emissions from the incinerator will adversely effect the quality of the food and the economy of the area particularly those located downwind from the incinerator.

• The area already has heavily polluted black-spots, particularly at Haulbowline dump.

• There is serious concern about 13,000 tonnes of toxic liquid waste which will be stored across from Maritime College.

• The proposed development is inconsistent with Irish governments policy to reduce release of dioxins furans, hexachlorobenzene and PCBs.

• In the absence of a comprehensive baseline studies it will be difficult to apportion responsibility for pollution in the future. As the EPA does not have sufficient resources to provide continuous monitoring, it will be regulatory. The Board is asked to apply the Precautionary Principle and refuse permission.

• Indaver has previously exceeded emission limits in their Belgium Plant by a factor of 1800.

8.10 Visual impact

• Cork Harbour is an amenity of extraordinary value. The proposed structure of such massive bulk, height and scale will be a dominant future in the landscape.

• The structure will be three times the length and four times the width of the cathedral in Cobh with a stack height similar to that of the spiral of Cobh Cathedral.

• The proposal will be unsightly and detract from Cobh as a town of historical significance.

• The tourism potential of the harbour will be negatively impacted with this large structure. The stacks will be visible all around the area.
Due to its prominent location it will be impossible to meaningfully camouflage or mitigate this overwhelming visual impact.

The proposed development will be a discordant feature visible from designated scenic routes.

The proposed structure will be highly visible to passenger cruise liners.

The development will negate the improvements arising from removal of Irish steel and disfigure the landscape of the harbour.

The proposed development will have adverse impact on the views towards Martello Tower which is a protected structure.

8.11 Local economy

The contaminants will effect the pastures where animals graze and have adverse impact on traceability/liability on milk and meat products.

In the event of a problem at the proposed incinerator locally produced foods contaminated with or even perceived contaminated with dioxins will be unsaleable. Similarly contaminated fresh fruit and vegetables will put consumers at risk.

The proposed development will have adverse impact on tourism facilities in Cobh arising from perception in relation to health matters.

The proposed development will adversely affect development of Spike Island as a heritage site.

The proposed development will be of no economic benefit to the local economy, but will stifle local recycling and reclamation industries.

Zero waste alternative (product re-design, recycling) also provides significant numbers of safe jobs, far in excess of those to be employed by the proposed development.

8.12 Compliance with requirements of the EIA Directive

The EIS is inadequate and does not comply with the mandatory requirements of the European Directive and Irish regulations.

The European Commission has decided to refer Ireland to the European Court of Justice in a case concerning European community legislation on environmental impact assessments.
The extent to which rock breaking will be required in some sections has not been identified.

The applicants did not carry out appropriate public consultation.

EIS is invalid as the closest neighbours (maritime College) were not informed by the applicant.

EIS fails to assess the impacts within the context of the environment where there is a legacy of toxic materials and contaminated sites in close proximity.

Use of emission levels caused by backyard burning of domestic waste (a practice now proscribed) is not an appropriate base line, and has no scientific basis.

Gaseous emissions from the plant are incompletely described, and inadequately characterised. There is no information on which to assess the impact of fugitive emissions.

Without adequate characterisation of the waste and without assessment of emissions due to abnormal operations, it is not possible to draw conclusions as to human health impact.

EIS includes a text from EHA ltd. of unattributed authorship or qualification (on health impact).

EIS does not provide accurate information regarding visual impact.

Flood risk assessment is by way of a desk study and data are not adequately disclosed.

Interaction of impacts is considered in a cursory fashion.

Impact on greenhouse gas emissions and related matters is incomplete, based on mistaken assumptions and misleading.

Flora and fauna surveys are incomplete, and seasonally limited. They do not provide sufficient basis to assess the impacts of the development.

8.13 Legal and procedural matters

The Irish decision making process in relation to planning and approval of incineration type development is invalid under EU law and therefore under national law. The obligations under EU law mandate the Board to withhold further consideration of the application pending the outcome of the Commission’s proceedings in relation to case...
concerning provisions of Irish legislation governing the approval of incinerators and other large industrial projects and provisions governing the removal of important archaeological sites.

- There is no system of substantive or procedural review of the Board’s decision such as is required by EC law. The Board should therefore refrain from further consideration of the present application until the defects are resolved.

- Dealing with this application through the Strategic Infrastructure Act bypasses the safety net (Cork County Council planning process) for exhaustively assessing the potential health impact of the proposed development, without considering methods of minimising harm and maximising benefits to the local community.

- The Board was statutorily prohibited from considering impact on human health or the environment while making their decision. Invalidity of that restraint has since been acknowledged by subsequent legislation and renders the initial decision inappropriate for consideration for present purposes.

- There has been no public consultation. The applicants claim to have met with organisations that do not exist (Carrigaline Town Council) yet Ringaskiddy and district residents associations did not receive any invitation to meet.

- Charter of fundamental Rights of the European Union (Article 11-97) require a high level of environmental protection and improvement of quality of the environment must be integrated to the policies of the Union and ensure sustainable development

- The period within which to make a submission to An Board Pleánala is eight weeks. To state that it is seven weeks is misleading, and aimed at limiting the time for submissions

- The proposed development does not constitute Strategic Development. Fast track planning process is not appropriate for this development

8.14 Costs

- No proper provision is made to assist participants who wish to have their views made known to the Board on the application. This is contrary to the provisions of the AARHUS convention, the provisions of the implementing EC Directive and contrary to the provisions of the European Convention on human rights Article 6 and Article 8 in particular.

- In order to have any prospect of parity in presenting their case to the Board it is essential that the communities have financial resources available to them in order to retain appropriate independent expertise
and advice for that purpose. The practice recently adopted by the Board of making some reimbursement of costs incurred by third party appellants has been extremely limited in scope and does not meet the test laid down in the convention nor does it comply with the requirements of the EC’s implementing Directive.

- The community does not have access to resources as a multinational making the application. They object to the fee of €50.

8.15 Other

- A right-of-way existed from Martello Tower to Gobby Strand since the time of British occupation.

- The proposed development will have adverse impact on the flora and fauna in the area.

- The proposed development will have adverse impact on property values

- Photomontages are misleading.

- Artist’s impressions contained in the brochure are misleading

- The proposed development would lead to gate fees putting unnecessary financial burden on communities.

- The proposed development does not conform to the definition of ‘industry’—useful manufacture. Rather it relies on gate fee charges to accept waste, and converts them into heat (small), toxic pollutants into air, and toxic ash (one third weight) and as such it is an activity more appropriately defined as ‘chemical-de-formation’.

- It is inappropriate to classify ‘incineration as ‘Strategic Infrastructure Development’

- Applicants should provide bond to indemnify everybody within 40km radius, and provide funding for continuous monitoring (24/7)
9.0 Relevant Policies and Guidelines

9.1 This section of my report provides a general overview of policies at international, EU, national and local levels, which are relevant in Board’s determination of the case.

9.1.1 International Policy and Guidance

United Nations Kyoto Protocol to the Convention on Climate Change
Stockholm Convention …..

9.1.2 EU Legislation and Guidance


Policy Guidance

EU COM (2005) 666 A thematic strategy on the prevention and recycling of waste
EU COM (2005) 666 Thematic strategy on waste prevention and recycling

Climate change 2007: Mitigation of Climate change: Fourth Assessment Report of the Intergovernmental Panel on Climate Change

9.1.3 National Legislation and Guidance

National Legislation

Waste Management Act, 1996
Waste Management (amendment) Act, 2001
Protection of the Environment Act 2003
Waste Management (Hazardous Waste) Regulations, S.I. no. 163 of 1998
Waste Management (Moment of Hazardous Waste) Regulations SI no. 147 of 1998
Waste Management (Shipment of Waste) Regulations SI no. 419 of 2007
European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2000
European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2006

National Policy Guidelines

Waste Management: Changing our ways, 1998
Preventing and Recycling Waste: Delivering Change, 2002
Waste Management- Taking Stock and Moving Forward-2004
National Hazardous Waste Management Plan 2001
National Hazardous Waste Management Plan (2008-2012)
National Strategy on Biodegradable Waste 2006
National Waste report 2006
National Climate Change Strategy 2007-2012
National Development Plan 2007-2013
National Spatial Strategy (2002-2020)
Delivering a sustainable energy future for Ireland (Government white paper) the energy policy framework, 2007-2020

DoEHLG Circular letter WIR 09/07 (July 2007)
DoELHG Circular letter WIR 04/05 (May 2005)
DoELGH Statement of Strategy 2008-2010
DoEH&LG Circular No WPRR 04/09 (May 2009)
Other relevant Documents

Hitting the targets for Biodegradable Municipal waste: Ten Options for change. EPA January 2008 (discussion paper)

Planning Policy and Waste Management Plans

The South West Regional Planning Guidelines, 2004
Cork Area Strategic Plan 2001-2020
Cork County Development Plan 2003
Cork County Development Plan 2009
Cork City Waste Management Plan 2004-2009

9.2 European policies


The latter provided a definition of ‘hazardous waste’ in Annex I and II and listed properties which made them hazardous in Annex III. It also required national competent authorities to publish a hazardous waste management plan.

9.2.2 The subsequent Council Directive 94/67/EEC on the Incineration of hazardous waste provided measures and procedures if prevention is not practicable to reduce the negative effects on the environment and human health related to air, soil, and water pollution caused by the incineration of hazardous waste, and set out limits. It required competent authorities to establish monitoring and inspection regime to assess operating conditions and measure emissions, and required notification exceedances of limit values.

9.2.3 The Thematic Strategy on Waste Prevention and Recycling (2005) sought application of life cycle thinking to waste management with the ultimate goal being prevention of waste. Where it is produced, its use as a resource is recommended.


It defined key concepts such as waste, recovery and disposal and put in place the essential requirements for the management of waste, and obligation for an establishment or undertaking carrying out waste management operations to
have a permit, and an obligation for member states to draw up waste management plans.

It also established major principles such as obligation to handle waste in a way that does not have a negative impact on the environment or human health, and encouragement to apply waste hierarchy in accordance with polluter pays principle.

The Directive set limits on sulphur dioxide and nitrogen dioxide emissions. It also provided definitions in Annex II A and Annex II B of Disposal and Recovery operations. It also provided definitions in Annex 2(a) and Annex 2(b) of disposal “and recovery” operations. It defined recovery as ‘use principally as a fuel or other means to generate energy’ as a ‘recovery’.

9.2.5 The Council Directive 2000/76/EEC on the Incineration of waste provided definitions of ‘waste’ and ‘hazardous waste’. It also provided definitions of incineration plant and co-incineration plant and stated:

If co-incineration takes place in such a way that the main purpose of the plant is not the generation of energy or production of material products, but rather the thermal treatment of waste, the plant shall be regarded as an incineration plant.

It specified more stringent dioxin levels, limits for mercury and dust arising from waste incineration and operational requirements to be applied to new plants from Dec 2002. Article 14 of the Directive required the Commission to submit a report before 31 Dec, 2008 based on the application of the Directive.


In its recitals it stated that the Directive should help move the EU closer to a ‘recycling’ society, referred to thematic strategy on prevention and recycling, and the need to assess the definitions of disposal and recovery to ensure a clear distinction between the two concepts based on genuine differences in environmental impact of the operation.

Under general requirement it gave powers to member states to provide legislation or measures to ensure ‘producer responsibility’ for manufacturers, importers and sellers of the product.

Under prevention of waste it required interim report on formulation of a product eco-design policy by 2011.

In Article 16 under ‘Principles of Self Sufficiency and Proximity’ it required member states to take measures in cooperation with other member states to establish an integrated network of waste disposal installations and installations.
for recovery of municipal waste. It also required that the network should be
designed to enable the community as a whole to become self-sufficient.

In Article 18, the Directive introduced a ban on mixing of hazardous waste.

It further limited the scope for consideration as a ‘recovery operation’ by
introducing specific technical efficiency thresholds in Annex II.

It qualified energy efficiency criteria R1 ‘use principally as a fuel to other
means to generate energy’ to include incineration facilities dedicated to the
processing of municipal solid waste only in cases where their ‘energy
efficiency’ is equal to or above 0.65. Annex II provided the formula for
calculation of the ‘energy efficiency’ of the plant.

9.2.7 Council Directive 96/82/EC on the Control of Major Accident Hazards
Involving Dangerous Substances as amended by Directive 2003/105/EC of the
European Parliament and of the Council

on the Control of Major Accidents Hazards involving dangerous substances.

It amended the Article 12 to read as follows:

Article 12 of the Directive reads:

“Member states shall ensure that the objectives of preventing major
accidents and limiting the consequences of such accidents are taken
into account in their land use policies and/or other relevant policies.
They shall pursue those objectives through controls on:

(a) The siting of new establishments
(b) Modifications to existing establishments covered by article 10
(c) New developments such as transport links, locations frequented
by the public and residential areas in the vicinity of the existing
establishments, where the siting of developments are such as to
increase the risk or consequences of a major accident.

Member States shall ensure that their land-use and/or other relevant
policies and the procedures for implementing those policies take
account of the need, in the long term, to maintain appropriate
distances between establishments covered by this Directive and latter
residential areas, buildings and areas of public use, major transport
routes as far as possible, recreational areas and areas of particular
natural sensitivity or interest and in the case of existing
establishments, of the need for additional technical measures in
accordance with Article 5 so as not to increase the risks to people.”
9.2.7 Council Directive 2008/50/EC on Ambient air Quality and cleaner air for Europe merged four Directives and one Council decision into a single directive on air quality, would repeal Directives 96/62/EC, 1999/30/EC, 2000/69/EC and 2002/3/EC from June 2010. The Directive must be transposed into Irish law by 2010. It set limits for particulates PM 2.5, but stated that these and other pollutants would be reviewed in 2013 as appropriate.

9.2.8 Regulation (EC) No 850/2004 on persistent organic pollutants and amending Directive 79/117/EEC. The objective of the Regulation is stated to protect human health and the environment from persistent organic pollutants by prohibiting, phasing out as soon as possible, or restricting production... of substances subject to the Stockholm Convention.... by minimising with a view of eliminating where feasible as soon as possible, releases of such substances...

9.3 National Policy

There is a similar evolution of policy at the National Level. The initial policy statements on waste “Changing our ways, 1998”, and Preventing and Recycling Waste: “Delivering Change, 2002” introduced the waste management hierarchy, and the need to reduce reliance on landfill as a central tenet of the waste policy.

It also set targets for diversion of overall household waste from landfill with 35% recycling target, 65% reduction in the biodegradable fraction consigned to landfills and 80% reduction in methane emission from landfills. These policies were in place at the time of the decision of the Board on the previous application.

Since then two further documents ‘Taking Stock and Moving Forward-2004 ‘ and, ‘National Strategy on Biodegradable Waste 2006’ provided further direction in policy.

9.3.1 Taking Stock and Moving Forward-2004 states : in key point 10:

“...thermal treatment with energy recovery has a role to play as one element in the integrated approach to waste management”

9.3.2 National Strategy on Biodegradable Waste 2006 states, in chapter 5:

...to reduce the environmental impacts of landfiling and to meet the targets set in the Landfill Directive, the management of biodegradable municipal waste will be improved by implementing a range of options.

The most desirable options would be waste prevention, reduction and reuse, followed by source separation for material recycling and
biological treatment. The other option that would be pursued to divert BMW from landfill includes thermal treatment which enables the energy content of the residual waste to be captures and used and pre-treatment systems that decrease the biodegradable content of residual waste prior to thermal treatment, MBT or landfill.

In establishing the Targets in section 5.3 it is stated:

Meeting national recycling and biological treatment targets and the EU landfill diversion targets will result in the diversion of approximately 80% of all BMW from landfill by 2016. Approximately 1.82m tonnes will need to be diverted annually away from landfill. This will require a substantial provisions of additional recovery capacity ...630,000 tonnes per annum....The quantities diverted by means of separate collection, materials recycling and biological treatment are still not sufficient to entirely bridge the gap between biodegradable municipal waste generation and the Landfill Directive targets.

Meeting targets would therefore require that a certain proportion of residual bio-waste which is not suitable for recycling or biological treatment or is not collected separately is pre-treated prior to landfill. Two broad categories of treatment are available, thermal treatment with energy recovery and mechanical biological treatment(MBT) with thermal treatment or landfill of the stabilised residue.

Table 5.1 provides for diversion targets for 2010, 2013 and 2016, increasing the total diversion from 59%, to 73% to 80%, while reducing landfill percentage. Taking into account the recycled and biological treatment waste requiring residual treatment would in the same periods increase from 13% to 18.5% to 22% (from 308,904 tonnes to 499,762 tonnes).

It states that the residual treatment identified in most regional waste plans is thermal treatment with energy recovery.

In chapter 9 under policy it is stated:

Separately collected BMW that is not suitable for recycling or biological treatment or alternatively is collected in the form of mixed waste is termed “residual” BMW. Implementing the prevention and recycling strategies will reduce the proportion of waste arising as ‘residual’ waste... despite reaching high levels of recycling and biological treatment, significant quantities of residual waste will continue to be generated. A large proportion of this material will be biodegradable and will need to be diverted from landfill in order to meet the diversion targets...
It is also stated in section 9.5.1

*Thermal treatment with energy recovery in accordance with the internationally-accepted waste management hierarchy is a key element of Irish waste management policy. The 10 Waste Management Plan for the regions /counties recognise this integrated policy role of thermal treatment and facilities have been proposed by local authorities for the treatment of residual waste in 6 of the regions.*

It is further stated:

*Recovering thermal energy from waste is supported by the National Climate Change Strategy. ... As well as incineration, other thermal treatment processes – e.g. pyrolysis and gasification – continue to be developed and may eventually be applicable for treatment of residual waste.*

In section 9.5.2 under Mechanical-Biological treatment MBT is described as a process that stabilises and reduces the volume of waste to be sent to thermal treatment or landfill.

The National Strategy on Biodegradable Waste makes a specific reference to Cork where it states:

*Cork regional Waste Management Plan proposes an MBT approach to residual waste management. Procurement of a regional facility through a PPP approach is underway with delivery of the project 1-2 years distant.*

9.3.4 *Ten Options for Change*’ the discussion paper by the EPA’, states that based on most recent statistics, delivery targets appears to be behind schedule, and to comply with Landfill Directive target for 2016, the country must develop new systems and infrastructure to manage in excess of 1 million tonnes of OFBMW (organic fraction of biodegradable municipal waste) or additional capacity of 110,000 tonnes every year for the next decade.

It recommends a detailed national waste management plan and removal of restrictions that curtail waste movements across county or regional boundaries. It also recommends a national guidance on waste infrastructure site selection possibly as part of a National Waste Management Plan.

MBT treatment of residual waste would be beneficial in reduction in volume and in acceleration of decompositions, but did not eliminate the leachate and landfill gas potential. Biological treatment technologies (composting or anaerobic) were acceptable, (energy recovered in latter contributing to national renewable energy and climate change targets).

Recommending research on the true extent of the potential markets for treated OFBMW products prior to investing in expensive treatment technology, it is
stated that the alternative management options whether for high quality compost or stabilised biowaste are landfill or incineration.

9.3.5 National Climate Change Strategy 2007-2010 deals with waste issue in chapter 8. Stating that waste counted for 2.5% of total emissions in 2005, the strategy refers to strategy for diversion of biodegradable waste away from landfill, landfill gas capture and utilisation for electricity generation supported by the Renewable energy Feed-In Tariff (REFIT) and states under waste-to-energy:

*To assist in the development of waste-to-energy projects the Government is extending REFIT to allow support for the renewable portion of mixed renewable and non-renewable generation... this type of hybrid support mechanism is fully consistent with the overall hierarchy of waste treatment approach.*

Under the heading ‘looking forward’ it states

“To maximise the recovery of useful materials and energy from residual waste the National Strategy on Biodegradable Waste identifies thermal treatment with energy recovery as the preferred option in most Waste Management Plans adopted by local authorities

It further states:

*In accordance with the methodologies developed by the Intergovernmental Panel for Climate Change (IPCC) the CO$_2$ emissions resulting from the combustion of biodegradable waste are considered carbon neutral and are not counted for the purposes of Kyoto obligations. In addition, generation of heat and electricity form waste in thermal treatment plants reduces the need to produce this energy from fossil fuels and will therefore displace CO$_2$ emissions from these sources. By exploiting an indigenous energy source, waste-to-energy plants make a contribution to national security of energy supply.*

9.3.6 National Development Plan 2007-2013

In Chapter 7 ‘Economic Infrastructure Priority’, and under waste management the NDP stated that recycling has improved from 9% in1998 to 35% in 2005, and will continue to be a priority. In the move away from landfill, regional waste management plans emphasise thermal treatment with energy recovery. Waste-to-energy plans will be provided as private sector developments or as PPPs.

9.3.7 Statement of Strategy 2008-2010 (DoEH&LG)
The above Strategy relates specifically to Environment and Climate Change. The policy context sets a target of reduction of 3% per annum average in greenhouse gas emissions.

In terms of waste it refers to a suite of policies developed over the last decade and to the considerable success particularly in terms of recycling. It states:

*The new Government programme indicates a further development of waste and resource policy in the direction of sustainability, in particular, to move away from mass burn incineration towards alternative technologies and to minimise waste going to landfill, subject to the outcome of review of the waste management strategy. This major international review being undertaken by the Department will address how best to implement waste prevention and minimisation, and the emergence of new technologies in waste management.*

9.3.8 Circular no. WPRR04/09

Update on progress in respect of implementing the Waste Management provisions of the programme for government.

Issued on 29th May, 2009, the circular refers to the Statement of Strategy 2008-2010, the Programme for Government which makes major commitments in relation to national waste policy and states in particular

*“There is an emphasis on moving away from the high reliance on incineration foreseen in the National Development Plan and reflected in the Regional Waste Management Plans for which the Local Authorities have statutory responsibility, generally operating in regional groupings. In this regard it is intended that there will be an increased commitment to the use of alternative technologies, including those known as mechanical and biological treatment”.*

It further refers to the Strategy 2008-2010, an in particular:

*The new programme for Government indicates a further development of waste and resource policy in the direction of sustainability, in particular move away from mass burn incineration towards alternative technologies and to minimise waste going to landfill, subject to the outcome for the review of the waste management strategy.*

and states that the review of Waste Management Strategy should be concluded on time in July 2009.

The circular introduces ‘Interim Policy Measures’ stating that progress towards meeting Ireland’s targets under the Landfill Directive and the requirements of the recently adopted Waste Framework Directive cannot wait.
The said ‘Interim Policy Measures’ include

- **Increase in the landfill levy and introduction of a levy on incineration.**
- **Roll out of brown bins collections.**
- **Intensifying efforts to promote at source/home composting.**
- **Supporting some old scale local composting initiatives.**
- **Encouraging access to waste streams for composting/anaerobic digestion, recycling and other processes high on the Waste hierarchy, and**
- **Source segregated collection of commercial bio waste**

It is further stated that an SEA has been initiated on proposed policy directions to the EPA, and local authorities, to require recipients to:

- **Limit incineration capacity to ensure that waste is not drawn to incineration which could have been dealt with by recycling or other methods high up the waste hierarchy**
- **Reframe from exercising their powers in such a way as to direct waste to landfill or incineration”**

9.3.7.1 I note publication of invitation in the national newspapers for carrying out SEA on limiting share of MSW to max 30% of the waste arisings.

9.3.8 **National Hazardous Waste Management Plan (2008-2012)**

The first National Hazardous Waste Management Plan (2001) (NHWMP) was drawn up by the EPA which was required to make such a plan under Waste Management Act 1996, which required:

“The Agency shall…make a national plan (in this Act referred to as ‘the national hazardous waste management plan’) with regard to:-

(a) the prevention and minimisation of hazardous waste.
(b) the recovery of hazardous waste
(c) the collection and movement of hazardous waste, and
(d) the disposal of such hazardous waste that cannot be prevented or recovered”.

It further stated that the plan must be reviewed at least once every five years.


The primary objectives of the plan are stated to be

- Reduce the generation of hazardous waste by industry and society generally.
- Minimise unreported waste with a view to reducing the environmental impact of this unregulated waste stream
- Strive for increase self sufficiency in the management of hazardous waste and to reduce hazardous waste export and
- Minimise the environmental, social and economic impacts of hazardous waste generation and management.

It is stated that the recommendations are based on the analysis of statistical data and the policy and business environment surrounding hazardous waste management, but that there are certain public policy constraints that were taken into account in preparing the plan. It states in particular that current policy is that large scale public investment in hazardous waste infrastructure will not be made and that hazardous waste industry in Ireland is entirely owned and operated by the private sector.

It is emphasised that proposals for hazardous waste management infrastructure would be expected to have regard to the plan and any proposals will be expected to describe how the overarching objectives of the plan will be met.

It is further stated that in order to be granted a waste licence or permit operators must demonstrate, amongst other things that environmental pollution will not be caused by the operation of a proposed facility, and that protection of the environment and human health is assured by this process.

The EPA through the plan is stated to encourage the development and introduction of new and innovative technologies and techniques for treating hazardous waste where they meet legislative policy and BAT criteria.

In table 1 in relation to implementation of the first plan recommendations it is stated that the unreported hazardous waste was reduced by 51% between 1996 and 2001 to 48,402 tonnes, estimated to be 47,011 tonnes in 2004 and 29,888 tonnes in 2006.

Under long term priorities it is stated that hazardous waste disposal was 125,629 tonnes in 2001, 161,430 tonnes in 2004 and 149,063 tonnes in 2006.

The NHWMP outlines a number of measures to achieve prevention, and reduction. In relation to recovery and disposal of hazardous waste, the plan indicates that it is desirable to apply the proximity principle, and to achieve self sufficiency, and hazardous waste landfill capacity and thermal treatment for hazardous waste requiring disposal should be developed.

In Table 3 under ‘location of treatment of reported hazardous waste’ it is indicated that 88,409 tonnes of waste was treated on site, 60,872 tonnes were treated off site but in Ireland and 134,904 tonnes were exported for treatment in 2006.
In table 5 under ‘recovery and disposal of hazardous waste in 2006’, and under Category D10 (incineration) it is indicated that 35,121 tonnes were incinerated on-site and 47,854 tonnes were exported.

It is stated that these categories of hazardous waste are generated by the Irish industry and society and are dominated by organic solvents generated principally by the pharmaceutical and chemical sectors.

Table 4 provides a summary of hazardous waste management in 2001-2006

<table>
<thead>
<tr>
<th>Category</th>
<th>2001</th>
<th>2004</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-site treatment</td>
<td>95,566</td>
<td>86,328</td>
<td>88,409</td>
</tr>
<tr>
<td>Off-site treatment</td>
<td>48,013</td>
<td>55,952</td>
<td>60,872</td>
</tr>
<tr>
<td>Exported</td>
<td>115,366</td>
<td>165,498</td>
<td>134,904</td>
</tr>
<tr>
<td>Total</td>
<td>258,945</td>
<td>307,778</td>
<td>284,184</td>
</tr>
</tbody>
</table>

The Waste Management Plan observations on this data are that

- Overall generation of hazardous waste increased by almost 10% between 2001 and 2006 with a spike observed in 2004 but that between 2004 and 2006 there has been an 8% decrease.
- The downward trend for on-site treatment of hazardous waste evident of the 2004 season 2006 and the slight increase became evident.
- Treatment of hazardous waste off-site, but in Ireland, and at commercial facilities, increased by 17% between 2001 and 2004 and 9% between 2004 and 2006.
- With some notable exceptions more of each category of waste is exported than is treated in Ireland.

It is stated that this may signify several things (lack of return to justify larger capital investments, lack of manufacturing industry commitment to large scale indigenous investment by waste industry, relative ease and cheapness of export particularly to large scale infrastructure such as cement kilns, incinerators and landfills abroad).

The plan notes that the reported disposal of hazardous waste decreased between 2004 and 2008 by 8% while recovery decreased by 14%.”

In section 6.4 it is concluded:

*In combination with the blending of waste solvents for use in cement kilns, or indeed in the absence of cement kilns in the mix (indigenous or foreign) and in the absence of alternative techniques that are capable of treating a wide range of diverse waste streams, incineration*
will be needed in order for Ireland to move towards self-sufficiency in the treatment of hazardous waste.

In section 6.5 it is stated:

“It is recommended that at least one hazardous waste landfill be developed in Ireland capable of accepting the wide range of hazardous waste that would otherwise be exported for landfill. Such a facility will be expected to provide a key national service and it should have an available capacity of at least 25,000 tonnes per annum”

Under implementation there are 30 recommendations, and implementing bodies are identified. Of these:

- Item no 29 recommends exploration with the appropriate northern Ireland authorities the possible terms of reference of North-South working group on hazardous waste to identify barriers to cooperative approaches in the plan and to make recommendations to overcome those barriers.

In this regard also worth noting is the ‘Revised UK import/export Plan’ which came into force in Aug 2007 and which allows “shipment of hazardous waste (for disposal) between Northern Ireland and the Republic of Ireland, in either direction,…where the waste is generated and disposed of within Northern Ireland or the Republic of Ireland”.

The permitted operations include (D5) – specially engineered landfill, (D9) – physico –chemical treatment and (D10) – incineration.

### 9.4 Waste Management Plans


The strategy identified 3 scenarios and adopted scenario 2 specifically rejecting scenario 3 which included incineration. This strategy was carried through in the subsequent waste management plans of both the City and County.

Waste management plan 1999-2004, the first statutory plan, identified Bottlehill site for residual landfill. This is stated to be constructed and commissioned, ready for operation.

Waste management plan (2004) confirmed scenario 2 for the management of municipal waste in the County, adopting ‘prevention’ as the core component. The main components of the scenario 2 included, adopting the concepts of national recycling strategy, and introducing large scale home composting,
introducing a new engineered landfill site and mechanical separation and composting or mechanical biological treatment of residual household and commercial waste whereby the wet organic fraction is composted and the dry fraction is baled and subsequently landfilled.

It provided for 81 objectives and actions related to prevention, collection, recovery and disposal activity, hazardous waste management and general waste management.

Of these first 31 actions related to waste collection with specific emphasis on source segregation of waste in terms of various materials and commercial premises as well as households.

In particular Action 29 referred to separate collection of bio-waste, and provided details of how this would be done.

Action 28 relating to data collection is also significant in terms of determination of accurate waste arisings and effectiveness of actions in the county.

Other relevant Actions include:

Action 46 – Endeavour to provide treatment of waste arising prior to final disposal as required by the Landfill Directive, with first major step to provide a ‘materials recovery facility’ where all recoverable municipal waste will be separated for recovery, with the residue being landfilled.

Action 47 – Energy Recovery

Council will recover energy from all waste restricted to final disposal wherever possible. Waste disposal with energy recovery is higher on the waste hierarchy... it is therefore preferable to use for example the methane gas generated from a landfill for electricity generation.

Action 51 – Examine results of the ongoing studies being carried out into the possibility of employing thermal waste-to-energy treatment for residual waste.

The Government’s policy suggests that the targets set out in the landfill Directive may be difficult to attain without the use of some form of thermal treatment.

Action 52 – Continue to examine other disposal methods of residual waste disposal that may come on the market

Actions 71-76 relate hazardous waste (collection etc) but does not provide specific action for ‘disposal’ of hazardous waste.
9.5 Planning Policies

The relevant documents include Regional Planning Guidelines for the west region (2004), Cork Area Strategic Plan (CASP) 2001-2020 and Cork County Development Plan 2009.

9.5.1 Regional Planning Guidelines (2004)

Stating that one of its primary objectives is the implementation of the National Spatial Strategy, the Regional Planning Guidelines refer to Cork Area Strategic Plan (CASP) to secure these objectives, and to designation of Cork City as a national gateway, as the core of the region and as the main driver of the economy of the south-west.

The metropolitan area needed to continued development of its reputation as a centre of knowledge and learning, culture, tourism/recreation complimented by a wide range of high-technology oriented modern industries supported by first class physical and public transport infrastructure.

Tourism and culture are considered as key ingredients of the future of Cork Metropolitan area. High level of access by land, sea and air and complemented by efficient integrated public transport system would support the tourism and cultural activities of the Cork Metropolitan area.

Environmental protection, waste minimisation and treatment are considered important elements in the future growth of the region. It is stated:

“…in this regard the most modern sustainable solutions, including incineration, were necessary, to facilitate the continued growth of the regions important Pharmachem sector must be embodied into regional strategic planning to ensure the area attains its targeted growth path in an environmental sustainable manner.” (2.1.1)

In paragraph 6.5 it states that waste management plans adopted by Cork County Council and Cork City Council are endorsed by the RPG and that continued investment is required in a wide range of waste infrastructure from bring sites to civic amenity sites to waste transfer stations and facilities for the recovery and disposal of hazardous waste.

It further states:

Energy recovery needs to be built into the system along with polluter pays, proximity and precautionary and shared responsibility principles. The Pharmachem sector makes a major contribution to regional GDP, and when appropriate waste management plans may need to be reviewed to consider incineration as a necessary technology to support the continued growth of this important sector.
9.5.2 Cork Area Strategic Plan (CASP) 2001-2020

CASP is stated to be underpinned by six key concepts – regeneration of Cork City, metropolitan Cork, reinforcement of ring towns, infrastructure lead development, creation of an integrated transport system and protection and enhancement of the environment. It is stated that CASP seeks to ensure that infrastructure including transport and utility services are provided in advance or in tandem with housing and other development. In Section 1.6 it states that a number of other parallel studies including waste management strategy for Cork region 2000-2020 have been completed and should be consulted in conjunction with CASP with regard to common planning areas or specific topics.

The infrastructure goal of the plan is stated to minimise the cost of providing water, sewage, electricity, gas and telecommunication services to the population and to maximise the use of existing infrastructure.

In Section 5 under ‘utilities’ it is stated

“The residents and industrial and commercial uses in the study area generate a large volume of solid waste, and it is of great importance to the quality of the environment that it is managed in a sustainable manner…. Among the key policies of the plans are an increased emphasis upon recycling of municipal, construction and demolition waste, a reduction in the amount of waste going to landfill, rationalisation of the number of landfill sites, and reduce the emissions from methane gasses from landfill. The development of composting and other biological treatment facilities are also proposed”.

In Section 7.7 under ‘development potential’ Ringaskiddy is described as the centre of port operation and related industries and that growth in the Ringaskiddy area should be limited to port related activities or industries, or complementary uses.

9.5.3 Cork County Development Plan 2009

9.5.3.1 This plan has recently been adapted, and as such is the statutory plan relevant for determination of this case.

I should note that while the 2009 plan includes and expands a number of the policy and objectives of the 2003 County Development Plan, not all are included. I consider the following of particular relevance:

9.3.5.2 The settlement objective SET4-2 states:
“It is an objective of the plan to encourage the development of Ringaskiddy as a major location for port development and large scale industry, taking account of the need to advance public transport including provision of a high quality green route and protect the environment of the existing residential community, to continue the sustainable development of Ringskiddy.”

9.5.3.3 In Chapter 6 under transport and infrastructure Objective INF5-13 states

(b) “It is an objective of this plan to strongly discourage development, which is sensitive to the effects of flooding, unless justified as essential in terms of sustainable and proper planning, and, if so justified, incorporates measures to reduce and manage flooding risks to the development itself and elsewhere to the satisfaction of the Planning Authority, as developed through an appropriate flood risk assessment”.

9.5.3.4 The Development Plan objectives in relation to waste management include

INF6-1 “It is an objective to implement and support the provisions of the County Council’s approved Waste Management Plan and in particular, to promote the development of facilities for the prevention minimisation, re-use/re-cycling or disposal with energy recovery of waste material”.

INF6-3 “It is an objective to develop a material recovery facility for the Cork region in line with the Waste Management Plan”.

9.5.3.5 In Section 6.7 objectives in relation to energy include

INF7-1 (a) “It is an objective to recognise the national importance of ensuring security of energy supplies for servicing a whole range of economic sectors in line with the Government’s White Paper “delivering a sustainable energy feature for Ireland”.

INF7-2 (a) “It is an objective to support the national climate change strategy and in general to facilitate measures to seek to reduce emissions of greenhouse gases.

(b) It is an objective to adapt sustainable planning strategies such as integrated approach to land use and
transportation and facilitate mixed use development so as to reduce greenhouse gas emission”.

INF7-3  “It is an objective generally to encourage the production of energy from renewable sources including in particular that from biomass, waste material, solar, wave, micro hydro power and wind energy, subject to normal proper planning considerations including in particular the impact on areas of environmental or landscape sensitivity.”

9.5.3.6 In Section 7.2 the plan refers to a Draft Landscape Strategy which is stated to have informed the County Development plan in the formulations of aims, goals and objectives which are intended to protect and enhance the character of Cork County’s landscape and to facilitate and guide sensitively designed development while also recognising the precious resource of the county’s landscape.

This section includes ‘historic character assessment’, ‘seascape character assessment’ and a number of objectives under ENV2-2 to ENV2-5.

The objectives in relation to scenic amenity, views and prospects are under objectives ENV2-6 to ENV2-15.

There are four designated scenic routes in the County Development Plan namely A53/S53, A54/S54, A51/S51 and A57/S57

Section 7.3 relates to Archaeological Heritage,

Section 7.4 to the Built Environment and in particular Record of Protected Structures.

9.5.3.7 Section 5.3 under land use and economic development Objective states

ECON 3-1  (a)  “It is an objective of the County Development Plan to promote the development of industrial areas as the primary location for uses that include manufacturing, repairs, warehousing, distribution, open storage, waste materials treatment and recovery and transport operating centres. The development of inappropriate uses, such as office based industry and retailing will not normally be encouraged.

(b)  It is an objective that industrial areas that are not used for small to medium sized industry, warehousing or distribution are considered generally to be suitable for waste management activities (including the treatment and recovery of waste material but not including landfill or contract incineration facilities). In the
interest of clarity, contract incineration facilities comprise those whose primary role is to manage waste that are not generated by the company.

(c) It is an objective that subject to local considerations civic amenity sites and waste transfer stations may be suitable on industrial sites with warehousing and/or distribution uses.

9.5.3.8 SEVESO Sites

The Development Plan provides a list of industries affected by the SEVESO 2 Directive in table 5.5. Three of these are located in Ringaskiddy two of which are Pfizer Ireland and Novartis. The consultation distance for these is given as 1,000 metres.

The County Development Plan provides specific objectives for SEVESO sites

ECON 3-8
“It is an objective to reduce the risk and limit the consequences of major industrial accidents by, where appropriate, taking into account the advice of the Health and Safety Authority when proposals for new development are considered”.

ECON 3-9
Proposals for new establishments. It is an objective, in assessing applications for new development or expansion of existing development involving hazardous substances, to have regard to:

- The Major Accidents Directive (SEVESO 2) 96/082/EEC.
- Potential adverse impacts on public health and safety and
- The need to maintain appropriate safe distance between residential areas, areas of public use and areas of particular natural sensitivity.

9.5.3.9 In Section 9.2 the objectives under overall approach to land use and zoning in local area plans include

LAP 2-1
“It is an objective to ensure that development during the lifetime of this plan proceeds in accordance with the general land use objectives set out in this plan and any specific zoning objectives that apply to particular areas as set out in any relevant Local Area Plans and Special Local Area Plans”. 
9.5.4 Carrigaline Electoral Area Local Area Plan

In Section 3 of this plan Ringaskiddy is identified as a Strategic Industrial Area.

The site of the proposed development is included within an area designated as I-15 with a specific objective:

“Suitable for large stand alone industry with suitable provision for landscaping and access points and provision for buffer planting, minimum 15 metre wide, open space buffer to Martello tower and its associated pedestrian access.”
10.0 Oral Hearing Summary

10.1 The oral hearing was held at Cork International Airport Hotel over a five week period in two separate blocks (27th April-14th May and 8th June-18th June) with a three week adjournment to allow examination of additional information provided during the first half of the hearing. The stenographer’s record of the hearing and audio discs are attached.

An ‘agenda’, together with format of the hearing was circulated with the notification of the hearing, to those who made written submissions to the Board, three weeks prior to the hearing.

Also circulated was ‘notes to the applicants’ requiring provision of information at the appropriate level to clarify whether the proposed development was considered a ‘recovery’ or ‘disposal’ activity having regard to the provisions of the Directive 2008/98/EC.

The applicants were further required to provide appropriate level of information to address the issues raised in the written submissions by the Planning Authority (including areas of suggested further information), the issues raised in the written submissions by the NRA, DoEH&LG, and the issues raised by the observers in their written submissions.

10.2 The attendance on the first day of the hearing was considerable representing most, if not all of the written submissions (1099 signatures). A subset of the overall list was produced following indication of those who wished to make oral presentations during the hearing. Approximately 30 umbrella groups emerged representing communities living around Cork harbour, (each representing somewhere between 1100 - 30,000 people). An additional 40 wished to make individual presentations. (A list of all the speakers is attached)

Two public representatives were given priority to address the hearing on the first day. Priority was also given to a doctor and a representative of the pharmaceutical industry to speak on the first day.

A number of doctors working as GPs were facilitated to speak at times they could attend.

Students representing various schools were accommodated to make presentation outside school hours, on a dedicated afternoon (6th May). School principles of primary schools also made presentations.

There was a dedicated evening session (14th May) to facilitate those who could not attend during the day time. Younger children were also in attendance during evening periods on number days.

10.3 At the invitation of the inspector relevant sections of the hearing were attended by specialists from DoEH&LG (NPWS, Archaeological and cultural heritage),
NRA, OPW and HSA. Two specialist advisors to the inspector (air quality / emissions and health) attended during discussion of relevant issues.

There was a team from Cork County Council in attendance almost throughout the hearing. The team consisted of specialists in environmental services (waste, and sludge), roads and traffic, fire services, and other services, and included the senior architect for the County. The team was led by a senior planner. Also in attendance was environmental engineer from Cork City Council with specialist knowledge on waste management strategy for the region.

10.4 The format of the hearing was changed (from that circulated prior to the hearing) following discussions on the first day of the hearing and at the request by the observers to hear the applicant’s case in full and to ask questions prior to making any submissions themselves. A hybrid format emerged, also allowing discussion of specific issues in the presence of specialists in a concentrated ‘modular’ form.

In various occasions the hearing was advised that the purpose of the hearing was to gather relevant information, to test the accuracy, reliability and validity of the information provided, to comply with the requirements of the EIA Directive for assessment of the likely significant impacts of the proposed development on the Environment, to comply with the requirements of Aarhus Convention for public participation, and to facilitate an informed decision making.

At the request of some prescribed bodies, written questions were forwarded prior to their attendance to the hearing (I note this was strongly resisted by the observers).

Arising from difficulties in bringing all the experts together at the same time, a similar approach was adopted, where on an on-going basis, questions /comments / responses raised by other experts subsequent to a presentation by an expert were allowed. A very limited further response was also allowed, only in some areas. Copies of any such questions / explanations/ documents were provided to the hearing concurrently.

The proceedings were recorded by two stenographers. Recordings were forwarded to inspector’s advisors Dr. Murphy and Prof. Broderick, where relevant, the next day.

10.5 I shall discuss specific issues arising, in some detail in the assessment part of my report. The following is a synopsis of the recurring themes of the submissions.

The main thesis of the submissions by the applicants, as outlined on the first day by the managing director Mr. Ahern, was that the proposed facility was needed because the region faced challenges in the areas of waste management
and in particular in meeting the requirements of the Landfill directive, and requirements in relation to renewable energy and climate change.

He stressed that Ireland was exporting its hazardous waste, to the benefit of receiving countries. Despite measures higher up the waste hierarchy such as recycling, ‘Bottlehill landfil ‘ could not sustain residual waste Cork created, and that the planned MBT facility would still create residual waste that needed to be landfilled. He stressed waste exported from Ireland was heating Hamburgh, and that the clock was ticking for Ireland to comply with landfill Directive obligations.

The proposed development would treat hazardous waste close to source and would help achieve Ireland’s self sufficiency. It would help Cork County to meet its targets for diversion of biodegradable waste away from landfill, provide a secure outlet for residual waste produced by MBT and result in considerable reduction in the amount of waste requiring to be landfilled.

He submitted that the proposed development would provide a part of the solution to integrated waste management for the region, while also generating energy.

10.6 The submission by the planning authority outlined that the proposed development materially contravened County Development Plan 2009, and its predecessor 2003 plan. It also contravened the waste management plan 2004, and the waste strategy for the region, which did not include incineration as an option for dealing with waste.

They questioned the need for the proposed facility, particularly in relation to the municipal waste incinerator. The targets outlined in the landfill Directive could be met without incineration, and the development of such a facility could divert waste away from prevention, material recovery / reuse/ recycling, which was the requirement of the Waste Framework Directive and the Council’s waste strategy.

The site was located in a critical location, in the centre of one of the most unique harbours in Europe. It would compromise the visual amenities of Cork Harbour and the areas adjoining.

They asked the Board to give serious consideration to health issues relating to the development.

10.7 The observers submitted that this was the third time they were putting all they have, to object to this development and they were doing so not because of unfounded fear, or ‘nimbyism’, but because as a result of their efforts to inform themselves of all the relevant aspects of the proposed development, they were convinced that it was a serious threat, to their community, to their home place.
They stressed that the EIS was prepared by consultants on behalf of the applicants and were paid by the developer, and was presented as a ‘justification’ of the development. They maintained the EIS was inadequate and that they were left with the feeling that they were presented with only half the picture. They questioned why the EIS was not prepared by a team of experts ‘independent’ of the developer.

They also questioned as to why a ‘private’ development was considered to be a ‘Strategic Infrastructure’ development.

They wanted to draw attention to their efforts to raise funds to hire expertise in an effort to address the inherent imbalance in the process. They emphasized some had put their homes and livelihood on line to do so. They noted the applicants had access to immeasurable funds, and they wanted it noted that there was no parity in the system.

They felt the outcome was ‘pre-determined’ and that the applicants were just going through the motions.

They wanted brought to the attention of the Board that the applicants did not engage in the process in a meaningful way, that considerable time was spent on waiting for information to be supplied by the applicants, even during the hearing, and that various speakers for the applicants were declining to answer questions stating that it was somebody else’s area.

They stressed that the development was objected to by all of the Harbour communities representing over 30,000 people. They demanded to know why their views were dismissed so lightly, and they were being treated as obstacles. They questioned why the development plan adopted through a democratic and participatory process was being set aside.

They wanted to stress that the impression given that there was no local community in the immediate area was wrong. They had homes, schools, play areas, clubs, in Ringaskiddy, in Shanbally, in Currabinny, in Carrigaline, and in Monkstown, Passage, and Cobh.

They did not believe the assurances given by the developer that nothing would go wrong. Something always did, through human error, through mal function of a minor component, through accidents. They had learned that through experiences. One after the other they told some of their past experiences, when things went wrong despite being assured otherwise. They wanted the Board to listen to individual submissions. [I particularly refer to Mr. Tuama’s colourful description of such incidents (p.162), to Ms. O’Driscoll (p140) (transcript for evening session on day 12), and Mr Forde on page 109 of the morning session the same day. I also refer to Mr. Chamber’s presentation on day 13, (pages 55-108), and the dvd / video he presented.]

They referred to Titanic being unsinkable. They referred to explosions in other incinerators, including the one in Antwerp operated by the applicants, and also...
in modern incinerators elsewhere, such as Campana in Argentina. They drew attention to a recent incident in Buncefield subject of a report being prepared.

Those working in high tech jobs spoke of their experiences in their own field of something eventually going wrong and stressed that it will, in the 20-30 year lifetime of the proposed incinerator.

They referred to asbestos problem, Hickson fire, problems recently identified in Haulbowline Island and other ceased toxic industries such as fertiliser plants. All of these affected them negatively, most importantly their children. Some said they no longer cared about what happened to themselves but were fighting for their children and grand children. They repeatedly referred to cancer rates being 44% higher in Cobh than elsewhere in the Country. They stressed that population in the harbour was already vulnerable.

They referred to US EPA which held that no group of people including racial, ethnic or socioeconomic group should bear a disproportionate share of negative environmental consequences resulting from industrial, municipal and commercial operations.

Those in medical and related profession (GPs nurses, midwives) stressed that they were already seeing health effects arising from perception of risk associated with the proposed development. They too referred to compromised health and vulnerability of the communities and their inability to take additional burden.

One after the other they submitted that the site and the adjacent road were subject to flooding and that the site was unsuitable for location of a SEVESO facility. They stressed that while at the last hearing they were told flooding would not occur, a 1:200 year event had occurred in 2004, flooding not only the road but parts of the site as well. Emergency vehicles could not access the site. The flooding could only get worse with the climate change and rising sea levels.

They drew attention to coastal erosion at the site boundary, and the resultant reduction of the site area. They argued strongly that the site was not suitable for location of an incinerator and failed the criteria set by WHO and Basel Convention.

They argued that in the last hearing they were told by the applicants that the principle of ‘producer responsibility’ applied and as Cork produced most toxic waste they had to place the incinerator in Cork. They submitted, that since then there had been a shift from pharmachem industry to bio-pharma which did not produce toxic waste. Some of the big producers had their own on-site incinerators to deal with their own waste, some recently closed down. They submitted, there was no need, no justification for it to be placed in Cork.

They referred to the EPA data base and submitted that Ireland produced toxic waste at the rate less than half the capacity of the proposed facility and
questioned where the extra waste was going to come from. They argued that if the proposed facility would have to import toxic waste from outside. They raised concerns that the ferry port would be used for this purpose. They noted that the applicants were already speaking of ‘all of Ireland’.

They argued that first time proposal was put forward against the backdrop of a growing economy, and was justified on the basis of the failure of the population to adhere to a recycling regime, and failure of the then current approach to waste management. This had changed. They were now able to meet the targets in terms of prevention, reuse, recycle and landfill.

The waste management strategy they adopted was one of the best in the country, it was working well and it did not include incineration.

They wanted to stress, unlike some other regions, they were not proposing to export their municipal waste for incineration elsewhere. They were taking responsibility for their own waste. The proposed development would undermine their efforts to reach the plan objectives.

They submitted as there was no need for the proposed development in Cork region, municipal waste would be imported from other regions which did not meet their obligations.

They were astonished that the applicants were now proposing to include a second incinerator along side the toxic incinerator to burn municipal waste (some added for good measure).

They referred to the traffic problems they are currently experiencing and how difficult it is to cross roads (particularly in Ringaskiddy), and to gain access to other local roads especially during rush hour. The proposed development would exacerbate these problems.

The existing road network was not adequate to carry the additional traffic generated by the proposed development in particular the truck traffic.

Trucks carrying toxic loads were a particular worry. They were worried about truck drivers on route to the facility trying to make u-turn after being informed that the facility is not accepting any waste due to a problem, such as flooding on the road.

They drew attention in particular to frequent spontaneous fires at the Hammond lane (adjoining), and the inadequacy of the road network for provision of emergency access.

They drew attention to location of National Maritime College of Ireland with its 800 students and staff located directly opposite and less than 50m away from the site and the threat to the safety of students of the college and local schools who use the sports facilities of the college regularly. Granting of permission would compromise the safety of the local community.
Those living in Cobh stressed difficulties of evacuation of the whole population of Cobh through a single road / bridge in the event of an explosion or unplanned emissions from the facility.

Those involved in food and agriculture stressed their survival was dependent on their clean and organic image. The proposed incinerator would be licensed to emit pollutants, which would change this image, and have catastrophic effects on their industry. A veterinary surgeon spoke of impact on animals as being similar to humans. They referred to the adverse impact arising from withdrawal of pork, perceived to contain dioxin.

Those involved in hospitality business talked about the effect the proposed development would have on the image of Ireland, the local economy and their livelihood.

Most (and in particular the public representatives) referred to Cork Harbour being one of the two most unique harbours in the world and the proposals to designate it as a UNESCO heritage area, its heritage value, to its beauty, and its potential to become a major tourist attraction. Perception that this was an industrial harbour was incorrect. They drew attention to CASP reference to Cork Harbour as Europe’s most exciting harbour.

The proposed industrial structure would dominate the harbour and be a blot in the landscape. Especially those arriving at cruise ships or those sailing in the harbour would feel the full impact of the large structure. They argued that the photomontages submitted by the applicants were not accurate presentation of the reality.

They argued that proposed structure would effect the setting of and the views towards the Martello tower. It would be detrimental to future development of Spike Island as a visitor centre along the lines of Robin Island or Alcatraz.

They referred to potential of the harbour for being a centre for research and development, attracting clean industries, the proposal to locate a Maritime Energy Research cluster (MERC) at National Maritime College, and the adverse impact the proposed development would have on these. They submitted the proposed development would undermine the local economy.

The public representatives submitted that there was a change in policy direction on waste management and in particular measures to ensure that no form of waste management would have an economic advantage over others. They noted considerations for introduction of incineration levy, funding for recycling industry, reinstatement of proximity principle making transfer of waste between regions difficult and removal of guaranteed waste streams to any incinerator. They stressed over and over that Cork regional waste management strategy did not include incineration.

Some public representatives noted the Board’s decision on a proposed incinerator at Rathcoole and maintained that the same considerations/ refusal
reasons (contravention of waste management plan, traffic, air quality), applied in this case.

They asked the Board to listen to thousands of people living around the harbour, to take their objections seriously and not dismiss out of hand like the last time.

They were worried about the possibility of the decision being made on the basis of compliance with some limits, rather than holistically, and impact analysis being confined to only those measurable (emissions etc). They maintained impact assessments of various sections of the EIS particularly of human health, were predicated on the findings of the air quality assessment, which in itself was inadequate.

They referred to restoration of the powers to the Board which they did not enjoy during making their decision in the previous case. Suggestion that since compliance with standards in the EPA licence would be met it would be ok on environmental grounds was no longer valid. Those powers were restored for a reason. They asked the Board to follow the doctrine of ‘harmonious interpretation’ adopted in the Courts, and to look at it as a whole, not in isolated parts.

They submitted ‘this is the wrong site, the wrong technology, there is no need for it and no one wants it’. They asked specifically that the Board listens to the audio recording of the closing submission by Mr. Loughnane.
VOLUME II

Assessment of Issues Arising

1.0 Introduction

The proposed waste-to-energy facility has two basic components: An incineration plant\(^1\) with two incinerators to burn hazardous and non hazardous industrial waste and municipal waste and a waste transfer station to handle industrial hazardous and non hazardous waste. They are located in separate sites on either side of an existing scrap metal facility, but within the overall site area of 12 ha.

The incineration plant will comprise of two incinerators:

- A fluidised bed incinerator with post combustion chamber for treatment of hazardous and non hazardous solid and liquid industrial waste (capacity 100,000 tpa)
- A moving grate incinerator for the treatment of municipal solid waste and non hazardous industrial and commercial waste (capacity 140 000 tpa)

The waste transfer station will have a capacity of 15,000 tpa. Waste materials will either be exported for treatment off-site, or transferred to the incineration plant for incineration.

It is anticipated the facility would generate approximately 25 MW of electricity of which 22MW is expected to be transferred to the national grid.

The application is for a ten- year permission.

In Jan 2004 the Board granted permission for a waste-to-energy facility to comprise of a single incinerator to burn 100,000tpa hazardous waste and non hazardous industrial / trade waste at the subject site. The five year permission expired in Jan 2009, just after lodgement of the current application.

In Nov 2005, the EPA granted waste licence for a ‘Waste Management Facility including hazardous and non hazardous waste incinerator’, to consist of two incinerators (fluidised bed incinerator with post combustion chamber, and a moving grate incinerator) with a capacity of 215,000 tpa. (Licence number 186-1)

\(^1\) Article 3(5) of the Directive 2000/76/EC states ‘if co-incineration takes place in such a way that the main purpose of the plant is not the generation of energy or production of material products but rather the thermal treatment of waste, the plant shall be regarded as an incineration plant within the meaning of point 4
Section 26 of the Planning and Development (Strategic Infrastructure) Act, 2006 (amending S. 143 of the 2000 Act), requires the Board to have regard to the policies and objectives for the time being of the Government, a state authority, the Minister, the planning authorities and any other body which is a public authority. The Board also must have regard to the NDP, National Spatial Strategy and regional planning guidelines in force. I will refer to these in relevant sections of my report.

I will also refer to the requirements of European Directives including EIA Directive where relevant.

Having reviewed the EIS, all the written submissions prior to the hearing and during the hearing, and oral submissions during the hearing; having reviewed relevant policy and guidance; having conducted the oral hearing and having inspected the site and its environs on a number occasions, I propose to examine the main issues for consideration in determination of this strategic development application in the following order:

1. Legal and procedural issues

2. Whether a precedent had been set for a waste-to-energy development at the subject site by the permission granted under PL 04.131196 and whether the said permission would constitute a material consideration in determination of the current proposal, having regard to project characteristics and changes, if any, in the receiving environment and various policies in the intervening years

3. Policy considerations

   Whether the proposed development would be in accordance with EU and National polices, (in particular waste, energy and climate change policies), having regard to:

   i. Whether there is a demonstrable need for the proposed facility at this location, and if so,
   ii. Whether the proposed site would provide a reasonable response to meet such a need in line with the relevant policies
   iii. Whether the proposed development would be in accordance with the regional waste strategy and waste plan of the local authority

4. Whether the proposed development is in accordance with the proper planning and sustainable development of the area, having regard to:

   i. Whether the proposed development would be in accordance with planning policies for the area
   ii. Whether the proposed development would be acceptable in terms of its visual impact
iii. Whether the proposed development would be acceptable in terms of traffic generation and impact on the road network
iv. Whether the proposed development would be acceptable in terms of soils geology, hydrogeology and in particular flood prevention
v. Whether the proposed development would be acceptable in terms of emissions, air pollution and climate change
vi. Whether the proposed development would be acceptable in terms of its impact on the ecology of the area and in particular impact on European Sites
vii. Whether the proposed development would be acceptable in terms of fire safety and Major accidents considerations
viii. Whether the proposed development would be acceptable in terms of its impact on human beings and in particular their health
ix. Whether the proposed development would be acceptable in terms of its impact on the archaeological and cultural heritage of the area
x. Whether the proposed development would be acceptable in terms of noise, and vibration
xi. Whether the site selection process and consideration of alternatives are of reasonable adequacy
xii. Other
2. Legal and procedural issues

A number of legal and procedural issues were raised by the observers either in written submissions or at the hearing. I propose to examine these under following headings:

1. Issues related to consideration of the application as a Strategic Infrastructure Development (SID)

   a) The proposed development is not a Strategic infrastructure Development

   It is maintained by some of the observers that a commercial incinerator by a private operator should not be considered as a strategic infrastructure development. Some maintained whether a development is ‘strategic’ should only be decided by the Dail.

   The procedures in making a decision on whether a development is strategic infrastructure development are outlined in S37 of the Planning and Development (Strategic Infrastructure) Act, 2006. The Board is empowered to make such a decision by the provisions of the same.

   In their decision on ….. the Board has decided the proposed development is a strategic infrastructure development.

   I note there has been no application for a judicial review of that decision.

   (b) No appeal of the Board’s Decision

   It is submitted by some of the objectors that in the case of proposals for a strategic infrastructure development, there is no system of appeal of the Board’s decision on the development. They maintain such an appeal is required by EC law. Some suggest the Board should refrain from further consideration of the case until this defect in legislation is resolved.

   While it is true that there is no appeal of the Board’s decision under the provisions of Planning and Development (Strategic Infrastructure) Act, 2006; consideration of whether this is in compliance with European law is a matter for another forum and outside the scope of this report.

   (c) Preclusion from pre-application discussions

   It is submitted by some of the observers that the observers were precluded from the pre application discussions with the applicants, and that this was unacceptable.
The procedures to be followed in pre-application meetings are outlined in Section 37 of the Planning and Development (Strategic Infrastructure) Act, 2006.

I note however that the ‘record of the meetings’ was made available for perusal throughout the hearing.

The hearing was also advised of the Board’s policy to appoint an inspector other than those attended to the pre-application meeting to report on the application if and when it is made.

(d) Inadequate time allowed to public for comment

It is submitted by observers that, without a preliminary process through the planning authority, the amount of time available to the public for a considered response to a SID application is severely limited.

They draw attention to the volume of information that needs to be sifted through and maintain that expertise is required for examination of specialist sections of the EIS and seeking those experts reduces the time for preparation of observations. In this case, lodgement of application just before Christmas was a further problem in terms of informing the community about the application.

The decision on the adequacy of the time permitted for making observations on a SID application is a matter for another forum.

2. Adequacy of the information submitted / Compliance with the EIA Directive

(a) Adequacy of the information

It is submitted by the objectors that the EIS is inadequate and that this was proven by the additional information submitted during the oral hearing. They stressed that information provided during the hearing at 500 pages was twice as much as the EIS at 250 pages, and that some of the information was submitted on the last day. They submitted this had put undue pressure on the observers.

Secondly, they submitted that the conclusions drawn in some of the models were flawed as they were based on insufficient information or information supplied by the applicants to various specialists preparing separate sections of the EIS.

They further submitted there was over reliance on the air modelling findings by experts in other fields.
(b) Preparation of the EIS by the applicants

The observers maintained that the EIS prepared on behalf of the applicants was aimed at justification of the proposed development rather than providing adequate information on the likely significant direct and indirect effects.

They maintained the EIS should be commissioned and prepared independently of the applicants.

In their view, the deficiencies in the EIS seriously undermined the EIA process required under EU law.


Member states shall adopt all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects.

In Article 5 the Directive requires member states to ensure that the developer supplies in an appropriate form of the information specified in Annex IV.

In Article 6 it requires member states to take measures necessary to ensure that the information gathered are made available to the public within a reasonable time in order to give public concerned the opportunity to express an opinion before the development consent is given.

Article 6 also requires that authorities likely to be concerned by the project by reason of their specific environmental responsibilities are given opportunity to express their opinion.

In Article 6(3) it states that detailed arrangements for such information and consultation shall be determined by member states.

In this regard I also refer to the preamble of the Council Directive 85/337/EEC where it is stated:

… this assessment must be carried on the basis of the appropriate information supplied by the developer, which may be supplemented by the authorities and by the people who may be concerned by the project in question.

As such there is no reference to a requirement for preparation of an EIS, but rather supply of appropriate information by the developer.
Under Irish Law this obligation is met by a requirement of an EIS (Environmental Impact Statement) to be prepared by the developer, (though, I understand there are other jurisdictions, where the EIS (or an equivalent report) is prepared on behalf of the consenting authority, independently of the proposer who would only supply relevant proposal details).

Schedule 6 of the Planning and Development Regulations, 2001 provides an outline of the information to be contained in an EIS. The EIS is considered as the starting point of the EIA process carried out by the consenting authority.

In this regard I refer to the judgement delivered in the High Court (April 2008) by Mr. Justice Mc Mahon where it stated

*EIS is a document prepared by the developer, while the EIA is a process which is an ongoing exercise undertaken by the decision maker… although the EIS is intended to be comprehensive, it is rarely definitive in its conclusions.*

The judgement also stated that a deficiency in the EIS did not invariably undermine the process as the decision maker might have the benefit of subsequent submissions and observations and would be informed by its own expertise.

In this case, the note sent to the applicants together with notification of the hearing required the applicant to provide information at the appropriate level to address the issues raised in the written submissions of the observers and prescribed bodies.

The applicants responded to this requirement as part of their presentation during the first week of the hearing. At the end of the third week the hearing was adjourned for three weeks for examination of additional information or responses provided.

Answers to some of the questions were provided at later stages which were again commented upon by those attending the hearing, and clarifications were sought. Where possible information was forwarded to expert witnesses and comments were sought from them through e-mail if they were not present. All these form part of the EIA process and add to the quantum of information available to the decision maker (An Board Pleánala). It is however correct that some of the information was provided rather late.

I shall comment upon the adequacy and reliability of information supplied by the applicant in specific areas later as part of my report on specific issues. I do however consider in general that the EIS submitted with the application together with the supplementary information provided during the hearing complies with the requirements of the Schedule 6 of the Planning and Development Regulations, 2001, for information to be contained in an EIS. As such I consider the EIS to be legally adequate.
The procedures adopted during the oral hearing facilitated testing of most of the information provided in the EIS (and/or provided subsequently), in terms of accuracy, adequacy and methodology, by the observers as well as by attending prescribed bodies /authorities and facilitated provision of additional information where necessary. These provided for a substantial part of the assessment process as required by the EIA Directive. The information is further assessed as part of my report in various sections, and would be examined by the Bord in their decision making.

It is therefore my considered opinion that in this case the process adapted would fulfil the requirements of the EIA Directive.

(c) The EIS did not refer to Schedules 7 or 8 of the Planning and Development Regulations, 2001.

It was stated by some observers that a deficiency in the EIS arose, as it did not refer to Schedule 7 of Planning and Development Regulations, 2001 in the EIS,

I note Schedule 7 relates to Articles 103,109 and 120 in respect of sub-threshold developments (developments that do not require preparation of an EIS). As such the fact that Schedule 7 is not referred to in the EIS for the subject application does not arise as an issue.

(d) Adequacy of the drawings

It is submitted by the observers that omissions and inaccuracies in some of the drawings could render interpretation of the permission or enforcement difficult and lack of quality control in the drawings in general gave an indication of the attitude of the applicants.

The original schedule of drawings did indeed include a drawing no CD000, though it was not submitted with the application. There were also discrepancies in relation to numbers CD115/ 116.

A revised schedule was presented on the second last day of the hearing.

During the hearing and at the request of the inspector a revised drw no 150-1 was presented to help clarify location of processing components within the building as shown on the floor plan. This was (A0 size) and enlargement of a drawing provided in the EIS which was not readily legible.

During the hearing the applicants referred to revisions in terms of removing the purge flue gas system, and possible revisions to the building design arising from the same. Following requests for clarification, (as to these would constitute material changes to the proposal), it was stated by Mr. Slattery for
the applicants that the applicant was not proposing to change the development and was not proposing any new revised layout. No revisions were proposed to the submitted drawings.

At the request of the inspector, the applicants also provided drawings showing whether changes arising from alterations to future road layout in the area (as referred to in the planning authority submission) can be complied with in the waste transfer station site. Other drawings were submitted to clarify precise location of drum stores /tank farm, and discussed during the hearing.

Having regard to submissions of revised drawings during the hearing and discussions in relation to the same, I am satisfied of the adequacy of the information provided.

(e) Accuracy and reliability of the information submitted / submission of the most up to date information

The observers submitted that some of the information submitted was either not accurate, or was not the most up to date.

It is of course imperative that the most up to date and accurate information is presented in the application and to the hearing so that the decision maker is properly informed.

In this particular application the observers were highly knowledgeable and motivated to test the methodology as well as accuracy, reliability and recency of the information submitted by the applicants. They were therefore highly instrumental in the provision of the most up to date information in many areas, for the benefit of the Board as the decision maker. I am satisfied that the information before the Board is most up to date in most if not all areas.

I shall refer to information inaccuracies if any, as part of detail examination of issues.

3. Separation of powers between Agencies

It is submitted by the objectors that arising from separation of jurisdictions of various authorities with specialities, the development applications were not being examined in a holistic way, and there were areas outside the remit of various authorities.

They submitted that while EPA had the power to control emissions from the stack, there was no control or monitoring of fugitive emissions. Their powers did not extended to activities prior to commencement of the operation or emissions during a major accident.
They maintained that the Health and Safety Authority had limited jurisdiction only related to the operation of the plant which excluded activities outside the site area (such as roads), or prior to commencement of the operations. They stressed that HSE which had powers in terms of evacuation in the case of major accident hazards was not consulted regarding the case.

The matter is again a matter for consideration in another forum. I do however refer to the judgement of the Supreme Court delivered by Murray C.J on 10th May 2007, (in the case of Martin v. ABP, and the Attorney General and Indaver Ireland) in relation to division of responsibility between the An Board Pleáнала and the EPA, where it was concluded that the combination of the assessments carried out by the Board and the EPA together met the requirements of the EIA Directive prior to consent.

4. Deferral of decision for the application until the outcome of referral to EJC

In the written submissions to the Board, it is stated that the European Commission has decided to refer Ireland to the ECJ in relation to implementation of the EIA Directive. They requested that the Board defer its decision on the subject application pending the decision of the ECJ.

The enclosed copy of press release with reference IP/07/1524 (dated Oct 2007) states

*The Commission is referring Ireland to the ECJ over shortcoming in Irish legislation used to implement the Environmental Impact Directive... The Commissions case is divided into two parts.*

*Secondly, the Commission considers that, because of weaknesses in Irish legislation splitting decision-making between Irish planning authorities and Ireland’s Environmental Protection Agency, there are risks that the outcomes required by the Directive will not always be achieved. When the decisions are being taken on the proposed incinerators and other projects for example, Irish rules do not guarantee that inter-actions such as those between pollution control measures and the landscape will be adequately assessed and taken into account...*

I note this is subsequent to the Supreme Court judgement referred to above. The supremacy of the ECJ is accepted without question.

I am unable to make a recommendation on the issue. I note however, that no Court order was presented at the hearing requiring discontinuance of the hearing.
5. **Cost related issues**

(a) **Parity of financial resources to ensure fair process**

It is submitted by the objectors that application is made by a multi million euro trans-national corporation with unlimited access to funds, while the observers have put not only their time at the expense of their businesses, and family life, but they also had to raise money on a continuous basis (over nine years) to hire experts to have independent advise and to be able to respond at the level appropriate.

They maintained that the present system was unfair and did not have a measure of equality between the parties. They argued, in order to have any parity in presenting their case to the Board, it is essential that financial resources are made available to the effected observers to retain appropriate independent expertise and advice. This was imperative as the EIS was prepared on behalf of the applicants while the community had to bear the financial burden to get experts to examine the EIS.

They argued that he European Convention of human rights provides that any civil authority adjudicating on matters which affect the rights of individuals must ensure those individuals have the benefit of fair procedures including availability of equality of arms between parties in the process.

They also maintain that the practice recently adopted by the Board (of limited reimbursement of costs) did not meet the test laid down in the Convention, nor did it comply with the requirements of the EC’s implementing Directive.

The decision on whether the existing system is in compliance with the Convention is a matter for another forum, and outside the scope of this report.

The decision on the amount of costs to be awarded is matter for the Board (but outside scope of this report).

I note however, the hearing was advised on several occasions and on the last day that applications for costs would need to be made to the Board within three weeks of completion of the oral hearing and that the decision order would include provisions for costs they considered appropriate.

(b) **Cost of making an observation**

This was particular concern of observers, who submitted that the observer fee of €50 to submit observations to a development by a multimillion dollar company was unfair. Some had paid as little as €2 for a joint submission as it was all they could afford to.

They stated over and over again that the system was unfair, in terms of financial burden put onto the communities, and in terms of time the local
communities have to take from their daily activities to make such observations.

The hearing was advised that the procedures in relation to making observations were laid down in the legislation and the matter was outside the scope of the hearing.

(c) Cost arising from the failure of engagement by the first party

A number of observers submitted that there was little sense of engagement by the applicants with the process and even the little engagement that has taken place had an air of begrudging participation only to the minimum extent the company felt they could get away with.

They drew attention to absence of technical experts from Indaver at the hearing and the necessity to put the questions to the experts/designers/operators in Belgium through an intermediary (Mr. Jones).

They wanted it brought to the attention of the Board, various times when the applicants refused to go outside their own company to obtain verifiable relevant data and to very late arrival of information in some areas, although being requested prior to adjournment of the hearing.

They maintained the reluctance of the applicants to engage fully and delays in provision of information sought lengthened the hearing adding to the costs to the community. They stressed that the applicants were predominantly responsible for extending the life of the hearing. They asked the Board to take these into account in their deliberations, and to award a bigger portion of the community’s expenses

I do not intend to make a recommendation in this regard, but would like to bring the following to the Board’s attention.

The process under Planning and Development (Strategic Infrastructure) Act, 2006 is different than the appeal process under the Planning and Development Act, 2000 which allows time for clarification of a number of issues by the planning authority before reaching the appeal stage. The appellants are afforded further time for review of written response of applicants to the written grounds of appeal all before an oral hearing takes place.

Under the Planning and Development (Strategic Infrastructure) Act, 2006 the pre-oral hearing stage of the process is confined to one-time written submissions by the observers which are circulated to the applicants, but not responded to in written form for further circulation, prior to the hearing.

In this case the applicants provided their responses to the written submissions at the oral hearing (as required in the written note sent with the notification of the hearing). In some areas this included further information, which led to the
need for adjournment of the hearing for three weeks for examination of the information by the observers / their experts, the inspector and her advisors and the prescribed bodies. As a result, the process was lengthened.

There were also problems with provision of timely responses to issues raised as part of the oral hearing submissions. This sometimes meant provision of response after departure of an expert, who raised the issue. Then the response was e-mailed to the expert who responded through e-mail, which sometimes led to further questions. In some cases information thus provided then had to be sent to advisors to the inspector for their information.

Some of the specific questions related to operations of the incinerators (those operated by Indaver) were responded to several hours (or several days) after the question was put to the applicants (who contacted Belgium facility for a response). As such continuity of questions and answers was disrupted, and sometimes arrival of the responses at a stage of the hearing when other issues were being discussed, led to scheduling problems, and problems in relation to availability of expert witnesses to examine the response.

There were on going scheduling problems associated with availability of experts, not only those provided by the applicants but by the observers, and sometimes related to restricted availability of prescribed bodies. Some of these resulted from rescheduling, or adjournment of the hearing.

The participants were accommodated by the inspector as much as possible.

(d) Board seeking of ‘costs’ in relation to previous legal proceedings

The observers wanted to put it on record that while all the effected parties had agreed not to pursue costs in relation to previous legal proceedings, the Board was pursuing objectors for costs and this was adversarial.

The hearing was advised that the matter was outside the scope of the hearing but that it would be brought to the attention of the Board.

6. Other

I understand there was commentary from an Indaver spokesperson in a newspaper article in relation to Prof. Howard’s evidence. I am not aware of what is written in the article as I have a policy of not reading the papers while I’m holding a hearing,

The objectors were anxious that the matter be brought to the attention of the Board as some of the members of the Board may have read the said article. (In this regard I refer the Board to pages 28-31 of the proceedings on 11th June, and Mr. Noonan’s closing submission)
3. **Precedent**

In Jan 2004 the Board granted permission (PL 04.131196) for a waste to energy facility, transfer station, and community recycling park at the same site. That permission was granted under the provisions of Planning and Development Act, 2000.

Section 40 (1) of the Planning and Development Act, 2000 limits the duration of a permission where it states:

40 (1) Subject to subsection (2), a permission granted under this part, shall on the expiration of the appropriate period (but without prejudice to the validity of anything done pursuant thereto prior to the expiration of that period) cease to have effect as regards —

(a) in the case of development to which the permission relates is not commenced during that period, the entire development,....

Section 42 of the 2000 Act provides powers for extension of the appropriate period (subject to certain requirements). I note that an application was not made by the applicants for such an extension during the prescribed period.

As the appropriate period of five years expired on Jan 2009, and as there has been no decision to extend the appropriate period, I conclude therefore that the previous permission (PL 04.131196) has ceased to have effect.

The question then arises as to whether the said (expired) permission should constitute a material consideration in determination of the current proposal.

In this regard I propose to examine the similarities and differences between the two projects, as well as changes, if any, in the policy and in the receiving environment, in the intervening years which would be relevant to the determination of the current case.

1. **Project comparison**

(a) **Use, capacity, duration**

The previous proposal (as described in the Board’s Order), was for a waste-to-energy facility, waste transfer station, and a community recycling park.

- The plant had one line only (fluidised bed furnace, post combustion chamber and flue gas cleaning line) for processing of hazardous and non hazardous industrial and commercial solid, liquid and sludge wastes.
- The capacity would be 100,000tpa
• The building was stated to be sized to accommodate a second grate incinerator for processing municipal type non hazardous solid waste (subject to separate application). (see pre-application documents)

• Duration of permission was not specified, therefore it would be 5 years

The current proposal is for a waste-to-energy facility, and a waste transfer station.

• A second line is proposed to accommodate a second (grate type) furnace to process municipal solid waste of 140,000t
• Total capacity would be 240,000tpa
• Application is for a ten-year permission
• It does not include community recycling park

As such there are significant and material differences in terms of proposed uses, proposed waste streams and the capacity proposed.

(b) Structures

• Building size – there is slight increase in the building size from 23,169m² to 23,390m²
• Building height – there is significant increase in building height from 40.7m OD to 48.27m OD
• Stack height – there is a significant increase in stack height from 60.70D to 90.77 OD

As such there are significant difference between the previous structure and the proposed structure.

In addition the structure is completely redesigned changing its outlook from a curvilinear structure to a building with a serious of angular sections.

2. Legislation

(a) Primary legislation

The previous application was made and decided under the provisions of Planning and Development Act, 1963, by the Bord as an appeal, following a decision by the planning authority (the original application to the planning authority being made prior to commencement of 2000 Act).

In the current case the application is made directly to the Board, and a permission is sought under the provisions of Planning and Development (Strategic Infrastructure Development) Act, 2006.

As such there is a significant change in the legislative framework within which the decisions on the application are made
(b) Risk of environmental pollution

In the case of the previous application, the provisions of Section 54(3) of the Waste Management Act, 1996, and section 98 of the Environmental Protection Act, 1992 precluded An Board Pleánala from consideration of matters relating to the risk of environmental pollution from the activities associated with the proposed development.

I first note Section 256 of the Planning and Development Act, 2000 which provided amendment to Section 98 of the EPA Act 1992, where it stated:

(1A) Where a licence...has been granted or is or will be required in relation to an activity...An Board Pleánala may, in respect of any development comprising the activity or for the purposes of the activity, decide to refuse permission..... where An Board Pleánala considers that the development, notwithstanding the licensing activity ... is unacceptable on environmental grounds, having regard to the proper planning and sustainable development of the area in which the development is or will be situate.

Part 2, Section 37E of Planning and Development (Strategic Infrastructure) Act, 2006 states:

(5) where an application under section 37E relates to proposed development which comprises or is for the purposes of an activity for which and integrated pollution licence or waste licence is required, hte Board may, in respect of that development, decide to refuse a grant of permission under this section, where the Board considers that the development, notwithstanding the licensing of the activity, unacceptable on environmental ground, having regard to the proper planning and sustainable development of the area in which the development will be situated.

The fact that the Board is no longer precluded from consideration of matters relating to the risk of environmental pollution in the present application constitutes a significant difference. Indeed the Board is empowered to refuse permission if it considers a proposal unacceptable on environmental grounds.

3. Policy

Since the decision of the Board on the previous application in Jan 2004, there has been considerable amount of new or revised legislation and policy directives both at the EU level and at National level.
The following are of particular relevance to this application:

- Climate Change 2007 : Intergovernmental Panel for Climate Change
- National Strategy on Biodegradable Waste 2006
- National Waste report 2006
- National Climate Change Strategy 2007
- National Development Plan 2007-2013

The following circular letters are also post decision:

- Circular Letter WIR 04/05
- Circular Letter WIR 09/07
- Statement of Strategy 2008-2010
- Circular Letter WPRR 04/09

Therefore, there are significant amount of new policy and guidance documents applicable to the case.

4. Policy documents at the local level

- Cork County Development Plan 2009 (adopted in Feb 2009)
- CASP (Cork Area Strategic Plan) Update, 2007
- Cork waste management plan 2004-2009

All these have been completed since the decision of the Board in Jan 2004.

Having regard to above, it is my considered opinion that the proposed development is materially different to the one previously proposed, and that there have been significant developments in the policy area at various levels since the decision of the Board in Jan 2004.

Therefore, it is my considered opinion that while the history of planning decisions on the site would need to be taken into consideration, the permitted (now expired) development does not constitute a ‘precedent’, in making a decision on the proposed development.
4. Policy considerations

In examination of the proposed development within policy context, I first propose to look at whether there is a need for the proposed facility and if so, whether the proposed development would provide a reasonable and an appropriate response to this need in line with policy requirements at various levels. In this section I will also look at whether the proposed facility is a recovery or disposal facility within the context of Waste Framework Directive, 2008.

The submissions, discussions and further submission on this issue took place over a number of days (28th April, 11th May, 12th May, 14th May, 16th June, 17th June).

4.1 Need

The question of whether there is a need for the proposed facility is one of the most fundamental questions in determination of this appeal. Submissions and discussions in relation to this issue took place over a number of days spread throughout the hearing.

The proposed development involves provision under one roof, of two incinerators with two distinctly different functions. One of the incinerators (fluidised bed) is for processing hazardous waste though half of the capacity proposed is for non-hazardous industrial waste. The other (grate incinerator) is solely for municipal solid waste. The waste arisings determining the need and relevant policies applicable to the each are also different.

Therefore, I propose to carry out my assessment under the two subheadings of ‘need for the hazardous waste incinerator’ and ‘need for the municipal waste incinerator’.

4.1.1 Need for hazardous waste incinerator

Applicant’s case

In his opening statement Mr. Ahern referred to the vulnerability of the economy and the need for businesses to find local cost effective solutions to make their operations work. He stated that waste was a real factor in this regard. He submitted that most businesses currently exporting waste for recycling or energy recovery to other countries were adding significantly to their costs which was making their operations much less competitive.

As more stringent rules came into place through the proximity principle and local rules of other countries, the door was closing in on Ireland exporting its
waste. Without the expensive export option or the local infrastructure option the businesses could not function in Ireland.

He stressed that exported waste was used as a local fuel supply elsewhere. For example hazardous waste from the Cork region was supplying the base load energy source for Hamburgh’s intensive district heating system. Similarly, residues from mechanical treatment were being exported from Limerick to cement kilns in Sweden effectively subsidising the production of cement in a competitor member state.

Jackie Keeney for the applicants stated that the need for the proposed development arose at policy level from current European and national waste, energy, climate change and sustainable development policies. The need also arose at a practical level from the quantities of residual waste generated which required the most appropriate treatment.

Referring to waste management plans for Cork city and county, including Sludge Plan, and to various targets set in each, she stated that coupling of municipal solid waste treatment with hazardous waste treatment in the same facility would provide for greater economies of scale and would provide a more cost effective solution for both municipal and hazardous waste.

Indaver had carried out a comprehensive study of the volumes of national hazardous industrial and non hazardous industrial waste and municipal waste volumes in the Cork region. It had had contracted two consultancies to look at the waste streams in Cork region, incineration and co-incineration capacity and the outlets for MBT residues nationally. Based on this and other information an assessment of the need for the waste energy facility was conducted.

The need for a hazardous waste to energy facility was identified in the National Hazardous Waste Management Plan 2008-2012 (NHWMP). Currently all 47,000 tonnes of hazardous waste which cannot be recycled was being exported for incineration via road and freight. Over 60% of this was generated in the Munster region. She maintained that majority of hazardous waste licence facilities were located in the southern half of the country, as indicated in Figure 3 of her submission.

The NHWMP estimated that a minimum of 50,000tpa (tonnes per annum) incineration capacity would be required, if the preferred scenario involving ambitious recycling and co-incineration targets were to be achieved and that this was the envisaged treatment capacity at the proposed facility.

This did not account for hazardous waste that may arise in Northern Ireland and if an all Ireland approach is taken total generation of hazardous waste in Northern Ireland would be in the region of 50,000 tonnes per annum. The majority of the hazardous waste generated in the province was exported to Great Britain.
She stated that the EIS (s.2.7) had identified a number of potential sources of industrial waste materials including contaminated soils and wastes estimated to be over 400,000tpa. A significant portion of this would be combustible.

Ringaskiddy and Little Island were recognised as the main centres of manufacturing industry in County Cork. They could also accept contaminated soil from Halbowline and the hazardous residues of car shredding from Hammond Lane. The 20,000 tonnes of industrial non hazardous waste to be accepted at the proposed facility was a ‘conservative’ estimate.

Observer submission in support of the application

Dr. Gillan\textsuperscript{2}, stated that their written submission to the Board as an observer was rejected because it was not accompanied by a cheque. He was facilitated to make a submission on the first day of the hearing in support of the application.

He stated that Pharmachemical Ireland was a leading representative body for the needs of the pharmaceutical and chemical manufacturing industries in Ireland. He stressed that Pharmachemical Ireland had no direct involvement in the project.

He referred to many global influences putting pressures on the industry such as weak new product pipelines, overcapacity in manufacturing networks, generic competition on blockbuster drugs and increased cost pressure from healthcare providers. He noted the importance of jobs in the pharmachem businesses and referred to competition from other locations such as Puerto Rico, Singapore and Switzerland for foreign direct investment. While they were trying to broaden the value base particularly expanding into R&D, the cost of labour, energy and waste was putting real pressures onto the sector.

He stated that Ireland needed an integrated approach towards waste management, one that involved prevention, minimisation, recycling, thermal oxidation and environmentally safe disposal. He noted that over 65% of the hazardous waste produced in the pharmachem companies was currently recycled (which was amongst the highest rate in European Union). He referred to rising of energy costs by 70% between 2001 and 2007 against the EU average of 36%. Ireland was now the second most expensive country for non hazardous land filling among benchmark comparators. He noted most of the waste still went to landfill and that a waste to energy treatment option was not available.

He stated that most pharmachemical companies in Ireland were IPPC compliant and all the companies signed up to “responsible care” a global initiative which helped the industry to operate safely, efficiently and in a

\textsuperscript{2} Senior Executive with Pharmachemical Ireland
sustainable manner reducing CO₂ emissions by 2.1%, volatile organics by 46%, sulphur dioxides by 29%. Similarly emissions to the water such as nitrates have been reduced by 6.5% and water consumption has been reduced by 11.5%.

Yet most of the waste that could not be recycled was shipped abroad because it could not be treated here. This added an enormous expense to the operation of the pharmaceutical industry which needed to be critically examined in these hard economic times. He stated that the lack of an integrated waste infrastructure was a major challenge in determining new investment in Ireland.

In response to a question he stated that pharmaceutical industry recycled approximately 60% of its hazardous waste but 80,000 tonnes got shipped abroad. He did not have any comment on the suggestion that at least 60% of what goes abroad was recycled abroad.

In response to a question he stated that there would be 20-30 significant chemical manufacturers in the greater Cork area and about 10 would have their own permanent incinerators. Not all the companies had their own incinerators because of the economies of scale. They were not big enough to do it themselves.

In relation to the question that significant job generation also occurred by adapting zero waste and recycling (as in Australia and New Zealand) he said when Ireland competes globally for foreign direct investment, there is quite literally a checklist used by the parent companies to decide in terms of where they are going to site a new facility and that if the others say that they do have an integrated Waste Management Plan that actually worked, they got an extra tick.

He agreed that the pharmachem Ireland had not taken a formal view on where the best optimum location for a hazardous waste facility would be and had not formed a view as to the optimal size of such a facility. (He stated that pharmachemical Ireland represented 55 members).

**Submissions by Observers against the application**

There were many submissions in relation to this issue. I propose to refer to only a representative few.

*Cllr. D’Alton*³ (CHEPA). In her lengthy and comprehensive presentation (14th May) accompanied by various bar charts summarising statistical information, she outlined the three main elements of EU waste legislation, as horizontal legislation (establishing overall framework and guiding principles), legislation setting technical standards (for the operation of waste facilities), and legislation in relation to waste streams (to reduce their hazardousness, and to

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³ Deputy Mayor of Passage West Town council, member of advisory group Cork Harbour Forum, chairperson of working group on heritage in Cork Harbour. An engineer, she had worked as an environmental consultant specialising in waste management. 12th May pm session
guide the method by which they are managed), asking along the way how the
various principles would be helped by the proposed facility.

NHWMP 2008 estimated Ireland’s hazardous waste production in 2006 to be
284,000 tonnes of which 40% is solvent. Most of this came from
pharmaceutical companies. Some 16 of the top 20 pharmaceutical companies
with most of the plants seen as benchmarks for the rest of the world were
located in two large clusters mostly in Cork and Dublin regions.

Referring to bar charts she outlined how hazardous waste production and
exports for treatment had increased between 1996 and 2004, and how the latter
had decreased afterwards to 2006 and 2007. In particular, solvents were now
increasingly recycled or used as fuel. She noted that organic substance
recovery was also becoming a dominant form of waste treatment, and that
physico-chemical treatment had also become statistically significant. She
noted that these were now offering alternative solutions and were being
provided in Ireland.

She then referred to increased on-site incineration playing an important role.
In 2007 the statistics indicated that much the same volume was treated on-site
as that treated off site (52%).

She noted that until 2006 most hazardous waste exported was disposed off by
incineration (35% in 2006), but this had gone down to 22% in 2007. Recovery
as fuel, solvent recycling and landfilling had increased. The decline in export
of solvents by 48% was noted by the EPA.

She referred to Irish Cement signalling its intentions to use solvent based fuel
in cement manufacturing process.

The amount of hazardous waste exported for incineration in 2006 was 32,500t
(less in 2005 at 18,500t and 2004 at 16,500t). This represented only 67% of
the capacity of the proposed development. A facility running at 67% capacity
would need to compete with other facilities to fill the capacity.

She noted that presently only a fraction of the licensed treatment capacities of
emerging new treatment facilities were utilised (healthcare risk material, oil
treatment etc), and asked if there is a permanent demand for waste from a
large disposal facility how could those emerging technologies flailing in the
marketplace ever hope to compete on either scale, reliability or cost with such
a facility. (She noted only one third of the licensed capacity provided for
treatment of 24,000t health care risk material was used in 2006).

She referred to advances and changes in the pharmaceutical industry using
solvent substitution, enzymatic catalysis and recycling of bio products, and
increases in waste efficiency.

She stated that this was an uncertain time for hazardous waste production
trends because patents were coming to an end, and pharmaceuticals were keen
to diversify. Pfizer and White were diversifying to bio, while Centocor and Genzyme were using processes based entirely on biotechnology.

In her view neither the increase in waste recovery nor the apparent emergence of interest in the pharmachem sector towards cleaner production would have happened had an incinerator been in place.

The order of preferred methods by the EPA was recycling, co-incineration in cement kilns, and incinerations for energy recovery. The proposed development was the least preferred option.

She noted that three of the seven waste streams identified in the EIS for acceptance at the proposed facility were recommended by the EPA for pre-treatment. For example contaminated agricultural plastic containers if pre-treated could be recycled.

Referring to generation of 23,500t of hazardous ash (and flue gas cleaning systems) by the proposed facility and noting that this would be a new hazardous waste stream which did not exist presently, she submitted that the amount of reduction in hazardous waste exports would be very little. Furthermore exported material would have to be landfilled.

Using pharmachem industry’s ‘members directory’, she submitted that (figure ) while there were 22 such facilities in Cork /south east / south-west and mid west, there were 25 in Dublin / mid-east and the Midlands.

She also looked at other producers of hazardous waste such as paper / textile/leather and indicated their locations (noting 27 of 68 were located in south region, 23 in Dublin region, and 18 in border region).

She then referred to TFS records and stated that the amount and proportion of hazardous waste exported from Cork for incineration in 2007 was 7,177t (i.e. 12% of the national figures).

Asking why so low, she answered that this was because Cork was taking responsibility for its own waste. She referred to various licensed facilities for recovery and incineration in the pharmachem plants in Cork (4 with on-site incineration, 11 with on-site solvent recovery)

In conclusion and noting that European legislation did not oblige Ireland to become self-sufficient, that figures produced by the EPA indicated a gradual shift in favour of principle of prevention, that establishment of a hazardous waste incinerator would strangle efforts towards reduction and cleaner production, she submitted that Cork was not responsible for the vast block of Irish waste to be exported for disposal.

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4 Transhipment of Waste (Regulations S.I. no 419), pre-notification or prior consent for export of hazardous waste. Dublin City Council is stated to be the national competent authority.
She further submitted that a careful analysis of centre of gravity of the hazardous waste generated and exported for incineration needed to be undertaken prior to location of a national facility. This was not done in the EIS.

Mr. Colm McDowell⁵ stated that in his experience and knowledge the hazardous waste quantities had decreased over the past number of years and this trend would continue, mainly because of consolidation, changes in the technology and the trend towards biopharma away from chemical syntheses (which was the older technology). In addition, the older technology (that is the syntheses plants) were moving out of the high cost operating areas in EU to the lower cost locations in the Far East. As drugs came off patent this trend would increase and in his opinion, the necessity for hazardous waste incineration in Ireland would also decrease in time.

He referred to his recent visit to Shanghai and the approximately 40 square kilometres of a large fully serviced chemical industrial park with many of the plants operating at EU standards and with an eye to exporting generic products. The park had waste incineration plant with approximately 200,000 tonnes capacity, a wastewater treatment plant and was exporting steam back into the grid of the park. He believed that large production facilities would go to such low cost locations globally rather than come to Cork.

Secondly he stated that the cement industry could use fuels derived from hazardous liquid waste and that this has been the trend and the direction of many of the facilities in Europe. In simple cost terms there was no comparison between using waste as a fuel and using it to operate an incinerator. As such he believed quantities of waste available for incineration would go down further.

He referred to the concept of solid recovered fuel (SRF)⁶ to provide an alternative method of recycling and recovering fuel from waste specifically non hazardous waste. There were a number of cement kilns in Ireland actively pursuing this method of using waste as a fuel. He believed this trend and this technology would increase in the coming years.

In response to question he stated that the proposed plant was specifically designed to handle liquid waste (being a fluidised bed), but that these liquid wastes would no longer be found in the market.

In response to a question he stated that the liquid hazardous waste would have a high calorific value and were ideally suited to recovery operations /use in the cement industry. In his opinion the operation of a hazardous waste incinerator which would seek to have high calorific materials as support fuels in the operation would reduce the possibility of sending solvent waste to recovery

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⁵ on behalf of CHASE. Previously operated a hazardous waste business and managed a waste transfer station in Dublin. He has been nominated by the National Standards Authority to the EU level to prepare a standard for solid recovered fuels made from waste. (12th May pm session)
⁶ same as RDF (refuse derived fuel)
He noted that the TFS system which allowed for an objection to a waste shipment on the basis that it can be treated in the location where it is generated by a third party could be used to prevent export for recovery. (he had been operating TFS systems since late 80s).

There were at least two cement kilns quite closely located to the Munster region in south Kildare and in Limerick. One of them had a licence to burn solid recovered fuels. One of the kilns was burning and was licensed to burn liquid hazardous waste. He noted that the applicants were supplying liquid hazardous waste to that kiln.

In his view 50,000 capacity hazardous waste line while small in global terms, was very significant in terms of the Irish market to the extent there would be no room for another facility.

In his view lack of incineration capacity would not provide a disincentive for foreign direct investment because the trend was towards bio-pharma which tended to produce lower quantities of waste. (He referred incinerators with 80,000t capacity in Germany, some of which were already experiencing difficulties in sourcing hazardous waste).

Mr. Power\(^7\), referred to toxic nature of bottom ash arising from heavy metal residues, and stated that 10% fly ash together with 20% bottom ash meant that 30% of what goes in would come out as hazardous material. The proposed facility with 240,000t capacity would generate more hazardous material than presently exported for incineration.

The proposed facility would also produce large amounts of CO\(_2\). He noted that HNHWM predicted that Ireland would exceed the reduction target under Kyoto Protocol by 7 million tonnes in 2020. The proposed facility would generate almost 1 million tonnes CO\(_2\).

**Assessment**

The requirement/ need for a hazardous waste incineration facility arises from the amount of hazardous waste exported from Ireland for incineration in the context of producer responsibility, self sufficiency and the proximity principle.

Therefore, in determination of whether to locate such a facility at Ringaskiddy, the main questions to be addressed are:

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\(^7\) for Zero Waste Alliance. A Fellow of Inst of Marine Engineering, lecturer at NMCI, visited Denmark as part of delegation from Waterford City Council as an invitee to look at incineration in Denmark in 2007. 17\(^{th}\) June
• Whether there is a demonstrable need for a national hazardous waste facility arising from production and export of hazardous waste for incineration, and if so,
• Whether a demonstrably higher proportion of hazardous waste creating this need is produced in Cork and its immediate environs to necessitate location of a national facility in Cork

The main argument put forward by the applicants (Mr. Ahern and Ms. Keaney) is that a national facility is needed to address hazardous waste produced in Ireland, to meet Ireland’s obligations for self sufficiency, and energy efficiency. They also submit that the majority of hazardous waste is produced in the Cork region by the pharmachem sector, and therefore, location of a national facility at Ringaskiddy is appropriate in terms of proximity principle and producer responsibility.

The main arguments put forward by the observers is that while there is a cluster of pharmachem sector in Cork there are also clusters elsewhere particularly in the Dublin region. They further maintain that hazardous waste generated in Cork is addressed in Cork through a substantial number of existing on-site incinerators, that solvents produced by this sector no longer need incineration as they can be used as fuel in cement kilns or recovered, that there is an ongoing change in the technology from chemical based to bio based manufacture of drugs which no longer produce hazardous waste, and that this will lead to further reductions in the near future. They maintain that the amount of hazardous waste sent for incineration abroad from Cork is small relative to national levels, and that the amount produced does not justify location of such a facility in Cork.

I now refer the Board to the NHWMP 2008-2012 produced by EPA and in particular table 17 (page 66) which provides details of quantity of hazardous waste potentially available for incineration in Ireland. Deducting ‘solvents’ (as it has potential for recycling and /or use as fuel), the figures indicate 18,430t in 2004, 16,418t for 2005 and 32,430t in 2006.

In relation to solvents the NHWMP recommends that in the interest of self sufficiency and maximising fuel substitution, combustion of blended solvents should take place in Ireland (currently exported) and notes that Irish Cement has signalled its intention to burn solvent based fuel from late 2008 subject to authorisation.

NHWMP1 states

> Obviously it is difficult to predict how much hazardous waste will remain after, even if all suitable material is diverted for recycling and use as a fuel. However, it is clear that diverting less solvent to

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8 (For ease of reference I refer the Board to the folder containing additional copies of exhibits presented during the hearing on this issue)
recycling or for use as a fuel in cement kilns would leave greater quantities sent for incineration, whether in Ireland or abroad. (p.67)

It further states:

*It should be noted that the export of this material is currently taking place in a secure, competitive and available marketplace abroad. Irish waste is not likely to be restricted from entering other member states, although there is some policy barriers to the UK disposal market.*

It concludes:

*It is evident from this analysis that there is a quantity of hazardous waste that is currently exported for incineration which will remain the most likely management route in the continued absence of commercialised alternative treatment techniques. It must therefore be concluded that in combination with the blending of waste solvent for use in cement kilns, or in the absence of cement kilns in the mix, and in the absence of alternative techniques capable of treating a wide range of diverse waste streams incineration will be needed in order for Ireland to move towards self sufficiency in treatment of hazardous waste.*

It then states:

*The proposed incineration facility for Ringaskiddy is authorised to treat up to 50,000 tpa.*

This in my view indicates:

- incineration (whether in Ireland or abroad) of some of the hazardous waste material would be necessary
- there are no barriers to export of hazardous waste for incineration in another member state, that it is presently taking place in a secure and competitive marketplace
- the amount of the material to be incinerated would be affected significantly by availability of facilities for recovery / use as fuel of solvents
- in Ireland such facilities are not yet available but Irish cement has indicated to start use of blended solvents as fuel for co-incineration
- in combination with cement kilns or in their absence and in the absence of alternative techniques capable of treating wide range of waste streams incineration will be needed in move towards self sufficiency

I note the last section seems to indicate incineration to be needed (for self sufficiency) only in the absence of alternative techniques or cement kilns, (and perhaps use of incineration in combination with cement kilns in the absence of adequate capacity of cement kilns).
During the hearing there was discussion on whether the NHWMP indicated a ‘need’ for 50,000t capacity incinerator. The observers maintained that while the 2001 NHWMP indicated such a need, in the case of the 2008-2012 NHWMP it was merely a statement of fact that such a facility was authorised.

The applicants were initially of the firm view that the plan did indicate a ‘capacity’ need. Subsequently, they stated this was expressed in the ‘Environmental Report for the Strategic Environmental Assessment of the NHWMP.

While I do accept the argument put forward by the observers that the statutory plan is the NHWMP, and that the reference quoted above is a ‘statement of fact’ rather than indication of ‘capacity need’, it is quite clear that a certain amount of hazardous waste ‘would need’ to be incinerated whether at home or abroad, regardless of capacity consideration.

This amount would be 32,430t at 2006 figures though much less in 2005 and 2004 (16,500t in 2004 and 18,500t in 2005). There is no information regarding the reasons for the substantial increase from the previous 2 years.

I refer the Board to the National Waste Report 2007, (published in July 2009). On table 24 (page 25), the amount of hazardous waste exported for incineration (D1) is indicated to be 32,664t, while export for use as a fuel (R1) is indicated to be 28,1447t (there is further 18,295t exported for solvent recovery).

I also note that while the overall amount exported for incineration show slight reduction between 2004 and 2006 (54,314t in 2004, 43,719t in 2005, and 47,854t in 2006) there is substantial decrease in the amount of solvents exported for incineration which could be diverted for recovery or use as a fuel (R1) in 2006, and as such it would be reasonable to conclude that the decrease is the result of diversion of solvents away from incinerators. In this regard I also refer to section 3.2.2 and table 5 of the NHWMP where it is indicated that while there was a 10% increase in hazardous waste generated between 2001 and 2006, with a spike in 2004, there was an 8% decrease between 2004 and 2006.

Based on the above, and in view of similarity between 2006 and 2007 figures for waste exported for incineration (D1), I propose to take the figure given in table 17 of the NHWMP (that is 32,430t, (though substantially higher than 2004-2005 figures of 16,500t and 18,500t)) as the requirement for the amount of hazardous waste that needs to be incinerated (as arising from export of hazardous waste specifically for ‘incineration’).

In my view this figure of approximately 32,500t, should form the basis for ‘capacity requirement’ if a decision is made to provide a ‘national’ facility in Ireland.

In this regard I note that while there are no barriers to export of hazardous waste for incineration in another member state, self-sufficiency is a
Community wide concept, and a move towards self sufficiency at all levels is clearly an important consideration and encouraged under Article 16 of the WFD (I shall discuss this later as part of policy).

I will now look at whether the proposed development provides an appropriate response to this ‘capacity’ requirement (32,500t) in the context of providing a ‘national’ facility in Ireland (this is without consideration of the origin of waste or location of facility).

As stated earlier and based on the figures indicated in the NHWMP there seems to be a demonstrable capacity requirement for incineration is approximately 32,500t. This would mean the proposed development with 50,000t would provide significant excess capacity (approximately 35% above the requirement).

The question then arises that, (in absence of demonstrable need for provision of excess capacity), if provided at the level proposed, how would such capacity be utilised?

It was argued by observers including Cllr. D’Alton that this would lead to predatory pricing to divert waste that could be treated without incineration, in particular solvents would be diverted away from recovery and /or use as fuel which are higher up the waste hierarchy. She also submitted this could effect development of fledging new alternatives technologies for recovery of such waste streams.

Regardless of considerations in relation to commercial viability (the proposed facility o other facilities offering alternative treatment), operation at or near capacity at the proposed facility is a relevant consideration in term of achieving required plume rise for adequate atmospheric dispersion. (I shall discuss this issue in air quality section of my report). It is also relevant in the case of energy efficiency.

It is also relevant in terms of whether utilisation of excess capacity would involve diversion of waste streams that could be processed in facilities higher up the waste hierarchy as this would be in contravention of WFD requirements.

During the hearing and in his discussion with Cllr. D’Alton Mr. Ahern stated⁹:

….If you look at the economics of this, hazardous waste on its own is never going to be economically viable for Ireland because it is quite a small incinerator in European terms, a 50,000t incinerator. So we combined it at the time with industrial waste streams like sludges, car shred and other waste streams available on the market from an industrial point of view.

⁹ (day 19 page 189)
We also knew or believed that Cork was going to find it difficult to meet its landfill directive obligations ultimately and combined with a municipal incinerator…

This would seem to agree with Mr. Mc Dowell’s assertion that a 50,000t hazardous waste incinerator would not be economically viable. Mr. McDowell also referred to surplus capacity available in the existing 80,000t incinerators in Dartmouth Germany, which arose following the move of chemical industries to Far East.

As stated earlier the economic viability of a facility is not a planning matter. It is, however, relevant in the context of whether a ‘national hazardous waste incineration facility’ at a proposed capacity of 50,000t is an appropriate form of addressing the demonstrable need of only 32,500t, particularly when the need is significantly below the proposed 50,000t capacity which, in itself, is considered ‘not to be economically viable’.

In this regard I note that as the proposed fluidised bed incinerator for processing hazardous waste would have 100,000t capacity, the amount of hazardous waste processed would in fact be 30% of this capacity.

It would then be reasonable to question whether a facility which would have only 30% of its 100,000t capacity used for incineration of hazardous waste can be considered a ‘hazardous waste’ facility.

This would suggest the 70% excess capacity would need to be utilised by ‘non-hazardous waste’, or hazardous waste that would otherwise be recovered or used as co-fuel in a facility higher up the waste hierarchy.

Mr. Ahern, during his discussions with Mr. Mc Dowell (12th May) stressed the unavailability/inadequacy of facilities in Ireland for co-incineration (cement kilns) and recovery of blended solvents to cater for all the solvents produced. He stressed in particular that there was none in Cork, and the one in Limerick was exporting to Sweden. Indaver had solvent blending facilities in Dublin and was taking them to Northern Ireland, but that had stopped as the cement kiln could no longer take it. He stated that the Juniper report (for the EIS) had taken into account available capacity in cement kilns. He also pointed out that cement kilns would require alterations to their licence to accept such fuels.

Mr. Mc Dowell agreed to current shortage of facilities to take solvents as ‘fuel’. He also drew attention to a provision in TFS regulations where export of solvents as a fuel could be objected to/prevented on grounds of availability of a facility (incineration) in Ireland if it was granted permission. (I refer to regulation 1013 /EC)

Use of high calorific value solvents in cement kilns as a fuel is considered preferable in terms of energy efficiency and in terms of reduction of requirement for fossil fuels to operate such facilities. They are placed higher up in the waste hierarchy, over incinerators, as ‘recovery operations’. Use of solvents in cement kilns is also clearly the preferred option in the National
Hazardous Waste Management Plan, 2008, which refer to their use as ‘fuel substitution’, and puts a strong emphasis on the distinction between the two.

Diversion of any waste stream (in particular high calorific value ‘solvents’) away from an alternative use higher up the waste hierarchy (recovery or use as fuel in cement kilns) would be in contravention of the requirements of Waste Framework Directive.

The question then arises, in the current absence or adequacy of cement kilns or other alternative facilities in Ireland, whether the self sufficiency of Ireland as opposed to self sufficiency at EU level should take precedence over the treatment of waste at a facility higher up the waste hierarchy but in a member state.

As the Waste Framework Directive apply EU wide and having regard to lack of barriers for export as referred to above, it would in my view be reasonable to conclude that export to another member state for treatment at a facility higher up the waste hierarchy would be more in compliance with the requirements of the Directive, and that support for self sufficiency at national level would not take precedence over the requirement for compliance with the waste hierarchy.

In view of the above, and based on the information before me, I am satisfied that the proposed facility at 50,000tpa capacity would provide ‘excess capacity’ significantly over and above the 32,450tpa indicated in the National Hazardous Waste Management Plan as the present requirement.

I am also satisfied that there is likelihood that this excess capacity could give rise to diversion of waste which could be treated in facilities higher up the waste hierarchy, and that this would be in contravention of the Directive requirements.

In this regard I am also satisfied that the matter can not be resolved by way a condition requiring applicants not to take waste which can be treated at another facility (in Ireland or at another member state). (In my view such a condition would not meet the criteria set out in development control guidelines).

I do not intend to comment on whether the proposed development would lead to a ‘monopoly’ situation in terms of treatment /disposal of hazardous waste arisings due to its ‘absorption’ of all available hazardous waste. It is only of relevance in terms of diversion of waste away from facilities higher up the waste hierarchy, and consequent contravention of Directive requirements.

I will now look at the amount of hazardous waste that would be ‘produced’ by the proposed facility.

The EIS indicates that the amount of ash which would be categorised as ‘hazardous waste’ would be 23,500t. This would be sent to a landfill abroad,
as currently there are no hazardous waste landfill facility in Ireland. It was argued by the observers that the proposed facility would now create a ‘new’ hazardous waste stream (which is not there presently) and which has to be exported. (I shall discuss at a later stage of my report, the differing views on whether bottom ash is to be classified as hazardous. For the present propose to take the amount provided in the EIS that is 23,5000t)

In this regard, and having regard to the relatively little difference between exporting 32,000t hazardous waste for ‘incineration’ in a member state and exporting 23,500t of hazardous waste for ‘landfill’ (of ash) generated by the proposed facility, in a member state, solely in terms of amounts, and in terms of their relative placement in the hierarchy; there seems to be little or no gain in terms of compliance with the requirements of the Directive, arising from the proposed development.

The next issue for consideration is how much of the national hazardous waste which ‘requires’ incineration is being generated in Cork.

In her presentation Ms. Keaney for the applicant stated that 60% of hazardous waste was generated in Munster region, and stated that majority of the hazardous waste licensed facilities were located in the southern half of the country.

I note that the facilities indicated in Figure 3 of her presentation are ‘waste transfer stations’ and as such are not ‘producers’ of hazardous waste. I also note two of the facilities indicted on the figure are located in Dublin (ENVA and Indaver), one is located in Cork (ENVA), one in Fermoy (Veolia), one in Shannon (ENVA) and one in Portlaoise (ENVA).

In response to request by the inspector to provide numerical figures, Mr. Ahern presented (12th May, day 10) excel figures stated to be taken from EPA data base in an effort to explain the current share of Cork (exhibit 44, also exhibit 72).

For the year 2006, the figures presented were related D10 (export for incineration). He also explained that EWC code 07 related to pharmaceutical industry. He concluded that total waste exported (as per EPA database) from Ireland in 2006 was 47,537t. Of these 56% of the waste exported from Ireland for incineration came from Cork. Next was Dublin with 27%. He concluded this was analogues to the 60% referred to last time. So the majority came from Cork.

Mr. Ahern noted that the big weights were actually tonnes of solvents (he explained 20 000kg meant a 20 tonne truck load destined for shipment abroad.)

In response to question from the inspector as to whether the figures were mutually exclusive he stated that these were waste transfer station figures, and some of the 27% (which came out of their own waste transfer station in Dublin
had come out of Cork in the first place). The figures for Cork did not come out of Tipperary (they took those) nor did it include Clare (they took those as well). He concluded nothing has changed in the market and Cork was still the major producer of waste that went abroad for incineration.

During discussions, Mr. Bond for Cork County Council drew attention to EWC codes 15 and 16 and stated that these codes related to ‘packaging’. I note indeed that approximately 2.5 pages of the 22 pages provided by Mr. Ahern in the said exhibit as being waste arisings from Cork included codes 15-16 (I did not calculate the sums arising from the relevant entries, but note presence of a number of 20,000kg entries).

I also note that as there are separate entries for Fingal (2%), and south Dublin (4%), these could at least theoretically bring the share of Dublin up from 27% to 33%.

Secondly, as stated earlier and noted by Mr. Ahern, the figures include big weights of ‘solvents’, (for which as discussed earlier, the preferred treatment is recovery or use as fuel in cement kilns). Indeed the figure produced (47,537t) is comparable to 47,854t indicated in the table 17 of NHWMP prior to exclusion of solvents. Therefore the percentages given above do not exclude the solvents and as such would not be a true representation of hazardous waste arisings that ‘require’ incineration.

During her presentation (12th May, pm) Cllr. D’Alton referred to TFS figures in an effort to show that majority of hazardous waste did not originate in Cork, and to explain that Cork was handling its own waste.

The TFS figures she obtained from Dublin City Council showed that in 2007 a total of 46,166t hazardous waste was exported out of County Cork of which 13,000t was exported for disposal, of which 11,000t was destined for incineration. As this included 4,000t sludge (which was non-hazardous), she submitted therefore that only 7,177t of hazardous waste exported for incineration originated in Cork, i.e. 12% of the national figures.

She also noted that 17,036t had originated in Dublin region (exhibits ) during the same period (27%)

Using Pharmachem Ireland members’ directory she presented that while 22 pharmachem manufacturing plants were located in south-west / south-east / mid west regions, 25 manufacturing facilities were located in Dublin, mid east and the Midlands regions (exhibit ). This indicated that the ‘centre of gravity’ of major hazardous waste production was not Cork (especially when those located in border/northern regions are also included).

I now refer to exhibit 118, presented by Mr. Ahern (17th June), for the years 2005, 2006, and 2007 (indicating a total of 47,537t for 2006, 42,907t for 2005

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10 TFS (transfrontier shipment). Waste exported must be accompanied by a TFS document showing various aspects including origin of waste. The national office that handles these is Dublin City Council.
and 31,540t for 2007). After explaining how the table was constructed, Mr. Ahern concluded that 60.7% of waste arose in Cork, (and 73% in Munster) and that the centre of gravity was Cork.

During his presentation of these tables, Mr. Ahern agreed with Cllr. D’Alton that the amount exported for incineration was 31,540t. (page 164 of day 19 of the transcripts)

The excel sheet of 8 columns (exhibit 118 / 2007 figures) presented by Mr. Ahern needs to be read carefully in three separate sections. The first section (in the first three columns) relate to TFS figures, which indicate that 7,561t (24%) originated in Cork, while 17,036 (54%) originated in Dublin City. Mr. Ahern stated that Indaver handled 16,600t of the 17,036t indicated for Dublin City in their waste transfer station at Dublin Port, and knew that ‘not all’ had come from Dublin city. (I note small discrepancy between the figures of 7,177t and 7,561t)

Column no 5 is a re-distribution of the 16,600t which Indaver is stated to have handled, (though indicated to be out of Dublin City).

The third section is the addition of these re-distributed figures to the official TFS figures, which increases the amount for Cork to 10,582t (from 24% to 33.5%).

Adding the Indaver figures for Waterford, Tipperary, limerick, Clare and Kerry to Cork would give a figure of 60.7% for Munster.

As such it was submitted by Mr. Ahern was that while the TFS indicated Cork to produce 24% of the waste this was in fact 33.5% because some of the waste handled by the applicants had come from Cork, and when waste handled by indaver for Tipperary, limerick, Waterford, Clare and Kerry are added to Cork this gave a total of 60% in Munster.

While I note there was no documentary evidence produced to support redistribution of waste handled by the applicants, and while I note the argument by observers that the figures should be obtained and examined independently by or on behalf of the Board, I propose to accept the figure given by Mr. Ahern in relation to distribution of waste handled by them as being accurate. This gives a figure of 10,582t (33.5%) for Cork, at the maximum.

I should note that this table was not discussed in detail as it was presented late in the evening on day 19 (a source of complaint by observers). I am not quite sure if the figures given relate to ‘exports for incineration only’ or ‘total exports’, however, given the total capacity of Indaver waste transfer station at 22,000t, the figures (6,600 + 16,900) would seem to indicate the latter.). I am also somewhat puzzled as to the necessity to add Indaver figures to the national figures provided by Dublin City Council which should in theory also include Indaver figures.
I further note that when a similar extrapolation is used to add the figures given in the same table for South Dublin, Kildare, Fingal and Wicklow to Dublin city (for the waste handled by the applicants) the percentage for Dublin region rises to 32.8%, quite comparable to Cork figure of 33.5%.

I will now look at the location of hazardous waste producing industry, and their geographical distribution. As referred to earlier, both Jackie Keaney and Cllr. D’Alton referred to geographical distribution of facilities producing hazardous waste. (in the context of proximity principle and producer responsibility)

In response to question by the inspector (on day 12) that it would be better to provide information in terms of amount produced in various facilities rather than number and location of facilities, Cllr. D’Alton submitted (day 19), that such information was readily available from the environmental reports of industries with IPPC, as they were obliged to return their (EAR) to EPA every year. (She added this information and trends could be undertaken by a consultant by or on behalf of EPA, or the Board).

Stating that EPA had started to upload the information for category 5.7.0, (pharmaceutical and chemical sector) and noting that data was missing for 18 of the 101 licences, she calculated that 41% hazardous waste production from IPPC licensed facilities would be from Cork, and 36% of national exports for thermal treatment (R1 or D1) came from Cork.

Stressing that her analysis was preliminary, (and excludes 18 six of which are located in Dublin, two in Waterford, one each in Monaghan, Roscommon, Kildare, Laois and three in Cork), she concluded that the analysis indicated that Ringaskiddy accounted for only 21.5% of all waste exported nationally for thermal treatment (R1 or D1) from industries licensed under activity class 5.7.0.

She stressed that the figures included high calorific waste which is regarded as energy recovery (R1), but that as some industries were not sure whether the activity was R1 or D1, the two were put together (as thermal treatment). This is an important distinction.

She also stressed that the figures did not take into account of recent cessation of activity at the Corden, Pfizer Loughbeg, Pfizer OSP2 and the proposed cessation of Pfizer little island by Christmas.

She noted that the stated aim of the 2001 NHWMP was “provision of a thermal treatment facility to treat hazardous waste currently exported for disposal by incineration”, (and not exported for ‘recovery’).

In her further submission /clarification (17th June) she then referred to Veolia (based in Fermoy) which handled over 50,300t of hazardous waste, and stated that 93% of the waste they handled was produced by pharmachem. She stated that of all waste exported by Veolia, 20% was exported for thermal treatment (D1 or R1).
Then looking at how much of the hazardous waste was treated on site, she calculated that 42% of all hazardous waste generated by the industries located in Cork was treated on-site. In the case of categories R1 and D1, 68% of all hazardous waste suitable for thermal treatment was treated on-site. When the shut downs referred to above are taken into consideration, the figure was 79%.

She submitted only $\frac{1}{5}$th of all hazardous waste exported for incineration from Ireland as a whole came from Cork, and stressed that the figures she presented did not include waste from Northern Ireland.

She submitted therefore the ‘centre of gravity’ for hazardous waste was not Cork. She stressed there was ‘no centre of gravity analysis’ for this facility, and this constituted a deficiency.

In response to invitation by the inspector, Mr. Ahern stated: (day 19 page 182)

\begin{quote}
I would not disagree with pretty much any of that. I think what I heard Cllr. D’Alton say was that 37% of hazardous waste arose in Ringaskiddy or in Cork, which compares reasonably well with my 33 or so percent. That is what we are saying. She went a little bit further and broke it into Ringaskiddy and rest of Cork which gave you, 21% particularly close to around our facility.
\end{quote}

He stressed that he would disagree with the assumptions about everybody was building a hazardous waste incinerator on their site or that industries shutting down, but otherwise he would not disagree.

They had not considered ‘centre of gravity’ approach was relevant. Last time Cork was generating 60% of hazardous waste. It was still the same.

During the hearing (day 19, page 186) Mr. Ahern stated that they had a contract with Hammond Lane, to take 15,000-20,000 tonnes of car shred. He noted that this was currently classified as D13 and was currently exported to Germany, but they would be exporting to their incinerator in Belgium, because it could no longer go to landfill.

Agreeing that the ‘capacity need’ in 2007 was in the region of 30,000t he maintained additional 20,000t was going to appear for incineration (in the form of car shred).

In this regard I note comments by Mr. Bond for the Cork County Council drawing attention to incoming requirements for recycling of car components to reduce hazardous waste consignment. (I have not been able to obtain a copy).

I now refer to table 2.10 of the EIS which provides an overview of all waste streams to be accepted at the proposed facility. This does not indicate car shred, though the 20,000t indicated for industrial waste includes
'contaminated soils'. There is however reference to ‘used tyres’ in the Juniper ‘Client Report’ on “availability of waste fuels for the Cork Incinerator”, in one of the appendices of the EIS.

Figure 1 of the report refers to ‘used tyres’ and estimates this to be in the region of 28,000t. (national figure). In figure 2 industrial waste is described as ‘mainly auto shred residue’ and indicated to be 20,000t in Cork area. There is no impact analysis or discussion of alternative treatments.

Having regard to lack of information at the appropriate level regarding the said car shred facility (or geographical distribution /capacity of other car shred facilities throughout Ireland), it is my considered opinion that the possibility of 20,000t car shred from Hammond Lane can not be taken into consideration either in terms of increased hazardous waste arisings or in terms of waste sent for incineration from Cork.

During the hearing Mr. Ahern also stated that he had arrangements with a landfill operator in Leinster to accept ash generated from the proposed development. (I note no details were given, and no impact analysis was provided for transport of ash to such a facility)

Prior to moving onto my findings, I would like to draw the Board’s attention to the differences in approaches in providing figures. In their presentation the applicants referred to ‘waste arisings’, while Cllr. D’Alton referred to ‘waste exports for incineration’ (D10) (D1/R1 if D10 not available).

This is an important distinction because the ‘need’ for a hazardous waste incineration facility is closely associated with the latter (export for incineration / thermal treatment) rather than the former, i.e. waste arisings. The latter while important, do not give an accurate picture of the amount treated / incinerated ‘on-site’, and more importantly does not the amount exported for incineration, which of gives a clearer indication of the need and the required capacity for an incineration facility for hazardous waste.

On the issue of whether Cork is dealing with its own hazardous waste through onsite incineration or recovery facilities I find the argument put forward by the observers that this is so, (including the numerical arguments) to be plausible, and accept the documentary evidence produced by Cllr. D’Alton (exhibit 119).

I accept the figures attributed to Veolia (based in Fermoy) which handles 50,000t is a much bigger player than Indaver based in Dublin Port which is stated to handle 22,000t, and note that percentages based on Veolia returns obtained from EPA website (by Cllr. D’Alton) were not in any way contradicted by the applicant.

I have not been provided with any information rebutting the argument put forward by observers that there is a move in pharmaceutical industry away from chemical based processing to bio based processing, and that newest facilities Centocor and Gynzeme, do not use chemical based processing.
Indeed Mr. Ahern agreed that new pharma plants built in Ireland over the last five years have been biopharma, and have been small producers of hazardous waste (day 9 pages 202-203).

Similarly there was no rebuttal of the argument that four of the largest facilities including Pfizer located in Ringaskiddy, and one located in Little Island had their own incinerators and/or other forms of treatment facilities. Mr. Gillan also referred to larger producers having their own incinerators, and presence of approximately ten on-site incinerators, in Cork.

I also accept submission by Mr. Bond for Cork County Council (day 6) that environmental returns to the Council indicated that 70,000t of hazardous waste was moved between the industry, of which 60,000t was recovered and 10,000t was disposed of. (Through C1 returns they could monitor movement of waste).

In view of the above the following are my findings:

- While there was an increase in hazardous waste production up to 2004, there is a downward trend between 2004 and 2006 which has continued to 2007, and that the 2004 figures were the peak, rather than the norm
- This trend is not likely to be reversed as new industries are more likely to be bio-pharma which produce much less hazardous waste
- There has been a reduction in the requirement for incineration as a result of alternative technologies for treatment of solvents or the use of waste as fuel in cement kilns, and such option is the preferred option by NHWMP, and in terms of the requirements of the Waste Framework Directive (WFD)
- While there seems to be a current requirement for incineration of hazardous waste, this is no more than for of 32,500tpa,
- A hazardous waste incineration facility with 32,500t capacity is not likely to have the required economies of scale on its own,
- Diversion of other waste streams (such as high calorific solvents) to incineration to achieve the required economies of scale would be in contravention of requirements of the WFD
- While I do consider the arguments that the change from chemical based technology to bio based technology is already happening at the pharmaceutical industry and that there will be a further reduction in requirement for incineration of pharmaceutical hazardous waste to be plausible and realistic, I propose to base the considerations for the ‘need’ on the current figure of 32,500t.
- While I also accept the arguments that the 2008 figures Cllr. D’Alton presented excluded cessation of activity in some of the facilities, and Mr. Mc Dowell’s and Mr. Gillan’s arguments that pharmachem is likely to move to lower cost Far East, (and as such the figures may still go down), in the absence of documentary numerical evidence to that effect, I propose not take them into account in my deliberations.
In relation to location of an incinerator facility the following are my findings:

- I am satisfied that the location of an incinerator facility would need to be based on the amount of waste that needs to be ‘exported’ from a location for incineration, rather than on waste arisings.
- I consider the documentation presented by Cllr. D’Alton in relation to the amount of hazardous waste exported for incineration from Cork to be plausible (as backed up by EPA data downloads)
- I accept that while the waste arisings in Cork are as suggested by the applicants is in the region of 50-60%, the proportion of hazardous waste exported from Cork for incineration, is considerably lower (in the region of 25% of current national exports)
- I accept the documentation in relation to ‘in-house’ incineration capacity in larger hazardous waste producers with IPPC licence (which could account for some of the considerable reduction in exports for incineration)
- I accept that while solvents are mostly generated by pharmachem industry, and that there is a cluster in Cork of pharmachem industry, alternative treatments for solvents (such as solvent recovery) also account for substantial the reduction in exports for incineration

I have not included hazardous waste arisings in Northern Ireland, in the above analysis, basically because I have not been provided with documentary evidence indicating amounts. (I note a figure of 50,000t was referred to by Jackie Keaney in her evidence).

An all Ireland solution is an accepted policy in the National Hazardous Waste Management Plan (2008). In section 6.8 it states:

*There are potentially considerable economies of scale to be achieved through full opening of Northern Ireland and Republic of Ireland waste markets.*

*Provision of common all-Ireland landfill capacity for hazardous waste, including asbestos waste is possible within UK policy and is not prohibited in Irish policy. Similarly, all Ireland incineration and physico-chemical treatment capacity may now be planned for and taken into consideration by treatment operators.*

As such while the Board may consider the addition of hazardous waste arisings in Northern Ireland for incineration in considering a ‘National’ facility, in the absence of documentary evidence of quantities indicating a demonstrable need, it would in my view be ‘premature’ to make a decision on the capacity of an incineration facility as an ‘all–Ireland national’ facility.

The inclusion of waste arisings and export for incineration by Northern Ireland is also likely to have a considerable impact on the geographical distribution and the ‘centre of gravity’ of hazardous waste arisings that needs to be incinerated. Furthermore it would have a significant impact on the proportion of waste and relative share of various regions. This would be relevant in the context of ‘share’ of Cork, and is likely to reduce it further.
As I noted earlier, in my view, determination of the ‘need’ for a facility would need to be based on the ‘actual tonnage’ of waste being exported for incineration rather than percentages of waste arisings, as a high percentage of a small amount would not necessarily be an indication of high tonnage. Secondly it would need to be based on exports for incineration and not on waste arisings.

Cllr. D’Alton (using TFS data) presented a figure of 7,177t of waste exported for incineration from Cork.

This figure (slightly different at 7,561) was also used by Mr. Ahern, but further increased by 3,021t to 10,582t by redistributing Indaver’s own figures. Despite lack of documentary evidence supporting the latter, for the purposes of assessment, I propose to accept this higher figure as being the actual amount of hazardous waste exported from Cork that would require incineration.

This would then raise the critical question as to “whether a national facility with a 50,000t incineration capacity is indeed required to treat approximately 7,500-10,500t hazardous waste generated in Cork which needs incineration”. Having regard to the figures and proportion of the overall it would be reasonable to conclude that it is not so.

Having regard to the fact that the amount of waste generated in Cork that require incineration is no more than 10,500t, it is my considered opinion that, notwithstanding some concentration of pharmaceutical industry in Cork, a ‘demonstrable need’ has not been proven for location of a ‘national hazardous waste incinerator’ of a 50,000t capacity in Cork / Ringaskiddy.

Having regard to the fact that a considerable amount of hazardous waste generated in Cork is solvents which can be treated in solvent recovery facilities and as such no longer require incineration, and the availability of on-site incinerators in larger producers; it would in my view be reasonable to conclude that the proposition that because pharmaceutical industry which produces the largest amount of hazardous waste is located at Ringaskiddy, an incinerator facilitating disposal of this waste should also be located at Ringaskiddy (in line with producer responsibility and proximity principles) is no longer valid. Accordingly, I am not satisfied that a quantifiable need has been demonstrated for location of the proposed facility at the proposed site.

I now refer the Board to the Environmental Report of the SEA for NHWMP 2008-2012. This was brought to the attention of the hearing by the applicants in response to the question of whether NHWMP identified a capacity requirement for incinerator.

In section 8.2.3 and table 8.3 various options are discussed for Treatment and Recovery, and a preferred option ‘Option F’ is recommended:
Overall option F is the preferred option for recovery and treatment as detailed assessment shows that it results in a major decrease of waste exports. Decrease in waste exports would reduce impacts on air, water, climate associated with the transport of hazardous material abroad.

Option F (preferred option) refers to ‘Integrated recovery option’ which is described as:

Employes a combination of solvent recovery (Option C), co-treatment in cement kilns (Option D) and hazardous waste incineration capacity (option E).

Option E which is suggested as part of the preferred option F is for

Central hazardous waste treatment facility with recovery and disposal facility co-located.

Assumes a central facility with treatment for various hazardous waste streams including thermal treatment (100,000tpa) and a new landfill cell (25,000tpa).

Any remaining hazardous waste will have to be exported.

This clearly indicates that the preferred option is for an ‘integrated’ hazardous waste treatment and disposal facility to include, thermal treatment, co-located with a new landfill cell, as well as solvent recovery and co-incineration in cement kilns.

It also clearly indicates that the preferred location for such an integrated facility is ‘Central’.

The proposed development does not meet the characteristics envisaged in the preferred option in terms of being part of an integrated facility, nor does it meet the preferred ‘central location’ criteria.

I note such an ‘integrated facility’ would in many ways be similar to applicant’s own facility in Belgium where an incinerator is located in a purpose built industrial park alongside recovery and landfill facilities. The proposed development on the other hand is a ‘stand alone’ facility at Ringaskiddy, at considerable distance to either to landfill or to recovery facilities, and as such fails to meet the criteria in terms of being part of an integrated facility.

In view of the above it would be reasonable to conclude that the proposed development if permitted would contravene the provisions of the National Hazardous Waste Management Plan in terms of location of a national hazardous waste facility expressed as ‘the preferred option F’ and may prejudice its implementation.
Industrial waste and sludge

Half of the capacity of the 100,000t capacity fluidised bed incinerator is allocated to processing of non-hazardous industrial waste and sludge. I will first look at sludge.

Sludge

The table 2.10 of the EIS includes 25,000t of sludge intake for the proposed facility.

The EIS refers to Sludge management plan for Cork County 2000, and to the planned waste water treatment plant with 80,000t capacity to be located at Shanbally (region 19). It notes that sludge destruction technology is recommended for Region 19:

- bio-solids arising from co-treatment of non-hazardous municipal and industrial sludges may not be a consistent product. It may contain a variety of industrial compounds from industrial processes which would render the biosolids unsuitable for use in agriculture. A sludge destruction technology is recommended for the region 19.

It states that the presence of a waste-to-energy facility in the immediate vicinity of the treatment plant will provide a suitable treatment option for this material, and that it is also likely to be a viable option for treatment of municipal sludges produced in the Greater Cork City and surrounding county areas.

It further states that the plan identifies the production of approximately 48,000t dry solids per year of industrial biological sludges in County Cork, in 2000.

In her evidence during the hearing Jackie Keaney stated that the sludge management plan 2000, identified Ringaskiddy as a suitable location for the establishment of a ‘hub-centre’ for the treatment of sludge. She drew attention to the objective of the plan to minimise sludge going to landfill in favour of alternative disposal routes such as composting, but that it had accepted some industrial sludges would not be suitable for these applications, and that for this reason the plan had identified the need for destruction technology for the Ringaskiddy hub. Referring to the conclusion in the plan that the amount of sludge to be treated would be too small for an incinerator, she submitted, the proposed waste-to-energy facility would achieve these economies of scale and therefore can provide a viable outlet for waste water treatment sludges in the region.

She further stated that landspread outlets are limited by legislation and competition with other fertilisers. (Nitrates directive limited the extent of application of nitrogen rich materials like sludges). EPA study had found that 40 million tonnes of animal manure was produced and it was competing with
500,000t compost from the mushroom industry. Sludge spreading was banned in many member states. Energy recovery provided an alternative outlet to lower those risks and ensured some value was recovered from sludge.

The written submission to the Board by Cork County Council, referred to the EIS for the Cork Harbour wwp11, and drew attention to the statement:

No provision will be made in the design of sludge treatment system at Cork Harbour wwp for the treatment of industrial sludge.

The said EIS (for Cork Harbour wwp) also stated:

“In the absence of industrial sludge contribution to the sludge being treated, the ultimate end use of the bio solids products is not restricted to disposal to landfill, and could include beneficial reuse in agriculture. Similarly the type of sludge treatment technology to be employed will not be restricted to the solids destruction technologies.

Based on phosphorus balances undertaken for Cork County Sludge Management Plan there is sufficient spare capacity in Cork County as a whole to facilitate the land spreading on agricultural land of all municipal wastewater sludge production in the county.

The most attractive option would be to produce a bio solids product for use in agriculture.”

In her evidence to the hearing Ms. Barnett12 explained that while thermal treatment was considered as an option, the preferred treatment of municipal sludge was beneficial use in the form of advanced fluidised composting. She noted that notwithstanding this, the EIS also stated that it was possible that sludge may be used in energy recovery systems, or other applications.

It was considered that there was adequate land in County Cork for spreading.

She noted the preliminary report for the EIS for the Cork Harbour wastewater treatment plant which stated

“Thermal degradation (incineration) is an established technology for disposing large quantities of wastewater sludge. However because of its complexity and cost and gas treatment requirements it is not considered suitable for use in this scheme... Also based on the current objections to incineration of waste in the Ringaskiddy area a very strong opposition to such a treatment process at this site can be expected. If however the waste incineration project is successful and operational at the time of commissioning of the wastewater treatment plant...”

11 wwp – waste water treatment plant
12 senior executive engineer Cork County Council
plant the operating contractor may make a commercial decision to use this as a treatment and disposal route for sludge produced on-site.

She stressed that the sludge management plan they were proposing was County-wide, and as such included greater Cork City and surrounding County areas (This was one of the reasons they had decided to respond to the EIS of the application).

She referred to the Cork County Council sludge management project for the treatment and handling of municipal wastewater, water treatment and septic tank sludges in the County including their ultimate reuse and disposal and that a draft brief for the project has been submitted to the Department of the Environment DoEHLG for approval.

In conclusion she stated that the question of whether the municipal sludges will, in whole or in parts intermittently or continuously, be treated via a destruction technology is a matter than cannot be determined at this time.

There were discussions in relation to what would happen to the sludge produced by the waste treatment plant (and in general to non-industrial sludge) and whether agricultural spreading alone would provide an adequate outlet. I will refer to a few.

Mr. Navratil\textsuperscript{13} stated that the best practice overseas was recycle of human waste to use as a soil conditioner. The micro nutrients were beneficial in agricultural context, in fact essential as there was nutrient deficiency in soil in many areas.

Joan Masson\textsuperscript{14} referred to the EPA’s report on Anaerobic Digesters in 2005 directed at the farming community, and stated that the following few years saw a huge interest and take up by farmers of the recommendations of the report for fermentation processes for their sludge ancillaries with more coming on board every year. They liked it because of heat gain and they could use the remainder as compost. She suggested the same process can also be used for a lot of other sludges mentioned in the waste streams for the incinerator.

I note the proposal for Cork Harbour wtp is with the Board for determination. I did not investigate its EIS, I have however, no reason to question the presentation by Ms. Barnet that the treatment plant is only for municipal waste water and that the preferred option for the municipal sludge was its ‘beneficial use’ in the form of advanced fluidised composting.

While I note the possible restrictions referred to by Ms. Keaney in terms of spreading of sludge on agricultural lands, (also noting lack of documentary numerical evidence to support the suggestion), having regard to the considerable area of Cork County, and detailed examination of various options

\textsuperscript{13} East Cork for safe environment
\textsuperscript{14} Currabinny
referred to in the Council report prior to reaching the preferred option, I have no reason to question the validity and achievability of the preferred option.

This would mean that the 25,000t waste stream envisaged in the EIS as sludge from the proposed wwtp will not be available to the proposed facility.

I would therefore conclude that a ‘need’ for treatment of the sludges from the Cork Harbour wwtp in the proposed facility has not been demonstrated.

Industrial waste

The EIS provides for 20,000t of industrial waste to be processed in the fluidised bed incinerator.

The section 2.7.2 of the EIS provides general information regarding industrial waste by reference to the National Waste Report 2006 (4 million tonnes) and Cork City waste management plan 2004-2009 (438,403t), and states that a significant portion of this is combustible, and suitable for acceptance at the proposed facility. I note there is no indication of the specific waste streams, nor there is any indication of the actual amount of the ‘significant portion’ referred to as being combustible, how it is being treated presently, and more importantly whether such combustible component can be treated in alternative ways higher up the waste hierarchy.

The EIS also refers to 20 ha lands at Haulbowline, which may contain hazardous soils or sludges. Table 2.10 includes contaminated soils under the industrial waste.

In her evidence to the hearing Jackie Keaney referred to potential sources of industrial waste materials identified in the EIS such as chemical products, man made fibres and textiles, and stated that it was estimated that over 400,000tpa of industrial waste was generated in County Cork in 2002, of which a significant portion was combustible.

She submitted that sufficient volumes would be accepted from industrial facilities in Ringaskiddy and Little Island areas which are recognised as the main centres of manufacturing industry in County Cork.

While this provides more information regarding waste streams to be considered, it does not provide any documentary evidence regarding actual amounts, nor does it give information indicate a demonstrable ‘need’ for their incineration, instead of other forms of treatment. In this regard, reference to ‘textiles’ and ‘man made fibres’, which clearly can be treated higher up the waste hierarchy, is particularly relevant.

Overall the information in relation to industrial waste is quite vague and seems to concentrate on the possible availability of ‘combustible’ waste from industrial sources in general terms.
I note during the hearing *Mr. Ahern* stated that there was 9 million tonnes of industrial waste produced by the industry which was not subject to licensing and needed a solution. While this may indeed be so, in the absence of documentary evidence supporting the necessity for incineration of such waste, relevant quantities, and impact analysis I am not satisfied that it can be taken into consideration in determining the capacity need for non-hazardous industrial waste.

Having regard to the above, I am not satisfied that a ‘need’ for incineration of 20,000t of non-hazardous industrial waste has been demonstrated.

In view of the above it would be reasonable to conclude that no conclusive evidence has been provided indicating a requirement for a 50,000t capacity (of the 100,000t capacity fluidised incinerator) to cater for non-hazardous industrial waste /sludges.

Overall, having regard to the demonstrable amount of hazardous waste which needs incineration in Cork is no more than 10,500t, (leaving a shortfall of 40,000t in the proposed hazardous waste capacity), and having regard to no demonstrable requirement for incineration of non-hazardous industrial waste (20,000t) and no demonstrable requirement for incineration of sludge (25,000t), (leaving a further shortfall of 45,000t); it would in my view be reasonable to conclude that a demonstrable need for a fluidised bed incinerator with a 100,000t capacity, to cater for 50,000t hazardous waste and 50,000t non-hazardous industrial waste has not been proven.

**Adequacy of the EIS**

As discussed briefly above, the consultants’ reports for the EIS as included in appendices 2.1 a, b, c provide information on the availability of waste for incineration at the proposed facility, in discussing the need for the proposed facility.

While this information is clearly relevant for the applicant, the main purpose of an EIS is to identify and analyse likely significant impacts, arising from the proposed development, and comparing these with the impact arising from alternatives.

Overall I consider this section of the EIS to be deficient in relevant information and impact analysis, and in particular its equation of ‘need’ with waste arisings rather than amount requiring incineration.
4.1.2 Need for municipal solid waste incinerator

The second component of the proposed facility is for a grate incinerator to process 140,000t of residual municipal solid waste (MSW). Dedicated session on this issue took place on 11th May, with further discussions on 12th May, 16th June

Applicant’s position

The main proposition put forward by the applicants was that the Cork region would not be able to meet its obligations under the Landfill Directive, and the proposed facility operating in parallel with Bottlehill, and as part of a fully integrated waste management system would help in this regard.

Mr. Ahern stated that for the region to meet its landfill obligations, even before we got to climate change and energy or anything else there is a need for pre-treatment prior to landfill. Ringaskiddy will help the private sector to meet those landfill obligations, in order to be able to continue their business and collect waste from households.

Ms. Keaney noted in particular if no MBT is employed (or delayed) it would not be possible for Cork region to landfill all residual waste without exceeding EU landfill diversion targets.

Table 2.9 of the EIS concludes that even with the implementation of sufficient recycling initiatives to ensure 50% recycling, a considerable deficit would remain in treatment capacity for BMW targets, in particular after 2016.

Table 2.10 of the EIS indicated 223,837t of MSW after 50% recycling. It is concluded therefore that alternative methods of treatment are required to achieve landfill targets.

Ms. Keaney stated that an MBT plant would generate 90,000tpa RDF, based on 223,000t residual waste arisings. If both MBT and waste-to-energy are employed, the capacity requirement for Bottlehill would not exceed 73,000tpa in 2013.

She noted that due to its inert nature, bottom ash from the waste to energy facility would be 54,000t and stabilised bio waste from the MBT would be 44,000t.

Ms. Downey for the applicants submitted that the Cork Waste Management Plan envisaged 150,000 MBT capacity. Of this, biologically treated fraction would be 60,000-65,000t (recovery of paper plastic and metals for recycling would remove 7% (10,500tpa). 50% (75,000) would leave MBT plant as RDF

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15 MBT Mechanical and biological treatment
16 BMW Biological municipal waste
17 RDF Refuse Derived Fuel
(though if the capacity of the MBT plant is increased it may go up to 117,150tpa).

In addition it was estimated that 44,000t to 65,000t biologically treated residues would be produced by the MBT plant. The Cork Waste Management Plan envisaged that this would be used for landscaping applications or as landfill cover.

She referred to a recent paper issued by the European Commission on the management of bio waste suggesting that as bio waste easily gets contaminated during mixed waste collections, its use on soil can lead to the accumulation of hazardous substances in soil and plants. She stated that for this reason some member states have banned the application of this residue to land outside landfill.

She also stated that the EPA document ‘10 Options for Change’ stated that disposing of this residue to a landfill may result in the MBT facility being classified as a ‘disposal’ operation, while MBT followed by energy recovery is likely to be classified as a ‘recovery’ operation.

**Planning authority’s position**

*Mr. Bond* for Cork County Council, noted in his brief of evidence (6th May), that the obligations under the Landfill Directive applied on a ‘national’ basis and that there was no obligation on the Cork region to meet those targets. In any event it was their view, that the local authorities (Cork County Council and Cork City Council) through implementation of their waste management plans they would meet these targets.

Secondly, the National strategy for biodegradable waste did not set thresholds for landfill diversion for individual local authorities, but only recommended that plans assess indicative target diversion capacity.

He explained that the targets set out in the landfill Directive were based on waste which is landfilled in 1995, and the targets were that the amount of BMW (biodegradable municipal waste) that is allowed to be landfilled must not exceed 75% in 2010, 50% in 2013 and 35% in 2016 of the base year (1995).

In the Cork Region as the 1995 figures were 181,971t, the figures for the target years would be 136,478t, 90,985t, and 63,690t (I refer to table on page 23 of his submission).

He submitted that they were on target to achieve these figures through introduction of brown bins, in particular through separation of food waste from the commercial premises. While achievement of target in 2016 was more difficult (being at 35%), they were confident that by concentrating on the

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18 Senior engineer, waste management, Cork County Council
commercial sector and through employment of MBT followed by anaerobic
digestion they would meet their targets. (I refer to table on page 24 of his
submission, which I have enlarged for ease of reading).

He noted that the National Biodegradable Strategy and Circular of 2008
required 40% diversion target. Coming into force of Food Regulations in
2010, requiring source separation of organic waste at commercial premises
would have an important effect.

RPS consulting engineers were appointed by the Council to procure
MBT/MRF facility at Rossmore for 65,000t of MRW, and 25,000t of MDR\(^\text{19}\). The shortfall of 42,000t for 2010 was before MBT.

In the region, they were already achieving 47% recycling rates for MDR. The
national average was 36%.

I shall refer to submissions by observers as part of my assessment.

**Assessment**

Firstly, I will look at municipal solid waste arisings.

The MSW arisings figures for 2008 given by the planning authority and by the
applicants are relatively similar (at 417,222t and 402,073t respectively).

I note submission by *Cllr. D’Alton* that the projections for waste arisings were
based on the highest ever recorded levels (800kg/capita) and that European
average at 530kg per capita was much lower.

In this regard I refer to appendix A –indicators of the National Waste Report
for 2006 and 2007, and note that while the former does indicate a figure of
0.8t for municipal waste generated per person, in the latter there is slight
decrease to 0.78t pp, and to submission by *Mr. O’Brien*\(^\text{20}\) for the City Council
where he noted that during preparation of their new waste management plan
(2009), they had noticed that there has been no increase in municipal waste
arisings in the city since 2004.

While I also consider the second point by *Cllr. D’Alton* (that the projections
in the EIS assumed a 2% population growth, (which included immigration)
and that given the changing economic climate such increase was
unsustainable), to be reasonable, I propose to take the figures given by the
Council which are even higher than the ones provided by the applicants in
terms of waste arisings.

\(^\text{19}\) Municipal Solid Waste (MSW), Municipal Residual Waste (MRW), Mixed Dry Recyclables
(MDR), Biodegradable Municipal Waste (BMW), Organic Fraction of Biodegradable Municipal Waste
(OFBMW)

\(^\text{20}\) Senior engineer Cork City Council, Coordinator of waste strategy for the region
In section 2.5 the EIS assumes biodegradable waste of 74% in MSW, and allows 50% blanket recycling.

This was highly criticised by Cllr. D’Alton who stated that different waste streams recycled at different rates and when the proportion of those recycling at higher rates (cardboard / paper /glass) is taken into account, the biodegradable waste generated would not be 74% equivalent but would be 64%. This was not contested by the applicants and would mean reduction of the figures provided in table 2.8 of the EIS.

While the figures presented by the planning authority do not provide a direct comparison in terms of recycling, percentages given by Mr. O’Brien in relation to kerb collections was that 30% was cardboard, 6% glass, 30% organic, and 6% ferrous metals). These would add up to 72% of the waste arisings which would be recycled at levels considerably higher than 50%. These would support the argument put forward by Cllr. D’Alton.

_Cllr. D’Alton_ also criticised the assumptions in the EIS regarding MBT, and that it achieved little other than some stabilisation of the organic fraction of the residual MSW. Following a three stage process (separation, anaerobic digestion and composting) the output would be in the region of 20% of the input.

This is also the scenario currently envisaged by the planning authorities in their waste strategy, though they stressed that the consultants were required to provide best technology that would carry them into the future.

There is a considerable difference in the assumption of the amount of residue leaving an MBT, presented by the applicants as being (55%-65%), and by Cllr. D’Alton as being (20%) of the input.

The submission by Claire Downey for the applicants was that materials recovery from MBT would be 3-15% , evaporation 20%. As such it does not seem to include anaerobic digestion or composting as part of the MBT process. During the discussions Mr. Bond stated that the options examined by the consultants included anaerobic digestion and other energy options to reuse the residue and to recover energy. (It was stated that MBT combined with anaerobic digestion is considered ‘+’ in terms of energy, while MBT with landfill is ‘ – ’).

Leaving energy efficiency aside, it seems quite plausible that an MBT (Mechanical–Biological Treatment) would employ biological as well as mechanical methods, such as composting and anaerobic digestion. Therefore, I consider the scenario provided by Cllr. D’Alton to be more realistic as a pre-treatment resulting in a 20% residue for landfill. This is also in line with the planning authority view.
I will first look at what happens to the residue following mechanical separation. Referred to as RDF (refused derived fuel) this would have relatively high calorific value as it would contain some plastics (not recycled due to contamination) such as food wrappings. This is estimated in the region of 80,000t in the EIS, and considered as a stream available for the proposed facility (figure given by Ms. Keaney was 90,000t).

I note however that RDF is also suitable for use in cement kilns as a fuel substitute for the same reason. As discussed in a separate section use of RDF in cement kilns as fuel is the preferred option as it is located higher up the waste hierarchy than incineration.

The residue following the biological treatment would also need an outlet. In response to a question by Mr. Ahern, Mr. Bond stated that it would be suitable as a landfill cover rather than be landfilled (as such it would not be a disposal operation). While I note the reservations expressed by Ms. Downey regarding possible reclassification which might arise from initial mix of biological waste with others, in my considerations I propose to take the current classification.

In the case of the proposed facility there will also be a residue from incineration. This would be in the form of bottom ash and fly ash and cleaning residues. While the EIS referred to possible use of bottom ash as a material in road building, no documentary evidence was produced that this would be so.

The observers referred to moves towards re-classification of bottom ash as hazardous due to its heavy metal content. They noted it was classified as hazardous waste in countries such as Austria. I note in his evidence Dr. ten Tusscher for the observers where he referred to toxicity of such road materials (in another session). I also note Mr. Chambers referred to his conversations with the EPA and stated that currently there was no classification of bottom ash, and each country decided on this issue. I consider this to be plausible.

In any event, in the absence of documentary evidence regarding where and how much of the bottom ash would be used as a road building material, I consider that the current outlet for bottom ash would be in the form of landfill, and that Bottlehil would be the likely destination for this.

Leaving energy content aside, and purely in terms of tonnage, and assuming the amount of residue from an MBT /anaerobic digestion/ composting option of 200,000t at 20% (as suggested by Cllr. D’Alton, and supported by the planning authority ), the amount of residue would be in the region of 40,000t. This would be similar to the amount of bottom ash produced by the proposed facility in the region of 41.9t (based on figures given in the EIS at 5,232 kg/hr and 8,000 hrs), (stated to be 54,000t by Ms. Keaney). I note this figure would exclude fly ash and cleaning residues (further 30,000t) which are classified as hazardous and need to be sent to appropriate facilities elsewhere). Therefore, even if the final residues from MBT and the proposed facility are both

21…Cork Environmental Alliance
landfilled, there seems to be no advantage of one over the other in terms of amount sent to landfill.

The next issues for consideration is whether the MBT facility provided by the local authority would be adequate to treat all waste following source separation. I again propose to take the applicants’ position that the amount would be in the region of 200,000t.

It was submitted by Mr. Ahern that the facility envisaged by the planning authority would only have a capacity of 65,000t while the residual waste would be in the region of 200,000t, and that there was no plans for a single facility for 200,000t.

Mr. O’Brien stated that the facility would be modular and would be expanded if and when necessary. Mr. Bond stated that there was no need for a single facility (with a capacity of 200,000), and that two privately owned facilities (Veolia and Greenstar) had licences for 82,000t and 100,000t respectively (they were not operating at those levels but could, if the need arose). Mr. Murphy referred to a planning permission for a facility of 122,000t capacity.

During the hearing it was also raised by Mr. Ahern that a condition attached to Bottlehil landfill required the baling of waste prior to landfilling and that there was no facility to bale 200,000t of residual waste and that private operators did not have access to baling facilities. In their response planning authority stated that there was no need for a single facility and baling could easily be provided in the 20 waste transfer stations throughout the County and city. In response a question, Mr. Murphy stated that as carried out within existing structures of permitted facilities, these would not require further planning permission. I consider the response plausible.

Mr. Ahern submitted that the Council only collected 27% of the waste. The private collectors who collected 73% had to find their own solutions. For the County to meet its landfill obligations and climate change / energy / agricultural requirements there was need for pre-treatment prior to landfill. The proposed facility would help private sector to meet those obligations in order to be able to continue their business and collect waste from households.

In his response Mr. Bond stated that targets had to be achieved by all operators, and while the County Council did not collect 73% of the waste or did not control the direction of the waste (private operator could choose to go outside the region), through waste permits they controlled the manner of collection. (Cork City collected 56%). He was confident the private sector would find a way under the leadership of local authority as they were operating in the region and under the same waste strategy, and had to provide accurate environmental returns. He noted that there was a significant reduction in the

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22 senior Planner, Cork County Council
number of private operators in the region, five of which were big operators.
(Four of the thirteen (?) were local authority)

I have no reason to question the figures presented by the local authority,
particularly having regard to the meticulous data collection, auditing,
comprehensive analysis and program of various steps and the clarity presented
by Mr. Bond, (and supported by Mr. O'Brien), in devising and implementing
the waste strategy for the region. (I shall discuss the waste strategy at a later
section of my report.)

In particular I note that in terms of waste arisings the figures given by Mr.
Bond more conservative than those provided in the EIS.

Having regard to steps outlined in terms of targeting ‘food waste’ from
commercial premises, the introduction of brown bin collections, work carried
out by consultants to date in terms of achieving best option for procurement of
an MBT facility as part of an integrated system, and having regard to the fact
that the landfill targets apply only to the biodegradable fraction of the
municipal waste, and while I note that there is no obligations at local authority
level to meet the targets of landfill Directive; I am satisfied that landfill targets
(at the same levels as the Directive) as set out in the waste management
strategy, and waste management plans are achievable by Cork authorities.
Therefore, in my view an issue of failure to comply with the Landfill Directive
obligations is not likely to arise.

I note the statement by Cllr. D’Alton that reduction of waste arisings per
capita to European levels of 530kg from the assumed figure of 800kg would
achieve landfill targets even without MBT facility. While a reduction at the
stated level may not be achievable immediately, having regard to the
presentations by the school children and various community initiatives
referred to by Mr. O’Brien and Mr. Bond such as green flag awards, life time
labs where 4000 school children has been put through in the last four years
learning life cycle approach to waste, and dialog with commercial premises
advising ways to achieve waste reduction to reduce costs, as well as efficient
waste enforcement teams operated by both councils, and having regard to the
fact that in the Cork region recycling rate at 47% is already considerably higer
than the national average of 36% (outlined in the EPA waste report), and
statement by Mr. O’Brien that there was no increase in waste arisings in Cork
City in the last five years; I have no doubt that with the leadership of the local
authorities, the community is well capable of achieving significant reductions
in waste arisings, to ensure meeting the 2013 and 2016 targets.

In the concluding statement of his evidence Paul Murphy quoted from
environment department report:

\[ \text{The Council questions the need for the facility, particularly in relation to} \]

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23 Senior planner County Council
the municipal waste incinerator aspect of the proposal. …The initial targets outlined in the Landfill Directive 2010-2013 can be met without incineration.

Having regard to the above it is my considered opinion that the existing and planned facilities in Cork region for the disposal /recovery of MSW are likely to be adequate in meeting the landfill targets for the region, and that there is no demonstrable need for an additional facility (in the form of an incinerator) to treat of MSW arising in Cork Region, to help achieve the said targets.

I now refer to Forfas waste management benchmarking analysis and policy priorities (2008).

In its executive summary, the key findings of the report include:

*By 2016 Ireland will need an annual capacity of approximately 800,000 tonnes of thermal treatment, 500,000 tonnes of mechanical and biological treatment and 700,000 tonnes of landfill to treat municipal (household and commercial) waste. A further 500,000 t capacity of landfill, thermal treatment and biological treatment will be required for non-hazardous industrial waste, as well as 100,000 t of solvent treatment capacity for hazardous waste including thermal treatment and solvent recycling facilities.*

Having regard to the permitted capacity of 800,000t thermal treatment (Poolbeg and Carranstown), (which is the amount referred above for thermal treatment), it would reasonable to conclude that no ‘urgent need’ (in Ireland) for provision of thermal treatment facilities to treat municipal waste has been indicated in the short or medium term in the above report. I note though indication of ‘need’ for landfill capacity for municipal waste.

**Adequacy of EIS**

As in the case of hazardous waste, in this section (municipal solid waste) the EIS seems to concentrate on availability of various waste streams for the proposed facility and how Cork would fail to meet its obligation under the Landfill Directive.

While there is a list of alternative processes including thermal treatment processes, the information is too general. There is no comparative impact analysis of the same waste being treated in various alternative facilities (either on unit basis or overall), nor there is a comparison of energy production and CO₂ emissions again on unit basis to ascertain impacts. It is therefore deficient in those areas.
4.2 Energy efficiency criteria (R1)

In this section I will examine the issue of whether the proposed facility is an ‘energy recovery’ operation or a ‘disposal’ operation. This issue is of important relevance in the context of Waste Framework Directive 2008, and in particular to waste hierarchy,

The issue was first highlighted in the Council Directive 2000/76/EEC on the Incineration of waste which provided for a distinction between an incineration plant and co-incineration plant where it stated:

*If co-incineration takes place in such a way that the main purpose of the plant is not the generation of energy or the production of material products, but rather the thermal treatment of waste, the plant shall be regarded as an incineration plant.*

Subsequently the European Court of Judgement (ECJ) held in the case C-458/00 92003, that municipal waste incinerated in a dedicated municipal waste incinerator was ‘waste disposal’.

The Judgement stated:

(34) ‘It follows from the term ‘principally’ used in point R1 of Annex II B to the Directive that waste must be used principally as a fuel or other means of generating energy, which means that greater part of the waste must be consumed during the operation and that the greater part of energy generated must be reclaimed and used”, and …

(43) However, where the reclamation of the heat generated by the combustion constitutes only a secondary effect of an operation whose principal objective is the disposal of waste, it can not affect the classification of that operation as a disposal operation”

Following on from this decision, the Council Directive 2008/98/EC on Waste (Revised Waste Framework Directive) which repealed the 2006 Directive, defined the scope for consideration of some activities as a ‘recovery operation’ by introducing specific ‘technical efficiency thresholds’ in Annex II.

The ‘energy efficiency criteria - R1’ use principally as a fuel or other means to generate energy’ would now apply to incineration facilities dedicated to the processing of municipal solid waste only in cases where their ‘energy efficiency’ is equal to or above 0.65. Annex II provided the formula for calculation of the ‘energy efficiency’ (R1) of the plant.

Therefore the question of whether a facility using MSW waste as an input is a ‘recovery’ operation or a ‘disposal’ operation is determined by a formula using various inputs. As discussed under ‘need’, these operations are categorised differently (R for ‘recovery’, and D for ‘disposal’).
I should note this is applicable only in the case of municipal waste incinerators and not in the case of hazardous waste incinerators, which under Annex 1 are listed as disposal operation classed as D10 i.e. ‘incineration on land’.

I also note that the Directive has not yet been transposed into Irish legislation, though the member states are required to transpose by Dec 2010. Therefore it will apply to facilities coming into operation subsequent to that date.

The note sent to the applicants alongside the notification of the oral hearing required the applicants to provide information at the appropriate level to clarify whether the proposed development is considered a ‘recovery’ or ‘disposal’ activity having regard to provisions of Directive 2008/98/EC. (I attach a copy of the rather complicated formula for the calculation of this).

In her presentation on day 2 of the hearing, Claire Downey for the applicants stated that according to the WID Directive all recovery activities must be prioritised ahead of disposal activities, such as landfill, in line with waste hierarchy.

She also submitted that the Intergovernmental Panel for Climate Change recognised waste-to-energy as being more energy efficient for residual waste treatment than landfill, MBT and anaerobic digestion.

She stated that the interpretation of the formula was yet to be clarified by the EU. They had used the preliminary guidelines from German Environment Ministry (exhibit 64) on advice from Dr. Reimann (scientific and technical advisor to CEWEP24. She also referred to BREF25.

Using this interpretation of the formula, she submitted that the R1 factor for the municipal waste line of the Ringaskiddy facility would be 0.69 and as such above the threshold of 0.65 to qualify as a ‘recovery operation’.

Indaver was investigating the opportunity to recover energy as heat as well as electricity for export. Operating in a combined heat and power mode would increase the energy efficiency of the facility. Recovered heat could be exported via a district heating scheme to industrial, commercial and domestic users. In the case of facility operating at CHP26, mode R1 would be 0.82.

On her presentation on day 12 (and in response to a request by the inspector) she provided some details in relation to the figures used in the formula (exhibit 56). The model from which the figures came from was produced by senior engineers operating the Belgian plant, who had intimate knowledge of how energy recovery worked.

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24 CEWEP - Confederation of waste-to-energy plants across Europe
25 BREF - Best Available Technique Reference Document
26 CHP- combined heat and power
In this regard relevant considerations would be energy in the waste input (CV value), auxiliary fuels (such as start up fuels), imported electricity (top ups), and some constants. She explained different CV values arising from RDF.

The energy exported would be calculated from the steam that is produced in the boiler which is converted into electricity by the turbines. Energy in the flue gas flow was relevant, as were the losses from radiation and boiler.

One of the assumptions was that steam sent to the turbine would be converted at 30% efficiency. (Turbine efficiency was determined by the suppliers). During this presentation, she revised the R1 figure for the proposed facility to be equivalent to 0.655.

During the discussions Mr. Bond and Mr. Cormac O’Sullivan for Cork County Council raised a number of questions regarding these calculations. For example 18.95 tonnes of throughput per hour at 7,500 hours (minimum), would add up to 142,000 tonnes per year. Reducing the figure to 18.94 would affect the other sections of the calculations.

The applicants maintained they would not be operating at partial load, and if the CV value was lower than expected, they would operate fewer hours per year, and would shut down. This raised questions regarding the impact of these shut downs on the energy efficiency calculations. (Every shut down requires further energy for start up) Another question was related to the conversion factor of 4 based on operating experience of engineers in Belgium.

In his submission Alan Watson\(^\text{27}\) (16\(^{th}\) June) stated that correcting the presentation for parasitic loads and arithmetic errors, the new information provided by Claire Downey would indicate that the efficiency would be 0.63. Using the data provided in the EIS the efficiency would be 0.49.

Going through the submission (exhibit 56) and using the figures given he calculated the R1 factor to be 0.63. (He also questioned as to why it was higher than the figure calculated using data in the EIS).

Energy input was a function of calorific value of the waste and the feed rate. The Stoker diagram which identifies these was not provided in the EIS.

He further submitted that, in practice, the operational efficiency is likely to be lower than the theoretical optimal because of fluctuations in the calorific value of the waste, lower load efficiency reductions and start-up/ shut-down losses would reduce the useful output. An independent verification would be necessary, as there were differences in obligations under the Directive for disposal and recovery operations. He referred, in particular, to the requirement for the strict application of ‘proximity principle’ in the case of disposal operations.

\(^{27}\) For CHASE, Mechanical engineer with specialisation on waste, CHP, author of reports for various groups including UNEP, former civil servant, expert witness on select committees and hearings, member of advisory group For Wales EPA and Stockholm Convention expert group.
In his response Mr. Slattery\textsuperscript{28} for the applicants confirmed there was a typographical / mathematical error in calculations, but it was just to show how different parts of the formula worked. He maintained that the elements of the formula can fluctuate and be controlled by the operator to achieve the same end point. (During his closing he submitted that it would be 0.67. Feed rate could be controlled but calorific value of waste was difficult).

Mr. Ahern stated “if it is ‘disposal’ we will only deal with waste coming from the region. We are proposing to take untreated municipal waste, or alternatively residues from MBT if it went ahead. The question of energy efficiency will come up when applying for a licence”.

During discussions it became clear that there has not yet been a definite guidance at EU level as to how the formula is to be applied. In particular whether there should be an allowance for parasitic load (energy required to operate machinery such as cranes, fans etc), or what the constants should be.

I accept the submission by the applicants that the CEWEP interpretation was the only available position when preparing their response to the note requiring the calculation of the R1 factor. Using this interpretation, and accepting that the original calculation contained a mathematical error, the energy efficiency (R1) that could be achieved by the proposed development would be 0.63 and as such below the threshold of 0.65 to qualify as a ‘recovery’ activity. (I do not propose to accept the figure provided in Mr. Slattery’s closing submission as it was not discussed or verified)

While I note the statement by Mr. Jones\textsuperscript{29} for the applicants that they would ask their suppliers to provide equipment to achieve the required levels of energy efficiency, that this may be done at a later stage, and the suggestion by Mr. Ahern that this could be done by way of condition attached to a permission; having regard to the requirements of the EIA Directive, it is my considered opinion that the considerations should be based on the information provided with the application. In this regard also note the position by Mr. Watson that using the figures presented in the EIS the relevant efficiency quotient (R1) could go down further to 0.49.

An incinerator, being a furnace, requires energy to operate. To operate efficiently and at levels required by the Directive, it needs to maintain high temperatures at levels between 800\textdegree -1100\textdegree. This would be provided partly by the calorific value present in the waste and partly from the grid and auxiliary supplies. The amount of energy a facility uses to operate and the amount of energy it produces are therefore relevant.

The WFD 2008 does put a significant emphasis on the distinction between recovery and disposal operations. In Article 3 (19) The Directive provides a

\textsuperscript{28} Arthur Cox solicitors
\textsuperscript{29} operations engineer, Indaver
definition of ‘disposal’, as ‘any operation which is not recovery, even where
the operation has a ‘secondary’ consequence the reclamation of substances or
energy.

It is therefore my considered opinion that the issue of whether a facility would
be a recovery operation or a disposal operation must be clarified, prior to
consent by the consenting authority.

The waste streams which are high in calorific value in MSW such as organic
components and plastics are required to be removed and treated by the WFD
higher up the waste hierarchy through source segregation, recycling, etc. This
means the amount of high calorific waste that could go to an incinerator is also
reduced considerably. As discussed earlier, while the RDF following MBT on
its own have high calorific value, when MBT is employed in combination with
anaerobic digestion there is further reduction. As the proportion of high
calorific value waste stream decreases, energy supply to the plant needs to be
increased.

The question of where the high calorific value waste stream would be treated
is quite important in the context of ‘energy efficiency’ and the classification of
the facility as a ‘recovery’ or ‘disposal’ operation, and also in terms of waste
hierarchy.

If the activity is a ‘disposal’ operation, then it is at similar levels in the waste
hierarchy to other disposal activities such as landfill. Secondly, if it is a
‘disposal’ operation, then the proximity principle comes into force restricting
importation of waste from outside the region.

In view of the above, and based on the information before me it is my
considered opinion that the efficiency of the proposed facility as proposed is
likely to be less than 0.65 prescribed in the Directive and as such the proposed
facility is not a ‘recovery’ operation but rather a ‘disposal’ operation.
4.3 Compliance with Policies

In 2004 the Board made their decision taking into consideration of the policies at various levels. In this section of my report, I propose to look at compliance with the current policies, and to changes, if any, particularly in the waste policies in the last five years, and, emerging new policy considerations, if relevant to the case. I will first consider these at EU level, then at national level. I will then examine compliance with the waste management strategy / plans of the local authorities.

4.3.1 Compliance with EU Policies

Applicants’ position

The main proposition put forward by the applicants was that the proposed waste-to-energy facility would provide a highly efficient option for treatment of residual waste and help close implementation gap by helping to meet landfill diversion targets, that through the treatment of hazardous waste much closer to the place of generation it would promote self sufficiency and would reduce reliance on exports, in line with proximity principle, and that it would promote the integration of waste management facilities.

In her presentation Claire Downey stated that according to the WFD Directive all recovery activities must be prioritised ahead of disposal activities such as landfill in line with the waste hierarchy. The proposed development would be in compliance with this.

Ms. Keaney referred to reclassification of efficient waste-to-energy facilities in the Waste Framework Directive (WFD) as recovery operations to be prioritised ahead of landfill.

The proposed facility would also promote climate change policies by increasing greener energy production and provide significant mitigation potential for greenhouse gas emissions by providing an alternative to landfill.

As such it would be compliant with the policies on waste, energy and climate change.

Observers’ position

The observers maintained that the proposed development would work against the waste hierarchy, and in particular against prevention and recycling by offering a solution to the waste created.

They submitted that the energy production was inefficient and prevention and recycling of waste would save more energy, and that the CO₂ emissions created by the proposed development would significantly outweigh any benefits.
As part of my assessment of the issue, I refer the Board to the list of the relevant policies I have provided in Volume I, section 9 of my report.

Of these, the Revised Waste Framework Directive (WFD), 2008 which repealed a number of previous Directives (including WFD 2006), is the most relevant and provides the most up to date policies in relation to waste.

It strengthened the waste hierarchy, required the application of life cycle analysis to waste and the movement of Europe closer to a recycling society. It required the achievement of self sufficiency for the Community as a whole in terms of management of waste.

I refer in particular the Article 4, which provides a mandatory application of the waste hierarchy approach in waste prevention and management legislation, in the following order: (a) prevention, (b) preparing for re-use, (c) recycling, (d) other recovery, i.e. energy recovery, (e) disposal. As such ‘disposal’ is at the bottom of the hierarchy, and the least preferred option.

The Directive further refers to the need for a clear distinction between recovery and disposal operations, and clarification of when the incineration of municipal solid waste is energy-efficient and may be considered a recovery operation.

This distinction was also referred to in the EIS and by the applicants during the hearing, who submitted that the proposed development provided an energy supply from a renewable resource, was more energy efficient than landfill and also helped divert methane from landfill operations. It would therefore be a recovery operation and placed higher at the waste hierarchy than landfill.

In view of its importance I have discussed the energy efficiency of the proposal in the previous section of my report (4.2), where I concluded that the municipal line of the proposed facility would be a ‘disposal operation’ and not a ‘recovery operation’. (I also note that hazardous waste incinerators are considered ‘disposal’ activity regardless of energy recovery).

This would put the proposed facility at the bottom of waste hierarchy alongside the landfill, and would constitute the ‘least desirable option’ in terms of compliance with requirements of the Waste Framework Directive, 2008.

I will now look at compliance with some of the specific areas of the Directive.

**Prevention**

Zero Waste Alliance submitted that the zero waste concept embodied a thorough application of the waste hierarchy, and the transformation of production and consumption into a cyclical rather than a linear process. While the communities that adopted zero waste were currently outside Europe (New Zealand, California, Buenos Aires in Argentina, Toronto in Canada), the EU
policy was heading in this direction, through the waste hierarchy where prevention was the most preferred option.

They submitted that prevention would also happen through product design (or re-design), using materials which can be reused and recycled, which would mean waste is not created in the first place.

Mr. Cronin\textsuperscript{30} also referred to the same concept maintaining that end-of pipeline options were in decent.

The policies outlined in the WFD, putting prevention above all, requiring application of life-cycle analysis in advance of waste management, and requiring eco-friendly product design are similar to those expressed by the observers, though ‘zero waste’ is not referred to as a requirement in the Directive. I refer, in particular, to Article 9 requiring formulation of an action plan by the end of 2011, to change consumption patterns.

In the case of hazardous waste the principle of prevention is also promoted through the requirement to reduce hazardousness of the waste, as well as the prevention of waste production in general.

The proposed facility is presented as providing a solution to the waste problem. During the hearing Mr. Ahern stated that the private operators who collect 72% of the municipal waste in County Cork, would have to find their own solutions. As stated by Mr. Bond the requirements of the waste hierarchy also apply to private operators.

As discussed under need, the emerging bio-based pharmaceuticals in the Cork area which produce much less hazardous waste is in line with the Directive.

In view of the above it would be reasonable to conclude that, in the absence of a demonstrable need for the capacity proposed (as discussed earlier in my report), the suggestion that the proposed development is not likely to promote the principles of prevention and waste hierarchy as required in the 2008 WFD, is plausible.

\textit{Recycling}

The main proposition by the applicants is that the proposed waste-to-energy facility can exist without impacting on recycling rates.

In his opening speech Mr. Ahern stated that while recycling must be the cornerstone of any strategy, it is a reality that only certain amounts of waste could be recycled in an environmentally sound manner. For example, one of the best performing waste regions in Europe, the Flemish region of Belgium, had 1.6 million tonnes installed waste-to-energy capacity. This operated alongside a

\textsuperscript{30} An Taisce
recycling rate of over 70%, (the highest of any region in the world), and an ambitious waste prevention policy.

In her submission Ms. Downey for the applicants presented that there was no impact on recycling rates in countries such as Denmark where incineration was part of the waste management.

This was strongly contested by the observers who maintained that the figures given by Ms. Downey for was 2004, and as such was outdated. They presented Eurostat figures, 2007 (exhibit116) and maintained that there was a reduction in recycling rates in Denmark in the intervening years. In their view incineration drew recycling out.

Ms. Fulton\textsuperscript{31} submitted that regional data for household waste for Denmark in 2005 showed that regions with higher incineration had lower recycling rates. Both Flanders and Netherlands were net importers of waste, and in Flanders waste facilities were operated by the municipality.

Ms. Fulton referred to a decisions in the UK, to turn down a large incinerator in Edmonton, north London on the grounds that it would give the London waste authority little incentive to do more recycling over an above the statutory minimum, and that meeting better recycling would lead to a shortfall in waste streams for the plant and so lead to waste being imported from other areas in contravention of the proximity principle (Kidderminster incinerator was rejected on the same grounds).

Mr. Watson stated that 50% recycling targets envisaged in the EIS were low. In Wales 70% targets were considered achievable.

\textit{The ‘Thematic Strategy on Waste Prevention and Recycling’ (2005)}, states that the basic objectives of current EU waste policy –to prevent waste and promote re-use, recycling and recovery so as to reduce negative environmental impact – are still valid and will be supported by an impact based approach. Noting that the long term goal is to become a recycling society, it introduces ‘life- cycle thinking’ into waste policy

The impact of the Strategy would be to move waste flows away from landfill, to be channelled into a variety of options higher up the waste hierarchy. Composting would be increased and quality benchmarks for composting facilities would be developed. Where energy is recovered from waste the Strategy would introduce use of efficiency thresholds to classify waste treatment in municipal incinerators as either recovery or disposal.

This was strengthened by the WFD (2008) which placed recycling firmly at no3 of the waste hierarchy, and required under Article 11 that (in order to comply with the directive requirements and move towards a European

\textsuperscript{31} Kinsale environmental Watch
recycling society), Member States should take measures to achieve minimum overall 50% recycling rates by weight, by 2020.

The applicants are proposing to take waste following recycling and if available, following MBT, if available. As such in principle, only residual waste which could not be recovered or recycled would be accepted. This is in line with the Directive hierarchy.

As stated earlier, the evidence given by the planning authority was that Cork region was already achieving 47% recycling rates (national rates 36%). Therefore, achievement of 70% recycling rates during the life time of the proposed development seems realistic.

In this context, 50% rates assumed in the EIS in calculation of waste streams available to the proposed development would be significantly low and seem to envisage little or no further increase in recycling in Cork region, over the life time of the proposed facility. This would not be in line with the Directive requirements of achieving a recycling society. Within this context the argument put forward by the observers that availability of a disposal option may have an impact on the incentives to do more recycling becomes plausible.

I do accept that the Eurostat 2007 (exhibit ) shows a reduction (albeit small) recycling rates in Denmark compared to 2004. In the absence of a detailed analysis of other forms of treatment, (as regards to their possible impact), I am however, not satisfied that a conclusion that incineration was drawing recycling out can be drawn.

While I do accept that ownership of waste facilities by the municipality in Flanders, might have impact, particularly in terms of strict implementation of Directive requirements, in the absence of documentary evidence providing details, I do not propose to take that into consideration.

Secondly, while I accept in principle relevance of the UK decisions referred to by Fulton, in the absence of documentary details of the said cases, comparison of the facilities proposed and the receiving environment, I do not consider its use as a precedence for a decision in this case would be appropriate.

I do however, note as discussed earlier, references by Ms. Keaney to industrial waste streams such as textiles and man-made fibres as being waste that would be available for the proposed facility does seem to indicate a serious possibility of diversion of the clearly recyclable (assuming prevention or reuse is not possible) products to a facility at a lower level at the hierarchy (whether energy recovery or disposal). This would be in contravention of the Directive requirements.

**Producer responsibility**

There is increased emphasis in the Directive in the area of producer responsibility
Under Article 8 ‘Extended Producer Responsibility’, the Directive refers to the producer responsibility of a person who professionally develops, manufactures, processes, treats, sells or imports. It also provides for measures (legislative or non-legislative), that Member states may take to ensure extended producer responsibility, and encourage product design.

Under Article 15 (responsibility for waste management), it requires member states to take the necessary steps to ensure that any original waste producer or other holder carries out the treatment of waste himself or has the treatment handled by a dealer or an establishment,..., but specifies that when the waste is transferred from the original producer or holder to one of the persons referred to, the responsibility for carrying out a complete recovery or disposal operation shall not be discharged as a rule.

There were discussions during the hearing regarding the responsibility of Cork as producer of hazardous waste. The WFD 2008, puts this responsibility directly on the producer of the waste as well as those who play a role in its transfer, rather than the locality. As such it would in my view be reasonable to conclude that the extended producer responsibility lies with the individual manufacturers of the waste rather than a particular location such as Cork / Ringaskiddy.

Principles of Self sufficiency and proximity

The Article 16 of the WFD 2008, relates to ‘Principles of Self Sufficiency and Proximity’. Under 16(1) it requires member states to take appropriate measures, in cooperation with other Member states, (where necessary or advisable) to establish an integrated and adequate network of waste disposal installations and installations for the recovery of mixed municipal waste....

Under 16(2) it states:

The network shall be designed to enable the Community as a whole to become self-sufficient in waste disposal as well as recovery of waste referred to in paragraph 1, and to enable member states to move towards that aim individually, taking into account geographical circumstances or the need for specialised installations for certain types of waste.

Therefore, there is indeed no requirement for ‘self- sufficiency’ below national level.

Secondly at national level, the move towards self sufficiency at member state level is conditional on geographical circumstances and the need for specialised installations for certain types of waste.

There is further clarification under 16(4)
The principles of proximity and self sufficiency shall not mean that each member state has to possess the full range of final recovery facilities within that member state.

Having regard to the above, it would be reasonable to conclude that an issue of compliance with principles of proximity or self sufficiency does not arise for the Cork Region under the Directive, in terms of provision of integrated and adequate framework of disposal or recovery installations.

I would also note that the requirement for the provision of an integrated and adequate network of waste disposal installations and installations for the recovery of mixed municipal waste is also at Member State level.

**Compliance with requirements of Landfill Directive**

In his opening statement Mr. Ahern stated “Here in Cork, just as in every other part of the country, the waste we create is growing. As the waste mountain grows, the disposal options for treating this waste are narrowing. Cork, like every region in Europe, has targets to fulfil. It must reduce its dependence on landfill or else face the prospect, under the landfill directive, of paying punitive fines amounting to millions of Euro.”

Ms. Keany stated that the landfill diversion targets were less than a year away and it might become increasingly difficult to meet these targets without some form of thermal treatment.

The observers and the local authorities submitted that the diversion targets were for the country as a whole and that there was no specific obligation on Cork.

The Directive 1999/31/EC known as the ‘Landfill Directive’ imposes restrictions on the consignment of certain waste materials to landfill. These restrictions include a gradual reduction in the quantity of biodegradable municipal waste (75%, 50%, 35%) which may be deposited to landfill sites. Each Member State is required to take measures to implement the Landfill Directive targets, and a national strategy setting out the proposed actions which will implement the biodegradable municipal waste landfill diversion targets must be completed and submitted to the European Commission.

In Ireland this requirement is met by Strategy on National Biodegradable Waste (2006), to which I shall refer under national policy.

Therefore, the obligations to meet the Directive requirements are not at local level, but rather at national level. Secondly, the requirements for the local authorities arise from the Strategy on National Biodegradable Waste, which while providing diversion targets as well as targets for treatment of source separated organic waste, at national level requires local authorities to achieve the same.
As I have discussed under ‘need for MSW, compliance with the requirements of Landfill Directive, (as well as requirements under Strategy on National Biodegradable Waste) are already incorporated into the waste strategy for the region and into the waste management plans for the County and the City. Furthermore, as discussed earlier there is realistic prospect that these targets would be achieved within Cork region, and that an issue of non-compliance with the landfill diversion targets would not arise in the absence of the proposed facility.

**Energy**

In his opening speech Mr. Ahern referred to energy security and supply as another regional challenge. He stated that homes and businesses needed energy to survive. Security of supply was at the mercy of events we could not control, and everyone recognised the need to pioneer alternative energy options. He submitted that many options were open to us but one in particular was staring us in the face - waste-to-energy”.

He stated “Burying or exporting our waste is dead money. By burying waste into a hole in the ground, its intrinsic value is lost and local environments are compromised. By exporting our waste, we not only lose the use of a local fuel supply, we effectively hand that fuel over at minimal gain to someone else. For example, hazardous waste from the Cork region supplies the base load energy source for Hamburg’s extensive district heating system. This effectively subsidises hot water and heating for the residents and industries in Hamburg… We take our heat, our energy, our waste, from Cork in particular, and we ship it to that facility…”

He further stated “Similarly, residues from Mechanical Treatment are already being exported just up the road in Limerick to cement kilns in Sweden, effectively subsidising the production of cement in a competitor Member State…”

In her evidence Ms. Keaney submitted that the recovery of energy from waste was gaining increased importance at European level in both energy and waste policy. The EU Biomass Action Plan stated that waste was an underused energy resource, and referred to Thematic Strategy on Prevention and Recycling of Waste and the revised WFD 2008 as instruments for encouraging this.

The Thematic strategy sought to promote energy recovery from waste, and found that it would help the EU to meet its targets under the Directive (2001/77/EC) on the promotion of electricity produced from renewable energy sources. Renewable energy sources defined in the Directive included biodegradable fraction in industrial and municipal waste.

Any refuse derived fuel recovered from the MBT facility could not be landfilled and had to be exported for energy recovery.
The proposed development would contribute to the objectives of EU and Irish electricity policy by maximising the recovery of energy from residual waste and generating renewable energy from biomass in the waste.

*Ms. Downey* submitted that the Intergovernmental Panel for Climate Change (IPCC), had noted that waste-to-energy was more efficient than landfill, MBT and anaerobic digestion treatment of residual waste.

The observers disagreed.

*Mr. Navratil* stated that recycling saved 3-5 times as much energy as would be recovered by burning. In the US it was calculated that if it burned all its municipal thrash it would contribute to less than 1% of the country’s energy needs. (He did not have Irish figures).

He submitted that it would be years before there was a net production of energy from the facility. Large quantities of energy would be embedded in building the facility, running it, and then eventually decommissioning it.

He noted that Ringaskiddy or Cork did not have a district heating system as Hamburg which was more thermally efficient.

*Mr. Watson* submitted that the proposed incinerators would be particularly inefficient generators of electricity managing less than 22%, compared to combined cycle gas turbines or power generators (60%).

He referred to EC Thematic Strategy on Waste Prevention and Recycling:

“At low energy efficiencies incineration might not be more favourable than landfill”

He referred to Environment Agency in the UK stating:

*In an incinerator the steam temperature is lower (about 400° C) to avoid corrosion of the boiler that can be caused by the mixture of impurities in mixed waste. This limits the electrical efficiency of an incinerator to about 27%.*

Mr Watson had specialised in CHP and strongly disagreed with the assessment in the EIS in relation to CHP. The site did not have the ‘heat load’ on a scale that would be needed to make efficiency useful, or increase efficiency. The nearest load ‘Naval College’ was essentially a seasonal space heat. The industries had very high standards in terms of availability of heat, and got their own ‘on-site’ heat generation. District heating needed to be done at design stage and not fitted retrospectively. He referred to various incineration facilities in UK which failed to deliver heat after years of operation.
He referred to Eunomia Research which found that electricity only incinerators generated twice as much CO\textsubscript{2} as a coal fired power station.

*Ms. Fulton* noted that Indaver’s non-technical summary stated that the potential for CHP was still under investigation, and would be subject to a separate approval process. She noted that the South East London CHP opened in 1994 but still provided no district heating as it proved too expensive.

She submitted that incinerators should not be rebranded as an ‘energy recovery technology’. They were not efficient in terms of energy production and would burn many oil based products such as plastics, which was equivalent to burning finite oil.

Until complete prevention and recycling is achieved, MBT which extracted plastics was preferable.

Ireland had a new and powerful way of dealing with its energy needs in the combination of wind and hydro generation. Bio-methane from sewage unwanted wood and food waste was already proven energy source in Europe where it was already being produced and injected into the gas grids (such as Spain).

She also referred to Eunomia research 2006, and said that it had shown that electricity only incinerators produced 33% more fossil fuel derived CO\textsubscript{2} per unit energy generated than gas fired power station.

*Mr. Mc Dowell* drew attention to the low calorific value of sludge. They were not good fuel and needed high calorific fuel in order to balance thermal load. This would be the case in the case of the proposed development.

He submitted RDF from MBT was more suitable for use as a fuel in cement kilns, as it would be replacing fossil fuels used in production of cement.

*Mr. Bond* for Cork County Council referred to the EPA document 10 Options for Change, in relation to biodegradable municipal waste. It pointed out that anaerobic digestion was unlike other energy recovery options as all the outputs from anaerobic digestion process could be reused, and recycled (subject to relevant regulations), and digested organic outputs could be integrated back to soil. Consultants appointed by the Council were looking at advanced technological MBT with anaerobic digestion. As referred to earlier, he submitted that, MBT combined with anaerobic digestion was considered ‘+’ in terms of energy, while MBT with landfill was ‘–’.

*Mr. O’Brien* for Cork City Council said Kinsale was the first landfill that secured AER for generation of electricity from landfill gas to feed into the national grid. 4% of the houses in the City were getting electricity from landfill gas.
I refer to the EU Directive 2001/77/EU on the Promotion of Electricity from Renewable Energy Sources, which promotes an increase in the contribution of renewable energy sources to electricity production, and requires Member States to set indicative targets to achieve 22% by 2010. It defines renewable energy sources as wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogas. It also provides a definition of biomass as the biodegradable fraction of products, waste and residues from agriculture, as well as biodegradable fraction of industrial anaerobic digestion municipal waste.


The EU COM 2005/0268 – Biomass action Plan, states that electricity can be generated from all types of biomass using several technologies. Annex 6 describing these technologies refers to several reliable technologies such as co-firing of biomass by mixing it with coal or natural gas in power stations, or large centralised power stations of CHP or more costly small decentralised power-stations.

Under the supply of biomass it refers to waste as an ‘under used energy resource’, and refers to the thematic strategy on prevention and recycling of waste being developed.

Therefore, electricity production from biodegradable waste by the proposed facility would be in line with the above Directive, and the Biomass Action plan. I would note however, that these both refer waste as one form of biomass from which renewable energy can be produced. It also seems the production of this energy is envisaged to be within ‘co-fired’ power stations, alongside other fuels. I have not been able to find any reference to ‘incinerators’ on their own, as performing this function.

I note however, The ‘Thematic Strategy on Waste Prevention and Recycling’ (2005) states that where energy is recovered from waste, the Strategy would introduce the use of efficiency thresholds to classify waste treatment in municipal incinerators either recovery or disposal, and that this would help the EU meeting its targets under the Directive on the promotion of electricity produced from renewable energy sources.

As discussed earlier, under the ‘Efficiency Criteria (R1)’ the Waste Framework Directive, 2008 also puts a very strong emphasis on the distinction between disposal and recovery operations based on the efficiency with which the energy is recovered.

Therefore while energy production from waste is desirable, the level of efficiency with which this production is achieved, is a material consideration in determining its acceptability.
As discussed earlier, the electricity generation from the proposed facility would not meet the efficiency threshold (and as such would be classified as a disposal activity).

I note the EIS does not provide comparative figures of the efficiency that would be obtained in co-fired power stations or in cement kilns using the same amount of waste or on a unit basis. I also note there was no rebuttal of Mr. Watson’s comparative figures regarding efficiency comparisons with power stations.

While I accept that energy considerations would also need to include information regarding building and de-commissioning of the facility, similar considerations would need to be applied to other forms of power generating facilities, and comparisons would need to be provided.

Having regard to the information contained in the EIS, I am satisfied that provision of steam for local district heating is not proposed as part of the proposed facility presently, but rather indicated as an option to be considered in the future. Having regard to lack of infrastructure for heat distribution, the dispersed location of nearby industry, and the fact that all the existing facilities would already have their heat sources in operation, it is my considered opinion that provision of district heating at later stage, retrofitting to an area already in existence, would be difficult physically and perhaps for economic reasons.

Regardless of viability or practicality of such an option in Ringaskiddy in view of the fact that no details have been provided, it would in my view be reasonable to conclude that the energy generation of the proposed facility would be limited to electricity.

In this regard I also refer to report of Prof. Broderick where he noted that the proposed facility did not contain any realistic plan to develop combined heat and power which is an essential feature of energy efficient thermal treatment facilities.

In view of the above, while production of energy from biomass contained in the municipal waste would be in line with EU policies in relation to renewable energy in general terms, having regard to the inefficiency of the energy recovery, and having regard to lack of supporting documentation that the contribution by the proposed development to renewable energy targets would compare favourably to alternative forms of production (using the same waste resource); it would reasonable to conclude that contribution by the proposed development to renewable energy targets could not constitute a material consideration in making a decision on this case.

In relation to the contribution to climate change I refer to air quality section of my report. As indicated in the report the EIS is deficient in relation to the issue.
I have not been provided with a copy of the Eunomia Research which found that electricity only incinerators generated twice as much CO$_2$ as a coal fired power station. While I also note that there was no rebuttal of the figure by the applicants, in the absence of documentary evidence I am not able to reach a conclusion in this regard.

There were discussions during the hearing on whether 4$^{th}$ Assessment Report did indeed state that incineration can offer immediate solution to production of CO$_2$ not by eliminating it but by producing energy from biodegradable waste. Various parties had different versions.

As discussed earlier the relevant considerations in terms of climate change are efficiency of energy production, and comparison of different technologies for CO$_2$ emissions during such production to ascertain which provides the best alternative in terms of Climate Change. This has not been done.

In this regard I note the statement by Mr. Power (day 19) that the proposed development would generate just under a million tonnes of CO$_2$, annually. While note that I was not provided with specific references in support of the assertion, I also note there was no rebuttal of this figure by the applicants.
4.3.2 National Policies

Applicants’ case

Section 6.4 of the EIS, states that the NDP recognises that whilst improvements have been made in recycling rates, this translates into only a small reduction in the amount of municipal landfilling, and that in line with national policy; the NDP states that on the integrated approach to waste management thermal treatment with energy recovery will be the preferred option for dealing with residual waste, after achieving ambitious targets in respect of waste prevention, recycling and recovery. The proposal would conform to this policy.

The EIS further states that National Climate change strategy is supportive of waste-to-energy developments, and that Waste Management –Taking Stock and Moving Forward, 2004 acknowledged underdeveloped state of waste infrastructure in Ireland, recognised waste-to-energy as an effective means of diverting a significant percentage of waste away from landfill, and highlighted that waste-to-energy had a role to play as one element of an integrated approach to waste management.

The proposed development would be effectively co-firing biomass with non-biomass waste resources, and as such would conform with the Bioenergy Action Plan, conform with the Energy Policy Framework 2007-2020, and the National Biodegradable Waste Management Strategy

The EPA National Waste Report, 2006 specifically noted that incineration is a means of diverting biodegradable municipal waste away from landfill.

The proposed development would conform to the objectives of the Forfas report Waste Management Benchmarking Analysis and Policy Priorities, May 2008 through flexibility facilitating rational use of infrastructure and enhancing competitiveness

The ESRI Medium Term Review 2008-2015 which included research on the environment for the first time specifically considered waste management and climate change to be the most significant environmental challenges for Ireland, and even with planned infrastructure for recovering and incinerating biodegradable waste it appeared unlikely that Ireland would meet EU and national landfill targets. The proposed facility will help ensure the Cork region can meet EU targets

The southwest Regional Planning Guidelines 2004 stated that energy recovery from waste needed to be built into the system along with polluter pays, proximity and precautionary and shared responsibility principles, and as such supported the proposed facility in principle
In her evidence Ms. Keaney also referred to the above quoting from *National Strategy for Biodegradable Waste*:

“All countries with high landfill diversion rates use thermal treatment for a considerable portion of traditional ‘mixed waste’ collection of BMW… Thermal treatment with energy recovery in accordance with the internationally accepted waste management hierarchy is a key element of Irish waste management policy.”

She also referred to the EPA pre-treatment guidelines 2008, to be included in waste licences, and the requirement that if waste is treated mechanically, it must produce and divert SRF from landfill which should be subject to thermal treatment.

In his statement of evidence, Mr. Harry Walsh referred to key documents outlining national waste management strategy and submitted that to date, NDP have not been replaced, that the Regional Planning Guidelines recognised the importance of the pharmachem sector to the region and indicated that incineration should not only be seen as appropriate, but necessary to support continued growth in this sector.

He submitted the proposed waste-to-energy facility would serve the needs of the Cork Region, and that it is in accordance with the NDP and is the preferred alternative to disposal and export.

**Observers’ case**

In his submission Senator Dan Boyle stated that 2007 saw a change of policy direction that indicated incineration was no longer the preferred disposal method of government policy, and that mechanical and biological treatment became the preferred treatment method.

He noted that the government also initiated an international review of best practice in terms of waste management disposal, which indicated that the existing policy was flawed in many respects and needed alternatives and better methods to improve it.

A third element of the Programme for Government commitment was that no form of waste disposal would have an economic advantage over others, and that the economic cost of incineration was not properly measured. He stated that to this end, a levy is to be introduced through legislation to counteract the cost of the levy being proposed on the landfill. The levy operation will be to the same extent as any increase on the existing landfill levy, so no economic advantage would accrue.

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32 Mc Cutcheon Mulcahy, planning consultants
The final aspect of government policy in relation to the removal of incineration as being a preferred aspect of waste disposal policy was the indication that the government would not allow, either nationally or through any local authority, the ability to guarantee waste streams to any incineration facility.

Mr. Cronin\textsuperscript{33} also stated that there has been an important policy shift in 2007 away from incineration to recycling and waste prevention. He referred to the Programme for Government and in particular commitment to waste hierarchy, targets of diversion of biodegradable waste away from landfill, and ensuring that all waste facilities have good transport links close to road and rail networks. An international review of waste management plans, was currently taking place.

He submitted that Circular 04/09 made it clear that MBT and not incinerator is to be the cornerstone of the national waste policy, and issued directions to local authority and EPA to refrain from exercising their powers in such a way as to direct waste to landfill or incineration.

The emphasis was now on moving away from high reliance on incineration foreseen in the NDP, and increased commitment to the use of alternative technologies such as MBT.

He referred to the Strategy 2008-2010, to the Programme for Government, the move away from mass burn incineration towards alternative technologies and to minimisation of waste going to landfill, subject to review of waste management strategy, and noted that consultants have been appointed to study options which will underpin the conclusions.

The minister had initiated an SEA on the policy direction to the EPA and local authority to require limit on incineration capacity to ensure waste that could be dealt with methods higher up the hierarchy, is not drawn to incineration.

David Staunton TD referred to his Dail question in Jan 2009, in relation to Government policy towards incineration, and to the response he received, which referred to commitments in programme for Government placing major emphasis on prevention, reuse and re-cycling of waste while minimising reliance on landfill and incineration, and the emphasis in the programme signalling a move away form mass burn incineration towards alternative solutions. He stated that the proposal was not supported by Government policy, not supported by national policy and not supported by local authorities.

Mary Hurley\textsuperscript{34}, stated that the last permission was granted because incineration was the corner stone of the National Waste Policy. This was no longer the case. Councils of City and County had developed a plan based on

\textsuperscript{33} An Taisce and Zero waste alliance
\textsuperscript{34} Cobh Action for Clean Air
waste hierarchy and were active in promotion of waste prevention as the key plank of the waste management activity in the region. The community endorsed their commitment.

As part of my report I refer the Board to the summary of National Policy and Guidance documents in section 9 (Volume I) of my report.

Waste Management- Taking Stock and Moving Forward published in April 2004, referred to progress made towards establishment of waste-to-energy facilities where thermal treatment was proposed in the waste management plan, and stated that thermal treatment with energy recovery has a role to play as one element in an integrated approach to waste management. The subsequent Ministerial Direction Circular letter 04/05 (May 2005), removed restrictions on movement of waste between regions.

The National Strategy on Biodegradable Waste 2006, referred to requirements for diversion of biodegradable waste away from landfill, and to requirement for substantial amount of additional recovery capacity. It indicated thermal treatment with energy recovery and MBT with thermal treatment or landfill as options.

Ten Options for Change (discussion paper by EPA) considered MBT acceptable in terms of volume reduction (but noted that it would still give rise to leachate and landfill gas). Biological treatment (anaerobic digestion and composting) would contribute to national renewable energy targets.

The National Climate Change Strategy 2007-2012 referred to initiatives under REFIT (renewable energy feed-in tariff) for landfill gas recovery and waste-to-energy projects.

These indicated acceptance, in principle, of waste-to-energy as an option for waste treatment, between 2004 and 2007. The last provide financial support for the same.

There seems to be however, a shift in this position from July 2007 onwards starting with the circular 09/07 which states that incineration or waste-to-energy facilities should not be the corner stone of waste management policies.

The Statement of Strategy 2008-2010 refers to Programme for Government indicating a move away from ‘mass burn incineration’ towards alternative technologies.

The Circular WPRR 04/09 which refers to introduction of levy on incineration, while supporting roll out of brown bin, home composting, anaerobic digestion and source segregation of waste, and limiting of incineration capacity to ensure that waste which could be dealt with is not drawn to incineration, are further indications of this shift.
As submitted by observers, a team of consultants have been appointed to carry out an international review of waste management policies. Their report was not available prior to closing of the oral hearing in this case. Therefore the Board may decide not to take its contents into consideration.

Having regard particularly to circular WPRR 04/09, which was issued during the hearing and referred to by observers; it is in my view reasonable to conclude that there has indeed a policy direction away from incineration in favour of options higher up the hierarchy at the national level, in the last two years.


It states in its executive summary that Ireland needs to accelerate the delivery of waste infrastructure projects along the waste hierarchy.

It also states that there is currently a high level of uncertainty about the future direction of Irish waste management policy, and proposed changes in waste policy in the areas of preferred treatment options. It recommends a speedy completion of the review of waste policy initiated by the DoEH&LG.

The document refers to specific infrastructures that need to be developed. These include:

- Thermal treatment to recover energy from industrial and municipal waste
- Thermal treatment or landfill capacity for hazardous waste
- Biological treatment (composting, anaerobic digestion) throughout Ireland
- Reprocessing capacity for materials (paper, plastic, recycled materials)

I note in the case of hazardous waste recommendation is for landfill ‘or’ thermal treatment capacity, rather than both.

*National policy on Hazardous Waste*

The proposed facility is proposed as a national facility for management of hazardous waste. I have already referred to some of the relevant policy consideration while assessing the need for an incinerator to process hazardous waste.

The applicants maintained that the proposed development would play a significant role in Nation’s disposal of hazardous waste helping reduce the amount sent abroad in line with proposed National Hazardous Waste Management Plan, 2008-2012
In his closing statement Mr. Slattery for the applicants maintained that NHWMP was predicated on the delivery of hazardous waste incinerator in Ringaskiddy.

The observers maintained that while 2001 National Hazardous Waste Management Plan did have as an objective “the provision of a thermal treatment disposal facility for the management of hazardous waste currently exported for disposal”, the NHWMP 2008-2012 contained no such objective, but merely acknowledged that permission being granted.

The most relevant policy document in this regard is the proposed National Hazardous Waste Management Plan 2008-2012. The Plan has two parallel themes: ‘Prevention’ and ‘Management’. The primary objectives of the plan are stated to be reduction of the generation of hazardous waste by industry and society generally, to strive for increased self sufficiency in the management of hazardous waste and to reduce hazardous waste export, to minimise the environmental, social and economic impacts of hazardous waste generation and management.

The plan states that new and innovative techniques for treatment of hazardous waste where they meet requirements would be encouraged. The plan also stresses that hazardous waste generated by Irish society and industry is dominated by solvents.

Under implementation there are 30 recommendations, and implementing bodies are identified. I will refer to a few:

- Item 6 recommends development of hazardous waste prevention programme in 2008
- Item 16 recommends commencement of a hazardous waste producer responsibility project in 2008

Under infrastructure and self sufficiency
- Item 20 recommends commissioning of a study to clarify technical and economic aspects of providing hazardous landfill capacity
- Item 22 recommends commissioning of a study in 2009 on the treatment of waste solvents with particular regard to the potential for solvent recycling

Under North South initiative
- Item no 29 recommends exploration with the appropriate northern Ireland authorities the possible terms of reference of North-South working group on hazardous waste to identify barriers to cooperative approaches in the plan and to make recommendations to overcome those barriers.

In view of the above, it is my considered opinion that the priority objective of the plan is prevention of hazardous waste production. Where it is produced,
the plan acknowledges that this is dominated by solvents, for which it prefers treatment in solvent recovery facilities or cement kilns for co-incineration.

Secondly, while striving towards self sufficiency in treatment of hazardous waste is an objective, there is no clear indication that this should be by way incineration, though there is clear reference to provision of a hazardous waste landfill.

The plan does, indeed refer to permission for 50,000 capacity at Ringaskiddy. I do however accept that this is a statement of fact rather than an indication of policy requirement, or indication of need.

Having reviewed its contents in detail, I do not concur with the conclusion by the applicants that the NHWMP is predicated on Ringaskiddy.

Contribution to provision of integrated waste management facilities

The submission by the applicants was that the proposed development would form part of integrated waste management facilities.

During the hearing Mr. Mc Loughlin\(^{35}\) estimated the size of Indaver facility in Doel to be around 12 km\(^2\). He added that if ash handling area is included, the area was larger. He submitted that that was the area required for an integrated facility. the site of the proposed facility did not have such site area.

Mr. Jones\(^{36}\) explained that there were a number of components (of the said facility). When the sludge incinerator with 450,000t capacity is taken into consideration there was 800,000t of incineration capacity on that site. Other facilities included fluff plant (for preparing high calorific fuel for the cement industry.

As stated earlier the facility at Doel (owned by the applicants) does seem to be a good example of an integrated waste facility with many complementary functions, including ash handling facilities, located adjacent to each other as part of the same complex, both in terms of physical proximity (which reduces impacts arising form transportation of input and outputs considerably), but also in terms of single management of all components in a coordinated manner, thus increasing efficiency.

In the case of the subject application the facility consists basically of two incinerators, which process different waste streams. Even when the waste transfer station which seems not entirely connected to main facility is taken into consideration, the proposed development can not be considered as an integrated waste facility. While the site area is considerable (12 ha) the usable

\(^{35}\) Chase

\(^{36}\) for Indaver
area is quite restricted by the topography and by location of Hammond lane facility in the centre.

As discussed under ‘need’, in the case of hazardous waste the preferred option of the EPA (as stated in the Environmental Report) is for an integrated hazardous waste facility comprises of a number of elements, i.e. thermal treatment, co-located with a new landfill cell, as well as solvent recovery and co-incineration in cement kilns. As stated earlier the proposed development is not in line with this preferred option and may prejudice its achievement.
4.3.3 Compliance with waste management strategy and waste management plans

**Applicants’ position**

*Ms. Keany* for the applicants noted that the waste management plan did not preclude the development of waste-to-energy capacity within the region, and that it was the only alternative to be reviewed on an on-going basis. As such the proposed development would promote the objectives of the plan.

She submitted that the municipal line of the facility has been deliberately sized to accommodate full MBT pre-treatment and a 50% recycling rate of municipal waste within the region. The proposed facility would help assist the region in meeting its landfill targets by treating residues from the MBT and providing capacity for any waste that can not be treated in the MBT plant. She referred to landfill targets being less then a year away. Without some form of thermal treatment it might become increasingly difficult to meet these targets.

Any refuse derived fuel recovered from the MBT facility could not be landfilled and had to be exported for energy recovery. A local waste-to-energy solution would avoid this expense and provide low cost source of energy.

The proposed development was consistent with the objective to promote the recovery of energy from waste in waste management plan for Cork County.

*Mr. Ahern* stated that the scale of incinerator has been carefully limited to ensure it did not prejudice any objectives of Cork City and County waste management plans.

**Observers’ Position**

*Cllr. D’Alton* submitted that the development plans were required to be consistent with national plans, policies or strategies determined by the Minister in relation to proper planning and sustainable development (2000 Act). She submitted that Cork County Development Plan which came into force Feb this year reflected the most up to date polices in waste management, as well as, proper planning and sustainable development of the area.

She submitted that in paragraph 7.4.3 ‘Changing our ways’ required that local authorities must identify and fully assess the various issues involved in the provision of an integrated waste management with a view of identifying the nature and scale of facility or mix of facilities, which in the circumstances appears to offer the best balance between maximising output of materials or energy and minimised environmental emissions at reasonable cost. The Councils’ waste strategy was considered by those representing both planning authorities to be the best application of national waste policy within their jurisdictional area.
Various observers submitted that the policies and objectives of the Minister in relation to incineration as a component of national waste management planning has been made clear by the circular 04/09 requiring local authorities to focus on strategies alternative to incineration. MBT was particularly mentioned as one alternative technology. They noted this was the chosen alternative in their strategy.

**Planning authorities’ position**

In his presentation (6th May) Mr. Nicolas Bond\(^{37}\) outlined how Cork County Council managed the waste in their region and how the Waste Strategy in conjunction with Cork County Council had evolved.

He would also outline how they intended to meet their targets under the Landfill Directive.

In terms of Waste Management Strategy he referred to the identification of problems in early 90s in terms of recycle, reduction of volumes of waste and compliance with Landfill Directive requirements. The Waste Management Strategy developed in conjunction with Cork City Council in 1995 developed three scenarios refusing scenario “0” as continuation of the prevailing, total dependence on landfill, and not achieving diversion targets. Scenario 1 included the recycling strategy of 30% by the end of 1999 and 50% by the end of 2005. It also introduced a concept of large scale home composting.

Scenario 2 introduced concept of separation of domestic and commercial waste at a mechanical separation plant and composting of wet organic fraction followed by bailing and landfiling of dry fraction.

Scenario 3 introduced the concept of incinerating of the dry fraction to further reduce the volume for landfill. This option was not accepted as part of the strategy.

The strategy adopted for implementation was a fully integrated Waste Management Strategy to include bring sites, civic amenity sites, home composting, establishment of a mechanical separation and composting plant in line with scenario 2.

Following introduction of the concept of waste management regions in the Waste Management Act, Cork was declared a ‘region’ on its own being the largest County in Ireland with 12 Town Councils within the County as well as the City itself.

\(^{37}\) Senior Engineer, in charge of waste section of the Environment and Emergency Services Directorate of Cork County Council
The Waste Management Plan 2004 which replaced the 1999-2004 Plan confirmed again the decision to continue to implement scenario 2 for the management of municipal waste in the county. This plan was currently under review.

He referred to 81 actions identified in the plan to go along with 8 objectives and stressed that in accordance with action no. 28 which required accurate data collection they had details of number of permitted collectors and permitted sites as well the amount they handled. This information was audited to ensure the information submitted by the collectors were correct.

While they did not have any responsibility in relation to TFSs they had information through C1s (annual environmental returns).

The plan included six specific actions in relation to hazardous waste. He drew attention to Action 71, to operate a programme for collection and recycling of household hazardous waste in partnership with Cork County Council, Curragh Waste Management, Janssen pharmaceutical, Pfizer, Gloxsosmithcline, Eli lily and Schering Plough. They had introduced a ‘chemcar’ system which travelled around on a fortnightly basis collecting household hazardous waste such as cleaning agents, batteries, accumulators, paints, inks, adhesives, waste oils, pesticides, waste medicines etc. He referred to taking back by pharmacists of waste under the Producer Responsibility Initiative. Waste cosmetics, batteries, florescent tubes and energy saving lights and thermometers were also taken back in civic amenity sites. They had taken back 2,742 tonnes of hazardous waste, Chemcar had picked up 37 tonnes of waste.

Waste collected from garages, dentists, doctors surgeries, veterinary practices and farm sites would be 32,000 tonnes, and could be hazardous waste.

The annual environmental returns indicated 70,000t of hazardous waste was moved from the pharmaceutical industry of which 60,000t was recovered and 10,000t was disposed of.

Article 5 of the Landfill Directive had required that by July 2010 maximum 75% bi-weight of BMW generated waste in 1995 could go to landfill (95 is the year taken as the baseline year). This would reduce the 50% by 16th July 2013, to 35% by 16th July 2016.

He referred to Landfill Directive waste pre-treatment obligations requiring member states to take measures in order to ensure that only waste that has been subject to treatment is landfilled and that this applied to any facility that was operational from July 2001 onwards. He said that it must be demonstrated to the EPA by 2009 that all waste delivered to a landfill would have been adequately pre-treated. He noted this would apply especially to the landfill at Bottle Hill.

Referring to National Strategy on biodegradable waste, and to the requirement to achieve BMW diversion targets of 40% minimum, he stated that they analysed their data to identify that part of municipal solid waste in commercial
activities. This was reinforced with the Circular in 2008 in relation to implementation of segregated brown bin collection for bio-waste and home composting and source segregated collection systems for organic waste to drive diversion of biodegradable waste from the landfill.

He too drew attention to the ‘International Review of Waste Management Policy’ indicated in the Programme for Government, initiated in February 2008, and to Eunomia Research and Consulting Ltd. whose final report was anticipated in mid to late 2009. These would provide further guidance.

How they deal with municipal waste in Cork region was envisaged as part of the Waste Management Strategy of an integrated system for the management of household and commercial waste which was facilitated by 15 permitted domestic waste collectors (including three divisions of Cork County Council plus the City Council). They had 7 waste management facilities licensed by the EPA, further 221 facilities permitted by Cork County Council most of them soils and recovery sites. Three EPA licensed landfills operated by Cork County Council and one operated by Cork City Council. They had a two bin collection system, 214 bring banks in Cork region, 9 recycling centres, and chemcar system.

Action 48 of the Waste Management Strategy was to provide a new engineered landfill to serve the Cork region which was granted permission in 2004 and handed over in 2007 though currently being maintained in a non-operational mode. He asked the Board be shown the aerial photographs to indicate that the ‘haul road’ up to the landfill as required by An Bord Pleanala was constructed (just to show how good they are).

One of the 179 conditions in the licence required pre-treatment and bailing of waste which went in there. It was licensed to receive 5.3 million tonnes of non-hazardous waste to be developed over 8 phases and permitted to operate until the end of 2025. It would take 217,000 tonnes per annum.

Rossmore was proposed as a location for Materials Recovery Facility (MRF). RPS Consulting Engineers were appointed in July 08 to procure MRF/MBT facility (Mechanical Biological Treatment) for treatment of 65,000 tonnes per annum of MRW (Mixed Residue Waste/black bin) and 25,000 tonnes of mixed dry recyclables. They were given the extensive data collected by the Council and had currently completed Stage 1 of the 5 stage process from preliminary design through to handover of the facility.

He referred to suggestion by the applicant in relation to the need for compliance with the Council Directive on the Landfill of waste, and he noted that the diversion thresholds and targets were not set for individual local authorities but rather at a national level. As such there were no individual targets for local authorities. However there was recommendation by the EPA that Waste Management Plans assessed indicative target diversion capacity.

While Waste Management Plans for Cork City and County were published before the National Biodegradable Waste Strategy and as such did not include
any specific quantitative targets for landfill diversion, they had made calculations in relation to the amount of BMW allowed to be disposed to landfill by the Cork region, based on the relative share of MSW disposal in 1995. Table shown on page 23 indicated figures for Ireland (1,289,911) and Cork 181,971 (Corks share of biodegradable municipal waste).

Using target disposals of 75%, 50% and 35%, he calculated that the amounts would be 136,478t in 2010, 90,000t in 2013 and 63,000t in 2016.

In 2008 the total MSW arising was 417,222 t (broadly similar to the figures produced by the applicants). Breaking it down to components for 2008, 2010, 2013 and 2016 in terms of overall waste arising, MDR arising, MRW arising, BMW content of MRW arising and BMW permitted to landfill,

In 2010 they could overshoot the target by a small amount, would introduce brown bin to achieve the targets 2013. While 2016 target was much more difficult (35%) they would target MSW and BMW element of the commercial waste stream diversion of food waste from the commercial premises (which would come into play in January 2010). An Executive Engineer working full time was assigned to achievement of this diversion. They were confident that they would achieve the target for 2016 by concentrating on the commercial sector.

He noted that they were already achieving a 47% diversion for the mixed dry recyclables.

He stressed that ‘disposal’ means any operation which is not ‘recovery’ even when the operation has secondary consequences of reclamation of substance or energy. Disposal could be disposal into landfill or disposal with incineration. The objective of the Directive was to achieve the best environmental option.

He concluded that they believed the Cork region would be in a position to achieve landfill targets. It was important that no encouragement was given to diversion from the prevention of material recovery, reuse and recycle. Such diversion would go against the waste hierarchy.

Mr. O’Brien was responsible for environmental policy planning and enforcement in the Council’s Environmental Directorate and regional coordinator of the Waste Management Policy since 1995, including Waste Strategy.

Cork City Council operated within a functional area of 37.3km² and served a population of 119,418 which represented approximately 25% population of the Cork region.

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38 BMW- biological municipal waste, MRW- Mixed dry recyclables, MRW- Municipal residual waste
39 Senior Engineer for Cork City Council
Cork City Waste Management Plan was adopted in 2004 and was a stand alone plan for the functional area of Cork City Council prepared in accordance with the Cork Waste Management Strategy 1995 – 2020 developed together with Cork County Council which set out broad strategic options over a 25 year timeframe.

He explained the basic parameters of scenario 2 adopted by both Council’s that is waste reduction, reuse, recycling, construction of an MRF and residual landfill facility (now developed at Bottle Hill). Scenario 2 remained in place. He too stressed that Scenario 3 which included incineration was not accepted.

He referred to 40 individual actions to be progressed over the period of 2004-2009 outlined in Cork City Waste Management Plan and stated that significant progress has been achieved in relation to these actions. In particular MBT facilities/services (tender assessment stage) would allow for the mechanical separation of recyclables and diversion of the separated materials for recycling, with biodegradable wastes (such as food and garden waste) to be composted for reuse as appropriate.

He stated that he was satisfied the 2010 and 2013 waste diversion targets would be met for Cork City. In the event of some shortfall arising in reaching the 2016 waste diversion targets a detailed examination would be required to take into account economic and environmental impacts of any technological solution required to meet such a shortfall.

Both referred to extensive education programs they had initiated and in particular the ‘Life time lab’ through which they put 4000 school children in the last four years, explaining life-cycle of waste.

**Assessment**

I refer the Board to the section 9 (Volume I) for relevant documents.

The strategy adapted by the two Councils is very much based on the principles of prevention, source separation, re-use, MBT / anaerobic digestion of organic fraction followed by landfill. This is in line with the most up to date policies at EU level including concepts such as life-cycle assessment. I am satisfied that the policies of the local authorities as expressed in the strategy and their individual plans based on the strategy is in compliance with the underlying principles of the WFD, and as such in compliance with waste policy at the EU level.

Scenario 3, which included ‘incineration’ as a waste treatment option was rejected. There is however, reference in Action 51 of the County Waste Management Plan, to the possibility of employing ‘thermal treatment’ in for residual waste in the case of difficulties in attaining landfill Directive targets.
In this regard I note submission by *Cllr. D’Alton* that the type of thermal treatment was not clarified, and that it could be one of several technologies such as pyrolysis. I also note that the EIS refers to these as alternative thermal treatment technologies and concludes that they are between research and development stages not yet ready for commercial purposes, and that they are only proven for homogenous waste streams.

In view of the above, I would conclude that while a material contravention of the Waste Management Strategy (option 2) does seem to arise, having regard to action 51, such contravention would not be material in be case for the 2004 Waste Management Plan for the County (currently under review).

The commitment of the local authority in implementing their strategy is quite clear. They seem to lead the way through identification of problem areas, and finding appropriate solutions (through extensive data gathering, education, and enforcement). While they do not collect all waste, they collect some and they control the manner it is collected by private collectors, through waste permit system, ensuring compliance with strategy.

The appointment of consultants (completion of the first stage of the five stage process for securing of MBT facilities at Rossmore), with instructions include energy efficiency and climate change to be considered as part of the alternatives is also in line with the emerging policy directions at EU level.

Bottlehil landfill (with 217,000tpa capacity) is ready for operation to most up-to-date standards required under the Directive, as set out in the conditions including baling. While the amount of biodegradable waste to be diverted to this facility would decrease progressively, and I note the 2008 Guidance from the EPA regarding diversion of RDF away from landfill; on the basis of information before me I do consider that an issue of inadequacy of landfill capacity is not likely to arise in the foreseeable future in the Cork Region.

As outlined in the section ‘need’, I am satisfied that providing the waste management plan is implemented, an issue of non-compliance with the Landfill Directive obligations is not likely to arise in terms of diversion of biodegradable waste away form landfills.

During the hearing in response to statement by *Mr. Slattery* that the waste policy was moving faster than technology, and included climate change and energy, *Mr. O’Brien* stated “So is our waste management plans”.

In response to question by Mr. Ahern as to how they would be able to meet their energy requirements, Mr. O’Brien stated that they were also actively involved in renewable energy projects, being the first authority to generate energy from landfill gas (under AER) to supply to the national grid, and their involvement with UCC in geothermal energy projects. A portion of Council vehicles were operating on different types of bio-fuel, UCC was looking at the concept of abstracting gas from Grass to use in transport.
Mr. Bond stated that what they were trying to get from the consultants (RPS) was what technology would carry them into the future. The consultants were also looking at the energy aspects of waste and in particular anaerobic digestion (one of the options), which was unlike other energy options because the residue would be reused.

Based on the evidence before me I am satisfied that waste management strategy of the local authorities and their individual waste management plans based on the same are in line with the requirements of the Waste Framework Directive, that both Councils are likely to achieve landfill diversion targets, that they are in active pursuant of energy production from waste, as well as conservation of energy through reuse and recycling, that they area actively involved in education of not only children but local businesses in waste life cycle analysis and cost effectives through waste prevention. I consider the waste management of the councils to be progressive both in strategy, (as extended into waste management plans), and in terms of implementation.

I am not satisfied that the proposed development would be necessary to promote the objectives of the councils’ waste management plans, as suggested.

In this regard I refer to the written submission by Cork County Council, which states:

*Construction of a municipal waste incinerator will not be required because of the improvements in the integrated waste management systems as required under the Cork Waste Management Plan 2004.*

*It could be counter productive in discouraging prevention and recycling as such a facility would remove the incentive to reduce, reuse and recycle.*

Based on the information before me, I have no reason to disagree with this view.

**Compliance with waste policies of County Development Plan 2009**

As part of his evidence Paul Murphy referred to the objectives of the County Development Plan:

*Objective INF 3-1 or INF 6-1 of the County Development Plan 2009, states:*

Waste management plan

*“it is an objective to implement the provisions of the County Council’s approved Waste Management Plan and in particular to promote the*
He submitted that the current proposal, notwithstanding the fact that energy recovery is incorporated in it, but especially because it includes a municipal waste incinerator contravened Council policy as expressed in its objective.

In his concluding remarks, he further stated:

_In summary, the construction of a municipal waste incinerator is not justifiable because of the improvements in the integrated waste management systems as required under the Cork Waste Management Plan 2004. It could be counterproductive in discouraging prevention and recycling and is contrary to the principle tenet of the Waste Management Plan 2004 which is prevention and consequently contrary to objective INF 3-1 of the County Development Plan 2003, or objective INF 6-1 of the County Development Plan 2009._

The Waste Management Act 1996 states that the Development Plan for the time being in force in relation to the area of a local authority shall be deemed to include the objectives for the time being contained in the waste management plan in force in relation to that area.

The recently adopted Cork County Development Plan provides specific waste management objectives under INF-6, supporting the waste management plan objectives to promote development of facilities for the prevention minimisation, re-use/re-cycling or disposal with energy recovery of waste material, and to develop a material recovery facility for the Cork region.

It also includes specific energy and climate change objectives under INF-7. (I refer to S. 9 5.3.5 of my report). Of this I note in particular INF 7-3 the objective to encourage the production of energy from renewable sources including in particular that from biomass, waste material, solar, wave, micro hydro power and wind energy, subject to normal proper planning considerations including in particular the impact on areas of environmental or landscape sensitivity.

During the hearing it was explained that energy recovery from waste would be achieved through MBT, and landfill gas.

In view of the fact that the County Development Plan 2009, has recently been adopted, it would view be reasonable to consider that it represents the most up to date position of the Council, including waste policy. Such a plan would also have gone through an SEA process. I am satisfied the policies contained in the plan are in line with WFD, and policies in relation to energy.

Having regard to my conclusion earlier regarding lack of a demonstrable need for a municipal incinerator, I concur with the conclusion by the planning authority that it would contravene the policies of waste management plan.
I also concur with the Council view that the proposed development may be counter active to the policies of the Council, as it might lead to diversion of waste from prevention, reuse and recycle. Having regard to current recycling rates achieved in the region at 47%, I am not satisfied that the 50% recycling rates envisaged in the capacity provision of proposed facility would not prejudice further increase in recycling.

I accept that the policies of the local authorities’ for recovery of energy from waste are envisaged to be through MBT / anaerobic digestion followed by landfill.

I further concur with their view that implementation of waste hierarchy takes precedence over energy recovery.

Having regard to the efficiency of the energy recovery of the proposed development I am satisfied that there is no need for its prioritisation ahead of landfill in this case.
5. Planning policies

Applicants’ position

In his submission Mr. Harry Walsh for the applicant referred to CASP strategy and County Development Plan, and stated:

_We consider that the proposed development is an industrial use in an industrial area, and on zoned industrial land, and therefore entirely suitable location for the proposed development._

In his view the proposed development did not materially contravene LAP 2-1 of the CDP 2009 or the specific zoning objective of the site I-15 as defined in the LAP.

He submitted:

_In this regard we concur with the Board’s previous definition of the proposed development as an industrial use and their assessment of the appropriateness of the proposed site from a land use point of view._

In his conclusion he submitted:

_“...The County Development Plan and waste management plan do not preclude thermal waste-to-energy treatment, but the County Development Plan does indicate that commercial incineration in not suitable in areas zoned for industrial development. In this regard, the proposed development materially contravenes ECON 3-1 of the 209 CDP.”_

Stating that, Cork Harbour has a diverse range of uses in terms of boating and leisure activities ranging from commercial shipping to small craft sailing, he submitted that the Cork harbour integrated management strategy identified various interests and uses within the harbour area but does not suggest that tourism or leisure use should take precedence over the continued industrial use of the harbour.

In their view the proposed development would promote the economic development of the harbour and would not interfere with the achievement of tourism or leisure activities.

Observers’ position

Roddy Hogan, for Chase referred to a number of new plans including Cobh Town Development Plan 2005 – 2011 which triggered commissioning of a
suit of subsidiary plans designed to reverse the decline of the old town. These included *Cobh: The path to renaissance and resurgence (Brady and Martin)* and *Cobh urban design feasibility study (Scott, Tallon, Walker)*. He stated that together these stressed the importance of the harbour in promoting economic regeneration through tourism.

He referred to Cork Harbour Integrated Management Strategy and to the preparation of a formal and detailed submission to the DoEHLG that the City and harbour of Cork be proposed to Unesco for designation as a “World Heritage Site”. He stated that Cork as a ‘City Region’ must compete with other regions in the state in seeking to attract major industrial investment, (usually FDI) and that in doing so it had significant advantages over Irish gateways in terms of critical mass, presence of University and of Institute of Technologies, skilled labour pool, airport and railway communications, regional hospitals and outstanding recreational areas of its harbour and the costs.

He said the particular attractiveness of the site is its location within an established pharmaceutical cluster, access to infrastructure and the port and an excellent environment and outlook which would facilitate a quality building attractive to its staff and would complement the image of the company. This was why the Council’s policy considered it vital to retain the present site for incoming “stand-alone” industry which needed and would benefit from its particular advantages.

The proposed development would clearly materially contravene important policies of CDP 2009, in relation to prohibition on contract incineration in areas zoned for industrial development and in relation to reservation of these industrially –zoned lands in Ringaskiddy for large stand – alone industry which will benefit from the particular advantages of the location.

He provided a historical summary of plans starting from 1978 LUTS Study which nominated Ringaskiddy and Little Island as two principal areas of employment, (which was followed by investment in infrastructure including port facilities), how, in an effort to kick start the stagnating economy land was reallocated to start a tax free far eastern industrial park in 1992 LUTS review, and how following rapid growth, CASP 2002-2020 commented: “Land supply in Ringaskiddy is becoming scarce…. Land in the area should be reserved for port related or complementary uses.”, and how CASP update May 2008 carried forward the original strategy, stating: “Ringaskiddy will continue to act as strategic employment location…”

He said thus the Council is continuing a 30 year policy when the current CDP 2009 identifies Ringaskiddy as a strategic employment centre and resolves that sufficient land would be zoned for appropriate uses which will be protected from inappropriate development that will prejudice its long term potential for these uses.

The attractiveness of this site was its location within an established pharma cluster access to infrastructure, and to port, an excellent environment and
outlook which would facilitate a quality building attractive to its staff and would complement the image of the company. Availability of the site could be critical to attraction of an important industry, or incubation of a new.

This was why the Council’s policy considered it vital to retain the site for an incoming stand-alone industry which needed and would benefit from its particular advantages.

This was why the policies would oppose the displacement of this option by an undertaking which had no need to be there, would dis-improve the image of the area and had significant collateral disadvantage.

In addition to conflict with policies of the development plan, the proposal would conflict with the proper planning and development of the area by virtue of its adverse impact on Cork Harbour – a vital resource and on Ringaskiddy and Cobh.

_Hazel Mc Carthy_\(^{44}\) referred to objective ECON 3-1 and submitted that the proposed development is a material contravention as contract incinerator either for municipal or hazardous waste are not permitted in this area.

Reviewing development strategy, and various objectives she concluded that the CDP identified Ringaskiddy as a designated employment centre, and Ringaskiddy was one of the most significant employment areas in the country with modern deep port facilities, naval and marine training institution and major, large scale high technology manufacturing plants.

The proposed development would contravene SET 4-1 in that a commercial incinerator of this scale would be detrimental in safeguarding the area as a strategic industrial location and would undermine its suitability for long term strategic use.

It would be detrimental to any plans to advance development of marine sector in the area or development of Spike Island as a major tourist attraction, all of which were objectives of CDP 09.

_Cllr. D’Alton_ submitted that County Development Plan policies demonstrated little or no support for contract incineration. The proposal would clearly fail to comply with the zoning objectives ECON 3-1 applicable to industry generally and ECON 3-4 specific to Ringaskiddy.

She noted that N28 was operating at full capacity, and any increase in industrial traffic should be permitted to Port of Cork. The traffic generated by the proposed development would have a competing interest.

\(^{44}\) Fenton Simons planning consultants
She maintained that Carrigaline LAP was a very accurate reflection of both County Council policy and local aims for Cork Harbour. It reflected the views of the CASP strategy in acknowledging the outstanding asset that is Cork Harbour.

She noted County Council designation of Spike Island as an area of strategic tourism potential, and the application for designation of Cork Harbour as a UNESCO heritage site.

She wanted to bring to the attention of the Board that a Cork Harbour plan was currently being prepared by Nicholas Manseragh (not yet completed), which would provide an accurate reflection of the Council’s aspirations of proper planning and sustainable development of Cork Harbour. She wanted to draw attention to draft Landscape Strategy which identified Cork Harbour as having a landscape of very high value, very high sensitivity and national importance. The aim of the strategy was that the proposals for development in the harbour should respect the sensitivity of the landscape, in particular should have regard to its rich and diverse natural heritage.

She submitted a waste facility did not need to locate next to the sea. The proposed development was diametrically opposed to the key aims of NSS for the gateway of Cork.

She referred to proposals for location of CMRC, HMRC of UCC (marine and hydraulic research centres), adjacent to NMCI.

She also referred to problems associated with application for dormitories at NMCI, and recommendation by HSA not to permit residential development. (I do not have documentary evidence in this regard, but I understand this issue was discussed at the previous hearing and therefore the Board would be informed of the matter). She maintained students were now commuting from Carrigaline.

Mr. Cronin referred to overall strategy of County Development Plan (chapter 2) to protect and enhance harbour’s natural and built heritage and to establish an appropriate balance between competing land uses to maximise the area’s overall contribution to metropolitan Cork.

The proposed development would constitute an inappropriate use of coastal lands, since an incinerator could be located in a more isolated location without compromising port related activity.

A joint R&D campus was planned at the National Maritime College of Ireland (NMCI) to be called MERC (marine engineering research centre) in the lands adjacent to the college (site owned by department of Defence) to dovetail with the proposed Curraheen Science and technology Park (council plan 2009) for sustainable economic development of the region.

45 An Taisce
The plan envisaged a growth in state sponsored R&D activity using the resources of the college, CIT, and UCC teaching staff enhancing the offer available to commercial enterprises, in relation to marine engineering. The support would enable the campus to spin out enterprises to develop specialising marine technologies, marine services, fishery services, naval training, aquatic services, wave and ocean energy technologies research. These would be at the heart of planned ‘Smart Economy’ which was Government policy.

Skills training and R&D was a requirement of the NDP, which included delivery of the strategy through PRTLI, science foundation Ireland and other funding programmes. Smart economic growth plan was to make Ireland a country that combines the features of an attractive home for innovative multinationals while also being an attractive incubation environment for the best of entrepreneurs in Europe and beyond.

The incubation centre would create in the region of 500 high quality jobs and in turn help create many enterprises related to marine and energy.

This application would compete for scarce coastal land resources in direct conflict with the objective INF 4-2 and in direct conflict with Government strategy of a smart economy.

The strategic uniqueness of this site could serve a certain purpose for which it was zoned and be used for a development that favoured the economic climate and the national interest.

*Cllr Dominic Donnelly* stated “we must move the perception of Cork Harbour as an industrial zone to that of being the second largest natural harbour in the world, with a long history and host of attractions and amenities”.

In his view since the last decision of the Board there has been a shift in perception and policy regarding the character of Cork harbour from one of industrial harbour to one of unique high visual quality harbour.

He submitted that the proposed development would cement the perception of the harbour as purely an industrial zone, and would almost certainly stifle the growing impetus for the harbour to reach its potential as a major centre for tourism, heritage and amenity.

*CASP* had referred to Cork Harbour as being one of the most exciting harbours in Europe. He referred to other submissions in relation to development of Spike island as a major attraction centre, as a focus of tourism, visitors travelling to Spike Island by boat from Cobh and from Ringaskiddy. The proposed development clearly visible from much of the island would have hugely detrimental effect on the experience of visitors to Spike Island.
He and many others including Cathy Synott, repeatedly referred to potential of the harbour for being a centre for research and development, its potential attracting clean industries, the proposal to locate a Maritime Energy Research cluster (MERC) at National Maritime College which would also relocate existing coastal maritime research centre (CMRC) located at Haulbowline. In their view the proposed development would prejudice such vital developments.

Mr. O’Shea, Mr. Martin and a number of others referred to various tourism initiatives, and how they considered the proposed development would adversely affect not just the existing businesses but also the emerging new tourism initiatives. The overall vision was for their development as significant contributor to the economy.

**Planning Authority’s position**


He said in County Development Plan 2009, more emphasis is placed on the strategic role of Ringaskiddy as an employment centre, and equally the significant role Cork Harbour is expected to play as a recreational / marine leisure / heritage resource. There was significant role for Spike Island.

He referred to section 2.28 of the EIS, which stated that the decision of the Board in the case of 04.131196 had effectively changed the zoning of the lands. He submitted this was not the case as the proposal was site specific. He noted the zoning was not changed in Carrigaline LAP which was subsequent to Board’s decision.

He referred to unique conceptualisation of LAP within the context of CDP, and stated that if a development is materially contrary to a local plan objective, it is also contrary to the CDP.

He submitted the proposed development contravened the three objectives ECON 3, and explained what was meant by ‘appropriate uses’ in industrial areas. The policy was not against incineration per se, because a number of facilities had their own incinerators.

He noted applicants did acknowledge material contravention of ECON 3-1.

\(^{46}\) Senior planner Cork County Council
He stated that the strategy set out in Carrigaline LAP identified Ringaskiddy as a strategic industrial area.

The site was designated I (industry). 15 was a specific objective:

> Suitable for large stand alone industry with suitable provision for landscaping and access points and provision for buffer planting, minimum 15m wide, open space buffer to the Martello Tower, and its associated pedestrian access.

While the proposal was not fully in accordance with the objective, because of the ‘I’ designation it was not materially contrary.

He said the importance of landscape of Cork Harbour from a policy and contextual point of view was acknowledged and supported in all the documentation listed earlier, but particular emphasis was placed on four designated scenic routes, located on all sides of the site.

The Primary document for any planning authority in determining whether a proposal is in accordance with proper planning and sustainable development of the area, was the relevant County Development Plan. Clearly the proposed development was materially contrary to the CDP 2003 and 2009.

In addition it was also contrary to the CDP 2003 and the Council’s waste management plan 2004.

The proposal materially contravened the specific objectives ZON 1-1 and ZON 1-13 (2003 plan), which were now LAP 2-1, and ECON-1 (in the 2009 plan).

He submitted that it also contravened INF 3-1 (but not materially).

**Assessment**

I attach a summary of relevant policy objectives and how they are presented in two different plans (courtesy of Cork County Council planning office). I also refer the Board to the box containing all relevant plans.

As outlined by Mr. Murphy, the proposed development is in conflict with most of those and I do not intend to repeat the reasons, as they are self explanatory. I concur with the conclusions of the planning authority.

In the following section of my report I propose to look at emerging new policies, for the area and whether the proposed development would promote these policies.
The importance of Ringaskiddy (and Cork) to the national economy through attraction of FDI is clear. Ringaskiddy is designated as a Strategic Employment centre.

There is also some guidance on the type of industry envisaged for this area. The references to ‘appropriate industry’ (ZON 13), do not encourage retailing and office based industry, but allows manufacturing in general. I-15 specifies ‘stand alone industry’, but this could include a variety of industry types.

Based on the submissions during the hearing I have formed the opinion that while in the 70s and 80s the incoming industry was dominated by pharmachem industries, there has been a shift to ‘bio – pharma’ in recent years, representing newer form of pharmaceutical industry. It is therefore likely that the incoming pharmaceutical industry would also be ‘bio – pharma’ (which produce much less hazardous waste).

Secondly, as submitted by An Taisce and a number of others there seems to be emergence of a new area of marine and water based energy, with strong relationship to research and development (R&D). The smart economy would concentrate in these areas, encouraging them through incentives. The requirements of these would be sea front location, and clean environment to carry out research and develop processes.

The next question is whether there are adequate zoned and serviced lands to cater for these new emerging industries and indeed to attract them. As referred to by one of the observers, the increasing scarcity of such lands particularly on sea front locations, is acknowledged in CASP strategy.

In this regard the assertion by a number of observers that incinerators can be located any where and need not be located on a sea front is plausible. Scarcity of such lands would of course also raise the question of whether development of the site for an industry which can locate in land could be prejudicial to the policies to attract new generation industries.

The proposals for MERC (marine / hydraulic / engineering / energy research centre) practically at the doorstep of the site adjacent to NCMI is as described by many speakers, may become an important catalyst in this regard, particularly if the other associated research facilities listed by Mr. Cronin / Cllr. D’Alton are all part of this new research / incubator campus. Proximity of such a centre would be desirable in attracting new industry which would benefit from such search and development. This would be in accordance with the policies of both CDP and NDP in relation to R&D based smart economy.

The second aspect of the question is whether presence of a municipal waste incinerator which by necessity accommodate municipal waste trucks (with

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47 Foreign Direct investment
associated noise and disturbance arising from their movements and perhaps odour), could become a deterrent, for location of such desirable industry in the immediate vicinity of MERC. I am not able to reach a conclusion in the absence of documentary evidence to the effect.

There seems to be emerging new policy direction in the area of conceptualisation of Cork Harbour’s heritage (visual, natural and built) as a valuable economic resource. In his submission Mr. Murphy referred to the commitment given in the 2009 CDP for preparation of a Harbour Study. As referred to by many speakers, CASP review also refers to Cork Harbour study. There are a number of studies, such as landscape studies and those related to Cobh built heritage. The moves towards securing UNESCO world heritage site designation are further examples of this shift in policy.

From this new conceptualisation of the harbour as a valuable resource in terms of landscape and heritage, there seems to be a new emphasis in the areas of tourism, marine and leisure activities. One speaker talked about development of Spike Island as a visitor centre along the lines of Alcatraz. Others development of haulbowline brown field site. Within this context the site, arising from its central location and exposure to views from many locations including designated routes as discussed under visual impact, gains added importance.

In view of the above I am satisfied that the site’s strategic location would need to be considered within the light of the emerging new policies, and that it would be more appropriate to consider the zoning objective for the site with this qualification, rather than just as a designation for industry (albeit sand-alone) in general.

I would also like to draw Board’s attention to Article 13 of the WFD 2008, which requires member states to take necessary measures to ensure

“...waste management is carried out without endangering human health and in particular (a) without risk to water, air, soil, plants or animals, (b) without causing nuisance through noise and odours, and (c) without adversely effecting the countryside or places of special interest”.

A number of places of special interest present in the immediate environment include, Martelo tower, Goby beach, the path linking the two, crematorium on /rocky island (on route to Haulbowline), and when developed as a visitor centre Spike island.

As discussed in another section of my report (soil geology, hydrogeology), the existing path is proposed to be relocated to the site’s eastern and northern boundaries. In the event of coastal erosion at the projected rate the survival of the public path during the lifetime of the facility could be under threat. There
is also the issue of whether the proposed new path being located so close to the edge is conducive to safe / enjoyable walking.

Again as discussed leisure activities in the harbour include sailing, and it is stated that the very shallow waters between spike island and Gobby Beach, and used as sailing school for children.

The County Development Plan states that one of the key issues facing the coastal zone of Cork is the development of marine tourism opportunities. The natural assets of the coastline including its harbours and numerous beaches are stated to enable the county to offer tourism as an important economic activity. Cork harbour study noted in section 4.18.3 recognises the full potential of Cork Harbour best be realised through a more integrated approach to its planning and development and refers to preparation of an overall study for the development of the harbour, building on projects such as COREPOINT and IMCORE currently under way.

The Plan also refers to the potential for an iconic tourism product at Spike Island, (3.2.26) and its potential for development of a major tourist attraction having regard to its military and maritime history, together with Haulbowline, (4.18). Arising from its proximity to Spike Island developments on the subject site would be highly visible from the island, and would need to be considered in the context of the above policies.

Having regard to the evidence before me, I am satisfied that there are indeed areas of special interest in the immediate vicinity of the site, most of which are also recognised in the County Development Plan, and that arising from its scale, location and restricted site area, the impact on these would be adverse.

I am also satisfied that the two main parameters of the future economic development of this gateway location are seen as tourism based on landscape, and built heritage, and new forms of industry aligned with research and development.

I am not satisfied that the proposed development would promote the objectives for protecting Cork Harbours’ natural and built heritage, or be conducive to promotion / attraction of new generation research and design based industries to the area in the future.

I am not satisfied that the proposed development would fulfil or promote strategic development at Ringaskiddy.

Overall I accept that the proposed development is in conflict with the County Development Plan objectives for development of the site.
6. Visual Impact

The dedicated session on this issue took place on 13th May.

Applicants’ case

John Kelly had prepared the ‘Landscape and Visual assessment’ section of the EIS, prepared the associated photomontages and the Strategic Design Review. The visual assessment was conducted having regard to the guidance and structure recommended for such studies by the EPA in their Guidelines on the information to be contained in Environmental Impact Statements. The views produced for the photomontages from key viewing points was chosen to represent the views from a variety of directions, distances and receptor types which may receive a view of the development.

In describing the receiving landscape and the visual environment he noted that the ridgeline on which a Martello Tower is located at the highest point was 43 metres OD. In his view the landscape character was influenced by the existing industrial, commercial and port related uses in the Ringaskiddy and Lough Beg areas, range of natural landscape areas around the harbour, urban settlements at Ringaskiddy, Monkstown, Cobh and Whitegate and also by the prevailing landscape of the harbour area.

He referred to the Inventory of Outstanding Landscapes in Ireland, 1977 which identified two areas of Cork Harbour as outstanding landscapes. These included shipping channel from Roches Point to the Carlyle and Camden Forts, extending around to Currabinny Wood and the Owenboy River at Crosshaven as well as River Lee channel between Monkstown and Great Island. He stated that the area around Ringaskiddy was not identified.

He referred to four scenic routes in the 2009 Cork County Development Plan located within the visual envelope of the site and within 1.5 – 3.5 kilometres of the site which could potentially receive views towards the proposed development. He referred to Policy ENV2-1 which stated

“It’s a particular objective to preserve the character of those views and prospects obtainable from scenic routes identified within this plan. These routes are shown the scenic amenity maps in Volume 3 and listed in Volume 2 of this plan. A profile of each route and views to be protected are listed in Volume 2 of the plan.”

He noted that the site was zoned as industry/enterprise (I-015) in the Carrigaline Local Area Plan which stated

“Suitable for large stand alone industry with suitable provision for landscaping and access points and provision of buffer planting minimum 15

48 Brady Shipman and Martin
metres wide open space buffer to Martello Tower and its associated pedestrian access”.

He described the main components of the proposed development as, main process building and stack, turbine building and storage tanks, access roadways, car parking and weighbridges, security and laboratory buildings, 38KV substation, waste transfer station, and associated earthworks, ground modelling, boundary treatment, landscaping.

He stated that the main process building would extend to 190 metres by 55 metres on the plan while the height varied from 16 metres to 42.5 metres. A single stack rose to 85 metres in height. Significant excavation was proposed to permit the buildings to be set low into the site and nestled into the hill immediately behind.

In outlining the potential impacts he referred to construction stage impacts such as removal of scrub and vegetation, excavation, stockpiling etc. At the operational stage the development would introduce a large new structure into the landscape and would initially give rise to significant negative local impacts some reducing to moderate negative impacts with the establishment of the planting mitigation.

He stated that the impacts on the character of the Greater Cork Harbour area would be moderate to slight and even neutral due to existing mix of industrial elements within the area of the proposed development.

He referred to various photomontages (section 12.5 of the EIS) and the supplementary photomontages prepared in response to written submissions to the Board, including those by the planning authority. I refer to submissions marked as 22A, B, C. These are proposed in addition to the figures in the EIS in Volume 3 and are numbered Figure 12(3)(b) – Figure 12(33).

He stated that two types of mitigation measures were proposed namely building form and architectural treatment, structural and low soft landscaping.

In relation to building form and architectural treatment he stated that the scope of the project was changed from the previously permitted scheme to incorporate additional production capacity and this required an increase in the size of the engineering process plant which could not be accommodated in the previously permitted scheme.

While the initial design approach was to modify the previously permitted curved building so as to accommodate the revised engineering, in an effort to reduce the overall height of the building they had decided to move away from the curved solution. During the hearing he showed a number of photos comparing the curved design with the proposed building design in terms of height and bulk. He noted that a curvilinear design would result in a much more monolithic building form than previously permitted, a greater portion of the building would have broken the skyline and the visual impact when viewed from Ringaskiddy would be much greater than actually proposed now.
He then explained the strategic design review in terms of landscape options for mitigation of the proposal through excavation into the site, earth mounding and planting in key locations to minimise views of the structure from the south and east. Smaller scale earth mounding would assist mitigation from Martello Tower direction and planting together with mounting would provide effective screening.

In response to various submissions to An Bord Pleanala he maintained that use of the wide angle lense was appropriate. Photomontages by their nature were static representation of a specific part of the wider scene and could not represent the entirety of what the human eye observed. He explained printed at A3 size and held at a reading distance of 365mm they would in fact appear in the same scale as the corresponding portion of the real scene. Each photomontage had a horizontal angle of coverage of 57° (significantly less than the human eye can observe).

In relation to choice of photomontage viewpoints he referred to the 22 views including night time submitted with the EIS and an additional 14 views in response to request by the Cork County Council. He maintained that while they are not exactly from the same locations as submitted photomontages they demonstrated similar level of impacts. He provided a movie/DVD. (exhibit )

He referred to emphasis of different parts of the harbour in various submission from national importance and high sensitivity, partly industrialised character, amenity areas around Glanbrook and Monkstown, views from scenic routes and stated that harbour is in fact a very large natural harbour extending to almost 6 kilometres from Cobh to mouth of the harbour and as much as 10 kilometres from Monkstown to Rosstellon.

He stated that the landscape character of the harbour is as varied as the harbour is large. He divided it into 8 different character areas namely Cobh, east of Cobh from Cuskinny Bay to Rosstellon, Aghada and Whitegate, Roches Point and the headlands of Camden and Carlyle Forts, Currbinny Wood and Owenboy River, Lough Beg, western lower harbour including Haulbowline Island and dockyards and the mouth of West Passage and to the north-west West Passage between Monkstown and Great Island. Describing separate characteristics of these areas he stated that the harbour is surrounded by a rich mix of built settlements, beautiful natural grassland and forested landscapes, large industrial facilities and historic settlements as well as multiplicity of port and harbour related activity including cargo ships, cruise liners, passenger vessels, fishing and leisure craft. In his view in the context of such a large and varied setting the current proposed development would not be significantly more intrusive than the complexity of uses and built and natural forms which already occupy the harbour area.

In relation to the issue of scale he provided comparisons with a variety of existing facilities in and around the harbour. These showed in general footprints of the proposed development as well as those of Whitegate refinery, Whitegate storage tanks, Aghada Power Station, Pfizer Lough Beg,
Gloughsosmithcline, De Pui, Fusion building systems, Novartis, carbon chemicals, Eliza, Centocor, Bucki, Pfizer RSP4 and Pfizer Ringaskiddy facility. Though he also included Cobh Cathedral he said it’s a community building set within urban context and does not compare like with like. He noted however the spire of the cathedral is very evident from many parts of the harbour.

The process being accommodated required additional height than many of the other pharmaceutical processes in the area but this development was proposed to be built at a low base level unlike quite a number of the other large structures within the harbour which were located at higher elevations. He explained how it differed from that of the previous proposal explaining choice of colours for various parts of the building. He also explained the details of the landscape plan.

In relation to impact on the scenic routes he referred to Section 12.5.2.2 of the EIS and submitted that designation of a route as scenic did not itself necessarily imply that every part of that route enjoyed views of only natural landscape. The overriding landscape character along the four scenic routes relevant to the development was one of sea scape and maritime activity but seen against the wide variety of backgrounds including beautiful natural landscape, large scale industrial facilities both large and smaller scale urban settlements. Presence of manmade interventions did not necessarily extract from the overarching qualities of the wider experience.

In relation to submissions on the impact of the Martello Tower he stated that the connecting views between the Martello Towers, which is the fundamental raison d’etre has been safeguarded. The views of the building from the Martello Tower would be screened but the remainder of the panoramic view from Martello Tower would remain unobstructed. He stated that zoning for industry/enterprise would inevitably result in additional development in close vicinity to the Martello Tower.

In relation to likely impacts on the areas east of the Ringaskiddy and especially on Gobby Strand he referred to various photomontages and maintained that the architectural treatment in subdividing the whole building in order to reduce the apparent scale was effective. The principle view from Gobby Strand was in fact to the east including Cobh, Spike Island, Carlyle Fort and Roches Point.

In relation to references to the image of industrialisation being removed from the water when sailing in Cork Harbour he stated that even the largest existing industrial structures around the harbour did not take away from the overall character of the harbour and were an integral part of the wider harbour experience. The harbour had a significant capacity to absorb a variety of land uses and building forms and that this was true when viewed from the water and from the land.

In relation to visual comparisons to other iconic buildings including Sydney Opera House, he acknowledged the iconic nature and unique character of St.
Coleman’s Cathedral and other structures such as forts on Spike Island reinforcing the unique and historical identity. He submitted that any new iconic development within the harbour designed to share the stage with the likes of St. Coleman’s Cathedral would have to have at its core an exceptional civic function such as that enjoyed by Sydney Opera House, whereas the proposed building was a functional building similar to many other industrial buildings around the harbour. As such it has been designed as a functional building and would not compete with the iconic structures of the harbour in the same way that the existing large scale industrial facilities did not compete.

He submitted that Haulbowline Island lied directly between Cobh and the proposed development and would considerably reduce the extent of visibility of the proposed development while views of Aghada and Whitegate from Cobh were unrestricted. In the case of Monkstown the large scale Pfizer building and the elevated centocor buildings were immediately across Monkstown Creek and were far more prominent visually than either Aghada or Whitegate.

In his concluding remarks he stated that the proposed development envisaged the provision of a major industrial development on the Ringaskiddy peninsula and would give rise to varying degrees of landscape and visual impacts from different locations around the wider Cork Harbour area. He repeated that Cork Harbour comprised a complex mixture of land uses.

He stressed that Cork Harbour and in particular Ringaskiddy area was recognised as one of the most significant employment areas in the county and as such it was also a commercial resource and setting for a large number of very significant industrial facilities. Many of these physically and visually prominent industries were within the harbour but were not unduly obtrusive to the overarching harbour character and were an intrinsic part of character of the harbour. He submitted that siting of the facility on industrial zoned lands, grouped with other existing and possible future significant developments in the immediate and wider vicinity it would be appropriate and in overall consideration would not give rise to serious adverse negative landscape or visual impacts.

Mr. Geert Douterlungne\(^49\) outlined the general approach to minimise the impact of large scale projects and explained the site specific issues and the guidelines to minimise the impact in terms of integration, scale, proportion, and landscape. Referring to various options with regard to minimising the visual impact he referred to two initial options of a single volume based on the previous permission and single volume with angular approach. Both options were assessed and deemed to be intrusive due to mass of the building and extent of the mass above horizon.

Further six options were developed. Following detailed explanation of all five options, he explained the option 6, multiple volumes – sloping roofs in both

\(^{49}\) Architect of the proposed structure
directions and stated that it was the preferred option from a visual prospective to maximise the opportunities to integrate the building into the landscape both from a distance where the colour and overall massing is important and from close up where the forms would be important. He stated that the impacts has been minimised by reducing the mass and height as far as possible, the appropriate use of colour, appropriate use of proportions to integrate the building into the existing environment.

Observers’ case

Rodney Hogan referred to the previous permission, but noted that the development was for a smaller facility on the same site. In his view there had been significant changes in circumstances since then which dictated that the decision should be set aside as a precedent in determining the present application.

He provided a drawing showing comparative scales of Cobh Cathedral and the proposed development to indicate that it would be enormous. In addition the proposed development occupied a close, central and focal position when viewed from probably the two most important sensitive locations in the harbour – from the town of Cobh and from Spike Island in the context of the surrounding complex of historic fortifications.

He acknowledged the commitment of the architects to diminish the visual impact of the proposed development by working on its shape, materials, colours and landscaping but stated that the scale and bulk of the main process building presented them with an impossible task and to disguise or diminish the scale of the building was not possible. He supported the conclusions of the Council’s Senior Architect in terms of scale, bulk and design of the building and its intrusion into important view sheds.

He too noted that the building did not reveal any windows or other elements which might indicate its actual scale. In his view it simply appeared as an intimidating closed shelter of gargantuan proportions and no discernable connection with people.

In examining impact on Cork Harbour he referred to its size being the largest natural harbour in Europe, its historical importance and referring to CASP, Page 27 and Cork Harbour Integrated Management Strategy designed to pull together and coordinate the policies and aspirations of many stakeholders with increasing concern and interest in the cultural heritage of the harbour. He referred to changing parameters for designation as a World Heritage Site.

Accepting that Cork Harbour is a working port and should properly continue to develop as such, but paying due regard to avoiding undue or avoidable adverse impacts on heritage and amenity, he stated that the most serious
impact of the proposed development would be its intrusion into the historic complex of fortifications which are of considerable significance.

While the EIS gave an excellent description of the archaeological and military features in the lower harbour it analysed only the impact of the proposal on the Martello Tower close to the southern boundary of the site and only in relation to physical damage finding no significant problem. In his view Martello Tower should be analysed in a much wider context and impact of the proposed structure should have been assessed in a wider context in terms of its potential impact on the cohesion and interpretation of the whole complex fortifications in the lower harbour and on their potential as an important tourism and employment resource.

He referred to the focal location of the proposed development within the complex composed of the three forts, two Martello Towers, the powder magazine on Rocky Island and the storage buildings on Haulbowline Island. (Figure 2 of the submission). He stated that the effect of the proposed development would be to substitute the proposed dominant building of vast scale as a principle point of interest rather than the historic structures which were intended to be the focus of an important tourist experience.

In examining the impact on Ringaskiddy Village he referred to property values and further impact arising from intimidating presence of a very large and blind built industrial building in close proximity to Gobby Beach and the perception in relation to long term impacts on health.

In discussing impact on Cobh he referred to its historical decline and how it would depend on tourism for the revival of its economy and consequent conservation of its architectural heritage and potential of the harbour. In his conclusion he stated that the proposed development would damage Cork Harbour by gross visual intrusion of a non harbour related structure into a focal location impacting on its status as a working port, diminishing its recreational and amenity value and most particularly breaking the cohesion of the historic complex of fortifications.

In her power point submission on the 14th May Councillor D’Alton showed aerial views to highlight the central location of the site to the lower harbour. She stated that developments in Lough Beg inlet were granted permission back in the 60s and 70s and as such they were much closer to the sea than those recently granted. Centocor located on a top of a hill and Novartis were examples of parkland approach to the surrounds of the facilities.

She wanted to emphasise that there was very little intensive development at the Ringaskiddy peninsula at present although it was industrially zoned. The first big pharmachem factory was Pfizer Ringaskiddy which expanded round the corner to OSB4 was 220 metres from the sea. In disagreeing with the suggestions of the industrial ambience of the area, she stated that as one approaches the site from the Ringaskiddy side, it is most certainly not industrial as yet down that end of the peninsula.
She referred to the former gun powder store on Rocky Island developed into a crematorium, planned tourist development on Camden and Carlyle, opportunity brown field site in Irish Ispat, and its potential for development as a maritime museum. She referred to the site beside National Maritime College and the anticipated location of a coastal and maritime research centre (MERC), and moving to the site by UCC and an incubator building for start up businesses to focus on renewable energy development and marine. These would both telly exactly what CASP strategy had outlined in Chapter 4.

Mr. Cronin for An Taisce submitted the site has become smaller (due to coastal recession) since the last application, while the proposed structure became larger. One could site a incinerator in many locations, but the sea face and a cliff edge was not one such position.

A common theme running along the observer submissions was that the perception that this was an industrial harbour was a misperception. They repeatedly referred to CASP reference to Cork Harbour as Europe’s most exciting harbour.

They (and in particular the public representatives) referred to Cork Harbour being one of the two most unique harbours in the world and the proposals to designate it as a UNESCO heritage site, arising from its beauty, its heritage value and its potential to become a major tourist attraction.

They argued it would adversely affect the setting of and the views towards the Martello tower. It would be detrimental to future development of spike island as a visitor centre along the lines of Robin Island or Alcatraz.

Planning authority’s case

Paul Murphy (Senior Planner) read from the written submission of the planning authority and outlined the zoning and amenity objectives for the area. In particular he drew attention to the following.

“It is considered that inadequate information is contained in the EIS to make an informed decision on the visual impact of the proposal. It will comprise the visual amenities of Cork Harbour and areas adjoining, including Cobh, Monkstown and Camden (including views from the scenic routes). Similarly a detailed comparison with a permitted facility is needed together with more photomontages and alternative design options. A replica scale model of the proposal should also be made.”

He also referred to the recommendation of Cork County Council that the Board refuses permission for three reasons one of which was:
“It would have a negative visual impact and would compromise the visual amenities of Cork Harbour and areas adjoining.”

He quoted from Cork Area Strategic Plan (CASP) which he stated illustrated the scenic importance of the harbour and the CASP vision for its future.

“The natural environment and in particular the spectacular harbour area are without comparison elsewhere in Europe. Protecting this asset and the social and cultural assets of their manifestations is therefore vital to the future success of the area.”

He submitted that the proposed building with a maximum height of 48.27mOD and a stack with a maximum height of 90.77mOD given its position on such a prominent peninsula, centrally located in the lower harbour will have a significant visual impact on the greater harbour area.

He submitted that the proposed development would impact visually not only upon the established areas around Ringaskiddy but also upon those areas regularly frequented by the public especially for walking. (Monkstown, Currabinny and Camden, areas of relatively high population for example Cobh, white and black point residential estates to the west of Cobh Cathedral together with parts of Monkstown and Crosshaven).

The visual impact would also be very significant from Spike Island and for the users of the harbour commercial and recreational (People visiting the region via the harbour either on a ferry or a cruise liner).

He stated that it would be likely to become a trademark, a ‘conspicuous’ structure in Cork Harbour comparable with the current Aghada power station. He referred to suggestions for additional locations for photomontages which would provide additional suggestions and a more accurate overview of the visual impacts. He stated that the previous proposal attempted to somewhat blend into the landscape both in its curved form and colours but this represented a radical departure. The current proposal because of its angular nature would be more rather than less obtrusive. The stack alone was 30 metres taller than the previous proposal.

He said the proposed development would have a negative visual impact on sensitive receptors which will be particularly acute for the residents of the western part of Cobh town including White Point and areas north and east of the dock yard at a distance of between 1 – 2 kilometres from the site. The impact would also be significant for some residences in parts of Monkstown and Crosshaven though less so because of the relative distance between 2 and 3 kilometres. The views from the amenity walkways in Monkstown and Currabinny will be significant and in the case of latter surprisingly so as the current proposal rised substantially above the ridge line at Ringaskiddy Hill (excluding the stack).

Martello Tower to the south-west of the site was a very significant visual (apart from archaeological) landmark and given that the proposal even
excluding the stack was going to be at its highest at 48 m OD would be well
above the ground level of the Martello Tower at 43 ms OD, the impact would
be significant notwithstanding the significant mounding and planting proposed
between both. It would obstruct the views of the tower especially from parts of
the west channel between Spike Island and the site.

While he accepted that due to zoning and development of adjoining sites there
will be some impact on the visual setting of the tower, he stated that the key
test was to ensure that any proposal did not unduly impact upon the same.

He referred to the proposed Draft Landscape Strategy. There was very limited
potential to mitigate the overall visual impact, principally because the scale of
the proposal was so large relative to the size of the site.

Repeating the Planning Authority’s serious concerns regarding the immense
scale of the proposed development on a prominent site and visibility from a
number of points to the north-east and west in particular he stated that in its
current form the proposed development would be detrimental to the scenic
amenities of the area. He also presented some slides to the hearing.

Sean McLoughlin (Senior Architect, County Council) referred to the CASP
statement in relation to Cork Harbour which stated that the natural
environment and in particular the spectacular harbour area was without
comparison elsewhere in Europe and that protecting this asset and social and
cultural assets in all their manifestations was vital to the future success of the
area.

He provided a number of slides, and stated that the building will be exposing
itself into the area because, it would actually be higher than the ground behind.
In trying to demonstrate that this is a very large building he emphasised that it
would be 5 metres above the base of the Martello Tower. He stressed that the
proposed building was in fact a fully 14-storey high building (at 3 m floor-to-
ceiling height) or a 12-storey building (at 3.5m). He referred to the buildings
in the immediately surrounding area including those of naval academy
buildings at three-storey.

He said you can see this building from everywhere other than from behind the
mounds. It would be the first experience the visitor would get by ship (he
showed the route that the ferry would take as one enter the harbour) and
stressed that after entering, one actually skirted around the building all the way
through to the Port.

He referred to the international regatta (second largest in Europe) which took
place twice a year with 700 entrants in the waters almost along the route of
where the ferry went. He stressed that the site was visually a very prominent
location.

He questioned: “when is the scale of a building too much and at what point is
a building too high or too big”. He thought when it became a too dominant
future in the landscape overshadowing all other developments including heritage figures, fixtures and also all the other buildings already in what is a designated industrial area. He stressed this is way larger than all those buildings.

He thought it was too large when it broke the skyline to such an extent as to be the highest future in the total landscape. He also thought it was too large when the scale was too great, when the footprint of the building was too large for the site it occupied and where there was actually not enough space to do the kind of landscape feature that are designed to hide it. He referred to various points of the proposed landscape plan and stated that in the areas where one needs to do the screening there was a stacking of trucks.

He said comparisons with other buildings in the landscape was slightly inaccurate because there was not one other building which is more than seven storeys high. This building was at least twelve storeys high. Other buildings in the Ringaskiddy peninsula were on parklands and therefore had adequate screening opportunity.

With the help of slides he tried to demonstrate that when one breaks the skyline it was not a good solution. Other buildings near the waters edge were only 13 metres high had, screening and no impact on Martello Tower. Due to its immense scale and its position on the waters edge the proposed building would be visible from the entire harbour area and surrounding high ground, it would be visually dominant, dominate the landscape from both the water particularly from boats entering the port and from populated and historic areas such as Cobh and Monkstown.

He referred to the comparison made to other existing large scale buildings in Cork Harbour. Roches Point lighthouse and Cathedral at Cobh were both iconic buildings giving Cork Harbour a unique and historic identity. Fort Camden and Fort Carlisle were dramatically situated on promontories at opposite sides of the entrance to Cork Harbour and were associated with the historic protection of the Cork Harbour. The structures similar in nature were mostly cut into the landscape without being visually obtrusive. Oil refinery and particularly the power station at Aghada were a blot on the landscape. The oil refinery was broken into components parts which reduced the impact but the large square box that housed the workings of the power station could be observed from virtually the entire harbour. These two complexes were relatively well removed from Cobh and Monkstown receding somewhat into the distance but created a huge limit of focus on arrival in the harbour.

Generally the structures that form the large pharmaceutical complexes were broken into their component parts and were not visually obtrusive as their scale might suggested. There was only one exception where a pharmaceutical complex broke the skyline and in this instance one could easily gauge the negative impact of such a scenario.

While a crane at the water’s edge was also an eyesore it was historically related to the shipyard activity and could be considered temporary.
He stated that Cork Harbour was a national asset and that the proposed building would have a visual impact on virtually the entire harbour area. Although the site might not specifically have the scenic amenity designation in Cork County Development Plan 2003, by location on the waters’ edge it was by default affected by scenic amenity designation of the 2009 Development Plan.

Comparing to Sydney Opera House in terms of its position on the edge of a large basin of water he said in that instance it is an iconic building relative in scale and context to the background of the city. He stated that an individual would scan the horizon focussing on single elements.

The proposed structure would create a competing high point to the Martello Tower.

During the dedicated session on visual impact on 13th May, there were long discussions in relation to use of wide angle lense in photomontages. Some argued that these minimised the impacts radically and made the water wider. Some argue photos of the site from High Road into Cobh should have been included. There were also lengthy discussions in relation to parkland approach, setting back from the road frontage and from water frontage in other cases. References to Centocor complex located on the hilltop were negative and it was stressed that it should not be taken as a precedent.

The observers did not agree with the EIS conclusion that the impact would be moderate, they stressed that the building would have no relationship to the surrounding area, would have no interaction with the environment, would be introverted, have no windows and intimidating not just because of its enormous scale but also because of the proposed use.

Some locals stressed how following development of Pfizer, people had stopped going to Lough Beach and that the presence of this unwelcomed building would also stop them from going to the last amenity left in the area.

**Assessment**

In examining the visual impact of the proposed development I refer to the Development Plan policies and CASP strategy for the area outlined by the Planning Authority and by various submissions. I also refer to architectural, archaeological and cultural heritage section of my report.

The main considerations in assessing the visual impact of the proposed development are related to scale of the proposed development, and to the characteristics of the existing receiving environment, and its capacity to accommodate the proposed development without undue visual impact.
I am first going to look at the location of the proposed site within Cork Harbour.

As referred to in the EIS and explained by Mr. Kelly during the hearing importance of Cork Harbour as one of the great landscapes was identified as far back as 1977. I also accept that there are various areas with differing characteristics within the harbour. The area around Lough Mahon and basically area to the north of Passagewest does have a more industrial outlook arising from developments on Little Island and along the older docklands on either side of the river.

The lower harbour is much wider and as described by John Kelly compasses a variety of areas all contributing to the overall mosaic. Within this area Spike Island occupies a central location together with Haulbowline Island. The eastern end of the Ringaskiddy peninsula forms the third leg of these central land masses. Its importance is acknowledged and accentuated through the location of the Martello Tower at its highest point at 43m OD.

I refer the Board to the panoramic photographs I have taken from the subject site at a point along its southern boundary in close proximity to Martello tower. I note that in taking the photographs I have used zoom facility until I was satisfied that the photo would represent an approximate size of the object/building I observed with naked eye.

The fact that I was able to obtain 180° panorama very comfortably (which could easily extend to 360° if the shrubs along the site boundary southern were removed) does indeed indicate that the site is located in a very commanding position with views of a large part of the harbour. In turn it is visible from practically all around the harbour.

I also note that Spike Island although located in a more central location is not as high as the appeal site (at 24mOD). This means the view from areas to the east/north-east are only screened to a limited extent by Spike Island. Haulbowline is also at a lower level though military barracks at 2/3-storey high gives a higher impression. Located between Cobh and Ringaskiddy they provide some but not significant screen.

The extent of the water body between the Ringaskiddy and Cobh changes depending on the viewpoint. At some, particularly higher points it reads rather narrow, while at lower levels such as water’s edge reads as a larger expanse.

The position of the sun and whether the photo is taken against the sun, also have an impact on the images presented in the photos. The photos I have taken from Cobh and from Monkstown towards the site (including Aghada/ Pfizer) were all taken against the sun, and seem to have suffered from two problems. The sky and its reflection on the water body regardless of adjustments on the camera seem to make the buildings look darker and less visible to camera than they are actually received by the naked eye. Secondly
the ‘haze’ impact seems to be accentuated when combined with the sun and reflection of water, reducing visibility (to the camera lens) even further.

Therefore, the photos I have taken from the site towards Cobh and Monkstown (in the northerly direction) are in my view more representative of the actual scale and distances as perceived through naked eye.

I do however, acknowledge the supremacy of Hassleblad (camera used by Mr. Kelly), and I am satisfied that when the panoramic photos are viewed as instructed by Mr. Kelly they are of accepted standard.

[During the hearing I was asked by the observers to remove the panoramic photographs presented in the EIS out of the submitted documents as they did not reflect reality. They noted the photos had to be printed in A3 size and held at 365mm distance from the eye. They could not be basis for a meaningful decision making. I informed the hearing that the EIS would remain intact, and be presented together with any other submission made during the hearing by the applicants, but that I would also provide the photographs I have taken alongside these.]

As stated earlier there were lengthy discussions regarding the character of Ringaskiddy and of the harbour and whether or not it was industrial. As one looks towards the Ringaskiddy peninsula from Cobh and Monkstown the industrial areas of Pfizer and OSB4 are at the edge of the viewing frame. I refer the Board to the enclosed aerial photography showing the location of various industrial complexes including more prominent ones, Centocor, Pfizer, Ringaskiddy. Of these Centocor which is a much later development is indeed quite large and because of its location on very high ground has a serious negative visual impact on the landscape.

Ringaskiddy Pfizer despite being quite a large complex is somewhat screened from the view because of its location on lower ground (reclaimed land) and various perimeter planting.

The developments around Lough Beg are also quite large but again because of their location on lower land they are both below the level of Ringaskiddy hill where Martello Tower is located. In addition the developments around Lough Beg are screened from view, being tucked away around an inlet away from the centre of the harbour, and screened by the Ringaskiddy peninsula to the north and Curribinny Wood to the south. They are only visible for a short period/distance, to those using the waters.

Apart from Centocor which becomes visible from practically everywhere in the harbour because of its location on high ground (53mOD) the other Pharmaceutical buildings despite having large footprints do not have an imposing presence in the landscape.

While there are remnants of industrial installations in Haulbowline, the military structures form a dominant character especially when viewed from the
As one approaches towards Ringaskiddy on the N28 particularly as one moves east from the roundabout in Shanbally, Pfizer and Centocor located on either side do indeed give the area a ‘modern’ industrial outlook. However this outlook changes at Ringaskiddy Village with location of the village on one side (southern side) and the ferry port with its large tracks of car park behind landscaped open space on the northern side.

The second group of modern industrial structures are located on R613 but they are not visible from the N28 or the village. The third group located on the third level road to Lough Beg are also screened by the topography, as the road rises before it descends again towards Lough Beg. In general the industrial complexes to the south of N28 are hidden from the view by the topography, and mature vegetation.

Apart from the Hammond Lane car breaking facility (which is located on higher ground, and screened by mature vegetation) and a warehouse located almost directly opposite, the section of the Ringaskiddy peninsula after Ringaskiddy Village has quite a rural character. The road to Haulbowline is noticed in the last minute because the eye is drawn towards the sea beyond Gobby Beach, adding to the tranquil character.

The new modern building of National Maritime College of Ireland setback behind landscaped car park area and its front plaza presents a pleasant last minute visual surprise. In this regard I do agree with Cllr. D’Altons assertions that this section of Ringaskiddy does not have an industrial outlook.

As one views Ringaskiddy from the surrounding areas including Cobh and Monkstown or Currabiny again the areas with the industrial outlook are located more inland and at the periphery of the viewing angle while the tip of the Ringaskiddy Peninsula reads as a rural promontory.

The architects for the proposed development have outlined the reasons for their choice of the building design. Mr. Kelly explained that as a result of increase in capacity they had to raise the height of the structure, which necessitated a move away from the curvilinear design previously used. Based on the drawings he showed during the hearing I am satisfied that such a change was indeed necessary, as the alternative option would result in a much larger and much more monolithic structure.

Despite serious efforts by the architects the proposed new building would still rise 5 metres above the highest point at the Ringaskiddy peninsula and this is without taking the 30m high stack into consideration. This would have the effect of a second hill imposed over an existing one, and located closer to the water it would compete with the existing topography for domination. The architects’ efforts to minimise the impact by locating the building as low as
possible and into the hillside as much as possible, were hampered by the requirement to raise the design level as a mitigation measure against flooding which necessitated a platform level of 5.77m OD (over 3m above the road level of 2.55m OD).

I will now look at the scale of the proposed structure. Mr. Kelly submitted the size of the proposed building would be 190m wide by 55m deep. I refer the Board to the photograph of a ‘Brittany Ferries’ ship I have taken during inspections on one Saturday morning while it was at the Ringaskiddy Ferry port. The photograph is taken from R613. I have also provided technical specifications for the ferry which is stated to have a length of 184.6m. While do not have the figures for the height of the ferry, it would in my view give an indication of the scale of the proposed structure. In this regard I also note assertions by Mr. McLoughlin (County Senior Architect) that the proposed development would be equivalent of 12 – 14 storey high building (i.e. considerably higher than the section of the ferryboat over the water level).

The overall site area stated to be 12 acres is of considerable size. However the actual usable area is much smaller than that as the presence of Hammond Lane in the centre presents a seriously constricting impact. As a result the usable area for the main facility is quite restricted and does not leave much room around the large process building itself. This coupled with the efforts to move the building into the hillside as much as possible in an effort to minimise impact means a lot of the working areas are located to the front of the structure. As such waste trucks to be admitted to the facility (queuing or weighing) or waiting for testing of toxic materials in the lab, as well as parked staff cars will all be in the area to the front of the structure.

The area left for the architects to develop a landscaping plan to hide the proposed building as much as possible and to minimise the visual impact as much as possible is quite restricted which basically consists of perimeter screening through various mounds and planting. In the front use of mounds dividing the circulation areas are also proposed to screen sudden rise to the platform levels, and provide further screening at higher levels. These of course are broken in various access points which provide full view of the activities referred to earlier, and the scale of the structure.

In this regard the arguments put forward by various speakers that the footprint of the building is too big for the site are reasonable.

There were various discussions during the hearing as to the type of structure that would be appropriate at this location. The proponents of an ‘iconic’ building maintain that such a central location in Cork Harbour would require an iconic structure. The architects for the proposal maintained that this was a functional building and an iconic building would need to have a civic or public use.

I do agree with the architect’s view that the design would need to reflect the function of the building. An incinerator can not be designed to provide a
design statement to draw the eye. It is not capable of performing such a function and it would not be appropriate to design it as such, just because of its water edge location.

However this would raise the question that perhaps this function is not appropriate at this exposed location in the harbour. I note while the location of an iconic building with a public/civic function could be required through Development Plan zoning and specific design requirement, this was not done in the recently adopted 2009 County Development Plan. The plan however requires for a ‘stand alone industry’ (and excludes contract incinerator). It was argued that such zoning and Development Plan requirement was intended to attract a stand alone ‘high tech’ industry which would have higher design specification.

The proposed structure is a very large structure. It is also arising from its function an ‘introverted’ structure without any windows, does not want to engage with its surroundings, but rather needs to be screened from the same. Yet it is located in a very exposed and prominent location in the centre of the harbour where because of its shear size it will be visible from many viewing points on land, and while travelling in the harbour.

One of the differences between the previous and current proposals, is the increase in the height of the proposed structure by 8m. This arising from the need to accommodate increased processing facility, leads to this significant negative visual impact.

The fact that it would break the skyline by a considerable degree not just by its height but also by its shear size, it would in my view, create an intrusive visual domination on the Ringaskiddy peninsula, and change its position as part of the three land elements in the centre of the harbour.

It would in my view, because of its prominent and exposed location, also have serious adverse impacts on the visual quality of the harbour in general, and adversely impact on the overarching qualities of the wider experience referred to by Mr. Kelly.

St. Colman’s Cathedral has a unique presence in the harbour. Its spiral is visible from various locations around the harbour. The proposed structure, which would also be visible from a number of the same points, is likely to provide an unwelcomed competitor creating visual confusion.

In this regard I also agree with Paul Murphy’s assertion that the proposed building is likely to become a trademark ‘conspicuous structure’ comparable to Aghada Power station.

I note the efforts of the architects trying to mitigate the impacts through building design and to provide various screening to minimising the impacts, but I am not satisfied that they could achieve it because of the sheer size of the structure. In my view a building located at such a prominent location should
not need to be screened, or its impact should not need to be minimised, but rather a building located at this location should be designed to be viewed with pleasure from wherever it is viewed. A building at such a location should indeed provide an interface between water and land mass inviting interaction between the two.

While I agree with the architects assertion that the views from Gobby Beach are in the easterly and north-easterly direction, and as such the proposed structure would not be in view, I also accept as plausible the submission by observers that the access to the beach would pass in front of the proposed facility which would be full view, and the awareness of the presence of the facility would intimidate those using the beach, thus affecting recreational as well as visual amenity value.

I accept the view of John Kelly that there are a number of sections of the harbour with differing characteristics, including industrial, I also agree with the assertion by others that the structures at Whitegate / Aghada of oil refinery and power station, and other industrial structures are somewhat removed from the centre of the harbour.

While the port related character and industrial nature is still visually dominant in the upper harbour particularly along the river, with demolition of buildings at the old steel plant and following Hickson fire, there seems to be a marked decrease in the industrial outlook of the lower harbour, allowing emergence of landscape, topography once again as defining elements. Within this context there also seem to be re-emergence of the old historical complexes, with increased visibility of the three storey military buildings on Haulbowline, and Fort Westmoreland on Spike Island. The Martello towers are part of this unique historical identity.

It was stated that the visual connection between various Martella towers would be retained. It is however important to note that the visual importance of the towers does not arise only from visual connection between them, but also from their visibility from all around the harbour, as a group in connection with other structures of the same period each performing a unique section of an overall function. I have already referred to the break of visual connection between Spike Island and Martello Tower.

In this regard I also note the conclusions by the applicants in the EIS (site selection) that the impact on the tower would be significant when viewed from north and south, due to its rise above the ridge line.

I attach a copy of the submission for nomination of Cork Harbour as a Unesco World Heritage Site. I understand this is still at preliminary stages and a decision does not seem to have been taken on the issue. This seems to be in line with the CASP view of the harbour.
Overall, it is my considered opinion that the proposed development by reason of its scale, height, significant protrusion over the ridge line on Ringaskiddy peninsula, by its introverted design necessitated by its function, inadequacy of usable site area for effective screening, would constitute a serious and adverse visual intrusion into a central and exposed location in Cork Harbour at the water’s edge. The proposed development would therefore seriously injure the visual amenities of the area, and be contrary to proper planning and sustainable development of the area.
7. **Traffic and Road Infrastructure**

Dedicated session on road and traffic issues took place on the 7th May. At the invitation of the inspector the session was attended by the NRA\(^{51}\) (national Roads Authority). John Ford\(^{52}\) and Paul Murphy from Cork County Council also attended.

At the request of the NRA, written questions were forwarded 24 hours in advance by the observers and by the applicants (source of complaint by observers).

The Board received a written submission from the NRA as prescribed body (see section 7, Volume I). The note accompanying the notification of the oral hearing required applicants to address the issues raised in written submission.

I will refer briefly to viewpoints of the applicants and observers, before discussing the issues arising.

**Applicants’ position**

*Mr. Lynch*\(^{53}\) (the author of Section 8 of the EIS), submitted that a Traffic Impact Assessment (TIA) was undertaken examining the construction traffic and operational traffic. During the construction period HGV construction traffic volumes and the workers would generate 199 vehicles per hour during morning peak and 134 vehicles per hour during evening peak. The operational traffic associated with the operational aspects of the development would be additional 39 vehicles per hour in morning peak, 22 vehicles per hour in the evening peak and 64 vehicles per hour at lunch time.

Traffic distribution pattern using the peak hour assessments was based on the current traffic demands in the area and 78% for of the traffic was assigned to the N28. The remainder was assigned primarily to regional routes to and from Ringaskiddy, R610 (serving Monkstown, Passagewest and Douglas) and R613 (serving Carrigaline and Kinsale).

The assumption was that a significant proportion of employees of the Ringaskiddy area were based in Carrigaline and to the south of Cork City. The increases as a result of the proposed development would be 1% – 2% during busy morning and evening peak periods and 5% – 8% during off peak periods. In their view these would not influence traffic conditions and would not have any material effect on traffic conditions at those locations.

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\(^{51}\) Tara Spain (Snr. Policy advisor), Paul Moran (regional manager), Tony Mullane (Cork office), and Mr. Harrington (solicitor)

\(^{52}\) Area Engineer for Carrigaline, Cork County Council

\(^{53}\) ARUP consulting engineers
As mitigation measures the construction start time would be 7am avoiding morning peak of traffic of 7.45 - 8.45am. The operational shift would also start at 7am. Waste acceptance would be at 9am and non shift staff would also start work at 9am. No vehicles were expected to queue on the external road network.

The overall view of the applicants was that the proposed development would generate a low volume of traffic when compared to the prevailing traffic conditions in the greater area.

The potential impact of the development during the peak hours periods would be limited with projected traffic increases in the region of 1% – 4%. He stressed that as the traffic dispersed from the waste energy facility the level of traffic generated would diminish. As such, while the increase would be 4% on the N28, north of the Shannon Park roundabout it would decrease to 1%. Therefore by the time the traffic reached the junctions such as Jack Lynch Tunnel, Dunkettle Interchange most of the traffic would have been distributed onto other roads within Greater Cork Area.

He also stressed that not all the traffic generated from the proposed development was new traffic because waste presently had to travel to Kinsale Road landfill/Rossmore landfill or to other landfill sites outside Cork (non hazardous waste) and to the ports of Cork and Dublin for export (hazardous waste). In their view the total traffic generated by the proposed development through Jack Lynch Tunnel on a daily basis would be 150 trips or less representing 0.25% of the overall. A similar amount was projected in the south ring road approaching Sarsfield Road roundabout representing approximately 0.2%.

In relation to a suggestion in the written submissions by the NRA and Council to provide origin/destination of waste and residual material to give a more robust analysis of traffic distribution, he said that the traffic distribution element of the submitted traffic assessment was based on the existing traffic distribution. This was deemed a more suitable method of establishing the traffic distribution during peak hours as it took into account of the actual driver route choice and employee catchment areas.

He referred to NRA’s Traffic and Transport Assessment Guidelines September 2007 which suggested that a threshold approach should be considered to understand the extent of influence of a particular development, noting that the thresholds were suggested at junctions where the increases from a development would exceed 10% of all the existing traffic movements or 5% in congested areas or sensitive locations.

He confirmed that Table 8.5 included all the traffic including all HGV trips associated with the operation of the proposed facility.
In response to NRA recommendation that waste acceptance/removal should commences at 10am rather than 9am and the period between 4.30pm and 5.30pm should be excluded, he stated that introduction of any further opening/closing restrictions would have no material impact on traffic conditions in the area. He said 18 HGV movements between 4pm and 6pm would not have any impact on the road network.

In response to the written submission by An Taisce Corcaigh that the road infrastructure was inadequate and there were no current plans to build new prerequisite infrastructure, he stated that increase in traffic flows between 1% and 4% on the surrounding road network during peak periods would result in little or no impact on prevailing traffic conditions and that no upgrade to the existing road network was needed.

In response to submission by Green Schools Committee that the traffic volumes would increase hugely (approximately 206 HGV’s daily) he stated that approximately 188 HGV trips per day would be generated by the proposed facility but that this would include return trips. As such it would be 94 HGV’s coming and going from the facility.

In response to submission that the same considerations applied in this case as in the case of Port of Cork application, he stated that Port of Cork would have generated 6,000 vehicles (3,300 HGV’s) while the proposed development was expected to generate 344 vehicles (188 of which would be HGVs).

**Observers’ position**

The impact of increased traffic levels on the road network and in their residential environment is a major concern for the residents of the area. They submitted the roads and junctions were already congested. Those whose residences are located on the third level roads in the area submitted in particular that they could not leave their homes in the morning, because of traffic levels. They referred to queues at the junctions not only on the N28, but also on every junction in the area.

In their view particularly the HGVs would lead to traffic hazard on an already inadequate and congested road network, and make it even more difficult for children to cross the roads.

Referring to the Board’s decision in relation to the Port of Cork they maintained that the same considerations in relation to insufficient transport infrastructure which is unlikely to be upgraded in the immediate term equally applies to the proposed development.

John Paul Fitzgerald submitted that the EIS acknowledged that while the N28 was designed to accommodate high volumes of traffic, the roadway
experienced congestion during peak periods (in particular from Ringaskiddy direction during the evening periods). They had also noted queuing at Raffe

They would agree with the EIS regarding queuing and congestion in the area particularly on the N28 but they stressed that their site visits indicated larger queuing lengths than stated in the EIS particularly in the pm peak.

They generally agreed with the traffic generation methodology detailed in the EIS but disagreed with the method of distribution and assignment on a number of grounds. In particular for a facility which would be the sole hazardous waste incinerator for Ireland dealing with hazardous waste, a catchment /distribution assessment needed to be undertaken to determine the likely distribution of traffic to and from the site countywide, province wide or nationwide.

In their view use of the existing traffic patterns as the distribution for the proposed development would seem to over predict HGV traffic utilisation of lower order regional and local roads, as opposed to strategic national road network, and underestimate the impact on the national road network. Over prediction of HGV traffic to utilise lower order roads would be contrary to the strategic nature of the proposed development.

The proportion of HGV traffic for the proposed development predicted to be 55% of the total would be very high compared with the percentage of HGV’s on the national roads which would in general have a proportion of approximately 10%.

In their view one HGV should have equivalent impact of three cars and that PCU\textsuperscript{55} values should be utilised rather than vehicle numbers to assess the impact on the road network.

The submission by the ILTP included a video presentation showing pm peak at the Shannon Park roundabout at 6 O’clock on January 27\textsuperscript{th} 2009. This in-vehicle video survey of the west bound approach indicated that to travel 415 metres of queued west bound traffic took 6.05 minutes.

He referred to the Appendix 8.1 of the EIS using Arcady Assessment of the Shannon Park roundabout for , which described the roundabout having a demand/capacity ratio of 67% with a maximum queue of two vehicles and an average delay of 0.15 minutes implying that this approach could accommodate in the order of 50% more traffic. In their view the base model was inaccurate (not calibrated or validated accurately) and as such it could not be relied on for future modelling assessments.

Secondly while the EIS only considered the roundabout in the assessment, the adjacent priority junction could also impact on the overall capacity of the network. This was not done.

\textsuperscript{55} PCU passenger car unit
In terms of impact on Ringaskiddy Village urban area they considered the figures presented in Section 8.7 of the EIS indicated increase in through traffic to be 4.1% in am peak hour, 14.7% in midday peak hour and 3.6% in pm peak hour.

In their view the HGV volumes have been under represented in the EIS and that the traffic impact on Ringaskiddy Village would be greater than stated particularly in midday and pm peak scenarios.

The interaction of the two junctions at Shanbally was not assessed and only the roundabout was assessed even though it was stated in the EIS that the nearby priority T-junction negatively impacted on the capacity of the roundabout and the road network at this location.

In their view the base calibration of the Shannon Park roundabout did not accurately reflect the existing situation particularly in the pm peak. In fact it under represented N28 west bound by approximately 400 m and as such it could not be relied upon.

In conclusion he submitted that the traffic generated by the proposed development had been under represented in the EIS, that the distribution and assignment methodology was flawed and that the junction analysis undertaken in the base model simulations were not validated accurately to existing conditions.

He also submitted that in their view the proposed development would be premature on roads and traffic grounds pending the upgrade and realignment of N28.

**Submissions by NRA**

The written submission by the National Roads Authority to the Board stated that the Authority did not have any objection in principle to the proposed development but added

“However it is acknowledged in the accompanying EIS the proposal has the potential to adversely contribute to existing unsatisfactory capacity issues on the N28 and the National Road Network infrastructure which serves the proposals catchment. The Authority would highlight that the latter has not been addressed appropriately in the Environmental Impact Statement submitted.

The submission also referred to Section 8.5 of the EIS and that it would be more appropriate if the origin of waste and destination of residual waste was identified to give a more robust analysis of traffic distribution. It questioned whether Table 8.5 includes all of the HGV trips.
The submission advised the Board that the land required for the proposed N28 was located within the development lands and that waste transfer station facility would be affected by such works. It required that no works should be included in the application within the route corridor of the N28 upgrade scheme without prior agreement of the NRA.

It further recommended that the hours of waste acceptance/removal should commence at 10am rather than 9am and that the acceptance/removal between 4.30pm and 5.30pm should be excluded.

There is also a recommendation for a development contribution of €564,321 in the case of a decision to grant permission towards the cost of upgrading works on the N28 which would facilitate the facility. A breakdown of these is provided for three separate areas namely link road from Lough Beg to Ringaskiddy, Lough Beg roundabout, and Ringaskiddy traffic calming.”

The written submission by the planning authority is along the same lines, as the NRA.

Assessment

In my assessment of the issue I will first look at the adequacy of the EIS in terms of methodology, description of the receiving environment /existing situation and in terms of assessment of the likely significant impacts arising from the proposed development.

The EIS predicts that generally 344 trips per day would be generated by the proposed development of which 188 trips would be HGV. (return trips).

Assigning 78% to the N28 in the northerly direction after Shannon Park roundabout and 22% in the southerly direction to the regional road network, it is submitted that as far as Shannon Park roundabout the increase would be between 1% and 4% for different areas and as such would be below the 5% threshold used in the NRA guidelines in traffic and transportation assessment.

I am first going to look at the two roundabouts which have been examined by the applicants. The first is the Shannon Park roundabout at the junction of N28 and R611. This roundabout is quite busy as most of the traffic from the south and west (R612, R613 and R611 from Crosshaven, Carrigaline, Kinsale/Oyster Heaven are channelled through R611 to this junction. It is of a higher standard roundabout with a large radius which increases its efficiency, and safety. During a number of my inspections at different times I have noted that despite this, it was heavily used and at peak hours it was operating at or above capacity. In this regard I consider the video submitted by the observers to be an accurate reflection of the congestion and queuing times.
While I do note that the applicant assumed an even spread of trips over the entire hour between 4.30 and 5.30 which would provide an average rather than peak figures, I do agree with the assertion by the observers that the maximum queue length of two vehicles is not realistic.

Therefore, I consider the suggestion that the base model which was used to predict the impact of the proposed development has validity/reliability issues to be plausible.

As such the conclusion that the impact would not be significant is not readily acceptable. Indeed the view of the Planning Authority was that whatever the methodology used, there were issues at the Shannon Park roundabout and they did not want any traffic adding to the congestion.

The second roundabout is Shanbally Village roundabout. I refer the Board to the photographs I have taken. As stated by the Planning Authority traffic calming measures have been introduced (I believe since the last decision of the Board) at this location which is basically a ‘village crossroads’ with school/church on one side of the road and shops on the other side. This is a particularly difficult location because the roundabout is located ‘off-centre’ on the southern side of the junction. Secondly, at the junction the road (N28) dips considerably coming from higher ground on both the easterly and westerly directions. Thirdly the radius of the roundabout is very small and entirely unsuitable to cater for HGV traffic.

During my various inspections I have noted that the drivers of the HGV’s did not notice the presence of the roundabout at an appropriate distance because of the vertical alignment of the road. They also noticed the size/inadequacy of the roundabout and its off-centre location practically in the last minute which necessitated them to apply the breaks while in the roundabout.

Some of the larger vehicles have particular difficulty negotiating the roundabout on the approach from the easterly direction. Indeed during the hearing it was stated by local residents and confirmed by the Planning Authority Local Area Engineer that the large loads which arrive at the deep water berth had to be escorted by the Gardai to use the wrong side of the roundabout to pass through. (I understand large loads such as wind farm turbine parts destined for west Cork are delivered to the national road network at Ringaskiddy deep water berth. Other large loads would include steel frame houses etc.)

This junction as I stated earlier is a village crossroad where children from school and houses cross the road on a regular basis to avail services of the shops. During various inspections at differing times of the day I have formed the impression that this roundabout does also operate at or above capacity and any increase regardless of the amount would constitute a traffic hazard at this junction. I note the increase in midday HGV traffic as a result of the proposed development is predicted to be in 14% region, which in itself is quite considerable.
As stated earlier, 22% of the traffic increase is assigned to the regional roads. R613 from Ringaskiddy as far as Raheens Cross is of relatively higher standard and gives access to pharmaceutical industries located on either side. It becomes quite substandard in the region of Coolmore Crossroads all the way to Carrigaline, though carrying considerable volume of traffic. Following its junction with R611 at Carrigaline, it continues in the westerly direction providing access to Cork Airport and although quite substandard again seems to carry considerable volumes of traffic throughout the day.

I refer the Board to the photos of the junction of R611 and 613 at Carrigaline, and tailbacks on R611 on either direction. The EIS has not examined this junction and an impact assessment has not been provided. Yet a considerable level of traffic (22%) is assigned to this junction (more if those turning south from Shannon Park is considered). This constitutes a serious deficiency in the EIS. Based on my observation in various occasions, I am satisfied that this junction will not be able to accommodate additional traffic generated by the proposed development in particular the HGV type vehicles.

During the hearing it became quite clear that the problems experienced in Coolmore crossroads was related to traffic coming from Passagewest, Monkstown and Rochestown areas and to a lesser extent from Douglas using Regional and third class roads in an effort to avoid N28 at Raffeen and Shanbally, thus using a north/south approach to Coolmore crossroads to access R613.

While I accept the suggestion by the applicants that the traffic generated by the proposed development would not be using these third class routes, I am satisfied they would be impacted as a result of additional congestion on junctions at Coolmore crossroads Shanbally.

In order to be able to provide a more realistic assignment of trips to the vehicles generated by the proposed development both the Planning Authority and the NRA recommended that origin (of waste) and destination (of residues such as ash) be provided.

During the hearing Mr. Jones for the applicants stated that hazardous waste would be generated either in Little Island or in Ringaskiddy while those from Castle Island, Tipperary and elsewhere will be using the national road network and as such the N28. The origin of the municipal solid waste could not be determined as it would depend on the private operators. He did not agree that they would be coming from the waste transfer stations, and stated that they would be coming directly from household collections. Part of the ash residues (bottom ash) would be sent to Bottle Hill Council landfill and would be using N28. (I note this may not be the case as discussed in waste management section)

As I stated earlier, I am not satisfied that the local road network particularly the regional roads are capable of carrying additional HGV traffic generated by
the proposed development. Therefore, I accept the view that the increase on N28 would be of a higher magnitude, plausible.

The applicants did not carry out a separate impact assessment because the contribution to the N28 as far as Shannon Park roundabout was estimated to be between 1% and 4% and as such below the 5% threshold referred to in the NRA guidelines.

Regardless of the fact that such threshold is meant for scoping rather than impact analysis, based on the above I am not sure if the levels would be below the 5% threshold, as suggested. In my view such impact analysis need to be carried out.

There was a suggestion that, had the applicants used PCU equivalent for the HGV’s these figures could go up. In this regard the applicants provided revised figures (Appendix A of Mr. Lynch’s submission) showing projected traffic flows in passenger car units per hour. There was discussion regarding whether the calculations should be based on two or three cars. While the NRA Guidelines normally recommended two car equivalency in the case of small roundabouts such as the Shanbally Village this could be three because the figure was based on the time it took for a HGV to negotiate the roundabout. The difficulties experienced by trucks would suggest three to be more appropriate.

In the revised table 8.13, in Appendix A shows 9.1% increase on the N28 east of Raffeen Bridge and 6.9% increase on the N28 east of Shannon Park roundabout and 11.5% increase on the N28 east of Shanbally. Even at 2 passenger car units equivalency these figures show percentage change above the 5% threshold. (I note that the increase is much less in the operational am peak and operational pm peak (with 2.4% at east of Shannon Park, 3.4% east of Shanbally and 2.4% east of Raffeen Bridge at pm peak and 2% increase east of Raffeen Bridge, 1.6% increase east of Shannon Park and 2.2% increase in Shanbally at the morning peak).

It is maintained by the applicants that restrictions on the waste acceptance hours (to start at 10pm and exclude the period between 4.30 and 5.30pm) would have significant impact on the operation of the premises and reduce the working hours from 10 to 7. However following discussions during the hearing both the Planning Authority and the NRA considered imposition of such a condition to be appropriate in the event of a decision to grant permission.

56 PCU figures are related to the time it takes to move a vehicle at a roundabout. It is related to roundabout design. Usually in urban areas factor of 3 is given to take account of pedestrians etc. on footpaths. Shanbally roundabout would fit into this category.
In my view the additional traffic generated by the proposed development would have unacceptable adverse impact on the existing local road network which is operating at or above capacity at the critical times. I am also satisfied that imposition of such a condition would increase the number of trips during the other times would also have adverse impact on the local road network particularly at Shanbally roundabout. In my view this would also increase adverse impact on the residents of Shanbally, throughout the day, not just during rush hours. In any event I am not quite sure that such a condition would be realistic or enforceable, given the fact that it would be reliant on cooperation of private waste collectors (who may simply choose to queue outside the premises and wait for reception).

During the hearing the local residents referred to difficulties experienced by school children in Ringaskiddy in crossing the road to avail of the green space opposite the village and to attend National Maritime College of Ireland. The Planning Authority was considering traffic calming measures in the village. I note the width of the road alongside Ringaskiddy Village is quite considerable with the village located on one side and port facilities on the other side. However these port facilities are located behind the setback green space which is beneficial as a play area for the children.

It was stated during the hearing that the large load trucks would be lined up along Ringaskiddy Road before escort is provided by Garda. During my inspection of the ferry traffic on a Saturday morning I also noted that a number of vehicles used this section before proceeding to the ferry prior to departure and also some larger vehicles used it after disembarking but prior to leaving on the N28. Therefore, the width of the road seems necessary. As such provision of a pedestrian crossing, seem reasonable.

The capacity of the existing ferry is indicated as being 2,000 vehicles. Another ferry service Swansy/West Cork with 400 vehicle capacity was also being considered to start operation perhaps next year.

During my inspection I noted a build up of traffic approximately three quarters of an hour before the departure time and a steady stream for approximately another 40-45 minutes after disembarkation. While the impact did not seem excessive at least in the Ringaskiddy Village, this was early one Saturday morning, and as this is a tidal port, time of arrival would vary. The EIS has not provided any impact analysis arising from the traffic generated by the ferry.

Having regard to the fact that the proposed development would also operate on a Saturday such an analysis would in my view be necessary.

During the hearing outlining the National Development Plan and Transport 21 Objectives to give priority to completion of the five major inter urban links and a list of other routes Tara Spain for the NRA stated that these were
identified to be completed by 2015. The NRA was not in a position to determine a timetable for the N28.

Mr. Moran (NRA Regional Design Office) stated that the alternative route was chosen for the N28 upgrade. The western section of the overall site including part of the area allocated to the waste transfer station at the subject site would be affected by the chosen route.

In response to request by the Inspector the applicants prepared revised drawings\textsuperscript{57} showing how they would comply with the conditions suggested by the NRA/Planning Authority, regarding N28 upgrade. The revised drawings indicated relocation of the drum store building and, relocation of the administration building and surrounding car park and relocation of the access into the waste transfer station. The revised layout was discussed at the hearing.

Having regard to the above the following are my conclusions.

- The EIS is inadequate in identifying and assessing likely significant impacts on parts of the local road network (regional and local roads) arising from the proposed development, as no surveys were carried out to determine existing levels (particularly at the junction of R613 / R611)

- I am not satisfied that the assumptions and trip assignment employed in the modelling do not under estimate the increase in traffic levels on the N28

- Based on the information provided in the EIS and arising from the discussions during the hearing, it is my considered opinion that the proposed additional traffic generated by the proposed development would have adverse impact on the carrying capacity of N28 between the site and the Shannon Park roundabout particularly at Shanbally and Shannon Park roundabouts, which currently operate at or above capacity at peak hours.

- I am also satisfied that having regard to its configuration, such increase would be hazardous particularly at Shanbally Village.

- Having regard to the National Development Plan and Transport 21 provisions to give priority to major connections between urban centres and the list of secondary national routes which does not include N28 in the Programme of Works until 2015 and having regard to the comments by the NRA that they were not in a position to give an estimated date for the N28 works, it would be reasonable to conclude

\textsuperscript{57} The revised drawing is numbered 18040/CD/003 Revision D and a blow up of the same in an unnumbered drawing showing the waste transfer station area only, is also provided.
that there is not a realistic prospect of completion of the N28 upgrade in the foreseeable future.

- I do not consider imposition of a condition restricting waste acceptance to outside the rush hour is appropriate as this would further the impact on Shanbally throughout the day. In any event the applicants are not amenable to accept such condition. Secondly I am not satisfied that it can be enforceable and may lead to queuing up by waste collectors outside the proposed development, waiting for acceptance.
8. Soils/Geology/Hydrogeology and Coastal Recession

The issue of flooding and coastal erosion in the area are of major concern to the observers. A dedicated session (14th May) was (at the invitation of the inspector) attended by representatives from OPW. Questions by observers were forwarded to OPW in advance of the session.

A further session took place on 09/06/09 for follow up questions to applicants’ consultant, who could not attend to the previous session.

Applicants’ position

There is quite a detailed section in the EIS examining the historical coastal retreat along the eastern boundary of the site using historical data and various historical maps. I recommend maps in particular be examined in detail.

Julie Ascoop58 for the applicants explained their brief to examine coastal erosion and accretion along the shoreline adjoining the site of the proposed facility to establish whether predictions can be made for future using historical data. The assessment had also looked at coastal flooding and identified 1:200 year flood level for the site. Ringaskiddy had experienced at least 5 significant flood events since 1962.

She stated “while the actual mechanisms causing the retreat have not yet been studied, assuming that future retreat will take place at a constant rate, equal to the average rate of retreat over the last 50-70 years, for the purposes of EIS a rough estimate for the coastal retreat over the next 100 years has been taken as 35-55 metres”.

She also noted that this figure should be treated with extreme caution as historical data is incomplete and of variable quality, the actual mechanisms causing the retreat have not yet been studied and that increased rainfall and rising sea levels may increase the rate of erosion.

In this location coastal erosion was likely to impact the development in the future. If coastal defence works are constructed in future, these could have an impact on the erosion or accretion to the north and south of the site.

Putting measures to protect the development might not be necessary at this moment in time, but further studies were required to confirm this assumption. In any event, coastal erosion should be monitored carefully at this site. When intervention is deemed necessary to prevent the coast from further erosion, this could be either hard protection such as rock armour, or soft protection such as beach nourishment programme.

58 Consultant engineer (ARUP) with speciality in hydrology
She explained that in arriving the design level of 4.55m OD Malin (approximately), they had adopted a level of 3.04m OD Malin for 1 in a 200 year water level on the basis of LeeCFRAM\textsuperscript{59} study. An additional 1m was added (using DEFRA\textsuperscript{60} figures) for the next 100 years and a freeboard of 0.5m was added (for coastal developments).

Raising the ground level at the waste transfer station was not expected to have significant impact on flooding in the area due to insignificance of the raised ground compared to total storage of the harbour.

The main process building would be located at 5.77m OD Malin, and as such it was extremely unlikely that it would be affected by flooding.

Diversion of trucks during emergency events would be addressed in the emergency plan for the plant and in their study they did not consider the prevention of flooding of the public road in the future since waste energy site did not contribute in any manner to the flooding of the road. They agreed with the County Council that a simple flood defence system (for instance at the back of the public car park) may be very effective in reducing the risk of flooding on the road in the future. They would be happy to discuss this matter with the Council.

\textit{Observers’ position}

In their written submission to the Board the observers referred to coastal erosion, flooding, ‘extreme’ ground water vulnerability at the site, ‘locally important’ aquifer, and an expert opinion by Professor John Sweeney (NUI Maynooth). The opinion stated that having regard to report of IPCC 2007, estimates for sea level rise may be conservative, as the risk is on the upside. Values in excess of 1 metre rise would not be a surprise, and that coastal protection measures will most likely be envisaged for the development. (He was not present at the hearing).

One after the other, the observers submitted that the site and the adjacent road were subject to flooding and had flooded in 2004 and that the site was unsuitable for location of a SEVESO facility. They stressed that while at the last hearing they were told flooding would not occur a 1:200 year event had occurred in 2004, flooding not only the road but parts of the site as well. Emergency vehicles could not access the site. The flooding could only get worse with the climate change and rising sea levels. They provided photos of the 2004 flooding.

They drew attention to coastal erosion at the site boundary, and stressed that it would impact on the proposed facility, on the proposed relocated public path, and on the gas main.

\textsuperscript{59} River Lee Catchment Flood Risk Assessment and Management study
\textsuperscript{60} Flood and Coastal defence Appraisal Guidance, DEFRA (UK)
In his evidence Mr. Bennet\textsuperscript{61} while agreeing with the EIS in terms of geology and hydrogeology stressed that the site was classed ML or L/LI (locally important aquifer of extreme vulnerability). In his view the statement that extreme vulnerability rating has no relevance because of containment measures was inspirational. He referred to continuous problems associated with the most up to date containment measures employed by a major oil company in petrol stations around the world. To say that extreme vulnerability had no relevance was not a sound statement to make.

Secondly, he referred to his examination of overburden along the beach exposure. These consisted of thick upper layer of unsorted glacial till containing angular boulders overlaying a thinner layer of laminated till containing imbricated shale layers with till matrix consisting of fine sand. He submitted that these were extremely susceptible to weathering/erosion and collapse under conditions of super-saturation and would appear to support the coastal erosion rates quoted by the applicants. He advised that bearing in mind the easily erodible nature of the sandy till and the apparent absence of bedrock above the high tide level, this particular stretch of the coastline must be considered amongst the most vulnerable in Ireland and that the coastal erosion map of Ireland identified this particular section of the coastline (he submitted an enlarged map, taken from encyclopaedia of Ireland. (exhibit…)

He had concerns regarding future inclusion of mitigation measures. The suggestion that significant impact on the coastal retreat is not anticipated from the construction or operation of the facility ignored the predicted coastal retreat of 55 metres per 100 years which would significantly undermine the proposed footprint of the incinerator building and eventually overtake the entire site.

Planning Authority’s position

Mr. Courtney\textsuperscript{62} for the Planning Authority stated that Mr. Adams had laid all of the issues from OPW indeed from official perspective. He noted that from the use of the term ‘platform level’ they understood that all parts of the structure and presumably sensitive tanks would all be constructed at a safe level.

Based on the EIS findings the rate of recession would be at 55 metres per 100 years. This would be divided by 3 down to something like 18 metres during the lifespan of the development.

\textsuperscript{61} Consultant hydrogeologist, CHASE
\textsuperscript{62} Senior executive engineer in rural water and planning and coastal section
He had asked that the applicants be conditioned to carry out annual inspections of the cliff along the site boundary and carry out protection works as necessary. In particular after any significant storm event the cliff should be inspected by somebody in Indaver to just see what is going on. Indeed the local authority could have some involvement in this because they would be interested in defending the coastline. The obvious solution would be to put in the necessary protection measures if it became readily apparent that they were required but the future protection works should be submitted and agreed with the Council before carrying out the works.

Referring to submission by Mr. Bennett he stated that quite accurately the environment would have a negative impact on the site and therefore it looked like mitigation measures would be required to protect against coastal erosion but that they could be ascertained on an ongoing basis.

The main difficulty with the flooding issue was the loss of the access road which also served Haulbowline and the Irish steel site. He referred to various issues arising from drainage, and sewer capabilities and stated that they haven’t got enough information to make a confident assertion on whether the existing sewer would be capable of drainage if maintained to a higher standard. Either way it would always mean that the site would flood and the road would flood and access would be cut off for some vehicles and depending on the level of flooding may be for all vehicles for a limited period. He outlined possible options (in his submission of 11th May)

A logical solution to the problem would be to raise the road by approximately 500 millimetres (0.5m) to ensure access in the medium term but then the water main would need to be replaced (and upgraded) because of its condition prior to doing so.

The other option would be provision of flood defences on the car park site and associated parts of the coastal perimeter that would need to be protected. he stated that they do not own the car park site or at least they did not think so and therefore they would not be in full control of actions there. He added that such works would require planning permission and possibly land acquisition to carry out.

He concluded that their preferred option would be raising the road as it would keep the tide out and it guaranteed access to the site, but that this would need be carried out at the applicants expense and as such a special condition would need to be imposed.

Mr. Ford\textsuperscript{3} stated that when flooding has occurred in the past it has stopped vehicles from using this section of the road and as such it could halt access in and out of the waste energy plant in the future thus effecting the operation of the facility.

\textsuperscript{3} Area engineer for Carrigaline
He quoted from the EIS “in the past it was possible to remove flood water from the road quickly by creating channels to allow it to drain into the lower lying waste transfer station site.” This was no longer going to be possible and any flood water on the road would need to drain gradually to the shoreline via the existing surface water drainage system on the road. This could further aggravate any flooding problems which may arise and increase the time required for flood waters to disperse.

He stressed that this would impede the access to the proposed waste-to-energy plant and it could also lead to some queuing along the N28. Based on the information given by the applicants they would recommend raising of the road to a level of 3.4m (by 0.5m). The estimated the cost of raising the road and the associated services over a 450 metre length adjoining the site was estimated to be approximately €375,000. He repeated that this should be levied as a ‘special’ contribution.

Submission by OPW (Office of Public Works)

Mr. Adamson\textsuperscript{64} for the OPW stated that the OPW has not undertaken any assessment of coastal erosion at this specific site but that they had reviewed the assessment that was undertaken by Arups and submitted in their statement of evidence.

He noted that the coastal erosion is recognised to already exist in the area, and referred to recorded events of Feb 1995, and Oct 2004. The latter was the most significant extreme sea levels recorded in Cork Harbour over the last 50 years or so. There were a number of other flood events that happened in Ringaskiddy area, as reported by the applicants and observers. He referred to the photos on the walls of the hearing venue.

He referred to two on going OPW projects. Lee Catchment Flood Risk Assessment and Management Study was strategic study looking at flood risk assessment and options for managing that around Lee catchment including the harbour. The second study was a strategic ‘national’ study, Irish Coastal Protection Strategy Study.

Adopting different approaches, the former projected a 1:200 chance that extreme sea level could exceed in any given year 2.74m OD Malin. (1:1000 chance was 2.90m OD Malin). He stressed that while there were agreements between the studies, they were both modelling studies, and projections, and as such there were uncertainties associated with their projections, that they should be treated with caution.

\textsuperscript{64} Asst. Chief engineer, OPW, Head of flood relief risk management division (he was accompanied by Mr. Caden principal officer)
Referring to section 14.8 of the EIS, and the statement that ‘based on the evidence it is expected that the coastal protection measures will be required along the coastline in the future’, he noted that the statement having been made, they would expect or suggest that it might be prudent that a more detailed assessment be undertaken to determine the causes of potential future rates of erosion with more certainty and to identify the nature of any coastal protection measures that are expected to be required. He further added that on top of that, the assessment should perhaps look at the potential impacts of any such measures on the coastal dynamics and sediment movement arising from these and that any additional measures that in turn may be required to prevent or mitigate against the impacts of such measures.

The assessment might also look at the viability and acceptability of such measures in terms of technical aspects of environmental issues and an indication sought if possible as to whether such measures might receive planning permission or indeed whether they would require consent under the Foreshore Act recently transferred to the Department of the Environment, Heritage and Local Government.

He was in general in agreement and concurrence with the statements by Prof. Sweeney. He noted that the projected life span of the proposed facility at 25-30 years also needed to be taken into consideration, in the context of projections of increase over 100 years.

He drew the Board’s attention to the draft Guidelines on The Planning system and Food Risk Management, published by DoEH&LG, under section 28 in cooperation with OPW. (He noted they were under review in relation to submissions made).

The fundamental principle of the guidelines was that of the sequential approach set out in the sections 3.4-3.8 of the Guidelines. This applied at two levels. Firstly, in terms of ‘zoning’ in the spatial planning process, and secondly with regard to site works.

Most of the site in question would be ‘C’ (guidelines zoning) – areas not expected to be flooded during a flood event that has a probability of 1:1000 of occurring or being exceeded in any given year. A small segment of the site was ‘B’ or possibly ‘A’ higher than 1:200 probability.

The Guidelines referred to vulnerability of different types of land uses, or development. Although this specific type of development was not referred to in the list, he considered it would be reasonable to deem this development ‘highly vulnerable’ given the potential pollution risk in the event of inundation. Under the Guidelines, highly vulnerable development should not be located in zones ‘A’ or ‘B’. As such the site was not ideal from a flood risk management perspective.

Applying sequential test within the site, would suggest that development be moved away from areas prone to flooding, but issues of site constraint and access would also need to be considered. In terms of mitigation, elevation of
the site to a level of at least 4.5m would seem acceptable, as it would be above the thousand year level, with free board, and conservative allowance for climate change. Given the 25-30 year life span of the facility, for added security it would be wise and prudent to elevate any potential sources of pollution above that level again.

Assessment

I propose to examine the issues in this section under the headings of coastal retreat/erosion, flooding, soil, geological characteristics of the site, and hydrogeology/vulnerability.

Coastal erosion / coastal retreat

I refer the Board to the maps contained in the EIS, and the photos I took during my site inspections.

Based on the historical data, the question in this regard is not whether the lands where the eastern section of the site is located would be subject to coastal erosion/retreat, but by how much this retreat/erosion would take place over the lifetime of the proposed facility and the impacts arising from the same. The question of whether the retreat can be controlled/lessened or mitigated in some way is also important.

This section of the EIS is quite detailed and gives reasonable level of information regarding the historical retreat, and projection based on the same. This would be between 35-55m over a 100 year, (i.e by 0.35-0.50m per year). This of course is a linear projection, and as outlined by Ms. Ascoop there are gaps in the historical data, (between 1929 and 1952) and therefore it is not possible confirm the exact time span during which the erosion took place. She also stated that increased rainfall and rising sea levels may increase the rate of erosion. Accordingly, I propose to take the higher figure.

I also propose to take the crude calculation by Mr. Courtney that the recession would be in the region of 18m during the 25 year lifetime of the proposed facility. An important consideration in this regard is the commencement date of the operation. It was stressed by the observers that the as construction would take about, 2 ½ -3 years, a ten year permission could start 7 ½ year after a decision to grant, extending the period to decommissioning further to 35-37 years. (This could theoretically increase the retreat to 22m.).

I refer the Board to the site layout, and the landscaping drawings submitted with the application, and in particular location of the public path between Martello Tower and Goby Beach, which is proposed to be relocated to the eastern side of the overall site. It seems highly likely that a retreat if it happened at the level projected would lead to complete disappearance of this
path, and might even affect seriously, the integrity of the access road to the waste reception hall, located at the rear of the site.

The EIS is silent in identifying these issues. In particular the impact on the proposed relocated public path was of significant concern to the observers.

An important consideration is that as stated by Ms. Ascoop it is currently not clear if the coastal retreat is due to coastal erosion or to deterioration of the cliffs arising from weathering, poor drainage etc. She recommended further study. This is also recommended by the planning authority especially following an adverse weather event. Mr. Noonan noted location of seaweed like matter two thirds up, and suggested sea levels would rise to that level in high tide storms.

It was submitted by the observers (following questioning the applicants during the hearing), that that the applicants had ownership of the site for ten years, and that no such study was carried out despite the fact that their attention was drawn to the issue previously.

Ms. Ascoop was quite clear in her evidence “it may not be necessary to put any measures, to protect the proposed development in place at this moment in time, but further studies are required to confirm this assumption”. In my view, such studies need to be taken to determine the causes of potential future erosion, and to give an indication of the likelihood of reasons for emissions in future in advance of the decision on the case.

During the hearing Ms. Lyden\textsuperscript{65} for the applicants stated (14\textsuperscript{th} May) that they had not studied various options in terms of coastal defence works and that they agreed that these or the beach nourishment programme would require foreshore licence. She also stated that they did not own the relevant area.

Subsequently (9\textsuperscript{th} June) while responding to questions Ms. Ascoop stated that there were various methods available that would not impact on other sites. So although they had not designed them (mitigation measures) they were aware of the available methods (she is from Netherlands). She displayed an expertise on the matter in responding various questions in relation to these methods, some of which related to protection of the whole coastline. They had not provided a design because it was not definite that it would be needed. They would monitor the coastline and if erosion is happening then they would take action and protect the coastline, so that it would not happen.

Such an approach is reasonable. It is however, important, having regard to the applicants legal ability (or otherwise) to carry out such works, that various possible mitigation options are outlined, and their impacts (if any) identified, prior to making a decision on the subject development.

\textsuperscript{65} Coordinator of the EIS
A decision in advance of such information would in my view be premature, and may have implications in terms of compliance with requirements of EIA Directive.

I not intend to comment on possible impact arising from relocation of the gas pipe, in terms of stability of the ground, or the impact on the relocated gas pipe should a coastal erosion takes place at an accelerated rate. These need to be examined in the EIS.

Coastal (Sea) Flooding

It has been accepted by all concerned that the road which provides access to the proposed development is prone to flooding. Furthermore a section of the site adjoining the road is also flooded. This is where the waste transfer station would be located.

I refer the Board to the historical maps submitted with the EIS which indicate sea / marshland immediately north of the road, and termination of the road shortly after the bend adjacent to the car park. (I should note that ‘the car park’ unless stated other wise refers to the ‘public’ car park adjoining the beach, just before the road turns in the direction of Haulbowline).

The considerations in relation to flooding issue are twofold: flooding at the site and flooding on the road.

In an effort to address the first problem the applicants propose to raise the design level levels of the proposed development to 4.55mOD Malin (in the case of waste transfer station) and 5.77mOD (in the case of main processing structure). The EIS is silent in relation to road.

There were lengthy discussions at the hearing and clarification of the levels, partly arising from differences in Poolbeg and Malin references. It was agreed that the correlation between the two (Malin to Poolbeg) was 2.713. it was also agreed that as the admiralty charts levels are given in relation to Poolbeg, the water spring tide of 4.2 shown on the maps would translate to 1.617 Malin Head.

There were also lengthy discussions in relation to storm surge and whether it would be 3m or 1m. The EIS provides a 1.04 storm surge based on spring tide in Cobh during 2004 event. A surge of 1.5 would get the levels to 3.2 Malin

Mr. Adamson stated that the analysis undertaken under the two studies he referred to earlier incorporated both astronomical tide and surge tide components and projected the 200 year in the area of site being 2.7 or thereabouts. (300mm added for uncertainty). I propose to accept these figures. (I note sea level rise of 1m and freeboard 0.5m is added to these).
Therefore the design level of 4.55m OD Malin would be above these levels and is likely to provide a reasonable level of protection for the proposed facility.

Following discussions in the oral hearing it has become quite clear that provision of defences at the back of the car park would not be readily possible as the ownership of the area was not clear and further planning application and perhaps land acquisition would be required.

I note, the observers submitted that Gobby Bach was the only beach left for the people in the area as a recreational amenity and works suggested would adversely impact on the same.

The applicants maintained that in the event of flooding the drivers of the trucks delivering waste would be informed. Observers maintained that congestion would caused by trucks making u-turns (noting some of these trucks would be carrying hazardous waste).

In this regard I consider the area engineer’s observations (that flooding occurred previously preventing access to the area, and that it may cause delays and queues on the N28) to be reasonable.

The Planning Authority’s preferred option was raising of the road by approximately 0.5m and upgrading of the services under the road. However this could also have implications on the other land uses in the area in particular National Maritime College, located directly opposite. These have not been examined.


Chapter 3 outlines the principles and key mechanisms based on a sequential approach of avoidance, then substitution, and then mitigation and management of risks only when both avoidance and substitution cannot take place.

The section of the site where the transfer station is proposed to be located is zone B (moderate probability of flooding) or possibly zone A (high probability of flooding). The Guidelines states (in Box 3.1 key elements of the sequential approach):

- Development should be directed towards areas of low flood probability (zone C), if no sites available in such areas development should only be considered in areas of moderate flooding probability (zone B)
- Development vulnerable to flooding should not be permitted in areas at high or moderate probability of flooding (zones A and B) unless demonstrated to be necessary, on grounds of wider sustainability trough a justification test
Further sequentially based decision making should be applied when undertaking the justification test for development that needs to be in flood risk areas for reasons of proper planning and sustainable development.

Such a sequential test has not been carried out for location of the proposed development at the site. (I note that while the Guidelines were in Draft form at the time of preparation of the EIS and as such a sequential test may not yet been mandatory, having regard to the importance of the issue and availability of the draft Guidelines for sometime, it would in my view be reasonable to have regard to their contents in decision making).

It would however be reasonable to conclude that the waste transfer station site would need to be raised considerably to mitigate a possible flooding. Having regard to the rather restricted depth of the site, such increase would in my view be visually unacceptable notwithstanding the landscaping measures proposed. This would as pointed out by one of the observers, also have implications in terms of gradient of the internal access (being above the 1:20 standard). A similar issue arises in the case of the main facility, where the design level is 5.77.

I now refer the Board to various levels indicated in section AA of the drawing 301. The road level is indicated at 2.65, car park level at 4.50 and building level at 5.77. Therefore the ground level of the proposed main facility at 5.77 would be more than 3m above the road level. As discussed in visual impact section of my report this would have significant implications, (particularly in terms of breaking the skyline, and increase exposure to various points around the harbour).

In response to question by Mr. Noonan that the Guidelines did not actually include in the list (of developments unsuitable for certain zones) hazardous waste incineration or SEVESO sites, Mr. Adamson stated that it was his understanding that there will be some potential contamination from pollutants at this site and as such inundation of the site could therefore pose a contamination and pollution risk to receiving waters such as Cork Harbour. He stated that the recent directive of the European Commission on the Assessment and Management of Flood risks that came into force in November 2007 did identify in particular SEVESO sites as being potential sources of pollution that need to be addressed in the flood risk assessment and, the preparation of the flood risk maps.

I note paragraph 3.19 of the Guidelines state that ‘appropriate assessments’ required under Habitat and Birds Directives provide a structured process within which flood risk assessment can sit. (I refer to the ‘ecology’ section of my report).
Soil, Geological, Hydro Geological Characteristics of the Site

The argument put by the observers was that raising the design levels of the proposed facility and that of the transfer station would not address the problems. Mr. Bennett submitted that the overburden, the till matrix consisted of fine sand and would collapse under conditions of super saturation. Till appeared to be extremely susceptible to weathering/erosion.

It was explained by Ms. O’Brien that the structure itself would be tied to the bedrock and the weight would be distributed and therefore even if the ground underneath disappeared it would not make any difference. She agreed that this would not be the case in the yard areas and in the transfer station as it was unlikely that there would be any piles. It would be a concrete slab on the fill engineered to support the concrete slab.

The submission by the observers was that the ground would become destabilised because of disturbances and holes for foundations and refill etc. and would have the potential to be unstable when it became supersaturated. They submitted when the material is excavated, reworked and put back in place it would be more susceptible to saturation and if water ingressed like flood waters or ground water it could lead to destabilisation.

Ms. O’Brien disagreed and stated that because of use of excavated rock rather than sand in the fill areas under the platforms, it would not be subject to supersaturated behaviour.

One of the observers referred to a hotel in Middleton which following its build using what the engineers considered to be suitable fill fell within 12 months of completion. He submitted that these were to illustrate instability of constructed foundations in areas where the ground is not stable. He maintained that these were examples showing that the engineers were wrong in the past and that the engineers may also be wrong in this case.

Mr. Ahern said for the transfer station to flood, the water level in Cork City, on the streets would be about 7 feet high and in that case the very last thing anybody would have to be worrying about would be what is happening at the proposed facility.

Ground water Vulnerability

It was submitted by Mr. Bennett that although the vulnerability appear to have been correctly interpreted in the EIS he was concerned about the assertion by the applicants that the extreme vulnerability rating was of no relevance to the proposed development since containment measures were being incorporated. He stated that these statements could only be aspirational as demonstrated by
the recent requirement for upgrading of number of petrol stations in the UK, which are supposed to have the highest level of containment.

The applicants clarified that it wasn’t their intention to imply or modify the site from an ability rating but that there would not be a contamination of the groundwater due to leaks and spills because of the effectiveness of their containment. They would have a waste licence and a double containment of sources and as such potential sources of pollution would all be matters that the waste licence would concern and that the licence would then be subject to regular testing and inspection giving a greater level of protection due to auditing by the EPA. They noted that spills and leaks although could occur would take place in the bunded areas which would be matters that a waste licence would also have regard to.

While it is true that double containment is proposed for storage areas, and that containment measures are a matter for the EPA, having regard to the soil characteristics referred to above, and having regard to the discussion in relation to design of the platform at the waste transfer station or the area around the main facility, I am not entirely satisfied that an engineered measures alone would provide certainty in protection.

In view of the above, overall it would be reasonable to conclude that the site has inherent problems in relation to coastal retreat, coastal flooding, some of which could further be exacerbated by the character of the soil /geological substructure, and in its current state the site is inherently unsuitable for the processes proposed to be carried out.

No regular monitoring has taken place in the last 10 or so years since the acquisition of the site by the applicants for a site specific assessment of the reasons for coastal erosion/retreat. As such it is not possible to have an informed view as regards to future possibility of such a retreat and the extent to which it might occur.

The applicants are proposing to overcome these difficulties through engineering measures by raising the site above the flooding levels and using double containment to prevent flooding.

They do not have any proposals for the road which is subject to flooding nor do they have proposals to address possible coastal erosion. Reasons for coastal recession have not been determined, various alternatives have not been outlined, and impacts arising from coastal defence measures or road works have not been examined / ascertained.

In addition, there is no indication that the applicants would have legal interest or estate to enable them carry out any works as mitigation measures should the need arise at a later date.
The proposed development effectively skips the first two essential steps of the sequential test required in the Flood management Guidelines and directly moves onto mitigation and management of risks, by raising the site levels significantly, to protect the proposed facility from flooding (In this regard I acknowledge site was purchased prior to Guidelines).

Raising the design levels as a mitigation measure against flooding by such a large margin particularly at the main facility, would have consequences in terms of significant visual impact arising from the exposed location of the site.

In view of the above and having regard to the processes that are going to take place at the subject site; it is my considered opinion that the site is inherently unsuitable for location of a SEVESO facility. I am not satisfied that all the impacts arising from the proposed mitigations measures to overcome inherent difficulties are not clear and where clear (such as raising the design level) are unacceptable in terms of visual impacts.
9. Air Quality

The dedicated session on air quality, emissions and climate impacts of the proposed development took place on 10th June. It was attended by Prof. Broderick, and by Dr. Murphy advisors to the inspector. Further discussions in relation to the issue took place woven into many other sessions, particularly human health, major accidents and ecology.


The written submission to the Board by the EPA (12th January 2009) as a Prescribed Body states that the EPA will not grant a waste licence unless it is satisfied that

(a) Any emissions from the proposed facility will not result in contravention of any relevant standard,
(b) The activity concerned will not cause environmental pollution,
(c) The best available techniques will be used to prevent or eliminate or where that is not practicable to limit, abate or reduce an emission from the activity.

I note a licence was granted by the EPA in 2005 for a hazardous and non hazardous waste incinerator with a capacity of 215,000 tonnes to include a fluidised bed incinerator and a moving grate incinerator in 2005 to the same applicant at the same site.

Ascertaining and monitoring of a facility’s compliance with the requirements set out in the Directives is a matter for the EPA. The Board is, however, empowered under the Planning Acts (2000-2006), to consider the risk of environmental pollution and refuse permission, notwithstanding the licensing of the activity, if it considers the development to be unacceptable on environmental grounds.

Applicants’ position

The main proposition put forward by the applicants is that the proposed development would comply with the emission standards and ambient air quality standards prescribed in the Directives, and as such there would be no adverse impact on the air quality of the area.

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67 licence Reg. no. 186/1
Observers’ position

The issue emissions from the proposed facility and impact on air quality are of significant importance to the objectors living around Cork Harbour. This concern is strongly related to impact of emissions on the health of the communities.

Strongly questioning the adequacy of the EIS to form the basis of impact assessment on this issue, the main arguments put forward by the observers is that, the methodology employed in the EIS is inadequate and inappropriate, the baseline surveys are inadequate, the models used for predictions do not reflect the local topographical and meteorological conditions, and that there is no consideration of emissions other than those regulated emissions from the stack under normal operating conditions. They maintain therefore that the conclusions drawn are inaccurate.

In my examination of specific issues I have taken into consideration of the comprehensive report by Prof. Broderick (Appendix 1, Volume III)

Air quality assessment methodology /Modelling

For description of the methodology employed I refer to section 5.3 (Volume I) of my report.

The air quality assessment as presented in the EIS is based on atmospheric dispersion models. Two models used are AERMOD and CALPUFF\(^{68}\). The former provides analysis of emissions in flat terrain to determine the rate of plume dispersion downwind of a source, while the latter uses complex terrain.

In his presentation on 28\(^{th}\) April, Dr. Porter\(^{69}\) explained that in this case they had used CALPUFF to validate the results of AERMOD. The meteorological data was obtained from Cork Airport station.

The observers maintained that the weather conditions in Cork Harbour are very different to those at Cork Airport. They argued therefore the air modelling which uses the data gathered at the Cork Airport is not applicable to Cork Harbour and to the area around the facility. They maintained that site survey in relation to air quality was short and inadequate, and not reflective of local conditions.

During the hearing Council D’Alton with expertise on the matter and in particular modelling, questioned why different models were used in the previous application, and in this application.

\(^{68}\) US EPA regulatory models
\(^{69}\) AWN consulting for the applicants
Dr. Porter explained that they used a different model than the previous time because the former was declared absolute by the US EPA and that there has been quite a lot of changes in the approaches of the US EPA to this over in the last few years.

Cllr. D’Alton asked why the input that went into the models, were not disclosed, what was measured and in particularly what was input in relation to surface roughness which would be significantly different in Cork Harbour than Cork Airport.

Five year ago they asked that the essential calculations to which the model is sensitive would be demonstrated in the EIS. They had asked that such calculations would need to reflect the conditions on site rather than at the airport which clearly has a different land use and dramatically different topography than the site which is in the harbour and yet again the presentation had focussed on the airport. She reiterated why he did not use coefficients for water which they encounter in great masses in the harbour and don’t encounter in Cork Airport at all. She stressed she had asked this information to be provided five years previously, and they still were not provided.

In his response Dr. Porter explained that one of the requirements of the models was to get a metrological station which is nearby. There were probably less than 10 fully operational metrological stations to cover the whole of Ireland. Cork Airport was the nearest station in this case.

He said the US EPA methodology required that you must use the land use characteristics of the location at which met data is provided (i.e. if you’re using Cork Airport data you must use land use characteristics of Cork Airport).

This did not apply when it came to CALPUFF because the land use characteristics were defined. Wherever the plume was, it correctly interpreted what the land use was at that point. He stated that he US EPA approved use of CALPUFF only in situations where the former was not appropriate. They had used CALPUFF to validate the results of AERMOD, and had found agreement.

Secondly data from Roches Point was as good as they could get with quite a similar exposure but that had closed in 1990.

The worst case impact would be near the site boundary when the plume is emitted from the facility before it gets an opportunity to travel. The further it travelled the more it would be influenced by the environment that it is in and more metrological conditions would come into play.

In this case the impact would be within a kilometre or two. Because the stack wouldn’t be considered that high relative to the building height the huge dispersion in the same way you would get at a power station would not happen. In the case of a power station you might see impact 10 kilometres
downhill or downstream but in this case the impact would be within a kilometre or two of the site.

Following on from the concerns raised in the previous hearing, they had installed an on-site metrological station and measured wind speed direction, temperature, humidity for a two year period. They had also purchased metrological data produced by a numerical weather model called MM5 using long range transport for 2006 and 2007 in Cork area and looked at the modelling domain of 100 kilometres by 100 kilometres with a resolution of 12 kilometres.

What was really a concern for air dispersion modelling was the metrological conditions at the effective stack height which is stack height plus additional plume rise (as it is hotter than the surrounding environment so it rises).

The site survey was not extended, because the information gathered was not presenting any new information. He also referred to information they got from two buoys located in Cork Harbour.

They had not provided the details of input data because it would take up too much space, in the EIS.

Cllr. D’Alton referred to frequency of a cloud cover sitting over the water in the harbour, while the sun was shining at Cork Airport, and maintained the conditions were different frequently.

Dr. Porter stated that Roches Point data was very applicable to the site and their findings for the Roches Point data was very similar results to the Cork Airport data. That included all the thermal inversions that occurred over that period of time and was explicitly modelled. Secondly all AERMOD and CALPUFF had algorithms to deal with thermal inversions. He said the model was looking at the worst case scenarios such as convective conditions.

Cllr. D’Alton stated she required a two-column table listing the metrological inputs and where they came from and another one-year data that was derived from the on-site monitoring station in 2007, collation between it and the wind speed and direction measurements from Cork Airport.

She stressed that the Cork Airport was 15 kilometres away, the MM5 data was at 12 kilometre nodes and the buoys were miles away although they were the best. None of these reflected the actual coastal situations in the harbour and with that sort of data regardless of the best efforts they would not reflect the coastal situations in the harbour despite the best efforts of Dr. Porter.

Dr. Porter said while there were limitations of AERMOD the advantage of CALPUFF was that it could truly reflect the actual environment and while AERMOD had one ceiling height everywhere CALPUFF got accurate ceiling

70 The information was provided by the applicants on a subsequent day, but was not discussed
heights and as such was much more powerful. It also used the buoy data to characterise the marine environment to give realistic boundary layer heights.

Cllr. D’Alton maintained one could not compare the modelling done using Cork Airport data in 2006, with the CALPUFF modelling done using on-site wind monitoring data gathered in 2007. She said improvisation using the best of data that’s available was just not good enough.

As outlined in Prof. Broderick’s report air models were used to calculate the ambient concentrations of air pollutants resulting from emissions from the elevated stack source of the proposed facility, and accuracy of the calculations depend on the quality of input data on emissions, meteorological conditions and surrounding terrain.

In paragraph 3.6 he states that these conditions are partially addressed in the EIS through additional modelling using local metrological data (wind speed, wind direction, temperature, relative humidity) collected over a two year period at the site of the proposed facility.

In paragraph 3.7 he states “although wind and other metrological conditions at Cork Airport do differ from those in the harbour, the plume modelled by AERMOD is emitted from an elevated source and its centreline lies at an altitude greater than 100 metres. As such metrological differences between the two locations will be reduced at this altitude.”

In relation to use of metrological data collected at Roches Point prior to the closure of the station in 1991 he notes good agreement with the results of the modelling performed using Cork Airport data. He also notes that the location of Roches Point at the mouth of Cork Harbour would also mean that metrological conditions could be expected to be different to those at Ringaskiddy.

He states that an appropriate air quality assessment methodology was employed to determine the impact of stack emissions on ambient concentrations in the vicinity of the stack. The agreement between the results provided confidence in the methodology employed, though this agreement is partly attributable to the use of similar inputs in both models.

He states in paragraph 2.10 that dispersion models only predict the increase in pollutant concentrations due to emissions. To obtain total ambient concentration values, these musts be added to background concentrations. Accordingly, the baseline survey should be designed to obtain air quality data in which the temporal and spatial detail is compatible with that of the model output with which they are to be combined.

In paragraph 6.3 (conclusions), he notes that the baseline air quality survey used to determine the background concentrations in the vicinity of the plant employed limited sampling periods (sometimes restricted to a single season)
and that this reduces confidence in the background concentrations employed in the Air Quality Assessment.

In view of the above it would be reasonable to conclude that in terms of determination of impact on ambient air concentrations, arising from stack emissions use of US EPA models is appropriate.

I note while the second model (CALPUFF) includes topographical data, it was used for a short period (one year) and only to validate the results of AERMOD (I understand each year data has to be purchased separately). I also note in Prof. Broderick’s report that agreement is partly attributable to use of similar inputs in models.

I also accept there are restrictions arising from availability of met data only in ten or so locations in Ireland.

In view of location of Roche’s Point at the Ocean’s edge, where weather patterns would not necessarily reflect the enclosed conditions of the harbour, I consider its use to be of limited value.

I am satisfied that disclosure of all the input to be examined by those with expertise, (including those competent with modelling such as Cllr. D’Alton) for outside verification would be appropriate, and necessary. Such information could easily be provided in electronic form and referenced as such in the EIS, to be obtained by those interested (if an issue of a bulky EIS, arises)

Having regard to the ownership of the site for a considerable period of time, I consider it appropriate to provide site specific survey data for longer periods. This is particularly important in this case because topographical and meteorological conditions at Cork Airport and Cork Harbour are different. It is also important because the findings of the survey indicated lesser concentrations of some substances than presented in the EIS for the previous application.

I do however accept that at the effective stack height\(^{71}\), at above 100m or so, the meteorological conditions would be similar to those at Cork Airport located at similar altitude.

**Change in stack height**

The observers asked why the stack height was raised by 30m (compared to the previous proposal). Dr. Porter gave a number of reasons.

Firstly the air dispersion modelling used in the previous case ISCST3 was now obsolete replaced by AERMOD (both US EPA). The former had a primitive ‘building downwash’ algorithm. The height of the building had increased from

\(^{71}\) stack height plus the plume rise
40 metres in the previous application to 48 metres now and one would need at least 2½ times the stack height to prevent building downwash. If the building height is increased without increasing the stack height the building downwash would become more significant as the plume rise would decrease with a resultant decrease in dispersion and increase in ground level concentrations.

Another reason was the increase in volume flow. The Incineration Directive had fixed the concentrations. But any increase in volume flow would lead to increase in the mass emitted and as such more pollutants being emitted from the facility. In order to counteract this, one needed to raise a stack height.

Overall building downwash, building height, volume flows all had greater impact than previously, and this necessitated raising of the stack.

**Topography /plume impact**

One of the major concerns of the observers, in particular those living in Cobh, Monkstown and Passage is that the stack of the proposed facility would be at a height of 90 OD, and as such would be at similar levels to Cobh located to the north/north-east of the site. Therefore, and having regard to the prevailing winds in the area thes areas would be recipient of the bulk of the emissions.

On this issue the EIS suggests that the centre line of the plume would be above the height of the hills surrounding the Cork Harbour. It also states that there would be no impaction during calm conditions.

The relevant consideration here is the height at which the plume would be located, and in particular the centreline of the plume relative to the height of high ground/ hill on which the impaction could occur.

The plume centreline height would be determined by the sum of the physical stack height and the additional rise of the pollutants (plume rise) that occurs shortly after leaving the stack. The plume rise would depend on the volume and temperature of the gases emitted from the stack.

In this regard I note Prof. Broderick’s comments that the Air Quality Assessment presented in the EIS is only valid for the emission characteristics considered in that assessment and that it should not be assumed that small changes in any of these characteristics will only lead to small changes in the predicted ambient concentrations.

The following are of relevance:

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Plume is fan shaped, with higher concentrations around centreline

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- As the ground level concentrations on the hills surrounding Cork Harbour are likely to be sensitive to the actual height of the plume, stack discharges from the proposed facility should be strongly regulated and monitored.
- Reductions in the volume of waste process would reduce plume rise and lower the centreline of the plume.
- Changes in the composition of waste could effect plume rise (lower calorific value waste leading to lower plume rise).
- This, while through reductions in mass emission rates would reduce ambient concentration impacts, because of the lower rise of the centreline it would also lead to increased ambient concentrations.
- The relationship between emission rates and the pollutant concentrations is complex and ‘non-linear’ and that it is possible that a reduction in waste processing may lead to increased ground level pollutant concentrations.

In calm conditions the plume of pollutants formed by the emissions from the stack would remain at an elevated height and the plume would remain relatively narrow. The pollutants would not be dispersed down to ground level, but transported downwind. In such circumstances concentrations within the plume can be high, and if an elevated area is in the path of the plume, impaction could occur, causing high ground level concentrations around that area.

During strong convector turbulence\(^\text{73}\), this could also lead to higher concentrations.

**Predicted Ambient concentrations**

The air quality assessment concludes that emissions from the proposed facility even at maximum operation will not lead to exceedances of air quality limit values.

To predict total pollutant concentrations expected during the operation of the facility, and to assess the predicted increases the EIS adopts a methodology where emissions (under maximum emission limits) are added to the background concentrations determined from the baseline survey. These are then compared with the corresponding limit values (ambient air quality standards).

In the case of the proposed development the overall figures achieved would be below the limit values in terms of concentrations of pollutants regulated under the EU Directive. It is however important to note that in this case the ambient background levels are quite low (in some cases comparable to rural area levels), and as such play an important role in the results.

\(^{73}\) on calm mornings when the air rises following warming up of ground temperatures, and is replaced by colder air from higher ground.
Referring to Table 17 Cllr. D’Alton maintained that having regard to the existing low ambient levels, the figures provided would indicate that the proposed facility would have an extremely significant impact on the cumulative air quality in the surrounding area.

Secondly she noted that the EIS had only taken into consideration of the existing industries which were licensed by the EPA. It did not take into consideration for example crematorium which was not licensed by the EPA but was under the control of Cork County Council.

She questioned great anomalies between measurements carried out at NMCI, indicating high levels, and very low levels by the applicants in some substances. She noted great discrepancies in the measurements by the applicants in 2001 and 2007. She drew attention to differences between the applicants’ measurements and the measurements by White Green Young.

Dr. Porter stated that the higher levels measured at NCMI could be attributed to decontamination of Irish Steel site. In his view the differences between different years was basically an [instrument] noise.

Cllr. D’Alton referred to Directive 2004/107/EC, and drew attention to the recital:

“scientific evidence shows that Arsenic, Cadmium, Nickel and some PAH are human genotoxic carcinogens and there is no identifiable threshold below which the substances do not pose a risk to human health”

She maintained that they needed to be identified, and measured properly.

She noted that PM$_{10}$ were monitored between November and February consisting of 11 days in November, 11 days in December, all of January and 7 days in February and for one of the months PM$_{2.5}$ were monitored. She asked “how could that be described as an extensive baseline study in the context of a project which has been going on for years”.

Dr. Porter responded that the air in Ringaskiddy had pretty rural characteristics with low traffic levels, and clean industry nearby. If they had found high levels after three months they would have continued to monitor.

I now refer to paragraph 4.9 of Prof. Broderick’s report where he states:

74 stated to be available on the internet
“...the EIS includes cumulative assessment of the combined effect of emissions from the proposed facility and other IPPC licensed facilities nearby. Few details are provided in the EIS, but it is stated that the pollutants of concern were \( \text{NO}_2 \), \( \text{SO}_2 \) and dioxins....the EIS indicates that the effects of the other sources in the locality are small, but the information provided in the EIS is limited to reach a firm conclusion on this regard.”

In paragraph 4.10 he describes methodology for assessment of dioxin intake by the maximum at risk individual (MARI), using RISC\textsuperscript{75} Human PCDD/F\textsuperscript{76} intake model, states that data on existing levels in soil were obtained from limited soil sampling, and analysis, while future conditions were determined from AERMOD air quality modelling, including deposition modelling, assuming dioxin emissions were at the maximum allowable concentration in the stack gases.

He notes:

Using this model the TWI (total weekly intake) of MARI is predicted to increase by 12%....compared to 4.4% and 5.1% increases predicted, using the same methodology for the waste-to-energy facilities in Carranstown and Poolbeg. (overall the levels would be 36%, 44% and 88% of the EU limit values)

In conclusions (paragraph 6.6) he also states:

“... the increases in concentrations would be greater than those predicted for the waste-to-energy facility in Carranstown and similar to or less than Poolbeg… The increased ambient concentrations at the site would reduce the capacity of the receiving environment to accommodate other future activities in the vicinity.”

Having regard to the above, it would in my view be reasonable to question:

- The reasons for this facility with capacity of 240tpa to produce greater concentrations of pollutants compared to others with 200,000tpa (Carranstown), at levels similar to Poolbeg (600,000tpa).
- Whether it is acceptable for one facility to increase pollutant levels by a significant proportion (1/3) of the existing levels (by 12% to 36%)
- Whether it is acceptable for one facility to absorb a considerable portion of available capacity reducing available capacity for future industry (which may be desirable to attract / beneficial to the economy)

\textsuperscript{75} RISC requires data on existing and future dioxin and furan levels in the soil and in air in the vicinity of the proposed facility.

\textsuperscript{76} PCDD/F poly chlorinated dibenzo dioxins /furans
These questions were not asked in this form during the hearing, though there were frequent discussions with references to the levels indicated at the graph, particularly in relation to Cadmium.

Limit values

During the hearing I asked how the limit values prescribed in various Directives were decided.\textsuperscript{77}

In paragraph 4.4 Prof. Broderick states:

“… Most limit values are set with a view to improving air quality in zones where the air quality is poor. They are less relevant in areas such as Ringaskiddy which currently enjoys good air quality”

It would therefore in my view be reasonable to conclude that while staying within the overall limits is important, this alone can not be a determinant whether pollution arising from a facility is acceptable. Contribution to pollution within the overall limits, in comparison with others is equally important. In the case of this facility, there seems to be a higher contribution of pollutants both in actual terms and in terms of share of the overall.

Therefore, while the emission from the proposed facility does not seem to bring the total concentrations to max limit values and therefore seem compliant of the requirements, this seems to be largely due to the existing air quality in Ringaskiddy and in a different environment with higher level of existing pollutant concentrations it could lead to exceedances.

Secondly, the proportionally high contribution to pollutants by the proposed facility may reduce the capacity of the receiving environment in Cork to accommodate other future activities and their emissions.

I also note in his paragraph 6.8 it is stated by Prof. Broderick:

“Some pollutants emitted from the proposed facility are known to have negative impacts, including health impacts, at concentrations below their limit values. It is therefore not correct to assume (as is done in the EIS and in evidence presented on behalf of the applicant to the oral hearing) that because ambient concentrations are predicted to remain below their limit values, no adverse health effects would be caused by emissions from the facility.”

\textsuperscript{77} I refer to chapter 12, (volume II) of my report - Human Beings
Other emissions

These would include abnormal emissions (emissions arising from process upsets/ malfunctions), emissions which are outside the monitoring schedules, such as emissions during start ups, fugitive emissions and uncontrolled emissions for 60 hours per year allowed by the Directive. These can be form the stack or from the facility itself /waste transfer station.

Abnormal emissions

The objectors were particularly concerned about abnormal emissions which could go on undetected for sometime. They also noted that the emissions during start up would be considerably higher. They maintained the impact arising from these have not been factored into the assessment carried out by the applicants.

Air quality assessment methodology adopted by the applicants uses maximum emission limits allowed under the Directive, and includes some additional emission for abnormal emission (one day per calendar month).

The applicants have not provided documentary evidence on how they have decided on the figure of one day per calendar month for abnormal emissions. During the hearing Dr. Porter stated that he would not be involved in the ‘production of abnormal operation scenarios’. He would be given relevant information by engineers from Indaver. The observers were concerned about unavailability of such information for verification.

In paragraph 3.3 of his report Prof. Broderick states:

> The treatment of abnormal emissions is subjective, as it relies on information provided by facility’s design engineers on the expected magnitude and frequency of those emissions, based on experiences elsewhere. This clearly leaves scope for uncertainty, which is compounded by the need to include these emissions in an arbitrary way within the modelling protocol. The EIS claims that pessimistic and conservative assumptions were used throughout the process, but confirmation of this would require regular stack emissions modelling at a more frequent rate than required by the WFD.

In response to request by the inspector, the applicants provided ‘what if’ scenarios on (8th May). The presentation was provided by Ms. Hennesy, and questions were responded to by Mr. Jones and Mr. Aherne. Subsequently and in response to the request by the observers about reaction times to a malfunction, the applicants provided an ‘increase in dust emissions scenario’ outlining how such an event would be handled. (15th June, exhibit..) I refer the Board to the transcripts of the discussions on both days.


Start-up emissions

The issue of start ups was discussed in more detail during the dedicated session on ‘ecology’ (17th June). While Dr. Porter was not present on that day, the answers were provided by Mr. Jones, (engineer for the applicants).

In response to a request for provision of number of ‘start-ups’ in the previous three years in their existing facilities, the applicants indicated that this would be 12 (higher than 1-2 per year as originally indicated).

In response to request by Dr. Good that surrogate data be provided from other incinerators in Europe, regarding start up emissions, the applicants initially maintained that they preferred not to provide such information as they did not know if other facilities were operated to the same standard as their own. Subsequently they submitted that the other operators who were their competitors were unwilling to disclose such information. Eventually they were able to produce five such cases through internet search. The emissions during start ups would be quite high.

I am also unable to find reference that up to 60 hours of uncontrolled emissions allowed under the Directive, were taken into consideration in the EIS.

Having regard to the above it would be reasonable to conclude that as the modelling exercise does not include all emission, the results may not be as conservative as indicated.

I note the applicants stressed that the emissions from their facility would be much less than the limits allowed under the Directive, (approximately 1/3). However, following questions and answers, Mr. Noonan for the observers noted that the applicants declined a request to accept a condition requiring emissions to be at the levels indicated (1/3), and asked that this be brought to the attention of the Board.

Such a condition could only be imposed by the EPA, and as such it is outside the scope of this appeal. I note the applicants did not provide an explanation for declining to accept a condition along the lines suggested.

I also note reference by Mr. Watson to a judgement in Britain where such a condition was considered acceptable.

Fugitive emissions

Emissions from the proposed facility during waste handling, transport and processing was another area of concern for the observers.
I refer to paragraph 2.5 of Prof. Broderick’s report where he states:

Because no assessment of fugitive emissions associated with the waste transport, transfer and processing activities of the proposed facility has been made, it is not possible to determine whether they are negligible or significant. The mix of operations proposed for the facility and the physical separation of the waste transfer station from the main process building, has the potential to give rise to fugitive emissions, especially for particulate matter, during loading unloading and movement of waste and residual material”

This issue was further discussed during other sessions of the hearing, including the ecology module.

In response to questions Mr. Jones stated that the solvent tanks at the main facility were kept under nitrogen blanket and over pressure breathing losses from the tanks were ducted either to the PCC or up to activated carbon unit. Fugitive emissions from the waste storage area were directed to the activated carbon filter. In the solvent tanks if over pressurised situation happened a safety relief valve would emit directly to the atmosphere but this was deemed insignificant and the value into the input model was zero.

In the case of the tanker truck unloading a closed loop system would be in operation directing the air back through the tanker.

Releases from the combustion unit/grate would be short periods of time (not specified). The building was designed to extract secondary air from the highest part of the building to ensure the building didn’t get too hot for the crane operators sitting at the highest level of the building. These would be directed back into the flu gas cleaning line.

There would also be a small section in the waste transfer station which operated under negative pressure, (In their waste transfer station at Dublin Port, the doors of such a section would be kept open to monitor to ensure those working in the area are not effected by fumes during handling of solvents. (They were now equipped with communication devices).

I note while it was stated that in the case of the main building the air would be directed to the stack, the situation is not very clear in the case of waste transfer station.

The applicants maintained that the approach they have taken in deeming that fugitive emissions would not to be significant was accepted before by the EPA in their previous licence application.

In relation to this issue I also refer to the Schedule B of the licence 186-1 which relates to emission limits. The emission point references are A1-1 (fluidised bed incinerator stack) and A1-2 (moving great incinerator stack).
The only other section where emission limits are imposed are noise related. Therefore there seems to be no conditions relating to fugitive emissions.

I note however that the date of the license was 2005, and there may have been regulatory requirements or assessment procedures introduced in the intervening years. This would be in line with Councillor Egan’s suggestion that under IPPC procedures for assessment of fugitive emissions were now available.

Dr. Good referred to US EPA draft protocol which gave guidance on calculations for fugitive emissions in terms of best practice and suggested it would have been preferable to systematically go through that element of it, even if you end up with a zero calculation going through the process.

It is quite clear from the above that there are guidance and/or procedures to identify emissions arising from abnormal emissions, process upsets/malfunctions, fugitive emissions, and start ups. This information has not been provided.

In view of the applicants’ experience of operating other facilities, (and there were frequent references to many other facilities operating across Europe using similar technology), it would in my view be appropriate to provide data from these sources to be used as a surrogate for the calculations for this facility.

The processes as to how it was reached to the conclusions that various emissions are insignificant must be shown. This area of the EIS is therefore deficient.

**Other Pollutants**

It was put forward by the objectors that a number of pollutants were not considered in the EIS although they would have an impact on the air quality and on human health. I refer in particular to evidence by Prof. Howard in relation to particulates (9th June).

This was noted by Prof. Broderick in paragraph 6.2 of his report:

“…some important classes of pollutants were not considered in the EIS which included fugitive dust emissions, ultra fine particulates, secondary particulates, POPs and ozone and that these would have impacts that are additional to the impacts quantified in the EIS.”

I note the particulate emissions from the proposed development (stated to be in the region of 17.5tpa) would constitute a considerable proportion of the total emissions.
Referring to US EPA human health risk assessment protocol which refers to how the distribution of particle diameter would differ from one combustion process to another and that this is greatly dependant on the furnace type, the combustion chamber design, feasible combustion, particulate removal efficiency and the amount of air that is used to sustain combustion and the combustion temperature, Councillor D’Alton asked if Dr. Porter had regard to the same.

Dr. Porter responded that they had checked with Indaver but they did not have that data.

**Secondary Particles**

In relation to concerns regarding secondary particulates Dr. Porter stated that these are usually associated with the conversion of NO\(_X\) and SO\(_X\) gaseous releases over a period of time. He noted that in the model there was no method to take into account that conversion and the normal approach to assessing secondary particulates was based on looking at the long range transport of these particles. An important factor to consider was the reaction time, that is how long it takes for the chemical reaction to occur. In a typical model and looking at a wind speed of 5 metres a second, such a reaction would not happen within 1 kilometre from the site, because it was a very short period of time. Chemical transformation of secondary particulates usually took place over many hours or sometimes days being a very complex process. He explained the processes and referred to super computers being used across the whole of in Europe modelling these.

Cllr. D’Alton referred to the modelling grid of 20 kilometres by 20 kilometres and stated that looking only within the immediate 1 kilometre zone around the site for effects was not adequate.

Secondary particles are formed in the plume, after the combustion and after emission from the stack. While they take longer time to form, which takes them to further a field through prevailing winds (in some cases necessitating impact assessment of trans-boundary effects), in calm conditions where the plume does not move away, but just stays at the level where emitted, there is further time afforded for their formation.

If this coincides with times of inadequate plume rise (determined by calorific value and amount and of waste) and less dilution (due to less volume of air beneath) the formation of secondary particles would take place at lower altitudes, and in closer distances to the facility.

In areas like Cork Harbour where calm conditions are common, and where the topography is enclosing, this could mean increased likelihood of plume staying stagnant at lower levels and longer time for formation of secondary
particulates. (I note the e-mail by Prof. Howard with the attachment of a wind rose to show such conditions (exhibit..)

The EIS assumes operation at optimum levels with optimum plume rise, and plume movement. The assumption that the only area where the impact would occur would be within 1km (one kilometre) radius does therefore not seem plausible.

As part of his submission (16th June) Mr. Watson referred to European Union ‘Clean Air for Europe’ (CAFE) programme and quoted from overview of methodology in relation to the assessment of the impacts of air pollution on human health.

“The pollutants of most concern here are fine particles and ground level ozone both of which occur naturally in the atmosphere. Fine particle concentration is increased close to ground level by emissions from human activity. This may be through direct emissions of so-called 'primary' particles, or indirectly through the release of gaseous pollutants (especially oxides of sulphur, oxides of nitrogen and ammonia) that react in the atmosphere to form so-called 'secondary' particles. Ozone concentrations close to ground level are increased by anthropogenic emissions, particularly of VOCs and NOX (the emphasis is his)”.

Stating that Ozone is clearly a secondary impact associated with the release of VOCs (volatile organic compounds) and NOX, both of which are a significant emission from the facility, he submitted ‘the impacts of secondary ozone appear to have been completely omitted from consideration in the EIS. He added that this would be surprising in an EIS in the UK. It would be unprecedented not to mention these pollutants now.’

He further submitted that the emissions data in the EIS shows that the incinerators would produce about 361 tonnes per year of NOX. National Emissions Ceiling Directive, also not mentioned in the EIS is 65,000 tonnes, which is to be achieved by 2010 whilst emissions in 2007 were 120,900 tonnes. A car would produce 1kg per 10,000km. (I note neither Dr. Porter nor Prof. Broderick’s were present on day 18).

**Ultrafine particles**

In response to question put forward by Mr. Noonan referring to comments by Professor Howard the day before, that particulates were measured by gravimetric analysis but that a much more accurate representation to model or to estimate the concentration of these would be using surface area Dr. Porter stated that there was a movement in that direction, but that the Council Directive 2008/50/EC had set relevant parameters for PM10 and PM2.5 until 2020 from the regulatory point of view.
He agreed that the gravimetric technique used at the moment was fine for measuring PM$_{2.5}$ but ultra fine particles (PM$_{0.1}$) would need a completely different technique and gravimetric technique would not be applicable.

Ultra fine particulates are not yet regulated by the EU Directives. I note it is stated in 2.6 of the report by Prof. Broderick that as their health effects are associated with their number concentration rather than their mass concentration the appropriate unit of concentration to use would be the number of particles in a cubic metre of air. The unit measure used for PM$_{10}$ and PM$_{2.5}$ which quantify the mass of particulate in a cubic metre of air could not distinguish between many very small particles and fewer particles of larger diameter.

As noted by Prof. Broderick and by other experts during the hearing, there does not exist an accepted assessment methodology for ultra fine particulate emission from waste to energy facilities or other sources. It was stated during the hearing by Prof. Staines that this was the only reason they were not yet regulated, but an increasing number of studies were concentrating on the subject of developing a measurement technique.

There is, very limited information as stated by Prof. Broderick on the rates at which ultra fine particulates are emitted from waste incineration facilities, and these are likely to be a function of many variables including the inputs of waste, emission control technology and operating conditions of the incinerator.

Presently they can not be reliably modelled and in the absence of limit values to form a basis for comparison it would not be possible to evaluate the significance of the identified impact.

Therefore, while in the absence of accepted measurement techniques it does not yet seem possible to provide quantified impact analysis, lack of references in the EIS to presence of such pollutants does constitute a deficiency.

**Monitoring**

Another area of concern for the observers was related to monitoring. The observers stressed that monitoring was not ‘continuous’ for a number of substances, and some were monitored only several times a year. In others continuous monitoring did not really mean continuous. They maintain that emissions during these periods would be considerable but would not be taken into consideration in full as part of the monitoring programme.

They noted that monitoring would be based on data provided by the facility operators. They stressed that they did not have confidence that monitoring would be carried out and /or enforced as required.
Cllr. D’Alton noted comments by Dr. Porter “dioxins are different because we are not able to continuously monitor whereas other compounds are something continuously monitored and that problems would be noted straight away”. She referred to the licence granted by the EPA to the former application and in particular conditions in relation to Cadmium requiring monitoring only quarterly (which would not be continuous). That would also be the case for Mercury, Arsenic, Lead, Cadmium, Manganese, Nickel and Hydrogen Chloride.

It was explained during the hearing that continuous monitoring was relevant for several of the pollutants NO\(_X\), CO, total dust, TOC, HCL, HF and SO\(_2\). For these sampling would be continuously done producing a data point every hour.

The Directive had set 97% of the daily average value. This meant 3% of the time exceedences would be allowed but there was a second requirement that daily average values should not exceed the limit values.

Continuous monitoring was done by Indaver themselves, while dis-continuous monitoring was undertaken by a consultancy and the analysis work was done at the lab. It was noted by Dr. Good that some of the Austrian incinerators had real time information.

I refer to the report of Prof. Broderick where he states

“The proposed emissions from the proposed facility would be fully complaint with the regulated emissions, providing they are monitored in a way fully identifying the timing and magnitude of all instances of abnormal emissions when they arise.”

I also note that monitoring of emissions is a function of the EPA and as such it is not open to the Board to impose conditions in this regard.

I would however refer to condition 4.1 of the licence issued by the EPA to the applicants in 2005, which relates to monitoring.

Under 4.1.1 it states:

…(continuous monitoring which refers to half hourly average values, 10 minute averages) within the effective operating time (excluding start up and shut off periods if no waste is being incinerated) and daily average values.

In paragraph 4.1.1.3 it states

…to obtain a valid daily average value no more than 5 half hourly average values in any day shall be discarded due to malfunction or maintenance of the continuous measurement system. No more than 10
daily average values per year shall be discarded due to malfunction or maintenance of the continuous measurement system.

(I note I am not quite sure whether the 10 days referred to above is over and above the 60 hours of unregulated emissions permitted under the Directive, or part of the same.)

In the case of the heavy metals the condition of the license requires that they would be monitored twice yearly which, based on the results, might be reduced to annually.

In view of the above while I accept that the observers’ comments do seem to be accurate regarding nature and extent of monitoring prescribed in the existing licence, having regard to the date of the said licence, (and possible changes to the requirements in the intervening years), and having regard to the fact that this a function reserved for the EPA I do not consider it appropriate to further comment on the issue.

I also note following on from requests that continuous and discontinuous measurements be provided in the earlier sessions, the applicants provided on 17th June such data for 2006, 2007 and 2008 (exhibit ), but the information provided were not discussed at the hearing.

**Climate change/greenhouse gas emissions**

The assessment methodology in the EIS follows an IPCC protocol for evaluating greenhouse gas emissions and seeks to determine the net change in greenhouse gas emissions as a result of the proposed development taking into account the avoidance of emissions as a result of the energy produced.

Mr. Watson (16th June) submitted

“Carbon assessment in the EIS is flawed because it takes average carbon level of the average waste stream, though after recycling the levels of fossil carbon increase.”

He maintained that, in this case the EIS very significantly underestimated the carbon production (CO₂) associated with the facility, and that contribution of this facility to Irish greenhouse gas emissions inventory would be more than the 0.14% indicated”.

As part of his submission on 17th June Mr. Power submitted that to burn material had to contain carbon. 240,000t of organic material would generate in the region of 1 million tonnes of CO₂. He disagreed with the figures of around 80,000t.
I note in paragraph 5.2 Prof. Broderick draws attention to considerable uncertainties which exist in the primary input data necessary for comparative evaluations such as mix of waste material, gas capture rates from landfill, methods of electricity generation, and energy likely to be displaced by the waste energy facility.

In paragraph 6.10 he concludes:

> while the net greenhouse gas emissions from the proposed facility would not be high and would be likely to be similar to those from a landfill, the EIS does not address the effect that the presence of the facility will have on the development of recycling and other waste treatment processes that have lower climate impact.

This in a way seems to be a recurring theme in the applicant’s presentation throughout, in which the proposed development is compared only to landfill and is presented as being prioritised to the same in the waste hierarchy. There is little or no information providing comparisons with other treatments higher up the hierarchy.

**Conclusions**

As stated by Prof. Broderick, thermal treatment processes such as that proposed for the waste-to-energy facility at Ringaskiddy give rise to harmful emissions. This is at the heart of the concerns of the communities living around the harbour. (I shall return to the issue in examination of human health, and also in major accident hazards, and ecology)

Rising the stack height and deliverance of the emissions at higher levels, provides for dilution resulting from increased volume of air beneath and dispersion through spread over a larger area.

The Directives prescribe limits on the amounts of emissions in certain substances on a per air unit basis. The Directives also prescribe maximum limits in the ambient air. The total emissions from a facility would be a function of its capacity.

Assessment of impacts arising from the proposed facility is based on two main considerations:

- The emissions from the facility and whether they would be in compliance with regulatory requirements
- Ambient air quality and whether the emissions from the proposed facility together with those existing in the receiving environment would be in compliance with regulatory requirements
The proposed development would be complaint with these.

I note however that this compliance of assessment is limited to only those substances for which regulatory requirements exist. The proposed development would also give rise to emissions of substances which are not subject to regulatory requirements due to problems associated with measurement techniques for assessment of their impacts, and do not have thresholds for effects (harmful even in small amounts). These have not been identified, and significance of impacts have not been analysed. I shall refer to these in (human health) section of my report.

Similarly, non-assessment of abnormal emissions, emissions during start-ups, during process upsets, and in genera fugitive emissions from transport and handling emissions, constitutes further deficiency in the information provided, and reduces confidence in the results obtained.

The models chosen for predictions are approved by US EPA and are acceptable.

Having regard to the limited availability of meteorological data in Ireland, and having regard to the effective stack height where the meteorological conditions are comparable to Cork airport, use of meteorological data obtained from Cork Airport (despite being located at a distance of 15km where the physical conditions and land use patterns are significantly different than the subject site located in the centre of the harbour) as an input into the model for prediction of impacts at the subject site and its immediate environs is acceptable.

There was however, opportunity, having regard to the rather long term ownership of the site (purchased in 1999), and discussions of such issues in previous hearings which took place five years ago, for provision of comprehensive and continuous site specific meteorological data sets to supplement /verify the meteorological data obtained from Cork Airport. This was not availed off. In my view this constitutes further deficiency in the EIS.

Secondly compliance with regulatory ambient air quality limits is mainly due to the low levels of presence of such substances in the receiving environment rather than the low level of emissions from the proposed facility. In particular the predicted increases from the proposed facility are considerably higher than two other permitted incinerators (when capacity adjusted).

This could affect the carrying capacity of the receiving environment to absorb future facilities. This has not been identified in the impact analysis. As such the EIS is deficient.

In view of the above it is my considered opinion that, having regard to the information deficit in the, the information before the Board is inadequate to form the basis for an informed decision regarding air quality.
10. Ecology /Natural Heritage

The dedicated session on this issue took place on 17th June. Dr. Jervis Good attended the hearing for a considerable number of days. In his opening statement to the hearing on 8th May, 2009, he described his role as to assist the inspector with regards to the requirements of the Birds Directive, Habitats Directive and Wildlife Acts.

The ecological importance of the area arises from Cork Harbour pSPA, (parts of which are located within 1km of the subject site), and which under European Law must receive the same level of protection as designated European Sites. Great Island Channel cSAC, a set of proposed NHAs, and Cork Harbour Ramsar Site are also of relevance. Protected mammals include badger and otter. Species of flora protected under the wildlife Acts 1976-2000 are also likely to be adversely affected by SO\(_2\) and NO\(_x\) emissions. Obligations under Birds Directive also require Member States to strive to avoid pollution or deterioration of habitats outside the protected areas.

The effects on these designated sites arises from the ecotoxicological effects of emissions, with particular concern in relation to Dioxins and Furans (PCDDs, PCDFs), Thallium (Tl), Mercury (Hg), Cadmium (Cd), which also bioaccumulate, affecting piscivorous birds, and species that are high in the food web.

The impact on the bird population will arise from sediment concentrations of toxic substances in the mud flats which provide feeding grounds for the birds. Some of the birds being migratory birds will already carry a certain amount of body burden in relation to these substances, arising from their use of other feeding grounds throughout northern Europe including heavily polluted areas.

The assessment of impacts on flora and fauna (Chapter 13 of the EIS) is based on the predictions of air quality modelling in relation to air dispersal /deposition of the pollutants and sediment loads based on bioaccumulation models.

The written submission from DoEH&LG stated that the EIS did not sufficiently focused on the effects of emissions on the European sites in Cork Harbour, (highlighting particular areas of information deficit), and that a more comprehensive assessment under Habitats Directive appropriate assessment on the specific effects of effluent discharges and emissions from the proposed development on Cork Harbour and its protected areas would be required.

The note accompanying the notification of the Board for the oral hearing required the applicants to address these.

79 (DoEH&LG) NPWS, regional ecologist
The oral hearing submissions for the applicants were presented by **Dr. Sorcha Sheely** (bird ecologist), **Carl Dixon** (terrestrial and aquatic ecologist), and **Dr. Fergal Callaghan** (chemical engineer specialising in degradation of waste materials, and dioxin), who had prepared relevant sections of the EIS.

Dr. Callaghan explained that he carried out baseline dioxin assessment and prepared the dioxin intake model. He undertook study of background sediment concentrations in the Cork Harbour area and conducted an ecological risk assessment for the same. The only pathways to dioxin bioaccumulation would be through aerial deposition of dioxin on marine sediments.

US EPA ecological risk assessment methodology (2003), and Screening level Ecological Risk Assessment Protocol for hazardous waste combustion facilities (1999) were used. Predicted increase in dioxin concentration in sediment resulting from airborne dioxin deposition was estimated over the life time of the facility in egg of fish eating bird and otter was found to be insignificant.

In response to questions by the observers he stated that he was not aware of major accident scenarios and had not taken them into account, and that he had accepted the modelling results given by Dr. Porter (air quality) without questioning assumptions.

The observers maintained that the impact assessment on ecology was based entirely on the air modelling results provided by Dr. Porter (ambient air quality), which they considered to be inadequate. It had not taken into account fugitive emissions, emissions during transport, emissions arising from malfunctions or accidents.

Most importantly, as the emission recording excluded start up emissions which were significantly higher than limits and operators were allowed 60 hours per year when no limits applied, the air quality modelling results were not a true reflection of the emissions from the proposed facility. They submitted the ecological impact assessment which transported the findings of he air quality as is was therefore inadequate.

In his statement of 8th May, **Dr. Good** outlined the main areas of concern as being effects related to organochlorine compounds, in particular dioxins on birds at the top of food chain, lack of ecotoxicological assessment within EIS, and compliance with the reasonable scientific doubt criteria under the Habitats directive.

I refer in particular to his submission on 8th May, where he outlined three approaches which could be used in decision making: -

(a) assumption that compliance with provisions of the WID (Waste Incineration Directive) would avoid adverse impacts, but a ‘site specific’ assessment would still be necessary
(b) accredited data available from monitoring of existing operations employing same type of pollution control and environmental management systems as proposed and studies using similar data showing no adverse effects, but a ‘site specific’ assessment would still be necessary.

(c) conservative modelling based on recorded operation of existing plants sufficiently allowing for process upsets, fugitive emissions, and modelling and bioaccumulation estimates to allow for ample margin of safety.

He recommended that a robust decision might be based on all approaches used together.

Under each category he referred to various studies, and the problems identified in those studies, such as infrequency of emission monitoring, assumptions about correct recording of data, remaining questions such as fugitive emissions, handling of filter ash.

He suggested supplying of information from a number of incinerators instead of a single facility owned by the applicants at Doel. Carrying out his own literature search, he referred to a number of studies in Australia, EU (Austria, UK), US identifying location and capacity of incinerator in relation to designated sites and their findings, while at the same time noting weaknesses of each study, and their relevance to the case. He required that the applicants prepare an ‘Assessment Sheet’.

On an on-going basis, he provided written questions in relation to air quality model assumptions, ecotoxicology risk assessment, and following written responses by the applicants’ consultants to various questions, raised further questions amongst others, in relation to toxicity reference value data cited in some responses provided by the applicants, and sought clarifications. In doing so he also provided invaluable guidance to the applicants.

He required comparisons of US EPA recommendations for allowances for abnormal operations with EU requirements. He referred to studies stating that dioxin and furan emissions from hazardous waste incinerators can often be higher than MSW incinerators.

He took part in discussions in relation to emissions asking questions to various experts as well as applicants. His expert views were sought by the applicants, by the observers and their experts.

I now refer the Board to the requirements of Habitats Directive.

The Article 6(3) requires:

> Any plan or project not directly connected with or necessary to the management of the site but likely to have significant effect thereon, either individually or in combination with other plans or projects, shall...
be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate after having the opinion of the general public.

In its judgement on the case C-127-02 (Waddenzee case) the European Court of Justice held that:

“...an appropriate assessment of implications of a plan or project implies that prior to its approval....all aspects of the plan or project... must be identified in the light of best scientific knowledge in the field...the competent authorities taking account of the appropriate assessment of the implications of [the development] for the site concerned... are to authorise such an activity only if they have made certain that it will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects”

The EIS presented by the applicants suffers from information deficit. Additional information provided to the hearing in response to specific requests by Dr. Good, went a long way to rectify the situation. They should have been provided in the EIS in the first place.

Dr. Good concentrating solely only on the issue throughout the hearing, and having regard to his expertise was able to absorb the material submitted in response to his requests, check sources and provide follow up questions.

This however represented additional burden for the observers who also had other issues demanding their time, and there was concern that they could not examine the information with due diligence, or seek necessary expertise. They did however took part in the discussions, questioning specific aspects of the methodology, choice of monitoring locations etc.

In his submission to the hearing on 17th June Dr. Good examined nature conservation under the headings of toxicity reference values for ascertaining the effects of air emissions on the integrity of Cork Harbour SPA, effects of nanoparticle emissions, mercury emissions, baseline monitoring, bioaccumulation modelling, and comparative data. I will briefly refer to these:

1. Toxicity reference values for ascertaining the effects of air emissions on the integrity of Cork Harbour SPA
   - Toxicity reference value (TRV) of 100 pg/g TEQ may be more appropriate in the case of Cormorant
• Sub lethal effects may occur in the great crested grebe in the range of 200-400 pg/g TCDD-TEQ (above the level for Cormorant)

2. Effects of nanoparticle emissions
• This is an issue particularly for human health risks due to inhalation, but compared to uptake of chlorinated and heavy metal contaminants via the aquatic food web it is less of an ecotoxicological risk to birds in the SPA.
• Understanding of ecosystem effects of nanaoparticles is still very inadequate,
• No data to indicate scientific likelihood that the nanaoparticle emissions from the incinerator will have adverse effects on the SPA over and above the chemical ecotoxicological effects

3. Mercury emissions
• While predicted to be low due to carbon injection, mercury emissions are probably best regulated in terms of removal of mercury containing waste before incineration (UNEP),
• This is perhaps an issue for IPPC licence.

4. Baseline monitoring
• Lack of data in the EIS on the occurrence and likely numbers of the most sensitive piscivorous species (birds, otter) in the immediate marine vicinity of the site or in Cork Harbour as a whole, has made it difficult to assess the impacts and their occurrence was therefore treated as an uncertainty.
• A baseline ecotoxicological survey of sensitive receptors to provide basis for monitoring the effects of emissions from the plant prior to operation of the incinerator can still be required as a condition of the IPPC licence.

5. Bioaccumulation modelling
• According to EIS the emissions are expected to be well below the WID limits.
• Figures are provided from Doel facility to indicate actual emissions. However, the data from grate incinerator must be added to the fluidised bed incinerator to give combined emissions and an uncertainty factor of 20% must be added, based on Belgian data analysed by Bergman et al. (2007).
• Also short-period start up emissions in some cases exceeding WID limit by a factor of 2 will also increase the median levels of emissions.
• Furthermore, taking into account the lack of statistical description of data from the Doel facility, then the predicted emission rate for dioxins and furans at the WID limit is not as conservative as it might appear from Doel data.
• The amount of feeding cormorant or common term in the area of highest predicted marine deposition north-east of Ringaskiddy was
not estimated in the EIS, nor the extent to which fish prey move between this area and the SPA at Monkstown Creek. In the absence of this data (or a Monte Carlo simulation) an uncertainty factor must be added, which indicates that the assumptions of the ecotoxicological model of maximum deposition is not as conservative as it appears for the target receptor distance near Whitegate.

- Other conservative assumption was that the sediment was permanently exposed to the atmosphere, rather than covered by tides, no data was included for bioaccumulation from water.
- Maximum biota-sediment accumulation factor is based on gull data. However this species is quite different to both common tern and cormorant
- Several submission on impacts on health referred to effects of mixtures of a diverse range of chemicals in the emissions. In this case, there is lack of data on the composition of the hazardous waste feed. If an uncertainty factor of two orders of magnitude is incorporated to allow for the unknown effects of mixtures of chemicals on the food web, and to take into account of lack of modelling of these chemicals then a final figure of <90 pg/g is achieved which is below the TRV for the most sensitive species. Therefore based on the model assumptions no adverse effect on the integrity of the pSPA is expected.

6. Comparative data

The extent of use of uncertainty factors and assumptions mentioned above may be debatable. However, some useful comparative data is provided in a paper submitted to the hearing by Dr. Sheehy referring to a 2002 study indicating no evidence of increase in residues of various substances.

His conclusion that the proposed development would not be expected to have significant adverse effect on the integrity of the Cork Harbour SPA, came with a series of qualifications.

He strongly emphasised that this should not be taken as an indicator of ‘health effects on humans’, as the effected bird populations have completely different type of reaction mainly through the food chain rather than inhalation, and that the designated areas are at some distance from the site, and.

I will now briefly look at the qualifications

C1 The air dispersal, deposition, and bioaccumulation models are a reasonably accurate reflection of reality.

The applicants maintained this was so, and that the qualification was met. The observers strongly disagreed stating that the air dispersal modelling had been done in a very defined way by Dr. Porter (ambient
air quality) excluding fugitive emissions, abnormal emissions (except those dictated by the applicants), 60 hours of operation without limits, and considerably high emissions during start ups, and that it was particularly unreliable in the absence of site specific met data.

C2 In the event that the IPPC licence requires a rapid quench air pollution control system to reduce dioxin/furan production within the process, that there is sufficient physical space at the site to incorporate such a system combined with an off-site water treatment plant, during the permitted lifetime of the facility.

The applicants stated that there was space. They did not however give an indication of how they intend to address the issue of off-site water treatment plant.

This issue arises because, in the event of a wet system of rapid quench dioxins and furans would be formed in the post combustion chamber and would need to be effectively removed by lime injection treatment. This would lead to higher concentrations in the ash if there is mal function in bag house filters, and higher emissions.

Mr. Jones (for the applicants) stated that they don’t have rapid quench system in any of their plants. The focus for incineration plants over the past ten years was recovery of energy in the boilers. The flue gases were accelerated to decrease their residency in that part of the boiler to minimise the amount of time for reformation of dioxins.

C3 Compliance with BSEN 14181 and BSEN 13284 monitoring guidance notes (copy attached).

Applicants confirmed those were the standards to be complied with.

C4 An adoptive environment management system can be put in place (including monitoring of dioxin, furan, chlorinated carbon, heavy metal and relevant organic contaminants in sensitive biological receptors, including in particular for piscivorous birds which can respond to any significant elevated concentrations of these contaminants by increased removal efficiency by pollution control systems.

Dr. Callaghan for the applicants stated that while emissions from incinerators had a particular congener profile (fingerprint), a lot of combustion plants burning oil had similar fingerprints. As such increase could be attributed to a variety of sources. If monitoring was required it would be important to check other such in particular if there was large fires in the area. In response to question by Dr. Good he did agree however, that there could be unique trace elements or organic compounds unique to a hazardous waste incinerator. Guidance from NPWS would be sought regarding establishment of such management system.
Mr. Noonan for the observers questioned if such a condition has been used and proven in the event it needed to be triggered as a worthwhile tool to trace back the exceedances to a specific site. Nobody could give an example.

C5 The risk of a shipping accident within Cork Harbour near the pSPA areas of a ship containing trailers of hazardous fluegas treatment ash / residue for export is very low.

The applicants stated that there was already hazardous waste being shipped out of Cork by the applicants and by their competitors. There would be a reduction in the volume of those exports, and that there was a likelihood of hazardous waste landfill being developed in the country, which would mean road transport would be used. The containers in which the materials were shipped would be sealed and would remain sealed in the event of ship sinking.

In response to question by Mr. Noonan Dr. Good stated that neither he nor the NPWS were competent to assess such a risk.

C6 The risk of a catastrophic accident at the plant involving flue gas treatment ash / residue or process dioxin-and furan rich gas is very low. Nevertheless without prejudice to the provision of the Environmental Liabilities Directive and implementing legislation, it is recommended that a bond is received to cover full costs of any ecological monitoring and restoration required for Cork Harbour pSPA or associated eco systems, in the event of a serious accidental release of contaminants from the facility.

The applicants stated that the likelihood of such an event was very low. They stated that the existing licence included a financial condition and as such duplication would be unnecessary.

In response to question regarding calculations for full costs of restoration Dr. Good stated that this would have to be done in the context of IPPC licence.

I refer the Board to condition number 12.2 of the existing licence No 186-1) which under the heading of ‘Financial Provision for Environmental Liabilities’ requires a fully costed environmental liabilities risk assessment and the cost of making such financial provision as required for the purposes of section 53(1) of the Waste Management Act 1996, prior to waste acceptance.

Mr. Noonan for the observers maintained that the complexity of the qualifications were an indication of the unsuitability of the site for the proposed development.
Mr. Watson also attended the first half of the ecology module. Though he was not an ecologist, he had extensive knowledge of literature in the area having presented a paper reviewing literature to the international dioxin conference last year. He drew attention to a number of issues in relation to assumptions, asked questions, suggested sources of information, and e-mailed some articles after his departure. He displayed intimate knowledge of regulatory requirements, as well as knowledge of most up to date literature in various issues.

In response to his request the applicants stated that the number of start ups in the previous three years (Doel) was 12 (higher than 1-2 per year as originally indicated). He requested the paper trail showing these (stating they would need to be provided to the regulatory authorities anyway). The applicant stated that they were not provided as they were in Dutch. Ms. Fiona Fulton, a Dutch speaker provided help when information became available (I note some of the information became available on the last day, and delays were a constant source of complaint by the observers).

Dr. Good required surrogate data to be provided from other incinerators in relation to start-up emissions. The applicants provided data only from their Doel facility and for a three-year period. In response to question by Dr. Good as to why information from 100+ other facilities in Europe was not provided, they stated they preferred not to provide such information because they did not know if they were operated to the same standard as their own.

Following request that information be provided, they carried out some search during the hearing but maintained that they had difficulties in obtaining information as most other operators were their competitors unwilling to disclose such information. Towards the end they were able to produce five such cases through internet search.

They suggested that such information be sought from consenting authorities. (They did not follow it up perhaps due to time constraints)

On the basis of the information emerged during discussions, particularly given by Mr. Watson, Dr. Good made revisions to his submission. These included:

- Uncertainty in dioxin measurements were upwardly revised, from 20% to 35%.
- Exceedances of emissions during start up were far greater than up to two times (as previously allowed) of the Directive limit, (20-21 times in Japanese studies, 12 days of the year, but at 1/15 for the remaining days still below the Directive limits).

80 Expert witness for Chase (an engineer specialising in incinerators) member of Stockholm Convention expert group, UNEP,…
81 Kinsale environmental watch
Mr. Watson referred to a figure of 969 times the Directive limit reported in a Taiwanese incinerator (during start up). This was discussed, in the absence of the paper, which was e-mailed by Mr. Watson the following day with the note that it was a modern incinerator that would be considered Bat in Europe. (I refer the Board to page 241 of transcript on day 20)

- For birds with high burdens accumulated in other countries it would be preferable if reduction in levels in those countries were addressed in the first instance.

- Because of lack of modelling of the toxicological effects of mixtures one order of magnitude (ten times) has been applied as uncertainty to reach the value of 70pg/g

Under the ‘Habitats Directive’ he recommended that conditions relating to the management of facility may need to be further assessed at the IPPC licence stage with particular regard to management of start-ups, avoidance of unnecessary dioxin formation by rapid cooling of post combustion gases and ecotoxicological risk assessment of ‘mixture’ of chemicals.

He also recommended 3 conditions for on-site wildlife for badgers, linnets and boom-rape plant.

Having regard to the thoroughness of the above analysis, I do not intend to reassess the issues in detail.

I consider the EIS to be deficient in terms of provision of most up to date information regarding studies on the subject. Reliance solely on the conclusions of the air quality section of the EIS for impact assessment on ecology presented a significant problem. However, the information gap was narrowed significantly through serious efforts of Dr. Good and to an extent by significant contributions from Mr. Watson.

While I do acknowledge that maximum emission limits allowable under the Directive was used to achieve conservative estimates, absence of other relevant information reduces the reliability of the overall conclusions.

There is serious information deficit regarding data on current exposures to provide a baseline. In the absence of such data, the applicants used assumptions in the model. It was stated at the hearing that eco-physiological information using bird feathers, abandoned egg shells etc could be used to provide such information (indeed same was suggested in one of the qualifications by Dr. Good).
I am however also persuaded by the argument by Dr. Callaghan that as the birds in question are migratory birds, this would not give a clear evidence that the intake was from Cork Harbour only.

I am not persuaded by the argument that bio accumulation models based on air dispersion /deposition are a representative reflection of reality. The extent of assumptions, and uncertainty factors that needed to be used by Dr. Good which were revised upwardly subsequently were an indication of the problem.

Despite serious deficiencies in the EIS, I consider that a thorough and ‘appropriate’ assessment of the impacts on flora and fauna as required by the Habitats and Bird Directives has been carried out through significant efforts of Dr. Good, with competency and expertise required under the Directives. I am therefore satisfied that this can form the basis for an informed decision by the Board.

In agreeing with the conclusion that the proposed development would not have adverse effect on the integrity of the European site (Cork Harbour pSPA), I have had regard to the fact that the designated European Sites are specific for migratory birds (protected species) which may also be exposed to similar substances elsewhere.

I have also had specific regard to the fact that the impact on the birds would arise solely from deposition on sediments of the harmful substances which would be taken in as part of their feed, and that there would be no impact on the birds from ‘inhalation’ of these substances.

I am satisfied that an impact from a major accident hazard would not be immediate and direct, but be confined to deposition of emitted substances on mud flats and the arising concentration levels subsequent to an incident.
11. **Major Accidents**

One of the major concerns for the observers is in the area of accidents and impacts arising from the same. The issue was discussed in a dedicated session on 15th June 2009. In attendance were (at the invitation of the Inspector) Mr. Patrick Conneely, and Mr. Gareth Doran (senior Inspectors with Health and Safety Authority), and Mr. Malone Chief Fire Officer and Building Control Officer with Cork County Council.

The proposed facility at Ringaskiddy is a ‘SEVESO’ site because of the inventory of various waste materials which are likely to be handled rather than the incineration process itself. The Inventory would include aqueous wastes, waste solvents (methanol and other solvent based wastes), range of other flammable materials and some solid waste materials which are categorised as harmful for the environment. Such sites are referred to as ‘establishments’.

If these substances are not used with due care they could be released and give rise to a major accident with potential consequences for human beings and the environment.

In examination of the issue I will first refer briefly to the main points of the applicants and observers.

**Applicants’ case**

*Mr. Tom Cleary* in presenting the applicant’s case in the first week of the hearing, noted that the HSA was the ‘Competent Authority’ appointed in Ireland for assessing suitability or otherwise of SEVESO sites.

Noting that the analysis of the data on major accidents which they provided and their off-site consequences were accepted both by the Board and by the HSA in 2003, Mr. Cleary stated that the risks have reduced since 2003 as a result of ‘lower inventory’ level, whereby volume of liquid wastes stored would be reduced by a total of 800m³. This would result in a need for a ‘smaller’ bund area to store the lower inventory reducing the spill areas and limiting the scale of an incident. He submitted that there would also be much reduced risk of an unconfined vapour cloud explosion (VCE) occurring following a liquid spill. This was based on the outcome of ongoing international research following the Buncefield incident in the UK.

He referred to the Hazard Identification and Risk Assessment report (HAZID) of December 2008 (copy attached) which he stated presented a range of radii to different levels of impact on persons off-site from a wide range of accidents in areas on the Indaver site. Modelling was conducted for a range of wind

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82 Description was provided (during the hearing) by Mr. Tom Cleary, of Byrne O’Clearigh Consulting Engineers specialising in safety and major accident hazards
speeds and atmospheric stability categories to check the sensitivity of the results to different metrological conditions and in general they were less than 100 metres from the centre of the accident. He noted that the distances were for unimpeded exposure in the case of thermal radiation from fires assuming flat and unobstructed ground between the tank or a bund fire and a person at the receptor point of interest. But, he noted, the main solvent tank farm was located due south of the incineration building which shielded persons at the road or in the vicinity of entrance to Gobby Beach car park.

Further information was provided to HSA in relation to risks at Hammond Lane. He outlined the methodology used for the (HAZID) including identification of the range of chemicals and wastes which would be handled at the facility, and maximum inventory of different substances checking the inventory to determine whether the site is a SEVESO site and whether it is a ‘lower’ or ‘upper’ tier site.

An International risk assessment literature review particularly from UK and Netherlands in relation to types of major accidents were carried out. Internationally recognised computer modelling software USEPA (ALOHA) and Netherlands TNO) were used to predict what the consequences would be if a major accident occurred. These were followed by discussions with the applicants in relation to additional engineering controls or measures which could be installed to reduce the frequency of a particular type of failure mode or to mitigate the consequences for their own staff or the nearest persons off-site including (in this case Hammond Lane employees) and to other persons in the immediate environs of the site.

Explaining important characteristics of ‘consequence’ modelling of accident scenarios he stated that because the accidents by their nature are unplanned and are short term in nature, air quality modelling used for continuous emissions in normal operations were not appropriate for modelling of sudden releases and short term events. Both models were used to examine the consequences of fires explosions and releases of toxic or corrosive material. For the bunker fire event they used USEPA screen 3 model to examine the dispersion of releases over several hours.

In Ireland HSA had set a series of criteria or “end points” whose distances they wished considered as part of the land use planning process. These end points would be ‘toxic’ and ‘thermal end’ points.

He referred to the ‘Buncefield’ enquiry following explosion at a large gasoline tank farm. In his view Indaver operation was of a scale that would be excluded from a need to comply with a new set of recommendations in the final Buncefield report because the site operated well below a liquid filling rate of 100m³ per hour.

In response to issues raised in the written submissions by the observers he stated:
• Requirement for an external risk assessment expertise for the Board was not necessary as the HSA has been the appointed competent authority for SEVESO regulations.

• While he was aware of an accident in Japan where workers were killed by an explosion due to aluminium components entering the kilns undetected, it was highly unlikely to cause fatalities outside the site.

• The consequence modelling showed that a solvent fire from the centre of the main tanks bunk would not inhibit evacuation at the roadway in front of the application site.

• Shelter in place would be recommended for Maritime College and Haulbowline Island could provide a perfectly acceptable evacuation route.

• The need to ever evacuate Cobh due to a major accident at the subject site would appear to represent an unreasonable fear risk. Risk of thermal radiation from a major fire at the site would be insignificant at the distance of 316 metres to the nearest residents on the Ringaskiddy side.

• Major fire involving solid wastes at the site would develop slowly and the smoke plume would tend to rise skywards. He referred to a recently reported fire at greyhound waste recycling plant in Clondalkin Industrial Estate which burned for 15 hours and stated that in spite of being a serious fire the building did not collapse and there was no evacuation of neighbouring areas. He also referred to the Bitumen oil fire in Dublin Port of 2004 and stated that there was never any question of evacuating suburbs of Clontarf adding that Clondarf is about half the distance from Cobh to Indaver’s main tanks.

• In relation to fire brigade being based too far away he stated that 5 mile distance was not very critical and the response time could be 10-15 minutes. He added that regulations required Indaver to have internal emergency plan in place and noted fixed water cannons in the bunkers to control a fire.

In response to request by the inspector he made two further presentations during the dedicated session. Of these, the first presentation was related to graphical representations of ‘consequence modelling’ of thermal radiation levels (from a range of solvent fires both from the main tank farm and from the waste transfer station) and ‘distance to 30 minute slot value arising from liquid spills. I refer the Board to graphics 104A and B submitted on day 15th June.

His second presentation was in relation to fire and explosion at a waste facility in Campana Argentina which was brought to the attention of the hearing at an earlier date by some observers.
Observers’ Case

The main points of the observers position as outlined in the written submissions related to impact arising from a major accident hazard on National Maritime College, and on the public using the roadway in front of the site, Gobby Beach or the right of way along Martello Tower. They maintained that the footpath on the public road was only 7½ metres from the waste transfer station while the footpath along Martello Tower was only 37 metres from the main tank farm. While the buildings in National Maritime College were approximately 300 metres away the roadway and parking, pedestrian areas were much closer. They stressed that the HAZID report did not include explosions in the waste transfer station.

They referred to explosions in some incinerators, in particularly one in Campana Argentina.

They referred to the plume of smoke in Hickson fire and stated that in the case of a fire at the subject site there would be smoke of toxic fumes directly effecting National Maritime College and Cobh and Monkstown. In his power point presentation Mr. Chambers showed how the plume of smoke did not go up, but remained grounded along Loch Beach.

They were particularly concerned about lack of emergency procedures outside the site and hindrance of emergency services because of location of the site in a cul-de-sac, at the end of the peninsula.

They submitted that a lower tier SEVESO site could become an upper tier simply by changing its chemical inventory. An increase in chemical inventory of itself did not trigger a requirement for further planning permission. Once constructed the proposed development could by simply increasing its inventory become an upper tier SEVESO site without the necessity to seek planning permission from the Board or planning authority.

Mr. Peter Daly83 addressed the hearing on a personal capacity though he held the position of Chief Emergency Management Officer for the Health Services Executive South. His function in that role would be to prepare emergency plans for the HSE for all types of major emergencies. I recommend the Board reads his submission in full (exhibit 103)

He referred to the aims of SEVESO II Directive as outlined in Article 1

“… Prevention of major accidents which involve dangerous substances, and the limitations of their consequences for man and the environment, with a view to ensuring high levels of protection throughout the community in a consistent and effective manner”.

83 Mechanical engineer with expertise in explosive, explosions and their effects, experience in chemical and biological weapons, served under UN SCOM as a chemical weapons inspector in Iraq. Current position Chief Emergency Management Officer for HSE, South.
He noted that the perception that the SEVESO II Directive was aimed exclusively at the operators of the establishments was not correct, but rather the Directive was a “goal oriented” legislation. It was not the intention of the legislation that purely engineering and technical issues should predominate in the examination of these facilities. He stated that an unworthy tradition HSA developed in SEVESO legislation to rely too much on the usually well written report on hazard identification and risk assessment which he said flew in the face of what the Directive actually said and was intended to mean.

“Whereas, in order to provide greater protection for residential areas, areas of substantial public use and areas of particular natural interest of sensitivity, it is necessary for land use bore other relevant policies applied in member states to take into account the need, in the long term to keep a suitable distance between such areas and establishments presenting such hazards…”

He said Article 12 in regard to land use planning (LUP) is very clear on responsibility, which is not on the potential operator but firmly on the Member State.

“Member states shall ensure that the objectives of preventing major accidents and limiting the consequences of such accidents are taken into account in their land use policies and/or other relevant policies. They shall pursue those objectives through controls on: the siting of new establishments”.

He stressed that not only is the thinking on LUP (land use planning) was changing but that this would also eventually lead to changes in the Directives.

He referred to a Commission staff working document on the regulatory aspects of ‘nano-materials’

“Practical IPPC implementation presently tends to focus mostly on conventional pollutants (sulphur, nitrogen, dust, halogens, heavy metals etc.) emitted in conventional form, reflecting the long established need to control such emissions and the corresponding expertise of the competent authorities concerned … the capacity of competent authorities to apply, monitor and enforce compliance with emission limit values or other types of permit conditions relating to nano materials would also need to be established”,

and stated that the emergence of ‘nanomaterials’ as an issue needs to be considered in review in the Directives is an example of how Directives evolve and in many cases how the science is running ahead of the legislation, but that as a result of science and research that we recognise the need to make changes. He submitted that after all that was how SEVESO Regulations came into existence in the first place.
He submitted that since future need to take nano materials into account is a reasonably credible scenario, he recommended that this risk be considered in deliberations of the Board.

Referring specifically to the ‘final’ report of the Major Incident Investigation Board into the Buncefield incident, he submitted that the report stated “the formation of the vapour cloud and its distribution around and beyond the Buncefield site remains under scientific investigation”. Therefore, it could not be concluded from that a vapour cloud explosion is not a credible event at either of the Indaver tank locations.

While nobody was killed in the incident he noted that Buncefield report went on to say a lot more. “As well as destroying large parts of the depot there was widespread damage to surrounding property and disruption to local communities”.

He noted that the investigation Board made 18 recommendations for improvements in the UK planning system including a fundamental review of the entire system, a consistent and fully risk based system for planning controls at all major hazard sites, incorporation of societal risk into assessments of planning applications and for better alignment with the ‘Comah’ regime. He asked that Buncefield report and its extensive appendices which include the results of the investigation Board’s own sponsored research into a model risk based system for land use planning be taken into consideration in making a decision in this case.

He noted that three types of establishments were envisaged under the SEVESO Directive and that the December 2008 submission indicated that this would be a lower tier site. He submitted that the only difference between upper tier and lower tier was one of a scale and that the hazards and risk did not change. The requirement of the Principle Response Agencies (PRA) to plan to respond to a major incident at SEVESO sites did not alter. He submitted that the PRA’s also had a generic responsibility to plan for accidents at lower tier sites and refer to the approved plans for the upper tier sites and in particular public safety zones as a basis for emergency response. Describing concepts of specified area, hot zone, warm zone, cold zone, he stated that in this case ‘warm zone’ would include the public road and time spent in the warm zone would be an important factor.

He referred to emergency plan for the GSK site (Curraghbinny), and emphasised that PRAs in planning a response must provide for primary and secondary access as a basic tenet. This was a wise precaution as the primary access route may be blocked or impeded as a result of the incident, wind direction and other factors. This principle was not achievable at this proposed site.

Secondly the same planning principle dictated that the occupants of the NMCI should not be required to evacuate in the direction of the incident. He also

84 SEVESO II (also referred to as Comah)
noted that even then, they would be sharing the escape route with the arriving emergency response vehicles.

He referred to the ALOHA model (Areal Locations of Hazardous Atmospheres), a computer programme designed for use by people responding to chemical releases as well as for emergency planning and training.

HAZID report justified use of ALOHA as it would be the same model used by the emergency first responders. He noted that ALOHA requires the user to “acknowledge that the model does not incorporate the effects of chemical mixtures, chemical reaction or terrain among other limitations”. He also stressed that other chemicals not included in the ALOHA list or mixture of chemicals may be accepted for incineration.

He concluded that the proposed facility was too big for the site and most of the issues flew from that basic fact.

Submission by Health and Safety Authority (HSA)

The submission by HSA directly to the Board on 7th April 2009 (arising from their function as a Prescribed Body) stated that the authority did not advice against granting of permission in the context of major accident hazards.

The submission also stated that classification of certain ash/residues to be stored at the establishment would be subject to further review by the authority in the event of a formal notification under control of major accident regulations and if such a review were to result in the reclassification of the establishment as “upper tier” it would have no effect on the land use planning advice due to the ‘physical state’ of the substances under review. This would however place additional duties on the applicants and onto local competent authorities in relation to external emergency planning.

In his lengthy presentation to the hearing Mr. Conneely stated that the purpose of his evidence was to explain the role of the Health and Safety Authority in the context of SEVESO major accident hazards and land use planning and to assist the Inspector. He referred to various functions of the HSA, including the requirement to report to the European Commission on the preparation of external emergency plans for upper tier SEVESO establishments.

He too referred to Article 12 of the Directive and the requirement on Member States to take account of the objectives of preventing major accidents in their

85 Head of process industries unit, which deals with matters relating to major accident hazards, (see exhibit 102)
land use planning policies through controls of the siting of new establishments.

What constitutes a major accident was defined in the Regulations as

“Major emissions fire or explosion resulting from uncontrolled developments in the course of the operation of any establishment, leading to a serious danger to human health or the environment, whether immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances”.

He emphasised that this related to developments in the course of the operation of any establishment and that it involved dangerous substances.

He wanted to stress that the role of the Authority was confined to sites covered by the Directive and Regulations, which were called ‘establishments’. This would generally comprise of the area within the facility boundary where hazardous substances are processed and stored and would also include any on-site pipelines.

He gave a list of things that are not covered by the Directive: The occurrence outside of an establishment of the transport of dangerous substances by road, rail, internal waterway, sea or air, intermediate temporary storage, loading or unloading of dangerous substances at docks, wharves or marshalling yards and waste landfill sites in general.

He stressed that the advice of the HSA did not deal with site selection or the suitability of one site above another or one design above another. Similarly activities relating to site development and construction were not considered.

In referring to European Guidelines on LUP (land use planning) he stated that the technical advice for new developments involved determining

- Whether the risks are sufficiently great that the development should be advised against or
- Whether they are below accepted thresholds, estimated using appropriate scientific methods, and therefore are insufficient to prevent the development from proceeding. In this case the judgement would be that the residual risk is capable of being managed under the enforcement regime of the regulations and appropriate distances are in place as required by Article 12.

He also stressed that in developing LUP advice, HAS considers only on-site major accidents which could have off-site effects. The standard accepted approach would be to identify areas where a potential loss of containment of dangerous substances could occur. In this case detail on the type of furnace to be used was not relevant.

On the other hand the number and size of the tanks storing large quantities of dangerous substances, their location, their overfill and alarm systems, their
bundling arrangements etc. would have critical bearing on the off-site consequences and risk.

He noted that a “domino effect” that an accident involving in the furnace could initiate an accident elsewhere such as a fire in the area storing bulk flammables but that this event should already be covered in the major accident identification process.

The importance off-site initiators of major accidents could be misunderstood. In the LUP context the approach of the HSA was to decide whether an event off-site or a natural hazard event could initiate a major accident on-site. In this case consideration would be given to

- If the event is of equal or lesser damage potential than the events for which the plant has been designed (earthquakes, floods as initiators for major accidents).
- If the event has a significantly lower frequency of occurrence.
- If the event is slow in developing and allowed for sufficient time to eliminate the source of threat and to provide adequate response.

In these cases external events would not be considered for LUP technical advice.

In describing the technical aspects of land use planning advice, he stated that it relies on currently appropriate techniques that estimate the consequences of releases through computer modelling allied to appropriate risk estimations based on widely accepted data.

He described the end points which are used when developing land use planning advice on the basis of consequence of major accidents as

- In the case of fire, the consideration relates to thermal radiation (heat radiation intensity and exposure duration)
- In the case of explosion, the consideration is over pressure generated.
- If toxic material can be released, the consideration is the ‘toxic dose’ (combination of concentration of the substance and specific exposure period).

He stressed that it is not just the concentration of heat intensity that is of interest but exposure time must also be included.

Arising from recommendations of the Buncefield major accident enquiry which advocated the use of risk based assessment (based on the risk of fatality) for all major hazard sites and following a review during 2008 using an external expert, LUP advice was now generated entirely on the basis of ‘risk’ as opposed to only considering the ‘consequences’ of credible accidents.

In using a ‘risk’ based approach, it was important that a suitable tolerability of risk framework was established. For LUP a risk figure of one in a million per
annum of dangerous dose (1 x 10^6 per year) should be used (UK). Same figure was used in the Netherlands which had a very well developed risk based system and in Australia as the maximum tolerable public individual risk for new developments.

He described the zone system used in existing establishments and new establishments and stated that before deciding on a full quantified risk assessment it is prudent to determine if there are consequences at the nearest locations. The criteria in new establishments would be that the development should not proceed if they present a risk greater than one in a million to the nearest residents or greater than five in a million to the nearest non residential neighbour.

In new establishments the general sequence of events in developing the technical land use planning advice would be: Identification of credible events and modelling of the consequences of potential major accidents with off-site consequences, determination if there are any consequences at the nearest residents and non residential neighbour, estimation of the risks to an appropriate level of detail, comparison of the risk against the HSA criteria (one in a million per year and five in a million per year as appropriate), and provide the technical advice as ‘advice against’ or ‘does not advice against’.

He described ‘risk’ as a combination of the consequence of a loss of containment event and the likelihood of it occurring. The measure that was used was ‘Risk of fatality’ which was typical in the field of QRA. The Authority would seek from operators of the proposed establishments a detailed risk assessment.

He referred to the QRA submitted to the authority and that the authority carried out a detailed assessment of the submitted QRA including replication of a representative selection of the fire and toxic modelling (including the possible impact of atmospheric inversion) as well as assessment of the likelihood of the various potential major accidents.

Further information was received from the applicants on March 10th and 24th and April 3rd on foot of request from the HSA for more detail. Their overall assessment of the submitted QRA was that it identified the appropriate sources for major accidents with off-site potential, these accidents have been modelled in a suitable way, where necessary sufficient risk assessment has been undertaken to demonstrate that the risk criteria set by the authority would be met.

He then stated that the authority would look at the best practicable means to prevent releases into the environment for bulk storage of liquids and noted that the dangerous substances in this case would be stored in “Double skin” tanks within bunds of capacity > 110% of the largest tank and that there would be on-site retention capability including an appropriate allowance for fire water.
He stated that the solids with environmental risk phrases were considered incapable of causing a major accident to the environment due to their physical state and containment infrastructure.

Flooding was considered as an off-site initiator but taking into account that the floor levels of all locations storing quantities of dangerous substances were at least 5 metres above sea level (one in 200 year flood level) and above 10 metre in the case of the main tank farm and process building. In the event that such flooding should occur above this level, it would be unlikely to result in a major accident and as such this HSA been ruled out from further consideration.

A fire in the Hammond Lane site was considered as a possible off-site initiator, however given the amount of combustible material likely to be present, the distance to the storage tanks, the proposed presence of a firewall and the fact that the fire events related to the solvent storage area are considered in the QRA, it was judged that no further consideration was required.

Erosion was considered as an off-site initiator of a major accident but was ruled out (slow developing).

The outcome of the process was that the criteria had been met (one chance per million/five chance per million) and that suitable containment measures would be in place for any large spills of substances (dangerous for the environment) on the site. Consequently the authority would not advice against.

He also referred to consultation distances which they would be advising the Planning Authority for the area following notification from the operator in relation to presence of dangerous substances on-site. The consultation distances in this case would be 300 metres and the Planning Authority would be asked to forward any applications within this distance.

Referring to the European Guidelines in relation to SEVESO Directive philosophy (diagram showing nest of 4 elliptical shapes). He stated that the HSA would inspect these establishments with particular focus on safety management systems and use of safe technology (the first two of the elliptical shapes), and they would ensure suitable on-site emergency measures are put in place. They would also continue to provide technical LUP advice to the Planning Authority on request.

**Assessment**

The aim of the Directive is stated to be

“Prevention of major accidents which involve dangerous substances and the limitation of the consequences for man and the environment…”.

The 2003 Directive amended Article 12 providing additional uses for maintaining appropriate distances. These additional areas are ‘recreational areas’ and ‘major transport routes’.

The 2003 Directive also provides an insertion (Paragraph 1A) requiring member states to draw up Guidelines defining a technical database including risk data and risk scenarios to be used for assessing the compatibility between the establishments covered by the Directive and the areas described in Paragraph 1. The database is required to take account of the evaluations made by the competent authorities, the information obtained from operators and all other relevant information such as social economic benefits of the development and the mitigating effects of emergency plans.

I note, the Regulations S.I. no. 74 No. 74/2006 (transposing the requirements of the above Directive), came into operation following the decision of the Board on the previous case. I also note that the 2003 Directive came into effect on 16th December 2003.

I refer to European Commission Joint Research Centre Land Use Planning Guidelines in the context of Article 12 of the SEVESO Directive, which was published in 2006. Figure 1 of the Guidelines provides the four nested elliptical shapes (as referred to by Mr. Connelly).

The Guidelines state that major accident fire hazards (fires, explosions, toxic releases) are a relatively new element in land use planning, and refer to the mandate of 31st December 2006 to draw up the Guidelines defining a technical database with risk data and risk scenarios to be used for assessing the compatibility between SEVESO establishments and residential and other sensitive areas listed in Article 12. This requires pursuing of these objectives through controls on

(a) the siting of new establishments
(b) modifications to existing establishments
(c) new developments such as transport links and locations frequented by the public and residential areas in the vicinity of existing establishments.

It is important to note that the Article 12 does not apply retrospectively, and that it is a ‘mandatory’ requirement which cannot be “overruled” by other factors of consideration.

In section 2.3.1 under “human health” the Guidelines state that the protection of residential and other populated areas liable to be effected by a major accident is a key objective of the Directive. It further states:
Member States shall ensure that their land use and/or other relevant policies and procedures for implementing those policies take into account the need, in the long term, maintaining appropriate distances between the establishments covered by this Directive and residential areas, areas of public use and areas of particular natural sensitivity or interest...."

The Guidelines also require identification of ‘vulnerable receptors’ and to assess qualitatively the environmental impact on these receptors including areas defined in the Habitats Directive and Birds Directive and water.

Referring to the definition of risk within the Directive as

“Risk: The likelihood of a specific event occurring within a specified period or in specified circumstances”

the Guidelines state that risk or risk management in the context of LUP in general appears by different forms of threat such as; natural disasters (floods, avalanches, earthquakes etc), long term or permanent impacts (industrial or municipal emissions etc.), or man made disaster (short term accidental releases).

The major accident scenarios described in the HAZID report for the application provides 12 scenarios namely release of toxic liquid at (main tank farm, bulk up tank farm, drum storage area), spill of aqueous solution with evolution of toxic gas (ammonia and HCL acid), guillotine failure of transfer line, pool fire in an outdoor area, vapour cloud explosion, fire in solid waste bunker area, fire in transfer station, accidental release of untreated flu gases, accidental release of partially treated flu gases, explosion of incinerator furnace. As stated by Mr. Cleary, of these vapour cloud explosion was considered highly unlikely.

The summary of the impacts provide hazard distances to the relevant end points. The building at National Maritime College would be 288 metres from the main tank farm. Table E provides a summary of the consequence distances of major accident scenarios.

Based on the submissions presented at the oral hearing I am satisfied that the HAZID report which is a Quantitative Risk Assessment (QRA) submitted to the Health and Safety Authority and assessed by the same is along the lines prescribed in the Guidelines.

It did become clear during the hearing that of the four areas indicated in the nested elliptical diagram, (Guidance on Article 12) the involvement of HSA was mainly in the first two circles, that is ‘safe technology’ and ‘safe management’ was limited in terms of the third, and did not cover the fourth area.
In the case of the third area i.e. land use planning where a decision to ‘advice against’ or ‘not to advice against’ was based on technical considerations- risk of fatality estimated through modelling. Mr. Conneely stressed that the Authority offered ‘no advice’ on the site selection process or the suitability of one site above another or one design above another.

Emergency planning, the widest and ‘all encompassing area’ of the nested elliptical shapes shown in the Guidance for the Directive, is outside the remit of the HSA. The ‘Competent’ authorities in this regard are stated to be HSE, Cork County Council and Garda Siochana.

In the case of ‘upper tier’ establishments, the competent authorities are required to prepare emergency plans, and this seems to give rise to a requirement for consultation with these authorities at the initial stages of a project (I am not quite clear on the precise point). In the case of lower tier establishments however, it seems there is no requirement for consultation with the competent authorities providing emergency response.

In this case the proposed facility would be considered a ‘lower’ tier establishment. It was explained that this was a matter of ‘size’, rather than ‘compounds’, as such it was ‘scale dependent’.

There were discussions at the hearing regarding movement of an establishment from lower tier to upper tier SEVESO establishment. While the applicants maintained that because of the size of the storage containers there would not be adequate head room for increasing the amount, (to trigger a change in level), and that the excess capacity in the planned containers would be in the region of 28%. Mr. Noonan referring to Table A (page 7) of the report, noted some areas of 80%.

I note that although the capacity proposed in this case is identical to the previous proposal (50,000tpa for hazardous waste), the storage capacity proposed is less. The reasons for reduction in the storage size of the compounds, is not specified.

Regardless of the size of the containers, a change from lower to upper tier establishment does not seem to require a new process of consent from either of the competent authorities. The only obligation on the owner of an establishment seem to be ‘to inform’ the competent authorities.

However, the level change would put obligations on the ‘competent’ authorities to provide emergency plans for an establishment already in operation, without being consulted prior to commencement of operations.

In response to a question Mr. Daly stated that because it was a lower tier site there was no requirement on the operator, but there was a legal requirement on the competent authority to provide emergency response, (should a need arise). The smaller circles (diagrams of Mr. Cleary) to a certain extent were irrelevant.
to them, because if somebody was injured in the middle of the site they had responsibility to provide rescue and/or treatment in the middle of the site, as they would to a member of the general public injured off-site. In this regard they also had to be concerned with the safety and response to their own staff when they had to enter the site.

Mr. Malone (Chief Fire Officer) stated that likewise they had to cover the safety of their members.

He further stated that they had not done any preparation based on this because they were not aware there was a consideration and that it had not come to major emergency planning team as a query, so they had not done any work on it.

In response to a question Mr. Cleary stated that reclassification of the facility as a ‘SEVESO 1’ (upper tier) facility was theoretically possible and that HSA had identified this possibility.

I also note in the submission of HSA a level change is considered a possibility (arising from re-classification of ash), but it is stated that this would not change the advice of the Authority.

One of the key considerations for PRA (principle response agencies) is stated to be availability of a secondary access to an establishment as the primary access route may be blocked or impeded as a result of an incident. In the case of the subject site, there is a single access which can be approached from only ‘one’ direction. This access, as discussed under ‘hydrogeology’ is prone to flooding which could hinder or prevent access by the emergency response units.

The likelihood of such a flood event occurring in the future is considered as a real possibility arising from Climate Change. The fact that the applicants have proposed to raise the design level of the whole facility by a considerable amount is also an indication that such an occurrence is considered as a plausible possibility.

The second aspect of single access is related to hindrance of emergency response units access, as a result of evacuation of the uses in the vicinity of the establishment. In this case the NMCI with its 800 students and additional primary /secondary school students using the sports facilities presents a problem. (I refer to the photo I have taken during one of my inspections, showing school children boarding a bus in NMCI).

The applicants’ suggestion that the students can evacuate to Haulbowline, was not considered appropriate as they would have to move in the direction of the incident (towards the road) first. The second option developed at the hearing was ‘shelter in place’ (i.e. at the NCMI). I note this would have to be ‘notified’ to European commission subsequently.
In this regard I draw the Board’s attention to the submission of 7th April (HSA), where it states:

_The authority will bring to the attention of planning authority the need to consult with the local authority emergency services on any potential impact on local access / egress arrangements in the context of public behaviour in the event of an emergency and access for emergency services._

In this regard in particular the attempts by parents to access their children attending NCMI would need to be taken into consideration.

On the issues of provision of secondary access, the applicants indicated that ‘Lough Beg’ had single access. Mr. Daly stated that site was ‘de-listed’ as a lower site (i.e. had become upper tier after commencement of operations). That was not an ideal situation. He added that in any event because it existed in one area one should not accept it in another area.

In the event of the establishment becoming ‘upper tier’ as an existing facility, it would mean the emergency services would have to provide services without being involved at the initial stage and without the ability to comment on the suitability of the site at the planning stage. Therefore, while I do accept that the current inventory at the site would mean it be classified as a lower tier site, having regard to the ease with which it can change to an upper tier establishment; it is my considered opinion that it should be treated as an ‘upper tier’ site in terms of considerations for emergency planning. As such in my view it would be appropriate to seek the views of the HSE (and other competent authorities) on the matter, prior to a decision on the case.

One of the criticisms of the HAZID report was that the scenarios of explosions were related to the main tank farm in the main facility. The response of the applicants was that the amount stored in the waste transfer station was quite low comparatively (25m³ vs. 400m³) and as such they had concentrated on the larger aspect.

I will first look at a possible incident at the main tank farm in the main facility. In this regard I refer the Board to the diagrams provided by Mr. Cleary, during the dedicated session.

The design of the facility does provide screening of the main tank farm from the road and to a certain extent from the car park on Gobby Beach, because of location of the main building in between.

There is however, very little protection (only the landscaped mound) for those walking on the public path (proposed to be re-routed to the eastern side of the site as access to Martello tower from the beach).
It was explained during the hearing that the likelihood of a person walking on
the said footpath or be on the beach were taken into consideration during the
quantitative risk analysis, but the likelihood of this was much less than
somebody in Hammond Lane.

This was strongly contested by the observers who maintained that both the
Gobby Beach and the footpath to Martello Tower were used frequently.

In this regard I refer the Board to the photo of the crossing point at the
southern boundary of the appeal site and the Martello field. Placement of a
number of stones as a path to ease the crossing and the general state of the area
around, would in my view suggest perhaps quite regular use of the path.
Having regard to the proposal for provision of replacement path, it would also
be reasonable to conclude that a certain level of usage was assumed. In any
event it would in my view be appropriate to carry out surveys to determine the
usage level of the path and indeed the public/recreational areas adjoining.

The impact on the beach directly east will be somewhat lessened because of
the height of the tank farms (approximately 10m above the beach level).

In the case of an accident explosion or fire in the waste transfer station there is
little protection of those on the footpath of the public road (leading to Goby
Beach). This was a particularly sensitive issue for the observers, who referred
to those walking to the beach, and to the funeral processions to Rocky island
crematorium, and the 7.5m distance of the waste transfer station form the
footpath. Again in my view surveys to determine the current usage levels
would be appropriate.

Having regard to the requirements of the amended Article 12, which
specifically refers to recreational areas and locations frequented by the public,
as areas for consideration, it is my considered opinion that the analysis must
include the above areas.

In assessing the impact of the accidents at the appeal site whether it is the
transfer station or the main facility the main consideration seems to be in
relation to the Hammond Lane facility. Such consideration given its proximity
and processes involved is of course appropriate.

Outside the site boundaries, the consideration is limited to the building at the
National Maritime College of Ireland. As can be seen in the attached photos
which I have taken during one of my inspections, it is quite clear that the
usage of the area to the front of the building (i.e. between the building and the
road) is not negligible. I do accept however that most of the forecourt areas are
located in the outer circle of ‘no discomfort for long exposure’.

Following Buncefield report the applicants decided that a VCE (vapour cloud
explosion) was not a realistic scenario in this case. This was because the rate
of flow of liquid transfer would be 30m³/hr (rather than 100m³/hr). During the
hearing there were lengthy discussions regarding the findings of the
Buncefield report. In this regard I accept the assertions by Mr. Conneely of
HSA and by Mr. Daly of HSE that the conclusions of the report have not been finalised.

I also consider it plausible the assertion by Mr. Daly that the important thing is not the rate of flow but the amount of spillage prior to an external ignition causing event. I would accept that at 30m³/hr flow rate it might take longer period to form a ‘pool’, but eventually it would have the potential to explode. As such I am satisfied that examination arising from risk and consequences of a vapour cloud explosion would also be appropriate.

The HAZID report includes a section on dioxin emissions as a result of a bunker fire. These indicate a small increase in the amount of dioxin emissions in the region of 0.1%. However there seems to be no transfer of this information to the main section of the EIS.

As it was pointed out by some of the observers and indeed by Dr. Staines during the health module the quantitative risk assessment (the hazard report) specifically refers to impact arising from thermal radiation (heat intensity and duration) in the case of fire, ‘over pressure’ in the case of explosion, and combination and concentration of substance in the case of toxic dose. There is no information regarding uncontrolled emissions from the facility as a result of such incidences whether be in terms of particulates or other substances. There were suggestions that particulate emissions (dust) would be considerable. As there were no information provided, it is not possible to comment on significance.

Having regard to the above while I am satisfied that the quantitative risk assessment provided with the application is of adequate standard, identification of all likely impacts and determination of whether they are likely significant impacts arising from such incidences on the sensitive receptors including areas frequented by the public have not been provided.

Having regard to the unique location I am also satisfied that in this case the application would need to be brought before the authority which plan emergencies in the event of an accident at the site prior to making a decision.

As stated earlier the HSA stressed that they do not comment on site selection or site suitability. Article 12 puts a requirement on the Member States, to pursue objectives of preventing major accident hazard limiting consequences through ‘siting’ of new establishments.

The Directive also requires Member States to ensure that all consenting authorities set up appropriate consultation procedures to facilitate implementation of policies.

I will now briefly refer to some of the other issues raised.
A requirement for evacuation of Cobh was not considered to be an issue by the applicants because of distances. This is reasonable in terms of thermal effects of an incident. I note in the case of an accident uncontrolled release of pollutants whether from the stack or from the building/waste transfer station would not have the plume rise predicted for normal operations, and could in theory impact on Cobh and Monkstown depending on the wind/breeze. Such an event could give rise to panic departure of residents in an effort to avoid contact with harmful pollutants. The only access is a single lane road and a single lane bridge. In this regard I refer the Board to the submission of Mr. Chambers (exhibit 78) which included a video of the Hickson fire recorded by a person at the naval base, showing cloud drifting towards Cobh, and page 98-99 of the transcripts of proceedings in relation to considerations regarding evacuation of Cobh.

I also refer the Board to the submission of Mr. Norcott Roberts on 18th June (exhibit 123). These relate to a fire at Campala Argentina. At the request of the inspector, Mr. Cleary provided a comparative assessment of the facility with the proposed facility and concluded that notwithstanding the significant on site damage in Argentina, the explosion and fire does not appear to have posed a threat to persons off-site. Observers drew attention to the green ‘space’ around the facility and to the presence of the fire trucks as an indication of the distances involved. They submitted such distances were not available in the case of the proposed development. Having regard to the distances of the process facility and waste transfer station to the site boundaries, I consider these to be plausible, particularly in relation to public paths, located adjacent to the site boundaries.

On the issue of accidents during transport of hazardous waste I do concur with the submission by Mr. Conneely that the Directive does not apply.

There were discussions on whether the models used were appropriate. In relation to ALOHA model and the fact that it does not deal with chemical mixtures Mr. Cleary stated that they looked at the worst case scenario in terms of calorific values, in terms of toxicity of the compounds and looked at the range of thermal radiation or toxic loads (SLOTS). They had compared the outputs from ALOHA over a range of wind speeds and stabilities with the EFFECTS model. The differences were minor within a metre of each other. Mr. Daly stated that modelling was only modelling and he asked whether the identical chemicals were tested with identical parameters in EFFECTS and in ALOHA and what the results were. Mr. Cleary stated that other applications had stated that they produced similar results. Mr. Daly disputed that they would give similar results. The applicants agreed to bring the results.

Mr. Conneely had repeated some of the modelling in ALOHA using their own approach and did some modelling in PHAST (confined to thermal effects). In his view ALOHA was conservative whereas PHAST would give more realistic and less conservative figure and less of a distance. While I do not have the competency to comment on the appropriateness of the models used, I consider it appropriate to provide the details of assumptions and figures provided in the models for independent verification by those with superior knowledge.
I now refer to County Development Plan objective ECON 3-9 in relation to proposals for new establishments:

*It is an objective, in assessing applications for new development or expansion of existing development involving hazardous substances, to have regard to:*

- The Major Accidents Directive (SEVESO 2) 96/082/EEC.
- Potential adverse impacts on public health and safety and
- The need to maintain appropriate safe distance between residential areas, areas of public use and areas of particular natural sensitivity.

These are in line with the Guidelines for the Directive.

In view of the above the following are my finding on the issue:

- There has been a proper consultation process with the HSA

- There has been no demonstrable consultation process on the suitability of the site for the proposed development with other competent authorities such as HSE, which need to provide emergency response.

- The location of the site served by a single and one directional approach road is restrictive for the purposes of emergency planning. In addition there is an accepted likelihood of flooding of this single access road

- A third level college with considerable number of pupils where there is regular usage of sports facilities by primary and secondary school pupils, is located within 288m, i.e. within 300m consultation distance. In my view it needs to be considered as a vulnerable receptor as whole not just the building and emergency planning would need to be considered.

- There is information deficit regarding usage levels of the recreational areas of Goby Beach, Martello Tower and the connecting path, which are located adjacent to the site boundaries. There is also information deficit regarding usage levels of public footpath to Goby beach and Rocky island crematorium

- While the overall site area is considerable, the sections where the main process building and the waste transfer station are located have excessive site coverage and have inadequate separation distances from the site boundaries to provide buffer areas.

- While consultation is not mandatory for lower tier establishments, having regard to the above, and having regard to the fact that there is
no consent process for upgrading of lower tier establishment to an upper tier establishment where consultation is mandatory, it is my considered opinion that in this case, the views of the competent authorities which need to provide emergency response need to be sought prior to a decision

- The EIS is deficient regarding type and amount of uncontrolled emissions during an incident, documentary evidence has not been provided regarding the height of plume, in the event of an incident. It is also deficient as there has been no examination of vapour cloud explosion.

As referred to earlier there was discussion of ‘what if scenarios’ provided by the applicants on 8th May. Some of these included explosions at the proposed incinerators arising from various causes such as a gas bottle hidden in the waste mix. I am satisfied that such scenarios were taken into consideration in the assessment of the HAZID report, by the HSA.
12. Human Beings

Impacts arising from the proposed facility on their health and well-being, is at the heart of objections by the harbour communities. Impacts on human beings cover a wide range of areas including physical impacts, socio-economic impacts and health impacts.

During the hearing and having regard to the involvement of a considerable number of different specialists, the impacts were discussed in dedicated sessions, but allowing cross references, where necessary.

Of these air quality, health, and major accident hazards, were examined in consecutive sessions. Issues related to impact on economic activity, recreational and residential amenity, visual impact, traffic, impact on built and natural heritage impact on material assets, also form part of the overall impact on human beings independently and cumulatively. For logistical reasons, these are examined separately.

Health

This section of my report will cover impact on human beings from health point of view.

The dedicated session took place on 11th June. It was also attended by Dr. Murphy, advisor to the inspector. Some of the expert submissions and questioning took place on previous days. Responses to some issues raised during discussions were provided by experts through follow up e-mails, after the dedicated session. These were also forwarded to the inspector’s advisors.

In my examination of the health impacts, I propose first to refer to the main arguments put forward by the applicants and by the observers, and examine the adequacy of the EIS, prior to outlining my findings.

Applicants’ position

The main argument put forward by Dr. Hogan\textsuperscript{86} was: “the proposed resource recovery facility is unlikely to have any significant effect on the environment and on human health”.

He referred to two literature reviews carried out by HRB\textsuperscript{87} and DEFRA\textsuperscript{88}, and stated that while the former did not draw any conclusions, the UK report found no conclusive evidence of a link between cancer and incineration, found

\textsuperscript{86} Director of Employment Health advisors Ltd., and author of the section on human health. for credentials see day
\textsuperscript{87} HRB - Irish health Research Board, 2003
\textsuperscript{88} DEFRA- UK Dept of Environment Food and Rural Affairs, 2004
little evidence that emissions from incinerators made respiratory problems worse, and in most cases incinerators contributed only a small proportion to local levels of pollutants.

He maintained that nearly all the studies that found health effects pre-dated modern technology, and pre dated all regulatory restrictions on allowable emissions. Given that the emission levels of modern incinerators were much lower, the potential impacts of dioxin and furans on cancer rates were small or non-existent. He stated this was confirmed by WHO (fact sheet 225) which stated that there is a level of exposure below which cancer risk would be negligible.

The fact that the facility would be operated in accordance with the strict terms of EU Waste Incineration Directive meant that emissions would be lower than practically all facilities assessed in these publications, reducing even further any possible risk.

In his presentation to the hearing (29th April,) he stated that emission levels would be 100 times less then 20 years ago, and that basic scientific principles indicated that the more controlled the emissions were, the less potential for any health effects.

He stressed that while dioxins were carcinogenic, the effects were ‘dose’ related, and that in this case they simply did not occur in high doses. Understanding of toxicological principles and the concepts proposed facility risk and hazard was fundamental in understanding the issue.

He stated “air modelling suggests that the proposed development would have minimal impact on background measurements of particulate matters (PM\(_{10}\), and PM\(_{2.5}\)), and not enough to put levels above air quality standards”. He submitted these included smaller particles including so called nano particles. We were learning about these ultra fine particles but epidemiological studies did not show consistent significant effects.

The overall finding of the largest study on Cancer (Eliot, 1996, UK) was no increase in cancers in those living near incinerators.

Other heavy metals such as lead and mercury were not carcinogenic, their impact depended on dose and to a great extent they were retained in the filtering devices. They were not formed in the incineration process but had to enter as components of waste. One would not expect large levels of these in pre-treated municipal waste. Air modelling had suggested no significant increase in heavy metals in the vicinity of proposed facility.

He said epidemiology specific to incinerators gave no basis for developing quantitative health impact functions and no attempt was made to use it in this way. It was considered that a more fruitful approach would be to examine the specific substances known to be discharged from an incinerator, model the
resultant environmental concentrations and use exposure response coefficient relating to those specific substances to estimate the magnitude of adverse health outcomes.

All information available on Ringaskiddy facility indicated that all emissions would be well within the statutory air quality standards, and these provided strong evidence that there would be no deleterious effect on human health either in the immediate vicinity or in the wider context, due to its operation. Hazardous waste was there anyway and was being exported for incineration elsewhere. From human health perspective the relevant consideration was what came out of the facility in terms of emissions rather than what goes in.

Modelling predicted that there would be no significant effect on air quality after taking into account that hazardous waste would be incinerated and it was therefore reasonable to state that no detrimental health effect would result.

In response to some of the points raised in written submissions he stated, that higher cancer rates in Cobh were related to social deprivation.

In his view the British Society of Ecological Medicine (BSEM)\(^9\) had very little academic standing. The DEFRA report had stated that the BSEM report failed badly on its understanding of the incineration process, and its significance as a source of substances, significance of dose of pollutants that could result from incinerators, and the adverse effects associated with alternatives to incineration, that it relied on outdated material, and as such its conclusions with regard to health effects of incineration were not reliable.

In relation to Stockholm Treaty he again referred to DEFRA report quoting from the same:

‘...an incinerator accepting 100,000 tonnes of waste per year over 25 years will result in the production of approximately 25 grams of dioxins and furans in solid residues and approximately 1 gram in emissions to air... Accidental fires, industrial combustion and small scale waste burning give rise to more emissions to air’.

He maintained that a ‘health impact assessment’ was not a ‘legal requirement’ for a project such as this, and it did not add to the planning process. It was more appropriate in cases of building hospitals, schools or public transport. They were extremely difficult to do for individual projects and the information gathered was not substantive, or reliable.

He stated that there were two approaches in assessing health effects of a project, namely –

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\(^9\) BSEM – provided by observers as part of written submissions
(a) Assessing potential emissions from the construction and operational stages and estimating effects on human health, (i.e. start with environmental baseline and assess possible changes from that baseline on human health). Then one could study exposed populations, paying particular attention to vulnerable receptors such as hospitals, schools, nursing homes. This approached also allowed use of air quality standards (This was the chosen option)

(b) Assessing human health and estimating potential effects of emissions from the construction and operational stages of the project. (i.e. start with the human health baseline and assess possible changes from the baseline as a result of emissions from the project). The attractiveness of this approach was that it was site specific, but it could be very difficult to establish some baseline data. While some health statistics such as cancer data were reasonably reliable (based on firm diagnostic criteria), it was generally impossible to assess cancer rates in small areas surrounding projects particularly if the population is relatively small.

In his view (and responding to requests by observers in the written submissions that a baseline health assessment and routine health monitoring be carried out in the vicinity of the proposed facility), it was far more important to monitor the exposure than rather than trying to monitor health. This was far more sensitive to potential changes in the environment and gave results before human effects, thus allowing for prevention rather than detection of disease.

He concluded that when bodies such as WHO, the EU, health and Environmental and food agencies, the Irish and British governments all say 'incineration, when operated properly and within licence, is safe', it was reasonable to conclude it is safe.

**Observers’ position**

One of the main areas of concerns for the objectors was related to the toxic substances generated by the incineration process. They stressed that incinerators while reducing the bulk of waste to 1/3rd, were transferring the remaining 70% into the air through the stack.

They were most concerned about the impact of accumulating toxins on the younger population, their children, grand children and future generations.

They maintained that while some of the substances were subject to emission limits others were not. They stressed emission limit values were being reduced repeatedly, because they were harmful. The arrow was pointing downwards.

They submitted that there were no safe thresholds for a number of the substances including heavy metals. These substances were harmful even in
minute amounts and to draw the conclusion that there would be no impact on human health was erroneous.

They submitted that the examination of impacts was confined to regulated emissions from the stack and in doing so relied on air quality models to assess impact on human health. This in their view was inadequate, as it did not include other emissions from the stack and non-stack emissions such as fugitive emissions, malfunction emissions, accidental emissions, major accident emissions, emissions during transport and handling. They stressed, given the track record of the applicants elsewhere exceedances were likely to occur, each adding to accumulation of these substances in the area.

They noted that there was no examination of interaction of emitted substances. There was no examination of impact on their health arising from the toxic ash, filter residues, and transport and handling of the same.

They referred to requirements under Stockholm Convention to which Ireland was a signatory, but was the only country yet to ratify.

They argued that the EIS was inadequate in assessing the impact of the proposed development on the health of the harbour communities. There was no examination of impact on school children, or NMCI. There was no examination of impacts on public arising from accidents (major or minor), inside or outside (to/from) the site.

They stressed there were no baselines studies. They submitted that Cobh in particular suffered from higher rates of cancer (44%), and the health of the population was already compromised.

They noted that while the Board was precluded from considering the issue in the case of the previous application, those powers were now restored.

In the past, when they drew attention to toxic effects of asbestos they were accused of scaremongering, but events had proved them right.

They asked the Board to note the legacy of polluting industries in the area, the toxic nature of the emissions from the proposed incinerator, inadequacy of the EIS, and to apply the ‘precautionary principle’ in this case.

Quite a number of local GPs came to the hearing, including Prof. Colin Bradley of UCC, not only for making presentations but also following and taking part in various sessions of the proceedings. There were also presentations by a number of other health practitioners including midwives, and nurses operating in the area.

In trying to convey their concern, the objectors also brought to the oral hearing a number of experts, Dr Gavin ten Tusscher from Netherlands, Prof. Vyvyan

90 National Maritime College of Ireland, located opposite the proposed facility
Howard, from UK, and Prof. Anthony Staines (Ireland), who were able to attend on different days (12th May, 9th June, 11th June).

I shall now refer briefly to the main points of the submissions by the expert witnesses, and their responses to some questions.

Dr. ten Tusscher, (Netherlands) is a paediatrician who has been carrying out research on health effects of chemical exposures for the past ten years, predominantly dioxins, PCBs and polybrominated diphenyl ethers. He was also a guest lecturer in university of Liverpool medical school.  

He had confined his presentations to dioxins and furans (TCDD/F), because it was his field of expertise. Nevertheless it had to be borne in mind that many other substances found in incinerators also caused serious negative health effects. He would also briefly touch on particulates when talking about lung disease.

Dioxins were formed as unwanted by-products of incineration process, and were one of the most toxic substances known. They did not occur naturally and were a product of combustion process. They were a health hazard because it was very difficult to break them down in the environment or in our bodies. They kept accumulating in our bodies in fat tissue, and they readily passed through placenta and milk from mothers to babies. Dioxin intake of a toddler was more than twice that an adult, because of body size.

He referred to studies indicating increases in infant deaths and congenital disorders near solid waste incinerators. Other effects included hormone disruption, decreased lung function, immunity interference, influence on thyroid, increased cancer risk, retardation of brain development. He gave a long list of studies in relation to these. He stressed there was a long period between exposure and negative health effects to manifest themselves.

He stated that while it is often argued that risk of an accident in an incineration is small, the incidences in the preceding years have shown numerous accidents at modern waste incinerators and by-product storage facilities resulting in high exposure. He gave a sample list using media search between 1993 and 2009 of various such events. He stressed that accidents also occurred in modern day incinerators.

In his view sampling of a number of key substances as done in the EIS was not sufficient. Bio-monitoring was needed to have a complete picture of exposure. Examination of interaction of all the substances also needed to be done.

The limit values have been repeatedly and drastically lowered as a result of scientific evidence, from the ‘then’ acceptable levels. He would not be surprised if European Union did not adjust the limits down again in a few years time.

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91 For credentials refer to evidence on day 10 (exhibit 45)
While he noted the progressive reduction in emission limits of dioxins, he did not consider there were any thresholds below which they could be acceptable.

He stressed that while the filter standards reduced the emission of dioxins and other substances through the chimney, what to do with these substances collected in the flue gas or fly ash presented the next problem. The toxic residues often stored in large storage dumps also presented risk to the environment and health of the population, particularly in the event of an accident. Experimentation with working into other residues such as tarmac had been tried, but also presented toxins when tarmac is broken up. Dioxins created by the incineration process could not be destroyed, and continued to accumulate in the environment.

Prof. Vyvyan Howard, a medical doctor specialising in toxico-pathology, stated that while there was a reduction in the emission limits of some toxins and some particulates through regulatory controls, the emerging research was pointing to serious dangers arising from other unregulated emissions and in particular ultra fine particles (UFPs).

These were extremely small particles (smaller than bacteria) capable of passing through brain/blood barrier, and across placenta. In particular in the lungs they went further down than others into the Alveoli far beyond body’s defence mechanisms to throw them out. Once they penetrated the epithelium, they were readily transferred from lungs to blood stream.

The filter technology was not efficient at filtering ultra fine particles. Because of their very nature they were hiding under other substances which the incinerators needed to emit. They passed through the filters.

Not only a high proportion of UFPs escaped the filters, but they were chemically reactive and carried a wide range of products of incomplete combustion and absorbed metals in them. The relative toxicity of UFPs arising from different processes remained un-researched.

UFPs were not covered by the Directives. Imposition of limits was not yet possible as they were not yet fully understood. He noted the focus on the potential health hazard of particulate matter exposure did not occur until the last decade. Imposition of limits in the case of larger particles only occurred in the last ten years. He noted, scientific research always preceded the regulation.

In the case of UFPs there was enough knowledge about their dangers. EU and various governments were now providing funding for research. (He was just given 2.5m EU funding)

The current standards for particles were in terms of total mass. The UFPs were only around 1% of total mass, and as such they constituted a small proportion

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92 for credential see proof of evidence 9th June.
of the mass of particulate material, but they covered large surface areas. They were volatile because of the imbalance between no of atoms and number of electrons, and therefore had raised chemical activity.

While the regulatory authorities were introducing limits on larger and fine particles (PM\textsubscript{10} - PM\textsubscript{2.5})\textsuperscript{93} another problem was emerging arising from exposure to plume of UFPs. Modern plants with their high gas fluxes guaranteed production of ultrafine particulate aerosol. UFPs acted like gases, and of course bag filters had to allow gases to pass through.

The evidence seem to indicate that there was a large amount of synthesis in the plume, that is ‘de novo synthesis’ and synthesis of new particles in the cooling plume, but there was yet insufficient knowledge on the subject. There was growing evidence in relation to mechanisms of catalysts, lipid oxidation, protein misfolding, all associated with particle. Gravimetric indices that are being used (for the larger particles) were not likely to be protective of health in terms of UFPs.

He noted, that it had been known for some years that aerosol emissions from combustion processes showed a bi-modal mass distribution, with a peak of coarse particles and another one of ultra fine particles.

A significant level of uncertainty about level of impacts of UFPs remained. Both WHO and HRB recommended biomarker studies. Epidemiological studies were beginning to come out, and would put pressure on the regulators to react.

Incinerators appeared to be very important sources of particulate contamination. A study in Sweden assessed the contributions of a modern incinerator to PM\textsubscript{2.5} and found it to be 17-32\%. He submitted that the increase modelled by the applicants at 0.5 μg/m\textsuperscript{3} with a background level of 7 μg/m\textsuperscript{3} appeared to ignore very significant contribution made to particulate burden by SO\textsubscript{x} and NOx.

Modern incinerators were a major source of fine particulate emissions (referred to findings of a 2007 study). The contribution was not just through direct PM emissions but included secondary organic compounds.

There were no thresholds for fine particles (i.e. no level below which deaths did not occur.). Children and foetus were particularly vulnerable to particulate air pollutants.

He noted that secondary particles and their impacts were not considered in the application at all and have not been incorporated into the (very limited) risk assessment. Without such consideration it was not reasonable to describe particulate emissions from the proposed incinerator as having no impacts.

\textsuperscript{93} PM – particulate matter. Sub text indicates diameter of the particle
In relation to substances which are currently regulated, he stated that while the limit values per unit had come down over the years (such as $\mu$gr/m$^3$), the increase in the capacity of the facilities meant that there was little or no reduction in the quantum of emissions. This meant the accumulation in the background levels continued to increase. The epidemiological studies could only be done retrospectively. But, as large incinerators have not been around long enough, it was too early to know epidemiologically whether they had an effect.

While the proponents of new facilities tended to dismiss older research as irrelevant, the opponents not unreasonably, were arguing that similar claims of safety were made in relation to those older facilities when they were operating.

In response to question he did not completely accept the argument that by putting new filters and new procedures in place, modern incinerators removed the elements that gave rise to previous (unfavourable) findings.

In his view the risk assessment undertaken by the applicants was simplistic, the principle assumption being if air quality standards are not exceeded by the combination of existing ambient concentrations and increase from the proposed incinerator then no harm would occur. This approach was fundamentally flawed for emissions for which no safe levels could be demonstrated.

He referred to the definition of precautionary principle and that it should apply “where there are reasonable grounds for concern that potential hazards may affect the environment or human animal or plant health when at the same time the lack of scientific information precludes a detailed scientific evaluation”. He suggested this was one such case.

Prof. Anthony Staines, medical doctor specialising in environmental epidemiology had serious criticisms of the section of the EIS related to impact on human health. There was no description of the population and its characteristics, the section on incineration and health was vague, the section on emissions was a series of statements. He noted there were no references to Cadmium or Arsenic as potential pollutants.

Apart from plagiarism (of some of his own papers), on health issues (on respiratory symptoms, reproductive effects and cancer) the literature review was extremely inadequate and relied on second hand review carried out by others. There were no baseline environmental analysis, no estimation of impacts on the population, no references to recent papers examining these.

Furthermore, the reviews referred to in the EIS were outdated, going back to 2003, and 2004. References to WHO referred only to a 2005 fact sheet, while there was a WHO workshop in 2007.

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94 for credentials see proof of evidence 11\textsuperscript{th} June
He stated that standard methods used for a Health Impact Assessment were similar to those required for an EIA as required by the EU Directive. Standard procedure would have screening (mostly a desk study), scoping (consultation with stakeholders, developing scale of study, including field study) and finally assessment/appraisal.

He submitted that a project of this kind required a proper HIA.

In response to question he stated that there was growing awareness of effects of particulate matter. The biggest new risk for cardiovascular disease identified in the last decade was the effects of particulates and there was no doubt that all the levels mandated by Europe had substantial health effects. The reason the levels were set as they are presently, was because it was not currently feasible to reduce exposure levels below those levels.

Half of the papers to be presented on Environmental Epidemiology conference in Dublin in August 2009, were related to that issue. The current difficulty was finding a way of measuring them, and two of the papers were specifically dedicated to possible measurement techniques. Regulation on PM$_{2.5}$ had became possible only after techniques were developed to measure them.

In response to question he said socio-economically deprived areas usually had more contaminated environments (cannot move out or can not protest). While it was not easy to separate different factors associated with ill health or morbidity it was not impossible.

In response to question he agreed that there is no identifiable threshold below which substances cited in Directive 2004/107 (Arsenal, Cadmium, Nickel, Polycyclic Aromatic Hydrocarbons), that they were toxic substances and that the bar chart provided by Dr. Porter (air quality expert for the applicant) showed increase of these substances over the current background levels. Such increase would be undesirable from human health perspective.

In response to question he stated that it would be possible to calculate effects of substances such as cadmium (or how many could be effected) as it was quite a standard risk calculation, but it has not been done in the EIS.

In response to question he said he did read the Hazard Identification Report$^{95}$, and while he would not have expertise in the area, he had two observations to make:

- transporting bulk hazardous liquid chemicals to the site was hazardous, and
- hazard seemed to be expressed only in terms of ‘over pressure’ or ‘thermal exposure’.

While he would fully accept their importance, he had not seen anything in the documents to indicate that any assessment of the where the plume from such

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$^{95}$ see major accident hazards
an accident might go, who might be affected by it, and implications of local
wind and topography in terms of where the smoke and fumes might go.

In response to question he said there is no evidence in the documents he has
seen that the impact of the waste-to-energy facility on human health had been
assessed.

In response to question by Prof. Bradley he said the concept of risk in public
health is slightly different because the workers in an organisation knew the
risks and received financial remuneration in exchange for taking risks, they
would be more informed about the risks than the general public, who do not
share the direct benefits of the operation of the plant.

Although the EIS stated that it was going to do a risk assessment, there was
nothing in the document indicating what the risks were to different groups or
to different areas. He noted that there were procedures to calculate those risks.

Prof Colin Bradley⁹⁶, professor of general medical practice at UCC (also
carrying out clinical duties in Cobh), said there was little data on which to
base assertions about the health of Cobh, but the little they had was not
encouraging. The people had been exposed to a number of hazards from
industrial processes over a long period of time, and were suffering from a
variety of illnesses. It was also a socio-economically deprived population.
There were reasonable grounds that the population was not healthy, and he
would say that the health of this population was compromised. On the basis of
what he had seen he would not like the population to be exposed to further
risks.

The cancer rates of 44% above average constituted a ‘real difference’ in
epidemiological terms, with confidence intervals of 1.30-1.58 (statistical
deviation). What gave rise to this was debatable. Not only socio economic
deprivation but other exposures contributed to this.

Coming on to the proposed development and the effects it may have on
patients’ health, he said he was already seeing the impact on his patients who
were worried sick. He knew and they knew that it could be a perceptual
problem, a psychological issue, but it was not going to go away if this facility
was built. This was even before the facility was built. Seeing it across the
water would be a daily reminder.

He referred to the HRB report in relation to dealing with perception of risk,
and how one ameliorates the stresses. This would be done by recognition of
the legitimacy of the community’s concern and through a process of
consultation. This approach was not possible in this case as it was adversarial,
going all the way to the highest court.

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⁹⁶ for credentials see ⁹⁶ June
He asked: so what is there to be worried about? What was proposed was a toxic incinerator, to which toxic material would be brought from length and breadth of Ireland, and given its capacity perhaps from further a field. This was a legitimate concern.

The nature of these toxins was of considerable concern to him as a doctor. It was not like toxins he saw regularly (such as alcohol which went through the system in a day). Once they got into the system they stayed there and did not come out. Additional exposure lead to further accumulation. The health effects were slow, and more significant in more vulnerable and younger members of the population. As stated by Dr. ten Tusscher we did not know what the safe limits were. One hoped the emission levels kept coming down, but experience told differently.

The assurances given were not very assuring. They stated dioxins and heavy metals coming out of the huge chimney stack would go far and away, rather than the harbour, regardless of rain or air currents.

He understood the assumptions used in mathematical modelling about which he was quite sceptical.

The other thing that came out of toxic waste incinerator was toxic ash. The HRB report despite some reassuring messages about how the levels were coming down, concluded

“there is some evidence that the incinerator emissions may be associated with respiratory mobility, acute or chronic respiratory systems are associated with incinerator emissions… although some studies are conflicting, other well designed studies indicate possible links to cancer risks… and residents near an incinerator site”.

In his view further research and more understanding was necessary before introducing these chemicals into this environment.

He was also worried about storage of quantities of toxins prior to incineration, and was not satisfied with the answers he had heard. He was concerned about transportation and spillages.

He submitted that risk assessment would need to be based on knowing all the risks, and knowing how to contain them.

He did not consider application of ‘hazard and risk’ concepts used in ‘occupational medicine’ was appropriate in environmental medicine. In occupational medicine there was a concept of ‘acceptable risk’. Employees knew the risks associated with their occupation, and they drew economic benefit from that employment. More importantly they had the choice of leaving if they considered the risk to be too high compared to the benefits. General population did not have that choice.
He noted both Dr. Hogan for the applicants and Dr. Dan Murphy were specialists in the area of ‘occupational medicine’. In his view their speciality was not applicable in this case.

*Dr. Elizabeth Cullen*[^97] who spoke on behalf of Irish doctors Environmental Association and on her own behalf, referred to very large studies in Japan, Italy linking adverse health impacts and incinerators. She noted problems associating illnesses with incinerators particularly when they are put in areas of lower socio economic conditions where illnesses are normally higher. She stressed that’s why she had chosen the very, very large studies (half a million), to take effects of social deprivation into account.

She asked what was coming out incinerators. Gases, particulate matter, chemicals, heavy metals and both fly ash and bottom ash. Particulate matter was small particles of matter that went right down to the alveoli where oxygen is transferred to the blood. They carried heavy metals and toxic compounds.

The problem with dioxins and PCBs[^98] in particular was that these compounds combined carbon and chlorine, and the body could not easily cope with carbon chlorine compound. It took men 11 years to excrete (half life) these. She noted women got rid of it much quicker, by passing it onto their babies. That’s why foetus and children were at higher risk. They also had exposure disproportionate to their body size.

Many safe thresholds were determined on single substances, but as stated in a Dec 2008 research, compounds may be much more active than expected when combined with other substances. Testing these combinations would take hundreds of years.

She had three issues with this proposal, namely safe threshold (lack of ) of cancer causing agents, the synergistic toxic cocktail effects and the issue of bioaccumulation.

She stated that formal air quality standards are primarily determined by the BATNEEC[^99] framework and this had no direct health relevance. She noted although requested by the European Environmental Bureau, there was no requirement for health related surveillance of incinerator licensing arrangements.

She stressed, history showed that it may take decades to identify health effects of procedures that release chemicals into the environment.

She then referred to Stockholm Treaty, and that the Irish Government has committed itself to reducing the release of dioxins, furans, PCBs as by products of industrial combustion, with a goal that leads to their ultimate elimination.

[^97]: for credentials see day 1
[^98]: PCB - Poly-Chloro-Biphenyls
[^99]: BATNEEC – best available technology not entailing excessive costs
In their view incineration did not destroy waste, but rather transformed it into emissions into the environment. They transformed household waste into hazardous waste. In her view an avoidable risk was an unacceptable risk. Incineration was avoidable.

*Dr. Fitzgerald*\(^{100}\) referred to the WHO definition of ‘health’ as:

“A state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity”

He maintained that health is achieved through a combination of physical, mental, emotional and social wellbeing and that the he believed the proposed development would effect the health of local populations on several levels i.e. physically, mentally and socio-economically, and therefore affect them directly and indirectly.

Generally speaking adequate studies of incinerators and health effects were very difficult to do partly due to time intervals involved from exposure to organo-chlorines, heavy metals and carcinogens concerned and the development of related cancers or other effects. The absence of large numbers of recent studies did not mean that older studies were irrelevant nor it meant that incineration was inherently a safe process.

Referring to Dr. Hogan’s assertion with regard to hazardous waste that “no detrimental health effect will result” he stated that WHO does not easily dismiss the idea out of hand that incineration can have measurable effects on health and describes the review of the available literature as “inconclusive”.

He referred to report on the WHO workshop in March 2007 which stated

“It is also important that the adverse effects on health due to nuisance (smell, noise, litter, effect on property values, stress for lack of regulatory response etc.) are considered. These end points often escape formal epidemiological analysis but are relevant for the health of communities”.

He further quoted from the same:

“consideration of all relevant health elements may be achieved through integrated and participatory approaches such as health impact assessment (HIA) which has proven effective in some cases in waste management policies....in view of the various limitations hampering our ability to characterise all risks such assessments should be inspired by a precautionary approach with respect to both the creation of new facilities and mitigation of exposure in existing sites”.

\(^{100}\) GP operating in Cobh in close co-operation with six other GPs
He then referred to experiences of other communities where hazardous waste incineration was located. In particular he referred to a letter by a community based group (SWARD) written in 2004 to House of Commons Select Committee on Environment, Food and Rural Affairs in the UK. 101

He noted that in this case, following hazardous waste incinerators and other associated residue ash landfill sites were up and running, the operators applied to expand their activities due to change in legislation. The community had real concerns about the ability of the environmental agency’s ability to monitor pollution, and actively prevent spills and contamination. He noted the degree these communities were stressed by the burden they were carrying in their locale. He would anticipate the communities in the harbour and especially Ringaskiddy and Cobh and Monkstown and Passage would suffer adverse health effects dealing with the stress of living with such an unwelcome industry in a similar fashion.

Referring to decline in the number of industries in and around the harbour, and greater reliance on more traditional home grown industries in the agricultural and fishing sectors, he submitted that these were very dependant on consumer confidence and trust. (He referred to the recent dioxin pig scare and a damage to Ireland’s international standing). Fugitive emissions or spillage at the site could be extremely damaging to international confidence in agricultural of fishery sector, and affect the health of communities whose livelihood is in those areas.

One of the greatest concerns had to be the emissions from the stacks which were significant sources of carcinogenic and various injurious chemicals known as Persistent Organic Pollutants (POPs), Poly-Chloro-Biphenyls (PBCs), Volatile Organic Compounds (VOCs) and other injurious agents such as micro fine particles.

He referred to injurious effects via destruction of biological processes due to catalytic effects and destructive effects of smaller particles on cells and their DNA especially during the vulnerable process of nuclear acid replication and transfer, to the concerns in relation to the effects of invisible micro fine particles especially on children and the foetus and their sensitive vulnerable growing and developing brain tissues.

He stated that you cannot improve your air quality by incinerating your waste and effectively dumping it in the sky only to have it settle on your lungs, on soil and through the food chain by bioaccumulation and then absorb into your tissues, lymph system and to exert negative health effects at cellular and sub-cellular level.

Referring to the National Cancer Registry findings of cancer rate of 44% above national average for Cobh urban area he stated there are other hotspots

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101 (Page 172, day 16)
around Cork Harbour and this has an all knock on effect on health generally albeit one that is hard to quantify.

He considered Dr. Hogan’s assertion that it’s all down to smoking did not reflect his experience on ground, and that it was a rather striking coincidence that the same community had also lived, breathed heavy smelting dust and other pollutants emanating from Irish steel/ Ispat site with slag heaps of substantial proportions still sitting across a narrow channel. He had been in contact with the data analyst with the cancer registry and was informed that the figures were not broken down to particular cancers.

He stated there were significant concerns about spillages of waste and that it was unlikely that such an operation would be able to operate without accidental spillage either locally at the site or elsewhere on route to the site. Given the unpredictable nature of waste streams being mixed (including liquids, solids and gases) as well as fuels it was extremely likely that there would be a human error or other sources of minor or major explosion.

The risk was further compounded by the activities of Hammond Lane where regular explosions occurred (one in the last month). Students of Maritime College as well as residents of the harbour area especially those in Ringaskiddy were particularly at risk as a population, as their routes of escape and evacuation were severely limited.

Assessment

As part of my assessment of this issue I had regard to the view of my advisor Dr. Dan Murphy, whose report is attached in appendix 2 (Volume III).

I will first look at the assessment methodology of health impacts.

Two possible assessment methodologies namely – assessment of environmental baseline or assessment of human health baseline, are identified in the HIA (appendix 7.1 of the EIS). This was also referred to by Dr. Hogan.

The HIA states that there is no competent authority to assess the latter (i.e. human health baseline) and that there is no legislative requirement for such an assessment. In addition, it is stated that there are difficulties with this approach, main drawback being due to the fact that baseline data on human health for a defined geographical study area is very difficult to obtain, (or that which can be obtained may not be reliable or scientifically unsound).

While noting the presence for National Tumour registry, it refers to difficulties arising from the long latent period between exposure and first signs of cancer, and further cites problems associated with classification of cases in specialist
treatment centres compared with peripheral centres, or the readiness of local doctors to diagnose a condition. These views were reiterated at the hearing by Dr. Hogan.

In explaining the reasons for the chosen methodology, the EIS states

“...baseline environment analysis is by comparison is a fairly exact science and measurements taken over a period of time in a number of different sites give a very detailed picture of the background information. Through modelling and increasing knowledge on potential human health effects of these would give a more reliable method of assessment for a project like this, though measuring potential effects not directly affected by emissions such as psychological effects or social well being would be difficult”.

and concludes:

At any rate the vast majority of possible detrimental effects to human health are related to emissions...in this project therefore, a human health section of an overall Environmental Impact Assessment is used in the assessment, ...modelling and assessments contained elsewhere in the EIS are utilised to assist in this process which is consistent with planning law and is more practical and accurate than other approaches.

This approach seems in general to be in line with section 2.4.2 of the EPA Guidelines on the information to be contained in EIS (2002) which states:\(^\text{103}\)

The physical environment is one of a number of recognised determinants of health which is often at the forefront of community concerns. Health can be affected by a number of direct and indirect environmental pathways, such as air, water or soil. Populations can be affected by either direct contamination or by induced effects of disease vectors, food chains and exposure to risks. The EIA typically deals directly with the environmental pathways and the extent to which these are affected by known contaminants, irritants or change inducing factors.

In relation to how the impact analysis is to be carried out. The EPA Guidelines states:

The evaluation of effects on these pathways is carried out by reference to accepted standards (usually international) of safety in dose,

\(^{103}\) Under section on Health and Safety:
exposure or risk. These standards are in turn based upon medical and scientific investigation of the direct effects on health of the individual substance, effect or risk. This practice of reliance upon limits, and thresholds for environmental pathways, such as air, water or soil provides robust and reliable health protectors for analysis relating to the environment.

Where anxieties about human health are understood to be of particular concern, the scope of the EIS ensures that observance of and reliance upon conformity with recognised national and international standards is adequately related to specific health and safety topic that are of local concern.

I will first examine whether the HIA / EIS is adequate within the framework of the chosen methodology, and in particular whether it addresses the two main components of the methodology i.e. identifying direct and indirect pathways and exposure to these pathways, and ensuring that this is related to health and safety of local concern.

The HIA states

*Potential emissions from the incinerator will be almost entirely to air... Therefore, this assessment will primarily deal with possible health effects of potential emissions to air. We will also consider potential effects of transport and storage of this waste*

Therefore the assessment of the impact of the proposed development on ‘human health’ is confined to impacts arising from ‘emissions’ only.

The EIS states “most important factors to be considered” in assessment of emissions are “the number of people exposed, duration of the exposure and the vulnerability or sensitivity of those individuals to those emissions”. These are stated to be residential areas, private and public health facilities, work places, educational facilities.

The EIS goes on to state that the proposed facility is located in a largely industrial area, and Ringaskiddy with a population of 514 is the nearest village. While it mentions the nearest towns of Monkstown, Carrigaline, and Cobh, and refers to nearest schools in Shanbally and Loughbeg as well as schools in Monkstown, Cobh and Carrigaline, there is no reference to the population characteristics or distances of these settlements, no indication of how the exposure could take place, whether there is sensitivity or vulnerability to those emissions, or whether consideration has been given to possible impact on these receptors.
Under Incineration and health the EIS states

*Most of these studies have looked at incinerators whose emissions of dioxins, particulates and heavy metals are far greater than would be emitted by a modern incinerator, and that basic scientific principle is that the more controlled the emissions are, the less potential of any health effects*.

These remarks are very general and do not give any information on the incinerators studied, substances studied or even the years when the studies took place. Similarly, there is no reference to the capacity of various incinerators examined in these studies, and how they compared with the capacity of the modern incinerators, in particular the capacity of the proposed facility to reach such a conclusion.

In this regard I also note, the points made by Prof. Howard that while the emissions were indeed becoming lesser on a unit basis (μg/m³ of air) as a result of increase in the capacity of the modern incinerators there was very little difference (if any) in terms of the total amount of emissions/accumulation in the environment (between older and modern incinerators). I consider such proposition plausible. I also note this point was not responded to by Dr. Hogan.

Under emissions the EIS states

*the emissions of such a facility will be largely to the air, and emissions by other means are negligible...The nature of emissions may change depending on the intake of the facility, however the flue gas cleaning systems have been designed to ensure that regardless of waste input the emissions will not exceed incineration Directive limits... air modelling detailed elsewhere in the EIS takes into account the nature of waste being treated in arriving its conclusions.*

This more or less describes the basic tenet of the whole HIA, which relies on the conclusions of the air quality modelling that there will be no exceedances of regulated emission limits / air quality standards to conclude that there will be no impact on the human health from the proposed facility.

There is however, no reference to the substances which are considered to have impact, how they may have impact on human health, how significant the impact would be, and whether all of the substances which could have impact were considered. Other than general references to filters, there is no information on what specific measures are proposed, if any, to mitigate or remove any adverse impact.

As stated above, the HIA states that potential effects of transport and storage of waste will also be considered. Subsequently it states:
...Transport of this waste is not without risk,... as a large amount of hazardous waste is exported and of this waste a significant portion comes from Ringaskiddy, reducing the distance required to travel, will result in reduction of the risk, as well as producing economic benefits.

While it would be reasonable to question the relevance of references to ‘economic benefits’ in this section, assessment of risks arising from transport of hazardous waste is important. The EIS however, provides no examination of what the risks would be, how they may arise, who may be effected (in particular Ringaskiddy and Shanbally), how significant the impacts would be and whether any mitigation is proposed.

Secondly, there is no comparative analysis of the stated risk arising from transport associated with exporting of waste with risks arising from transport of hazardous waste to / and residues from) the facility to support the conclusion reached.

I will now look at the literature review. The literature review presented in the HIA consists mainly of HRB, 2003 and DEFRA, 2004.

The HIA states that the former (HRB) is disappointing as it does not make recommendations on the best solutions, but quotes from the same:

There is some evidence that incinerator emissions may be associated with respiratory morbidity. Acute and chronic respiratory symptoms are associated with incinerator emissions...a number of well designed studies have reported associations between developing certain cancers and living close to incinerator site...it is hard to separate the influences of other sources of pollutants, and as a result the evidence of a link between cancer and proximity to an incinerator is not conclusive

It finds DEFRA report more helpful in assessment of the risk associated with incineration and quotes:

We looked in detail at studies of incineration facilities and found no consistent or convincing evidence of a link between cancer and incineration, there is little evidence that emissions form incinerators make respiratory problems worse. In most cases the incinerator contributes only a small proportion to local levels of pollutants”.

It was pointed out by Sr. Staines during oral hearing that the literature review was not only second hand, but that it was also quite outdated. He produced a list of studies on the subject in the last few years (which he stated was only through a quick internet search). In particular he referred to a WHO
workshop\textsuperscript{104}, which was not mentioned in the EIS although being very important. This workshop was also referred to by Dr. Fitzgerald.

I note the HIA contains a separate section on WHO outlining its set up, its objectives, and refers to WHO definition of health:

\begin{quote}
A state of complete physical, mental and social well being, not merely the absence of disease or infirmity,
\end{quote}

During the hearing there were discussions on which version was being referred to. The applicants clarified that Dr. Hogan was referring to fact sheet 225 and to WHO Global update (2005). I am satisfied based on the information before me that 2007 Workshop referred to by Prof. Staines was not part of the literature review in the HIA.

The HIA refers to Irish government website ‘Race against Waste’ quoting from the same:

\begin{quote}
Properly managed and monitored municipal waste incinerators do not impact on the environment, health or food quality...this is because incineration of waste is strictly controlled and the gases emitted are cleaned and scrubbed to ensure that any emissions are extremely low...what determines whether they do us harm is the amount or dose we are exposed to...even if we incinerated 1 million tonnes of municipal waste in Ireland this would contribute to less then 2% of the dioxins emitted to air EPA (2001)
\end{quote}

and concludes

\begin{quote}
This is a very reassuring position for a Government Dept to take.
\end{quote}

During the hearing Cllr. D’Alton questioned how such a statement would constitute a scientific assessment of the ‘health impact’ of the proposed facility.

I would accept that relevance of such a website, as part of literature review for a HIA is questionable. Similarly, I would also question the relevance of references to generation of electricity or production of steam in a HIA (in another section).

In the last part of the literature review the HIA refers to Waste Incineration Directive, and states that the requirements of the Directive were developed to reflect the ability of incineration plants to more cost effectively achieve higher standards of emissions controls compared to 1980s.

\textsuperscript{104} Population health and waste management: scientific data and policy options report, Rome, Italy WHO, (2007)
It also states that the Directive specified air emission limits which must not be exceeded, requirements concerning normal and abnormal operating conditions, water discharges from cleaning exhaust gases, ash recycling, plant control and monitoring, and public access to information, and continuous monitors for certain pollutants. Again I question the relevance of these statements to health impact assessment even within the context of literature review.

Having regard to the above and on the basis of the discussions during the oral hearing I am satisfied that the literature review section of the HIA is less than adequate as it does not review up-to-date studies and as it relies on reviews carried out and conclusions reached by others a considerable time ago. There is no indication that the HIA carried out any investigation of studies which may be of relevance to the specific proposal. It is my considered opinion that the literature HIA is seriously deficient.

I will now look at the pollutants considered.

Under the heading ‘potential pollutants’ the EIS/HIA refers to debate in relation to dioxins and furans, how these substances are already present in our diet and how we may be exposed to high levels because the food we eat come from all corners of the world. Then it explains how they are formed spontaneously from chlorine atoms, carbon that has not been fully oxidised. It notes that the process is the same in the incinerator as turf fires or tiled stoves, and that in countries like Germany the latter group now are producing more dioxins than incineration plants.

Relevant to the case it refers to the dioxin WHO fact sheet 225, and sampling carried out by AWN on background soil concentrations in Ringaskiddy area, and notes they are well below any recorded levels or limits defined in the area. It further states that this is despite the history of heavy industry in the area and in particular Irish Steel which would have emitted pollutants far in excess of what will be emitted from the proposed facility.

It concludes “because of absence of impact on the local levels and bearing in mind most human exposure to dioxins is dietary anyway, it is a straightforward conclusion the proposed facility will have no significant effect on dioxin intake either locally or nationally”.

There is no information on what type of pollutants Irish Steel would have emitted and how it would compare to the proposed facility in terms of substances, toxicity, amounts, how the exposure would take place and how they would impact the receiving environment. The statement is not backed up with any documentary information or information to support the statement ‘far in excess’ of what will be emitted from the proposed facility.

It is also not clear how a straightforward conclusion is reached at national levels from the stated dioxin intake at the local level.
In relation to particulates, the HIA states that any development where combustion takes place emits particulate matter. It notes that particulate levels are coming down in Germany.

In relation to the site it refers to air modelling section of the EIS which predicts that contribution from the site in the context of the baseline is minor and that under maximum operation the levels would remain significantly below levels which would be expected in urban areas, and well below relevant air quality standards.

In relation to heavy metals the approach is the same.

Overall the HIA seem to consist of a series of statements, and conclusions. There is no clear indication of whether there was identification of exposures, and identification of likely significant effects, direct and indirect impacts, sections of the receiving environment which could be affected (if any). As noted earlier, evaluation of effects on the pathways by reference to internationally accepted standards of safety such as dose, exposure, risk, thus reliance upon limits and thresholds for environmental pathways is an accepted methodology.

Within this chosen methodology however, there seems to be total reliance in this case on the work carried out by those preparing the air quality section of the EIS. In particular, there is no indication of involvement in determination of the substances to be studied (surveyed and modelled), the pathways of exposure, the surveys to be carried out, or any contribution to modelling inputs or the assumptions made in the modelling.

Secondly in transferring the conclusions of the Air quality section of the EIS in its entirety, there is no indication that the results were questioned. For example why the surveys showed lesser ambient back ground values in some substances in this EIS than those measured in the previous one, and whether this was as a result of shorter measurement period or the season, or could be associated with discontinuance of some polluting industry, (whether such discrepancy was associated with methodology, or changes in the receiving environment and if latter is the case, reasons for such changes).

As outlined in the Air quality section of my report, the EIS examines only those emissions from the stack which are regulated by the Directives. There is no information on other emissions such as fugitive emissions particularly of particulates from the facility or from the waste transfer station, or during transportation (of waste, or ash or other residues).

Similarly, the HIA does not make any reference to impact on the health of the human population arising from a major accident hazard whether arising from exposure to plume of completely uncontrolled emissions, or dust or smoke (if any) or impact arising from panic and perceived lack of evacuation procedures (particularly of the vulnerable sections of the population).
There is no evidence that the study area was clearly defined. The information regarding sensitive receptors is general.

The section of the EIS on ‘dioxin uptake’ (Prepared by Dr. Callaghan) is of superior quality, but limits itself to normal emissions from the stack only.

Literature review is very important particularly as part of the scoping exercise in terms of identifying areas that needs to be assessed in an EIS. It gives an indication of the most up to date thinking on the subject and emerging new issues. Studies which examine facilities which are similar to a proposed facility in terms of processes involved also provide invaluable help and sometimes provide surrogate data for risk assessment.

In this case a wealth of information seems to have emerged on the subject, particularly as part of the 2007 WHO workshop subsequent to the DEFRA review of 2004. The literature review is also seriously inadequate as it relies on the analysis and conclusions of DEFRA with a specific brief and carried out for a specific audience. It does not include any consideration of local concerns.

Overall, I consider the HIA section of the EIS to be seriously deficient within the framework of the chosen methodology. I am not satisfied that two main criteria identified in the EPA methodology have been met.

**Emissions**

While emissions were considered in the Air Quality section of the EIS, during the hearing they were referred to frequently and discussed in further detail in relation to health impact. Therefore prior to moving into the next section of my assessment of the issue, I propose to look at the emissions in more detail.

For clarity, I refer to the list provided in WHO Workshop 2007 on ‘Population, Health and Waste Management: Scientific Data and Policy Options’ (Section 3.1 Emissions and Exposures under Incinerators):

The Inorganic emissions would include water (vapour), carbon oxide (CO), carbon dioxide (CO\(_2\)), sulphur oxides (SO\(_X\)) nitrogen oxides (NO\(_X\)) and products of incomplete combustion such as silicates, inorganic ash soot, metal elements and their oxides and salts (mercury and other metals with high vapour pressure).

Organic emissions would include (VOC), hydrocarbons, dioxins (polychlorinated dibenzo-P-dioxin and polychlorinated dibenzofuran) (TCDD/F), Polychlorinated Biphenyls (PCBS), Polycyclic Aromatic Hydrocarbons (PHAS).

Particulates (particulate matter with an aerodynamic diameter smaller than 10, 5 and 2.5 microns (PM\(_{10}\), PM\(_5\), PM\(_{2.5}\)) and ultra fine particles. Further
emissions not related to the stack would include ash, butter ash, fly ash, noise, odour, pests, transport related emissions, dust and spores.

There were discussions in relation to effects of most of those, especially chlorinated organic compounds, and particulates. I will refer to a selective few.

**Dioxins (PCDD/F)**

Of the emissions by the proposed facility one that concerns the observers most is dioxins.

They have repeatedly referred to the WHO fact sheet no. 225 (2007) on dioxins and their effects on human health and in particular the first paragraph which states:

*Dioxins are environmental pollutants. They have the dubious distinction of belonging to the “dirty dozen” – a group of dangerous chemicals known as persistent organic pollutants. Dioxins are of concern because of their highly toxic potential. Experiments have shown they effect a number of organs and systems. Once dioxins have entered the body they endure a long time because of their chemical stability and their ability to be absorbed by fat tissue where they are then stored in the body. Their half life in the body is estimated to be 7-11 years. In the environment dioxins tend to accumulate in the food chain. The higher the animal food chain one goes the higher the concentration of dioxins.*

They also referred to findings of Stockholm Convention on the persistent organic pollutants, and submitted during the hearing that despite considerable passage of time Ireland was the only country which did not ratify this convention.

The EIS includes a specific section (7.3) on ‘dioxin uptake’ which refers to the monitoring programme conducted by the AWN consulting in the Cork Harbour area in 2001 and updated during 2008.

Findings of the study were outlined by Dr. Fergal Callahan during the hearing which stated that the background soil concentrations for the sites sampled in Cork Harbour area were found to be low when compared with data from other countries.

The data was then used to establish a baseline for PCDD/F (dioxin /furan) intake for a theoretical maximum at risk individual (MARI) in the vicinity of

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105 PCDD/F – (polychlorinated dibenzo-P-dioxin and polychlorinated dibenzo-furan)
the proposed facility using annual average dioxin and furan emissions under maximum operating conditions and assuming that both municipal solid waste and hazardous waste facilities were operating at maximum permitted dioxin concentrations in the flue gas and permitted flue gas exhaust flow rates were used to model soil concentrations over the operating life of the facility.

The predicted increase in dioxins and furan intake for the maximum at risk individual was determined to be only 6.9% of the EU TWI (Total Weekly Intake) of 14 pictogram per kilogram body weight with a predicted dose increasing from 7.98 to 8.95 Pg/Kg Bw/Wk.

It was therefore concluded that the proposed solid waste and hazardous waste to facilities would have no significant impact on the dioxin and furan intake for even the theoretical maximum at risk person and therefore the facility would have no impact on human health.

This was strongly contested by the observers who argued that there were no safe limits and any increase no matter how small would contribute to accumulation and would be in contravention of the Stockholm convention which aims at total elimination of dioxins and furans.

Secondly they noted that in the study only the emissions under normal operations were considered. These would be at optimal levels. During start-ups, mal function or process upsets or accidents dioxin formation would be at much higher levels, but these were not accounted for. Therefore the figures given underestimated the real emissions.

In response to presentation of Dr. Hogan that dioxins are also being produced in other sources, including backyard burning, they argued the fact that dioxins are produced from other sources such as backyard fires is not a good reason to allow a facility which will add 0.03% to the amount in the environment on a yearly basis

Dioxins and furans are not present in the environment. They are formed during the combustion process and as such are a by-product of the same. Depending on the type of the combustion process there are many different types, but each would carry the characteristics of the original materials.

The ‘The Stockholm Convention’ follows on from the decision of the governing Council of the United Nations Programme 1997-UNEP/GC decision 19/13C to initiate international action to protect human health and the environment, measures to reduce and/or eliminate emissions and discharges of persistent organic pollutants (POPs).

It refers to awareness of health concerns resulting from local exposure to persistent organic pollutants and in particular impacts on woman and through them upon future generations. In 2001, 92 countries are stated to have signed the treaty. In May 2004 the Convention entered into force. The Fourth meeting of the Convention was held in May 2009, where signatories increased to 152.
The objective as stated in Article 1 is

...to protect human health and the environment from persistent organic pollutants.

The Article 3 of the Convention provides measures to reduce or eliminate releases from intentional production and use. Annex 1 provides a list for “Elimination”. This includes Polychlorinated Biphenyls (PCBS).

Article 5(a) of the Convention requires each party to develop an action plan within two years of the date of entry into force of the Convention and subsequently implement it as part of its implementation plan specified in Article 7.

I also refer to EC Regulation 850/2004 on persistent organic pollutants and amending Directive 79/117/EEC. Article 1 of the said Regulation states

The objective of the Regulation is to protect human health and the environment from persistent organic pollutants by prohibiting, phasing out as soon as possible, or restricting production… of substances subject to the Stockholm Convention….. by minimising with a view of eliminating where feasible as soon as possible, releases of such substances…

The Article 6 (3) of the Regulation states:

Member states shall, when considering proposals to construct new facilities… using processes that release chemicals listed in Annex III, without prejudice to Council Directive 1996/61 EC give priority consideration to alternative processes, techniques or practices that have similar usefulness but which avoid formation and release of substances listed in Annex III.

In Annex III substances subject to release reduction provisions are:

- polychlorinated dibenzo-P-dioxin and dibenzofurans (PCDD/PCDF),
- Polychlorinated Biphenyls (PCBS),
- Polycyclic Aromatic Hydrocarbons (PHAs).

In Annex C of the Stockholm Convention it is stated that polychlorinated dibenzo-P-dioxins and dibenzofurans and polychlorinated biphenyls are unintentionally formed and released from thermal processes involving organic matter and chlorine as a result of incomplete combustion or chemical

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106 I understand such plan is currently being prepared by EPA.
107 IPPC as amended by Regulation (EC) No. 1882/2003
reactions. The Annex provides a list of such processes. Waste incinerators, including core incinerators of municipal, hazardous or medical waste or of sewage sludge are the first entry in the list.

I further note in the WHO fact sheet 225 it is stated

"… due to the high toxic potential of this class of compounds efforts need to be undertaken to reduce current background exposure”.

It would therefore be reasonable to conclude that it is the view of all international and regulatory authorities that PCDD/F are considered highly toxic and the policies of WHO, Stockholm Convention, and EU are in the direction of reduction of these substances with ultimate aim of elimination.

Having regard to unequivocal references to ‘protection of human health’ and the objectives of reduction and elimination referred to above, I am not satisfied that conclusion drawn by the applicants and in particular the by the HIA that ‘there would be no impact on human health’ is plausible.

In my view, notwithstanding non-ratification of the Stockholm Convention, it would also be reasonable to conclude that any operation which would give rise to increase in such substances no matter how small would be contrary to these policies, in principle. In this regard, Regulation EC 850/2004 of particular relevance.

While it is clear that dioxins are present in the environment being generated by various combustion processes including backyard burning, as stated earlier, dioxins carry the characteristics of the substances which are burned in the combustion process. In this regard, characteristics of ‘hazardous waste’, (particularly organo-chlorinated compounds) becomes relevant. I am not satisfied a comparability inferred is appropriate.

I should note that while dioxins were the only substances examined in some depth Section 7 of the EIS, this however does not include any work on the dioxin levels that would be present in the ash or those collected in the filters, and in particular how and where they would be disposed of (and impacts arising from such disposal). Having regard to the toxic characteristics of the said compound, in particular its tendency to bio-accumulate, these would need to be examined and clarified. In this regard I refer to remarks by Dr. Ten Tusscher that their use as road building material proved problematic, in that toxins re-emerged following break up of road material.

While the landfill for the disposal of such residue containing TCDD/F may be at a distant location (and therefore not local), these would contribute to the total dioxin burden in the environment. Having regard to the objectives to eliminate them in the environment as a whole, it would in my view be necessary to provide calculations of TCDD/F in residues particularly in ash.
I note in his submission (17th June) Mr. Watson\textsuperscript{108}, maintained that European Regulations implementing the Stockholm Convention require that ‘priority’ must be given to alternatives to incinerators. He submitted that there was no information in the EIS that any such review based on emissions of persistent organic pollutants (POPs) was carried out.

**Particulates**

Particulates were described as ‘endocrine disruptors’. Incinerators are stated to be a major source of such emissions not only through stack emissions but also through handling and transport of ash and waste inputs. In the case of the proposed facility 17.5 tonnes per annum is estimated.

Of the particulates PM\textsubscript{10} and PM\textsubscript{5} and PM\textsubscript{2.5} are regulated\textsuperscript{109}. It is stated that the proposed development would be in compliance with these.

As stated earlier the HIA refers to air modelling section of the EIS and the prediction that contribution from the site in the context of the baseline would be minor and would remain significantly below levels which would be expected in urban areas, and well below relevant air quality standards. I note however that the existing high levels of particulates in urban areas seem to be in the context of particulates generated by traffic and general transport. It was stated at the hearing that the particulates generated by cars was not comparable to incineration as they contained different compounds.

The next level of particulates include secondary particles (those formed in the plume after emissions) and ultrafine particles (smaller than 0.1 \( \mu \)m in diameter).

For detailed information on their impact on human health I refer to the paper by Professor Howard. His references to the dangers to human health arising from these, was not contested by the applicants and was agreed and supported by other expert witnesses to the hearing. It was also stated that despite growing awareness of the issue they are not yet regulated. This was because they have not been fully understood and also because a method has not yet been developed on how to measure them.

I also note the comments by Dr. Staines referring to a conference in Dublin in August 2009 that a large proportion of the papers were related to ultra fine particles and that two of the papers related to attempts to measuring them. He stated imposition of limits on fine particles (PM\textsubscript{2.5}) followed development of measurement techniques.

\textsuperscript{108} Member of Stockholm Convention expert group on best available techniques for dioxin and PCB reduction, for references refer to policies / energy efficiency criteria

\textsuperscript{109} Regulations for the latter are introduced in the Council Directive 2008/50/EC\textsuperscript{109} for compliance by 2015
I will now look at some of the points raised in Professor Howard’s submission to the hearing.

Referring to Table 9.2 he calculated that the daily emissions from the proposed facility would total to 5,819,544 m³ containing 58.2 kilogram of particulates and 1,164 kilograms of NO\textsubscript{X}. He submitted these were large emissions in any terms and without any consideration of secondary particulates, the authorised incinerator emissions would have the potential to daily fill a space of 11 kilometres by 11 kilometres by 50 metre deep to the WHO annual guideline of 10mg/m\textsuperscript{3}/PM\textsubscript{2.5}.

He submitted, that secondary particles should of course be considered in any case and that emissions from an incinerator installed with a Selective Non Catalytic Reduction (SNCR) NO\textsubscript{X} control system as proposed here may actually increase direct emissions of ammonium nitrate which is an important component of PM\textsubscript{2.5}.

He concluded that the efficiency of the filter was therefore not the most significant aspect of the total particulate emission and control of NO\textsubscript{X} (and to a lesser extent SO\textsubscript{X}) was actually more significant in terms of the contribution to ground level concentrations. He noted neither appeared to have been modelled in this application.

This point was responded to by Dr. Porter via e-mail which stated that they did not assess the effects of the secondary particles, because the wind speed was calculated at 18 kilometres per hour (5m/sec) and as secondary particles took time to be performed they would not be a feature within the area of expected deposition around the plant. This area would be a little over 1 kilometre in circumference.

In his response again through e-mail Professor Howard stated that in Cork as in most places the wind sometimes stops blowing occasionally and quite regularly it is below 18 kilometres per hour. To confirm his views, he attached a wind rose of Cork Airport 2006.

He further stated that in any event the response did not address the key problem which is the effects of ultra fine particles on health be they primary or secondary, and more worryingly the applicants appeared to have completely discounted any health consequences outside the immediate zone of the plant.

Two issues arise from this. One as discussed in the air quality section is that the proposed development would generate significant amounts of particulate emissions effecting capacity in the receiving environment to absorb further emissions, from other (future) industries.

Secondly, again as discussed in the air quality section, consideration of only an area within 1 kilometre radius of the site for formation of secondary particles and impact analysis is quite limited, particularly having regard to the topography and climatic conditions of the harbour, and raises questions
regarding adequacy of the EIS. In relation to assumptions regarding wind speed, I consider the wind rose forwarded by Prof. Howard to be self evident.

While there are yet no regulatory requirements for assessment of UFP emissions, having regard to the comments by both Professor Howard and Professor Staines it would be reasonable to conclude that there is evidence of growing concern in relation to ultra fine particles.

In this regard I would refer to WHO Air Quality Guidelines for particulate matter, ozone, nitrogen, dioxide and sulphur dioxide, global update 2005:

“Other fine particles have recently attracted significant scientific and medical attention. These are usually measured as a number concentration. While there is considerable toxicological evidence of potential detrimental effects of UF particles on human health, the existing body of epidemiological evidence is insufficient to reach a conclusion on the exposure-response relationship of UF particles. Therefore no recommendation can be provided as to guideline concentrations of UF particles at this point in time”.

During the hearing Dr. Hogan stated “the fact that epidemiology have not identified the effects we can be reassured even if we don’t know everything about UFP and while they are coming out of incinerators at infinitum, because they are essentially products of combustion and by far and away the greatest source of them is traffic and diesel emissions in particular.”

Professor Bradley stated that while there was agreement that we do not know much about ultra fine particles, the little that was known suggested that they do have significant effects on human health. He stressed that that more importantly, ultra fine particles coming out of a car were quite different from ultra fine particles coming out of an incinerator because what they are mixing with had very significant implications for the toxicity of ultra fine particles, as dangerous chemicals like PCB’s and dioxins attached themselves to those ultra fine particles. They became pollutants not just in their own right but by the virtue of the environment from which they came from.

Dr. Hogan agreed ultra fine particles would have health affects, but disagreed with the interpretation that incinerator was going to be emitting lots of these ultra fine particles that is going to have health effects.

I again refer to the WHO Air Quality Guidelines Global Update 2005 (Page 7):

“The WHO Air Quality Guidelines are based on the now extensive body of scientific evidence relating to air pollution and its health consequences. Although this information base has gaps and
uncertainties it offers a strong foundation for the recommended guidelines. Several key findings that have emerged in recent years merit special mention.

Firstly the evidence for ozone ($O_3$) and particulate matter PM indicates that there are risks to health at concentrations currently found in many cities in developed countries. Moreover as research has not identified thresholds below which adverse effects do not occur, it must be stressed that the guideline values provided here cannot fully protect human health.”

Secondly an increasing range of adverse health effects has been linked to air pollution, on ever-lower concentrations. This is especially true of airborne particulate matter. New studies use more refined methods and more subtle but sensitive indicators of effects, such as physiological measures (e.g. changes in lung function, inflammation markers)...

Thirdly as our understanding of the complexity of the air pollution mixture has improved, the limitations of controlling air pollution through guidelines for single pollutants have become increasingly apparent. Nitrogen dioxide ($NO_2$) for example is a product of combustion process and is generally found in atmosphere in close association with other primary pollutants including ultra fine particles. It is itself toxic and is also a precursor of ozone, with which it coexists along with a number of other photochemically generated oxidants....

In view of the above it would be reasonable to conclude:

(a) There are health risks associated with ozone and particulate matter, and no thresholds below which adverse effects do not occur have been identified, and guideline values cannot fully protect human health
(b) An increasing range of health effects have been linked to air pollution on ever-lower concentrations
(c) As understanding of the complexity of air pollution mixture improves, limitations of controlling air pollution through single pollutants become apparent
(d) $NO_2$ is a product of combustion process and found in close association with other primary pollutants including UFPs

The argument put forward by the applicants that ‘because the emissions from the facility when added to the existing baseline levels would remain below the ambient air quality standards, there would be no adverse health effects from the proposed facility’ is not in line with the above findings.
In this regard I also refer to submission by Mr. Peter Daly \(^{110}\), where he referred to current work by Commission staff on the regulatory aspects of 'nano-materials, and quoted:

> "Practical IPPC implementation presently tends to focus mostly on conventional pollutants (sulphur, nitrogen, dust, halogens, heavy metals etc.) emitted in conventional form, reflecting the long established need to control such emissions and the corresponding expertise of the competent authorities concerned ... the capacity of competent authorities to apply, monitor and enforce compliance with emission limit values or other types of permit conditions relating to nano materials would also need to be established."

and stated that the emergence of ‘nanomaterials’ as an issue needs to be considered in review in the Directives is an example of how Directives evolve and in many cases how the science is running ahead of the legislation, but that as a result of science and research that we recognise the need to make changes. He submitted that after all that was how SEVESO Regulations came into existence in the first place.

### Heavy Metals

The other toxic substances which would be emitted from the proposed development include heavy metals such as Arsenic, Cadmium, Nickel as well as polycyclic aromatic hydrocarbons (PAH). There is a separate directive, Council Directive 2004/107 in relation to Arsenic, Cadmium, Mercury, Nickel and polycyclic aromatic hydrocarbons in ambient air.

Figure 9.4 in the Air Quality section of the EIS provides a bar chart showing the increases in these over and above the existing background levels (as determined by the surveys) which are stated to be low at levels found in rural environments.

The said figure based on AERMOD modelling indicates that increase in some of the substances would be relatively small compared to existing (these include PM\(_{10}\) -PM\(_{2.5}\), SO\(_2\), NO\(_x\), and to a lesser degree NO\(_2\) and Benzene, (i.e. mostly traffic related emissions), and PAH. Increases in others such as Hg (Mercury), As (Arsenic), Ni (Nickel), HF, and particularly Cd (cadmium) is indicated be quite substantial over and above the existing levels.

It was indicated during the hearing that one of the reasons for raising the height of the stack (suggested by Dr. Porter) was related to predicted increase in cadmium levels. A substantial increase is also indicated in NO\(_2\) (1-hr), though I note increase in terms of annual emissions is less pronounced perhaps as a result of average value.

\(^{110}\) during dedicated session on Major accident hazards (15\(^{th}\) June)

*Scientific evidence shows that arsenic, cadmium, nickel and some polycyclic aromatic hydrocarbons are human genotoxic carcinogens and that there is no identifiable threshold below which these substances do not pose a risk to human health. Impact on human health and the environment occurs via concentrations in ambient air and via deposition. With a view to cost effectiveness, ambient air concentrations of arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons which would not pose a significant risk to human health cannot be achieved in specific areas.*

Under Article 1 the objectives of the Directive include

(a) Establish a target value for concentration of arsenic, cadmium, nickel... in ambient air so as to avoid, prevent or reduce harmful effects of arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons on human health and the environment as a whole.

(b) Ensure with respect to arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons that ambient air quality is maintained where it is good and that it is improved in other cases.

Therefore, it would be reasonable to conclude that as these substances are carcinogenic and as there is no threshold below which they do not pose a threat to human health, their emission by the proposed development (regardless of the amount) could have adverse impact on the health of the population.

Furthermore, having regard to the stated low ambient levels of these substances in Ringaskiddy, it would be reasonable to conclude that the proposed development would be in contravention of Article 1(b) of the said Directive, to maintain air quality where it is ‘good’ regardless of the increases predicted as a result of the proposed facility.

In the case of Cadmium, having regard to substantial increase over and above the existing levels, I am also satisfied that there would be contravention of Article 1(a) of the Directive.

In this regard I also refer to paragraph 6.8 of Prof. Broderick’s report where he states:

*Some pollutants are known to have negative impacts including health impacts at concentrations below their limit values. It is therefore incorrect to assume (as is done in the EIS and in the evidence presented on behalf of the applicant to the oral hearing) that because*
ambient concentrations are predicted to remain below their limit values, no adverse health effects will be caused by emissions from the facility.

**Limits and standards (emissions /ambient air quality)**

As referred to above, the main argument put forward by the applicants was that all emissions would be well within the statutory ambient air quality standards, and these provided strong evidence that there would be no deleterious effect on human health.

The observers maintained otherwise. They stressed that standards were revised on an ongoing basis. They maintained safe levels of one period were not considered safe after a while. As one put it the arrow was pointing downwards.

During various sessions of the hearing I enquired from a number of expert speakers their views on how the emission limits and ambient air quality standards were set by the various Directives and regulatory authorities, and in particular whether they were set to ensure safe limits in terms of human health or whether they reflected the levels that could be achieved by the technology. I will briefly refer to the responses.

*Dr. Hogan* for the applicants stated that WHO scientific committee uses best available technology, but in the case of dioxins technology was irrelevant because intake was largely from food and “tolerant daily intake” was set purely on the health basis and had nothing to do with technology.

As referred to earlier, the last part of the literature review the HIA (prepared by Dr. Hogan) refers to Waste Incineration Directive, and that the requirements of the Directive were developed to reflect the ability of incineration plants to more cost effectively achieve higher standards of emissions controls compared to 1980s.

They also referred to Recital 7 of the Waste Incineration Directive 2000, states:

“*Therefore a high level of environmental protection on human health protection requires the setting and maintaining of stringent operational conditions, technical requirements and emission limit values for plants incinerating or co-incinerating waste within the community. The limit values set prevent or limit, as far as practicable, negative effects on the environment and result in risk to human health*”.
**Dr. Elizabeth Cullen** stated that formal air quality standards are primarily determined by the BATNEEC framework and that this had no direct health relevance. She noted although requested by the European Environmental Bureau, there was no requirement for health related surveillance of incinerator licensing arrangements.

**Dr. Ten Tusscher** stated that the limit values were repeatedly and drastically being lowered from the ‘then’ safe limits as a result of scientific evidence. In the case of dioxins the effects were slow to manifest themselves in epidemiological studies. Therefore the current limit values were those of WID 2000, and the facility which will come into operation in 2013 would be operating at levels set more than a decade before. He stressed that there was no safe limit, no threshold below which it was acceptable (in the case of dioxins).

**Prof. Howard** stated that it was a political decision, and that they were in general what can be achieved without vast changes. He added the science points that a safe level of exposure is much lower than the one that has been set as the limit.

**Dr. Staines** stated (in response to a question re-effects of particulates) that there was no doubt that all the levels mandated by Europe had substantial health effects. The reason the levels were set as they are presently, was because it was not currently feasible to reduce exposure below those levels.

The standards for limits to air were set at levels at which there were human health impacts, and that we knew that the air which reached European Union standards could still have human health impacts.

**Dr. Porter** stated that there were two things to consider. One was emission limits (that is what is set for the facility) and this in itself did not indicate a health risk. What was important was the ambient air quality standards, which was after it was emitted from the facility, at what concentration it was in the ambient environment. That was where it became important to assess whether or not there is health implications of the limits set. He stated that ambient air quality standards took into account a number of factors, not just health.

In the case of particulate standards it would ideally be lower if it was feasible that the limit value could be achieved, but that it is not feasible was one of the reasons it was set at the level it is set. To get to the levels where there is no impact there was still a long way to go, and we were not at that level yet.

I refer to paragraph 4.4. of the report by Prof. Broderick where he states:
Most limit values are set with a view of improving air quality in zones where the air quality is poor. They are less relevant in areas such as Ringaskiddy which currently enjoy good air quality.

He explained to me as part of our discussions that industrialised conurbations in Europe had a legacy of poor air quality. The aim was to reduce the existing high level pollution incrementally, and this was reflected in the air quality standards and Directive limits.

As I have outlined briefly in the Air Quality section of my report, the terminology used in Article 13 of the 2008/50/EC Directive (Merged Directive) is “limit values and alert thresholds for the protection of human health”.

It seems as such, that limit values are more of an indication of levels beyond which they would trigger ‘alert’ rather than levels up to which they assure no adverse effect.

I also note under Article 32 it states that in 2013 the commission shall review the provisions related to PM$_{2.5}$ and if appropriate ‘other pollutants’ and shall present a proposal to the European Parliament and the Council.

I further refer to WHO Air Quality Guidelines for particulate matter, Ozone, Nitrogen and Sulphur Dioxide (Global update 2005). Under the heading of “Role of the Guidelines in protecting public health it is stated:

An increasing range of adverse health effects has been linked to air pollution, and at ever-lower concentrations. This is especially true of airborne particulate matter…

... As noted above the epidemiological evidence indicates that the possibility of adverse health effects remain even if the guideline value is achieved and for this reason some countries might decide to adopt lower concentrations than the WHO guideline values as their national air quality standards.

.. In addition to guideline values, in turn targets are given for each pollutant. These are proposed as incremental steps in a progressive reduction of air pollution and are intended for use in areas where pollution is high. These targets aim to promote a shift from high air pollutant concentrations which have acute and serious health consequences to lower air pollutant concentrations…”

In view of the above, it is my considered opinion that there is indeed regular review and progressive reduction of targets in relation to various limits, and as such there is realistic likelihood of further lowering of limits in the future.
Having regard to the above I am also of the opinion that and the suggestion that current levels are safe is not plausible.

**Consultation with HSE**

I now refer to the submission by the HSE directly to the Board as a ‘Prescribed Body’. This indicates that there was consultation by the applicants (which seems to be at the scoping stage). The attachment is incomplete, but includes a report signed by environmental officers.

During the hearing it became evident that the local authority files did not provide the same attachments received by the Board (the observers were referred to the Board files for reference). There was also reference to the effect that the said attachment was an internal memo.

The HSE declined to attend the oral hearing as a prescribed body. Though I understand there was an observer present during various sessions, no contributions were made by the HSE to the hearing.

I shall refer to role of HSE also under major accident hazards.

**Precautionary Principle**

A recurring theme during the hearing woven into discussions in various sessions was a request that the Board applied the ‘precautionary principle’ in making a decision on this application. Again various speakers concentrated on different aspects of the proposed facility, but arrived at the conclusion that precautionary principle should be applied.

Some such as Mr. Loughnane and Mr. Navratil referred to tobacco debate and maintained that it takes time to show the effects and then it is too late. Absence of evidence of harmful effects did not mean evidence of absence.

Others drew attention to recurring downward revision of various limit values from ‘acceptable levels’ of previous times. This would mean the levels now considered acceptable would not be considered as such in the future. They also submitted reducing the levels may only be extending the detection time in the studies. In view of these uncertainties precautionary principle needed to be applied.

A number of speakers referred to the track record of the applicants as well as operators of other incinerators. They maintained that concentration on compliance with emission limit values was not appropriate as there would be breaches, monitoring problems, malfunctions, and accidents (as in the case Belgium facilities). Those working in various industries stressed such incidences do occur regularly in all other industries and this would not be an
exception. Precautionary Principle needed to be applied, to protect the harbour communities.

Professor Howard submitted that not all of the harmful substances (such as UFP’s) were subject to control, though there was growing evidence that these particles are harmful and that they are emitted by incinerators. There were difficulties measuring these substances and as such there were no defined thresholds below which risk would be acceptable.

He maintained application of Precautionary Principle was advisable, which required that when there are reasonable grounds for concern that potential hazards may affect the environment or human animal or plant health when at the same time the lack of scientific information precludes a detailed scientific evaluation.

Prof Bradley stated there was lack of knowledge on the issue, though it was known toxic substances however they came into the environment were bad for the health of the population. Introduction of a toxic waste incinerator would mean introduction of toxins into the environment. Incinerators changed nature of toxins, but did not get rid of them completely. Bigger the facility, would mean larger the amounts of toxin. Lack of information on the health of the local population and lack of capacity for assessing that on an ongoing basis would mean an unknown leap into the dark.

Both he and other doctors referred to the vulnerability of the receiving population in health terms and their experiences with polluting industries over the years and stressed that so called ‘acceptable levels’ applicable to general population were not applicable to this group. Precautionary principle needed to be applied to protect the population which was already carrying a heavy burden.

I note the Institute of Public Health in Ireland Guidance on HIA adopts the WHO definition of ‘precautionary principle’:

Where there are threats of serious damage to health, a lack of full scientific certainty should not be used as a reason for postponing measures to minimise this damage.

Precautionary principle is one of the main pillars of the European Environmental Policy introduced well in advance of other principles such as polluter pays principle, or proximity principle.

I now refer to EU COM (2000) communication from the commission on the Precautionary Principle, states:
The issue of when and how to use a Precautionary Principle both within European Union and internationally, is giving rise to much debate and to mixed and sometimes contradictory views. …

The precautionary principle is not defined in the Treaty which prescribes it only once – ‘to protect the environment’. But in practice its scope is much wider and specifically where preliminary objective scientific evaluation, indicates that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human animal or plant health may be inconsistent with the high level of protection chosen for the Community…

Recourse to the precautionary principle presupposes that potentially dangerous effects deriving from a phenomenon, product or process have been identified, and that scientific evaluation does not allow the risk to be determined with sufficient certainty…

… Judging what is an acceptable level of risk for society is an imminently political responsibility…

In describing the constituent parts of the precautionary principle it states (paragraph 5.1)

The precautionary principle is relevant only in the event of a potential risk, even if this risk can not be fully demonstrated or quantified or its effects determined because of the insufficiency or inconclusive nature of scientific data.

It further states:

The recourse to the precautionary principle would presuppose:

- Identification of potentially negative effects resulting from a…or process
- A scientific evaluation of the risk,…makes it impossible to determine with sufficient certainty the risk in question

It would therefore be reasonable to conclude that the above two criteria must be met simultaneously prior to application of the precautionary principle.

I note these seem to be in line with the definition provided by Prof. Howard.

I will first look at particulates.

Recital 11 of the Council Directive 2008/50/EC (On ambient air quality and cleaner air for Europe) states:
“Fine particulate matter (PM$_{2.5}$) is responsible for significant negative impacts on human health. Further there is as yet no identifiable threshold below which PM would not pose a risk…”

It would be reasonable to conclude that potentially significant negative effects arising from ‘fine’ particles (PM$_{2.5}$) is acknowledged in the Directive, but evidence of their full effects and thresholds have not yet reached a level of scientific certainty.

As stated earlier the said Directive provides ambient air quality limits for PM$_{2.5}$ starting in 2015 revising downward for compliance in 2020. This seems to be in line with the observers’ argument that there is considerable time between development of scientific evidence and imposition of limit values, and even longer time for existing industries to comply.

In the case of ‘ultra fine particles’ both criteria also seem to be met, as the available scientific information seems to indicate possible dangers, (as acknowledged in various documents) while a level of scientific certainty / knowledge evaluating /defining such effects is not yet possible in the absence of measurement techniques. As such there are no regulatory controls regarding their emissions.

There seems to be a unique problem in relation to UFPs in that as they hide under the vapour gases which the incinerators need to direct to the stack (and emit). As their entrapment through additional filtering devices would not address the problem, control of emissions of UFPs may not be possible through additional filters to the existing technology, but rather may require complete new incineration technology, design an implementation of which would require further time for implementation of regulatory controls. In the absence/ delays of such developments the existing facilities would need to continue.

This is a universal problem for all incinerators and not unique to the proposed facility.
It is therefore my considered opinion that a decision on whether to apply precautionary principle (arising from considerations in relation to UFPs) would also apply to incinerators ‘in general’, and having regard to the universality of the issue a decision on whether precautionary principle should be applied would be a matter for the EU$^{111}$, (perhaps following a decision by the ECJ$^{112}$.

Secondly, and with regard to question on whether there is a ‘specific’ case for application of precautionary principle in relation to location of the proposed facility in Cork Harbour where health of the population may not be conducive to respond well to limits applicable to general population, I am of the view that the opinion that lack of information arises not because scientific

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$^{111}$ where as indicated by Mr. Daly the works is already being carried out
$^{112}$ I note Annex 1 of the Communication refers to a number of case law and EJC decisions on precautionary measures.
uncertainty precludes gathering of information or detailed scientific evaluation of the relevant information, but rather is related to deficiencies in provision of available information at the appropriate levels.

I note that in a rather recent decision of the EJC (in relation to a case under Habitats/ Birds Directives\textsuperscript{113}), the terminology used was ‘no reasonable scientific doubt to the absence of effect’.

**Risk assessment**

The concept of risk was another area referred to frequently and by many speakers, and in differing contexts.

There were lengthy discussions on the issue in particular in relation to the concept of ‘acceptable risk’. Experts for the observers maintained that acceptance had to come from those who were exposed to that risk. Prof. Bradley in particular maintained that the concept of risk applicable in occupational medicine (Dr. Hogan’s speciality) was not appropriate in environmental medicine.

Dr. Hogan maintained that the concept of risk and hazard were closely linked, and referred to ‘dose – response’ curve.

While he accepted that there were differences between occupational health risks and public health risks, that (difference) was very much recognised in levels of exposure. In the case of particulate matter for example, the occupational exposure limits for PM would be measured in $10\text{mg/m}^3$ (and for respirable $5\text{mg/m}^3$). When talking about environmental levels they would be talking in terms of micrograms (i.e. hundred or thousands times less).

In relation to suggestion that acceptance had to come from those exposed to the risk he maintained this would be by way standards. He said: “…for example people do not have a choice about drinking water standards”.

Dr. Staines responded “…people do indeed have a choice about whether or not to drink the water they are given, or what kind of water they drank” (he referred to prevalence of bottled water).

Prof. Staines maintained that it would be possible to calculate effects of substances such as Cadmium (or how many could be effected). This was quite a standard risk calculation, but it had not been done in the EIS.

\textsuperscript{113} Waddenzee case (see ecology section of my report)
Based on the discussions during the hearing I find the arguments put forward by Prof Bradley and Prof Staines regarding concept of ‘acceptable’ risk to be reasonable.

I am also satisfied, that application of the concept of ‘dose-response curve’ for substances where there are no identifiable thresholds below which there is no risk, does not seem appropriate. In this regard I consider the submissions by Prof. Howard and Dr. Ten Tussier particularly relevant.

Overall I accept the arguments that the risk identification and assessment in relation to the proposed facility are quite limited, and unsuitable within the context of the application and the receiving environment.

**Impact Assessment**

The issue of assessing impacts of a facility such as incinerator on human beings and in particular their health was referred to during various sessions each concentrating on one aspect of possible impacts. This is an indication of the complexity of the issue.

The submissions during dedicated health session followed a similar pattern, each presenter concentrating on a different aspect. Some referred to studies identifying issues through epidemiology. These, by their nature are retrospective studies (described by one participant to the hearing as looking through the rear window while driving a car to see how many people have been killed by the car being driven). As impacts take time to take effect, these studies need to be carried out after passage of some time. Nevertheless, they draw attention to issues and effect regulatory changes. Studies in relation to impacts of dioxin exposure fall into this category.

Another group referred to studies of substance characteristics in laboratory setting and extrapolation of findings to real life situations. They too draw attention to issues and effect regulatory changes. Studies in relation to particulates fall into this category.

As outlined earlier one of the characteristics of the oral hearing in this case was attendance by a number of doctors operating in the local area and in particular, Professor of general practice, Colin Bradley. This third group seem to be in a particular position to identify likely significant impacts not only because of their expert knowledge of the substances emitted by the proposed development and familiarity with relevant literature in relation to impacts of such substances, but also because of their intimate knowledge of the receiving human as well as physical environment, including history of past exposures to toxic substances (asbestos, etc).

As such they seem to be in a position to identify possible likely significant impacts arising not only in a one-dimensional way (i.e. from ‘exposure to substances which would be emitted by the proposed facility), but also looking
at cumulative impact by adding other dimensions such as current health status of the receiving (human) environment and its carrying capacity.


The WHO definition of health as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity” serves to emphasise the range of factors that influence health and is the definition adopted in this guide.

Dr. Murphy states:

“…an Environmental Impact Assessment which is confined to substance exposures ignores for example the stresses and fears outlined by Professor Colin Bradley”.

In my view in this case, while identification of pathways such as air and soil, and exposures for impact appraisal is an essential part of a HIA (as part of an EIA), this alone does not seem to be adequate for assessment of impact on human beings and their health in this case, as the characteristics and the carrying capacity of the receiving environment could have a strong bearing on the significance (or otherwise) of the impact that would arise.

Proponents of a project have the responsibility to produce sufficient information to enable the decision making authority to carry out the environmental impact assessment. Having regard to the deficiencies in the EIS / HIA referred to above, and arising from the discussions at the hearing, I am not satisfied that adequate information is available before the Board to complete the Environmental impact assessment to form the basis of an informed decision on this issue.

In this regard I should note that I accept that there is no legal requirement for a formal and separate HIA. Therefore the impact assessment on human beings needs to be carried out within the framework of the EIA Directive.

As the Board would be aware, the requirement for assessment of effects of a project on human beings is derived from the Directive 85/337/EEC (as amended by the Directive 97/11/EC), transposed into Irish law through European Communities Environmental Impact Regulations 1989, and incorporated into Planning and Development Act, 2000 -2006 (as amended) and Planning and Development Regulations, 2001-2007.

I now refer to two of the recitals to the Directive:
“Whereas……and private projects which are likely to have significant effects on the environment should be granted only after prior assessment of the likely significant effects of these projects have been carried out…”

“Where as the effects of a project on the environment must be assessed in order to take into account of concerns to protect human health, to contribute by means of a better environment to the quality of life…..”


Article 3 of the Directive requires

…identification, description and assessment in an appropriate manner in the light of each individual case, the direct and indirect effects of a project on the following factors:

- Human beings, flora and fauna
- Soil, water, air, climate and landscape
- The interaction between the factors mentioned in the first and second indents
- Material assets and cultural heritage

As such it is a requirement that impact on human beings (direct and indirect) must be identified, described and assessed.

Secondly, in my view, it would also be reasonable to state that the above order indicates the priority given to assessment of impact on ‘human beings’ over any other considerations.

Indeed the Board would be aware that the only overriding consideration under Article 6(4) of the Habitats Directive for giving consent for a development which would adversely impact on the integrity of a European site is related to ‘public health and safety’.

Thirdly, it would also reasonable to conclude that the Directive requires that this assessment should be carried out in “an appropriate manner” for each individual case.

While there is no clarification of what is considered to be “an appropriate manner” in the EIA Directive, in a recent judgement in relation to a case under the Habitats Directive114, the European Court of Justice gave an indication of the process.

I do of course acknowledge that the said case was related to assessment of impacts under the ‘Habitats Directive’, and related to designated ‘European sites’. However, having regard the fact that both Directives are part of the

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114 C 127-02 known as the Waddenzee case, see Ecology section
same European Environmental Policy, and ‘human beings’ and ‘flora and fauna’ are considered within the same category under the EIA Directive; in my view the above ECJ ruling could be used as a model in assessment of impacts on ‘human beings’ under the EIA Directive.

Therefore, it is my considered opinion that an ‘appropriate assessment’ is required in relation to impact on ‘human beings’ in this case to form the basis for an informed decision.

As discussed earlier, this section of the EIS is seriously deficient, and contains a series of statements declaring lack of negative impact without identification and analysis of likely significant impacts individually or cumulatively on the receiving environment, in this case human beings. Having regard to the deficiencies in the EIS providing such information, it is also my considered opinion that it is not possible to carry out an appropriate assessment in this case.
13. Archaeological, Architectural and Cultural heritage

The dedicated session on built and cultural heritage took place on 5\textsuperscript{th} May, and was also attended by Ms. Desmond, Archaeological and Architectural Heritage, DoEH&LG

Applicants’ case

In her brief of evidence for the applicants, Deborah Sutton\textsuperscript{115} described the methodology employed in examination of the archaeological, architectural and cultural heritage impact of the proposed development. These included desk top study, consultation with the statutory agencies, and field survey.

She summarised the main findings of the EIS; that there are no recorded monuments within the proposed development area or along the route of the effluent pipe, that the Martello Tower located 70m south would not be impacted by the proposed development, that while part of the development lands are located within the zone of archaeological potential of the tower, but there would be no development within this area.

She noted that Martello Tower was the largest of the five towers in Cork Harbour. A path from the beach to the tower was indicated in the 1\textsuperscript{st} edition of OS maps, and it was considered to be part of the curtilage of the protected structure. Comparison of the 1934 and 1997 maps indicated that the current escarpment was once a more gradual slope.

In outlining the potential impacts, she submitted that while the Martello Tower would not be impacted, the proposed development would directly impact any remaining parts of the path associated with the Martello Tower, but the recent modifications of the landscape in the area suggested that a large section of the path may have been impacted.

The visual impact on the tower would be minimal, though the tower would not be visible from some locations to the north east and views from the tower to north east would be compromised. The construction of an earth mound would mitigate the visual impact of the proposed development to and form the Martello Tower and would be sufficiently low to allow views of the harbour from the tower and views of the tower from around the harbour.

The assessment (paragraph 2) included a recommendation that the design of the proposed development should not obscure the outline of the Martello Tower.

The proposed alternative path would provide access to the Martello Tower from the Goby Beach.

Effects of vibrations during construction work would be insignificant.

\textsuperscript{115} Archaeological consultant with Sheila Lane associates
Observers’ case

There were a number of submissions by the observers. I will refer to a representative few.

In her comprehensive submission accompanied by a power point presentation Cllr. D’Alton referred to Granada convention definition of architectural heritage. She outlined the building of Cork Harbour defences starting from 1601 in Kinsale Harbour (James Fort and Charles Fort), and then in the entrance to Cork harbour (Camden and Carlisle Forts), then in Roches point and Spike Island mostly against the threat of French invasion. Basing of British navy in Haulbowline, powder magazine in rocky island and five Martello Towers followed during Napoleonic wars.

In 1923 Haulbowline was handed over to Irish Government but the ports remained under the control of British Government until 1938. Spike Island was used as a convict depot until 1847, and then as a prison until 2004. Camden Fort was handed by the Government to Cork County Council in 1989. Headquarters of Irish Navy was on Haulbowline, Rocky Island was now a crematorium and Fort Carlisle was used by defence forces for training purposes.

She explained the purpose of Martello Towers throughout the world, in south of England, Scotland, the Caribbean, Canada, the Mediterranean, south Africa, Australia and in Ireland. Describing differences between various types she submitted that of the overall 220 built only 120 were remaining, and many in other countries they were designated as part of UNESCO World Heritage Sites.

Ringaskiddy Martello Tower was unique because it was the only one in Ireland to stand in a moat with surrounding glacis. It was the largest (51ft diameter, 40ft high) tower of any reasonable condition standing in an original moat in the world. It was even more important in terms of the role it played in conjunction with Camden and Carlisle Forts, Fort Westmoreland on Spike Island, and Haulbowline Martello Tower.

She submitted that far from being a dream of hysterical romantics, the vision for Cork Harbour was firmly grounded in policy at European, national and local level. She referred to application for World Heritage Status, commissioning of architectural heritage appraisal for Fort Camden, investigations for establishment of maritime museum on Haulbowline island, baseline studies for fortifications in Cork Harbour to be marketed as a unified entity abroad under remit of Cork Harbour Forum. She submitted that cultural, architectural and landscape heritage are indivisible and as reflected by policy, have the potential to make a powerful economic combination.

European Charter of architectural Heritage 1975, recognised architectural heritage as an economic asset. Granada convention 1985 defined architectural

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116 Chepa, deputy Mayor Passage West Town Council, advisory member Cork Harbour Forum, chairperson working group on Heritage in Cork Harbour, designer / producer of passage west-Monkstown railway Heritage Trail (see waste policy for other areas of expertise), drafted architectural design guidelines for passage west and monkstown
heritage not merely a building, but groups of buildings of similar note, and recognised conservation value of defences of Cork Harbour as a single functioning entity. She further referred to European Landscape Convention 2000, National heritage plan 2002, and their references to economic value of heritage.

South west Regional Planning Guidelines (2004) recognised tourism and cultural activities as being key ingredients of the future of Cork, Architectural Heritage Protection Guidelines for planning authorities 2004 identified cultural tourism as increasingly significant and advised promotion of local history for tourism purposes to have genuine economic value.

She referred to Cork Harbour integrated management strategy 2008, European Commission definition of integrated coastal zone management (ICZM), and to objectives RCI-16-1 and RCI 16-2 of County Development Plan 2009, supporting an integrated approach to coastal management in conjunction with meaningful participation of all stakeholders. One of the key strategy objectives of the Cork Harbour integrated management study was the strategy to protect the social and cultural assets of Cork Harbour such that unique identity of the area is maintained and protected.

COREPOINT project was supported by Interreg III, objectives of which included establishment of North-west Europe as a region of excellence in coastal management. The lead partners in the project were Coastal and Marine research Centre (CMRC) of UCC.

Cork County Development Plan 2009, recognised the very powerful economic benefits offered by proper conservation of built heritage in its landscape. She referred to section 7 of the plan and the commitment in 7.2.22 for historic assessment of Cork county with the specific aim of identifying opportunities for cultural tourism potential.

She said they disagreed fundamentally with the statement in the section 16 of the EIS that the proposed development would not directly impact on any architectural heritage. In their view the proposed development would forever, irretrievably damage architectural heritage of Ringaskiddy Martello Tower, and have irreversible and significant negative impact on the collective cultural heritage of 19th century defence structures in the lower harbour.

She submitted the EIS was deficient as it did not provide any evidence of paths being associated with Martello Tower. In their view the EIS made a fundamental omission as it dealt with the structure alone. Legislation for protection of built heritage as defined in Articles 57 and 58 of the Planning and Development Act, 2000 specifically linked a protected structure to, not merely character of the structure, but also any element which contributes, to its special architectural, historical, archaeological, cultural, interest.

Sections 6.8.7 and 13.6.1 of the Architectural Guidelines linked conservation of a protected structure not merely with its setting and character but also with its function. The specific function of Martello Tower was to prevent enemy from
taking the hill and bringing batteries to bear on Fort Westmoreland, (the major fortification on Spike Island). It provided for defence of the high ground on the western side of the Harbour, had field of fire over the harbour to the east, north west and the area west of Haulbowline island. Two guns each had 1.5km range. The proposed development would break the line of sight with Fort Westmoreland irreversibly damaging its intrinsic function.

The proposed building would break the line of Ringaskiddy hill, and in doing so block directly the site which Martello Tower was constructed to defend

Ringaskiddy tower did not work alone. With the help of slides she explained how the invaders would be attacked by the succession of towers. The network of defence structures would no longer be complete. It mattered a great deal that Martello Tower would not be visible from the sea anywhere between Marloag point and the middle of the west channel, and it was of fundamental relevance that it would no longer be visible from spike island. The intrinsic function of the tower would be blocked. She described the ‘field of fire’, which would be lost.

She submitted view 12.3a was not taken at the entrance to the tower. Presently there was a direct line of sight between Ringaskiddy tower and all the lower harbour fortifications with which it was designed to work (with the help of slides she explained).

She referred to section 13.8.3 of the Guidelines referring to impact of large buildings altering views to and from a protected structure, thus effecting their character, and the statement that proposals should not have an adverse effect on the special interest of the protected structure.

Referring to use of artificial berm to disguise the top of the proposed structure from Martello Tower, she submitted they (Chepa) could not understand how a small hill growing out of the descending slope of a larger hill could ever be ‘organic’.

The site for Martello Tower was purchased in 1812 and its extent was marked by ordnance stones. In the case of Ringaskiddy tower there were 10 ordnance stones. Glacis around the tower was marked by six of which two marked the beginning of the path between the tower and Goby Beach. Two further stones marked the path midway as it descended to the Beach. Last two marked its end at Goby Beach. 1859 survey on behalf of British War office clearly identified boundaries as including the path running between the tower and Goby Beach.

She referred to section 13.1.1 of the Architectural heritage Guidelines, and submitted the path was indeed within the curtilage of Martello Tower. She noted the EIS was incorrect in stating that Ringaskiddy tower was the only one in Cork Harbour to have ordnance stones. Rossleague tower on the northern side of the Great Island also had a path connecting to the quay. While the function of the path was not clear she suggested it would be reasonable to assume a dual function movement of construction materials and movement of soldiers to/from connecting fortification at Spike Island.
The path was an intrinsic part of the protected structure complementing and assisting the function for which the protected structure was originally constructed.

The proposed development would destroy the link between the tower and the fortification it was designed to protect.

As a mitigation measure the 200 year old path would be replaced by a new amenity path skirting the eastern and southern boundaries of the proposed development, bounded by a timber fencing on one side and a 2.4m palisade fencing on the other, hidden in hedge of 1.5-2m in height. On the eastern boundary the path would be located adjacent to a clay overburden cliff, clearly subject to considerable erosion. Along the southern boundary, it would be parallel to the line of high tension transmission lines between pylons. The amenity of the user would be immediately and passively impacted by the building merely 17m away. Currently available dramatic panorama over Haulbowline and Monkstown bay would be hidden, sea views which are so relevant to the Martello Tower would be completely eliminated.

In conclusion she submitted that there was a vision for Cork Harbour from the people for the people, inspired by place and grounded in policy, vision for the future inspired by the past. This was under threat by the proposed superimposition by the proposed development upon the topography, a harbour, the curtilage and attended grounds of a protected structure intrinsic to that vision of Cork Harbour.

She went through a checklist in dealing with applications for works within attendant grounds of a protected structure and submitted that the proposed development would affect the character of the protected structure, that it would affect the relationship between the protected structure and its attendant grounds, that the protected structure would not remain the focus of its setting, the proposed works would require an alteration of the profile of the landscape rendering it irrelevant to the function of the protected structure, (topography in this case was a significant landscape feature), that it would damage and obstruct important views and vistas, that the skyline would be significantly altered, that the proposed development would be highly visible both from the protected structure and its approaches. She submitted that the impact of the proposed development was clearly, and fundamentally negative.

Referring to the National Heritage Plan, she asked An Board Pleánala that they may be permitted to advance their vision for international recognition of the architectural and cultural identity of Cork Harbour.

In his submission on 13th May, Roderick Hogan\footnote{Architect, Hogan associates, on behalf of Chase} stated that while the EIS gave an excellent description of archaeological and military features in the lower harbour, it analysed only the impact of the proposal on the Martello Tower close by the southern boundary of the site and then only in relation to physical
damage, finding no significant problem. In his view Martello Tower should have been analysed in a much wider context. In this regard he agreed with the scholarly analysis and conclusions of Cllr. D’Alton.

The impact of the proposed development should have been assessed in a still wider context, that of impact on the cohesion and interpretation of the whole complex of fortifications in the lower harbour and their potential as an important tourism resource.

He referred to the focal location of the proposed development within the complex composed of the three forts, two Martello Towers, the powder magazine on Rocky Island and the storage buildings on Haulbowline (shown on a map), and to the emerging proposals to develop a tourist attraction based on an interpretative centre on Spike Island accessible by boat via the landing stage at the north western corner.

The panorama of the fortifications from that viewpoint would be substantially dominated by the proposed process building (photomontage 17b). Martello Tower would be obscured from that viewpoint and from elsewhere on the island the impact would be no less adverse.

The effect would be substitution of this dominant building of vast scale as the principal point of interest rather that the historic structures which were intended to be focus of an important tourist experience.

\textit{Michael Martin} was operator of a heritage guided walking tour, called the ‘Titanic Trail’. He had written a book on the history of Spike Island, and had previously worked in the Irish Navy as an engineer for 23 years.

Beauty and visual quality of Cork Harbour was used as a marketing tool to attract visitors from around the world.

The grave yard at the western end of Spike island was a ‘famine’ grave yard. It was not just a convict depot. In fact the convict depot had opened as a direct result of the famine. He gave a brief account of the history of the island going back to ecclesiastic period, Vikings, improvement of fortifications in expectations of aid by Americans to the French, and submitted that in its own right the island had unique characteristics to become a World Heritage site. He referred to his suggestion for a glass memorial with etching of the names of those died there. He submitted, the proposed structure would impose significantly on the island.

He also referred to his experiences as an engineer, and how the fail-safe systems failed, sometimes as a result of minor problems.

In response to questions he referred to his lecture tours (a recent one in university of California). He had invited the group that ran tours of Alcatraz, Fort Henry in Baltimore and spoke to historians in Tasmania. He referred to various references by others that it was on par with Robben island or Alcatraz,
and Halifax in Nova Scotia. He submitted the setting of Spike Island was as important as its history.

Sean Cronin submitted that the important view of the tower was from where the people were, from publicly accessible areas. That is north and north east, along the public road and where NCMI was located. The proposed development would significantly impose on these important views. The views from the south were not publicly accessible to the same extent, being from green fields.

**Planning authority’s position**

Paul Murphy for County Council read the relevant section of the written submission by the planning authority signed by the Conservation officer. The submission referred to relevant policy and guidelines and to ENV 5-1, 5-2 and 5-4 of the County Development Plan, and stated that the proposed development did not physically impact upon the Martello Tower and the surrounding bank.

In relation to the path it noted that it provided access to the tower to/from the sea, but that it did not currently survived above ground, and that a substantial section seemed to have been removed by modern groundworks. It was agreed that a geophysical investigation should be carried out as suggested by the archaeological consultants, to establish the extent of sub-surface archaeological remains, and that should this indicate a surviving path below the surface, it should be excavated and preserved by record.

Path to be created from Martello Tower to Gobby Beach as part of the proposed development would ensure continued access to the structure / monument.

It was inevitable that the proposed facility would have a visual impact on certain aspects of Martello Tower. The submission noted the mitigation measures to minimise this impact, and noted that other industrial units located around the Martello Tower.

Ms. Desmond for the DoEH&LG stated that the applicants seem to have taken on board the Department’s submission in relation to architectural and archaeological heritage.

They were satisfied that the applicants were happy to take on board the conditions recommended. In the case of a decision to grant permission she recommended clearly defined conditions for monitoring of Martello Tower during construction, and clearly defined buffer zone of 30m.

\[118\] An Taisce
\[119\] senior planner
Assessment

The most important consideration in examining the impact of the proposed development on built and cultural heritage arises from the impact on Martello Tower, which is a Recorded Monument (ref. no C 0087053). As such it is protected under the National Monuments Acts 1930-2004, and under part IV of the Planning and Development Act, 2000 - 2006).

It is located 25m from the boundary of the site. The proposed process building would be located to its north east, at approximately 70m. It has a moat. The original draw bridge has sometime in the past, was replaced by a footbridge (in serious disrepair). It was accepted by all concerned during the hearing that a path connected the tower to Goby beach and was used in association with the same. As such it constituted part of the curtilage. There were differing views on the attendant grounds.

The impact on Martello Tower could arise in two ways. The first is impact on structural integrity of the tower. Based on the evidence presented in the hearing, I am satisfied that the likelihood of impact in structural integrity of the tower is quite low. (I refer to noise and vibration section of my report and the submission by the applicants that rock excavation would be mechanical and would not involve explosives). Nevertheless, monitoring and provision of a 30m wide buffer zone as suggested would be appropriate during construction stage.

The second aspect of impact on the tower would be in terms of impact on its setting, curtilage, and attendant grounds. In this regard its function and its special interest also becomes relevant.

Having regard to lack of access from inland at the time, and having regard to the ordnance stones, I have no reason to doubt that the path connecting the tower to the beach was constructed to provide access to the tower. I am therefore satisfied that it does form part of the curtilage of the protected structure.

It is however, quite clear that while the original path was a direct line between the tower and the beach over a sloping terrain, the profile of the terrain had changed through rock excavation, (in the last 50 years) which created a sharp drop and severed the path. It also seems that subsequently an alternative path was forged perhaps by the public and by the farm machinery which currently lies, inside the boundaries of the site. I note that it is also possible to access the tower through the fields on the western side eventually connecting to third class road to Loughbeg.

Based on the evidence before me I am satisfied that due to significant changes in the topography, the original path can not be reinstated. Therefore, the suggestion that investigations should be carried out along the line of the path and that preservation should be by record is reasonable (and accepted by the DoEH&LG).

The subsequently forged path connecting the tower to the beach is mainly used by walkers (and partly by farm machinery). Therefore its function is one of an
amenity walk, as such different from the original function of supply of materials and perhaps soldiers to the tower. In view of the fact that it is of rather recent origin, I do not consider preservation of its alignment is required. Therefore its relocation (to outside the processing area of the proposed development) is acceptable in principle.

In this case the issue arises from the characteristics of the ground where the new path is proposed. Along the eastern boundary, (as stated in soil and geology section of my report) it is to be located in an area subject of serious coastal erosion, which makes the survival of the path during the lifetime of the proposed development questionable. The section of the proposed path along the southern boundary by necessity is quite confined by the mounding to screen the process building. This would as argued by the observers impact on the amenity quality of the path and the walk.

I now refer to the County Development Plan, and Carrigaline area plan forming part of the same. The only access to the tower is indicated to be from the west through the fields. Having regard to lack of a designated walkway in the development plan between the beach and the tower, it would in my view be unreasonable to expect preservation of the existing alignment of the path over the site (which would cut across the section where the process building is located). I note, the issue of a right-of-way in relation to the existing path (if any), would need to be resolved in another forum.

There was disagreement regarding the extent of the attendant grounds of the tower. The observers maintained Ringaskiddy hill was the attendant ground as it provided the setting for the tower to enable panoramic views of the harbour. In their view the landscape and the topography provided the setting for the function of the tower. This was not accepted by the applicants.

There is some merit in the argument put forward by the observers, having regard to the fact that it was only possible for the tower to perform its function, through its location on an elevated position. Indeed as described by Ms Sutton for the applicants the purpose of the Martello Tower was to enable views all the way around the harbour. I am however not satisfied that the hill as a whole can be regarded as attendant grounds, (which has a specific meaning, and restricting powers). In my view the hill provides the setting of the tower to perform its function.

The function of a protected structure is of significant importance, and sometimes protection of the structural integrity of a structure alone and without protection of its setting may lead to loss of the very reason the structure was built for. In this regard, the section 13.8 3 of the Guidelines, which refers to effect on the special interest of a protected structure is of relevance.

I was not presented with a counter argument to the submission put forward by the observers that the Martello Tower was built to protect Spike Island (the Fort on the island) and that it formed part of a serious of fortifications to protect the harbour and the military installations within the harbour. I also accept the view
that it was the largest of the five towers in the harbour, which accentuated this function.

As stated in another section of my report, the Ringaskiddy hill is at 43 OD. The proposed development which rises to 48m (excluding the chimney) would, as stated by the observers create a second and taller large mass along the water’s edge.

Presentation of a higher mass of considerable size at this location would also subjugate the supremacy of Ringaskiddy hill and the biggest Martello Tower in the harbour, not only in terms of topography and height but also in terms of uninterrupted views all around the harbour. In doing so, it will block the direct line of sight between Spike Island and the Martello Tower.

The question then becomes whether this impact is significant in terms of built heritage and cultural heritage. (I shall discuss the visual impact in another section).

Based on the information before me it is my considered opinion, that while the impact on the structural impact of the Martello Tower would be negligible, arising from the mass, scale and location of the proposed processing building, the impact on the setting of the Martello Tower would be significant, as there would be severance of the Martello Tower from the network of fortifications around the harbour which were designed and situated to provide protection for the harbour in an integrated and cohesive way. This was achieved through location on the highest points around the harbour, and uninterrupted and panoramic views over the harbour and direct visual contact with each other. In my view the proposed development is likely to provide a significant intrusion into this network and perhaps lead to loss of cohesion of the same.

Therefore, I consider the direct impact on the setting of the Martello Tower would be significant and negative.

Having regard to the various initiatives, and plans which seem to be based on the landscape and built heritage qualities of the harbour as an economic resource, an indirect impact could also arise.

In view of its consideration of only the impacts on the tower itself the EIS is therefore deficient.

The mitigation measures proposed are designed to screen the views of the process building from the tower. It is however not possible to provide a similar and meaningful screen in the case of the views towards the tower from north easterly direction, particularly from spike Island and Haulbowline.
14. **Noise and vibration**

The dedicated session on this issue took place on 9th June.

**Applicants’ position**

In her brief of evidence on 29th April, Ms. Harmon submitted that given the significant distance between process buildings and sensitive receptors in the surrounding environment, there would be no noise or vibration impact associated with the proposed development.

As the volume of traffic generated by the proposed development would be relatively minor in the context of the volume of traffic on N28, the noise impact arising from the same would be negligible.

The construction phase of the development would be approximately 18 months and its impacts would be temporary. Rock breaking would be mechanical and not involve explosives. Noise levels during this period would be within recommended construction noise limits.

For the operation period similar conditions to those imposed by the EPA in the previous permission were anticipated and they would be complied with.

She concluded the net noise impact of the proposed facility would be acceptable.

During the hearing and in response to questions Ms. Harmon stated that she had not visited the plant in Belgium operated by the applicants, but that she had visited incinerators in Denmark as part of her preparation for another case. The throughput was not relevant in consideration of noise impact.

In response to question, she stated that she considered the noises level of 68 dB\_LA\_eq\ 1-hr outside the NCMI to be acceptable as it would be similar to the noise levels of a busy city centre location with traffic noise. Ms. Harmon maintained that only residential buildings where sleeping took place were considered sensitive receptor.

**Observers’ position**

The main points of the submissions by the third parties was that the applicants had not examined the noise impact on the NMCI located directly opposite, on those using the recreational areas such as Goby Beach or the path to Martello Tower, or those walking to Rocky Island crematorium.

They submitted that the waters just outside the Goby Beach were used as a sailing school for children, that in general the water carried noise to Cobh and Monkstown. They submitted the noise impact arising from traffic would be
significant both for those in the immediate vicinity of the site and for those living on the surrounding road network.

The observers stressed that NCMI was a school, and should be considered as a sensitive receptor. Ms. Synott in particular referred to the special character of NMCI where the students learned to interpret the sounds of the water as part of their training and stated that the school was located at this quiet water edge location to facilitate this. A constant noise emanating from the proposed facility would lead to loss of environment suitable for such specialist training.

Cllr. Geroid Buckley attending the hearing following day contested strongly the answer given by Ms. Harmon in response to invitation by Mr. Slattery that that she was aware that there was no objection from NCMI. He was the president of the student union (750 students). (In this regard I refer the Board to the submission by NCMI, dated, …, and confirm that there was indeed a letter of objection by NCMI.). He submitted that the planned incubator unit for R&D would accommodate 500. The proposed development would adversely effect these.

Assessment

I do accept the submission by the applicants that in general consideration of sensitive receptors is confined to residential buildings and exclude third level schools.

Having regard to the fact that the only traffic generators are NCMI, and Haulbowline I do however consider the submission by the applicants that this section of the N28 carries 3000 vehicles per day to be questionable. In my view such levels would only apply as far as the junction of N28 with the port / Lough beg road, not along the boundary of the site, which is not part of the N28.

While I accept that there would be some noise emanating from the port related activities located nearby, dismissal of impact arising from the predicted levels of 68 dB on the basis of comparability to busy city centre locations does not seem completely plausible.

Within this context increase of noise levels by 10dB would be significant. While I agree that the construction period is temporary, and would concentrate on the initial (i.e rock breaking) part of the 18 month-2 year construction period, this could equate to a rather significant portion of instruction time in the context of a 3 year degree course.

I have referred to the configuration of the roundabout at Shanbally Village in my assessment of the traffic and road infrastructure, which arising from its vertical alignment and small radius, necessitates HGVs to apply their breaks in order to be able to negotiate the small, off-centre roundabout. This adds to the noise levels, normally generated by the HGV movements. The proposed
facility will generate in the region of 188 HGV movements. I am not satisfied there has been an appropriate analysis of noise impact associated with this increase on the residential buildings and primary school, adjoining Shanbally roundabout.

The observers submitted that there would be significant impact on the people walking along the path between Goby Beach and Martello Tower. This was considered a temporary impact by the applicants.

The air condensers located along the southern boundary would have noise levels of 98dBA and noise levels at the chimney stack would be 94 dBA. The noise levels at Martello Tower were predicted to be 32-36 dB, but 55dB at the site boundary.

In this regard while I do accept the explanation by Ms. Harmon regarding reduction of noise energy as it travels, I also accept, given the distances involved, the suggestion by Ms. Noonan that the reduction seems rather large, to be also plausible.

I now refer to the Directive 2002/49/EC relating to the assessment and management of environmental noise. In Article 2 under Scope, it states

1. This Directive shall apply to environmental noise to which humans are exposed in particular in built-up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, hospitals and other noise sensitive buildings and areas.

Therefore, while I do accept that the impact on those using the path or the beach would be of temporary nature, having regard to the above, it would in my view be reasonable to conclude that the footpath between Martello Tower and Goby Beach would need to be taken into consideration in terms of environmental noise.

I note however, under Article 3 (definitions) the Directive refers to ‘quiet area’ (in an agglomeration or in open countryside) as being delimited by the competent authority. I am not clear if either the path or the beach are delimited by the County Council for such purposes.

Overall, in my view this section of the EIS while addressing the general requirements, is inadequate in terms of identification of unique aspects of the receiving environment and analysis of impact on the same arising from the proposed facility.
15. **Site Selection and consideration of alternatives**

This is an area of considerable importance to the observers. There was a dedicated discussion on the issue in the morning of 28th June, though the issue was repeatedly referred to woven into discussions in various other modules.

**Applicants’ Position**

In her brief of evidence *Ria Lyden*\(^\text{120}\) gave a synopsis of the site selection process during 1999-2000. Because of location of pharmaceutical companies in Cork Harbour region producing 60% of waste arisings, search was confined to Cork region. She referred to preliminary investigation of five areas, from which Ringaskiddy was identified as offering the best option, assessment of further five areas in the county, short listing of four sites in Ringaskiddy as the preferred sites and purchasing of the subject site at a public auction.

The main assessment criteria used was land availability, together with land use zoning, and availability of utility / services. She also referred to a selection criteria developed by the applicants for detailed assessment of the four sites in Ringaskiddy comprising of a combination of Indaver’s own criteria and WHO Guidelines (Sloan 1993), and technical Guidelines on Incineration on land, (Basel Convention,1997).

In 2008, Arup was appointed to carry out an independent review of the site selection process (they were not involved in the original site selection), to assess the site in the context of current internationally recognised criteria for the selection of a site for waste-to-energy facilities, and to determine whether the site is still a suitable location for the proposed development. They were also asked to review changes which have taken place (or proposed), between 2000-2008 which could render the site unsuitable for the proposed development. This review included visiting 10 areas and 4 sites considered in the original process.

She referred to policy review (between 2004 and 2007) which acknowledged need for thermal treatment of hazardous waste in Ireland. In relation to non hazardous waste the Government policy considered waste-to-energy as being environmentally preferable, and effective in diverting waste away from landfill.

Area review was based on land availability and zoning. There were no changes in this regard.

The recent developments in the area included NMCI, Centocor, Fusion and Vision systems plants, Crematorium on Rocky island, and closures of Irish Ispat and prison on Spike island.

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\(^{120}\)EIS coordinator, Engineer, Arup consultants,
The updated assessment criteria was developed based on 14 points. She went through each.

Zoning was appropriate, there were no locations which met the criteria of sensitive location (such as flammable / explosive materials) in the area, there were no stationary populations (NMCI was a non-residential third level college and the nearest primary school was 500m away), the road network was sufficient to serve the traffic needs of Indaver facility, N28 by pass would improve access, there were utility services available, there would be visual impact in the area of Martello Tower when viewed from both north and south, ridge behind the site would reduce the massing and impact, required land areas of 5-8 ha was available, the site was close to Ringaskiddy village but no new houses were built since 2001.

The impact on existing economic activity would be positive reducing cost of exporting waste, and reducing fines Ireland faces in relation to landfill targets, residue disposal would be through export arising from lack of landfill, steam generated could be converted to electricity and fed into national grid, IDA would not make other land available, there was adequate skills and expertise for the construction and operation of the facility, costs arising from topography was factored into the budget, they were satisfied of commercial viability, and the proposed development would not result in inequity because it was related to the needs of existing and newly developed industrial facilities.

The Non-hazardous waste line provided a facility to deal with waste produced by households and industry.

She then examined the proposed facility in the context of 4 step WHO criteria assessing relevance of various considerations, under each.

- Under exclusionary criteria (1) the site was not considered prone to flooding, and storm surge flooding of the waste transfer station was easy to eliminate.
- Under Criteria (2) the site was in a promising area because of industrial zoning,
- Under Criteria (3) in terms of risk to health and environment, the site had low sensitivity for 5 out of 7, medium sensitivity in coastal areas for shellfish and fishing, high sensitivity in existing developed areas of Ringaskiddy village.
- Under criteria (4) ranking of sites, it ranked highly in 8 out of 10.

She concluded the site was considered favourably based on WHO site selection criteria.

She noted, of the 10 areas originally considered in 2001, ten remained unavailable for sale / or unsuitable in terms of proposed land use.
Observers’ position

There were many submissions on this issue. I shall refer to a representative few.

Mamie Bowen\textsuperscript{121} (submission of 8\textsuperscript{th} June) referred to WHO fact sheet no 281 as being the latest publication. It stated categorically that best practice in hazardous waste include- “siting of incinerators away from populated areas or areas where food is grown, thus minimising exposure and thereby risks”. She said application of the site selection criteria after purchasing of the site breached the WHO Guidelines.

Unusual atmospheric thermal inversions of Cork Harbour, flooding of the road and the site, eroding of the coast line on the eastern boundary, and proximity of human habitat were further breaches of the guidelines. She went through each disagreeing with the EIS conclusions, finding statements such as ‘rate of recession can not be determined’ unacceptable.

She referred in particular the proximity to NMCI and the Naval base at Haulbowline, to residents of Ringaskiddy village, and to Curribinny, and drew attention to people using Goby beach, and funeral processions to the crematorium at Rocky island.

She noted the OPW Guidelines on flooding stated: “Climate changed dictates that developers take note of flooding …and expected extensive tidal surges”.

Chris Ramsden\textsuperscript{122} went through four of the 14 criteria provided by Ms. Lyden, and submitted that conclusions were inaccurate.

- There was a facility with flammable / explosive materials in proximity (criteria 2). Hammond Lane car breaking operation had continual spontaneous fires, (picture). There were stationary populations within 500m, NMCI which had 800 pupils and teachers was located only 35m away.
- Road network was inadequate (criteria 4).
- There was a single access, a cul-de-sac. In the event of an accident turning trucks or those on the side of the road would inhibit rescue vehicles ability to access. Accidents did happen (Argentina, Quebec, Japan). Proximity to residential areas (criteria 7)
- The health of Cobh, Monkstown other harbour communities would all be affected by emissions.

Hazel Mc Carthy\textsuperscript{123} stated that the proposal did not conform to WHO guidelines (46) and Technical Guidelines of Basel Convention (ratified by

\textsuperscript{121} Chair, Monkstown, Glenbrook, Passage
\textsuperscript{122} CHASE,
\textsuperscript{123} Fenton associates, planning consultants
Ireland in 1994), which stated that site selection should be phased process examining each location on the basis of protecting human life and on the natural environment.

She submitted that and environmental assessment should be made prior to final decision on the siting. Public acceptance a basic element of the site selection process should be actively solicited during the entire process, beginning with site selection.

_Cllr. D’Alton_ referred to her profession as an engineer specialising in waste, and stated that site selection is a basic and fundamental tool in waste management, and a key consideration at the outset of provision of a waste facility.

She referred to EPA Landfill Manual on Site Selection, (Draft 2006), and said one of the first exclusionary considerations in determining a location of a landfill is the presence of a regionally important aquifer. One could not and would not locate a landfill on top of such an aquifer (although there are provisions in the 1993 Landfill Directive for barriers), because precautionary principle must apply and in the event of a failure of the engineered protection, the natural environment would be the back-up to assist in minimising the impact on the environment.

She too went through the exclusionary criteria, of the WHO Guidelines, and submitted the site failed on 5 of the 14. (5 – flooding, 7 – atmospheric conditions, 9 – natural resources, 11 – historic locations or structures, 13 – stationary populations).

She submitted if incineration is part of Government waste management policy, absence of any Guidelines on site selection constitutes a clear deficit. She submitted that in the absence of such guidelines the proposed development would be premature.

_Assessment_

During the hearing there were lengthy discussions regarding the exact timing and extent of site selection process and whether WHO criteria was applied during original site selection.

As outlined in Ms. Lyden’s evidence the decision regarding location of the hazardous waste incinerator in the Cork region was on the basis of then waste arisings in the region. The search was on the basis of industrially zoned lands. The decision to purchase the subject site was on the basis of availability (there were references to refusal by landowners and by the IDA)
Based on the evidence before me, I am not certain WHO Guidelines (or guidelines on Basel Convention) were applied during the original site search / selection, or that their presence was known prior to purchase of the site. However, I concur with the assertion by Mr. Ahern that they are Guidelines and as such there is no ‘mandatory’ requirement that they be used.

I do concur with the view that it would be desirable to have ‘national’ guidelines on the siting of hazardous waste facilities and in particular hazardous waste incinerators along the lines of ‘landfill manuals’. However, determination of whether they should be provided is a matter for another forum, and outside the scope of this report. In view of no indication of impending provision of any such Guidelines I am however not satisfied that an issue of ‘prematurity’ would arise.

I concur with the view that site selection based on suitability of the soil/geological and hydro-geological characteristics is an important tool and should be used before or at least in conjunction with of engineering solutions as mitigation measures, rather than to overcome the inherent problems. For example in the case of landfills ‘clay soil’ is preferred as a prerequisite to form a natural barrier below engineered landfills to ensure protection of aquifers, ground water and designated natural areas to which the water discharges. Sandy soil / gravel areas with high permeability are avoided as a matter of course in areas of aquifer vulnerability, regardless of engineered operations. I have discussed the unfavourable geological and hydro-geological characteristics of the site in an earlier section of my report.

The Board has already adjudicated on the original site selection process. Therefore I propose to confine my considerations in relation to site selection only to the current proposal.

I am of the opinion that the site selection process was not one based on WHO or Basel convention of a methodical 4 step process similar to ‘threshold analysis’ with exclusionary criteria, followed by comparative analysis of a number of sites on a number of criteria; but rather, it was one of verification of the suitability of a single site using a number of criteria devised by the proposers, which included some criteria from the Guidelines, as well as other considerations such as economic viability or energy generation, which are not in the Guidelines.

Based on the evidence before me, it is my considered opinion that in the absence of availability of any of the other ten sites, site ownership was the most important determining factor of the outcome.

In relation to consideration of changing circumstances, it is quite clear that one of the issues, (storm surge coastal flooding) has been considered seriously, as significant changes to the design level of the main facility is being proposed (to 5.77mOD while the road level is 2.55m OD), as a mitigation measure.
Therefore the assertion that flooding was only an issue at the waste transfer station seems questionable.

The issue of coastal recession was considered but left for resolution at a later stage, through mitigation measures if and when such an issue arises. It was also considered in the context of major accident hazard, but no mitigation was proposed as it was considered to be a slow developing event.

Having regard to the nature of activities carried out at the adjacent ‘Hammond lane’ facility which is practically encircled by the proposed facility, and which necessitated detailed further, I also consider the suggestion that the site met the criteria of sensitive location such as flammable / explosive materials in the area, to be questionable.

The existing capacity of the road was considered sufficient for the requirements of Indaver, and N-28 by pass would improve access. In this regard I refer to roads and traffic part of my report, where I concluded that the existing network was congested, increased traffic generation particularly at two roundabouts would be hazardous, and that there was no realistic possibility of completion of N28 upgrade in the short to medium term.

The other changes in the area such as opening of NMCI, crematorium on Rock island, the Naval base and its inhabitants were not considered to be significant. I refer to the section of report on major accident hazard, and in particular the issues related to emergency response /planning.

Therefore, it is my considered opinion that the applicant’s review of changing circumstances was limited in its scope and its findings were not supported by the evidence presented at the hearing.

The requirement for indication of the site selection process employed, arises from consideration of alternatives. The paragraph 1 (d) Schedule 6 of the Planning and Development Regulations, 2001 (as amended) requires that EIS should contain:

(a) an outline of the main alternatives studied by the developer and
(b) indication of the main reasons for choice.

As such, it does, as referred to in a judgement\textsuperscript{125} sets a very low threshold for an EIS to comply.

In the case of site selection for the ‘Municipal line’ the EIS is rather silent. In Ms. Lyden’s evidence this was presented as part of policy review with reference to continuing growth of municipal waste and landfilling (3.3), and waste generation by households and industry( ).

\textsuperscript{125} Mr. Justice Mahon (see legal and procedural issues)
There is no indication of a dedicated site selection process for municipal line within Cork County, particularly whether a gravity analysis was employed, nor is there any indication of considerations of alternative locations. The general indication was that site selection for both was carried out at the same site.

In this regard I also note reference by Ms. Keaney (in her evidence in relation to policy and need considerations), to ‘economies of scale’ in locating hazardous waste and MSW lines within the same facility.

Having regard to the fact that municipal line is a new proposal and one that has a larger capacity than the hazardous waste line, having regard to significant differences in the characteristics and the amount of municipal waste arisings and their geographical distribution within Cork county, from that of hazardous waste arisings from industry located around the harbour, I am of the opinion that the a separate and independent site selection process for the municipal line is necessary.

Based on the evidence before me, am not satisfied that this was done and therefore, I conclude that there is significant information deficit in relation to site selection and consideration of alternative sites with respect to municipal solid waste.
B. Conclusions and recommendation

The proposed development provides for two separate incinerators under one roof. One is a fluidised bed incinerator for processing of hazardous waste and non-hazardous industrial waste (100,000tpa), the other is a grate incinerator to process municipal solid waste (140,000tpa), giving a total capacity of 240,000tpa. The waste transfer station is an independent facility (15,000tpa) located within the larger site area, but not directly required for the operation of the main incineration facility.

I have reviewed the EIS, the written submissions, the submissions at the hearing, supplementary documents, relevant policy and guidance documents, conducted the five week long hearing and inspected the site and its environs on a number of occasions. The following are a summary of my main findings:

1. Having regard to the material differences in terms of capacity, nature and extent of waste streams to be accepted, and design of the proposed facility; and having regard to the considerable developments in waste policy and guidance in the intervening years, the decision with regard to the appeal no PL 04.131196, which has expired in Jan 2009, while being a material consideration, would not constitute a precedent in determination of this strategic development application.

2. The EIS is legally adequate. It is however deficient in content and impact analysis in a number of sections in particular in identification and examination of interactions and cumulative impacts, and impacts arising from proposed mitigation measures. In some areas the statements in relation to no impact are without a clear analysis of the likely significant impacts individually or cumulatively. In others the information on the receiving environment is seriously deficient. Therefore, and notwithstanding the considerable amount of supplementary information provided by the applicants and by the observers during the hearing; it is my considered opinion that the information before the Board is insufficient to enable the Board to carry out an environmental impact assessment in an appropriate manner, to form a basis for an informed decision on the application.

3. A considerable proportion of national hazardous waste is generated in the Munster region and in particular in Cork, by the pharmaceutical industry. However, a significant portion of the hazardous waste thus generated, is solvent based, for which the most appropriate and preferred form of treatment it solvent recovery or use as fuel substitute for co-incineration in cement kilns. Secondly, it is accepted that there is a change in the processes employed by the newest pharmaceutical
industry from chemical based processes to bio-based processes, and that these new processes generate significantly less hazardous waste (than the traditional pharmachem industry). Two of the most recently located companies are of this variety. Thirdly, a number of the existing large producers of hazardous waste have, have installed their own dedicated on-site incinerators or solvent recovery facilities in recent years. (Such dedicated incinerators are preferable to general incinerators because they are specific to hazardous waste inventory and mixtures of the producing company). Perhaps as a result of combination of these factors, there seems to be a decline in export of hazardous waste for incineration (as originating in Cork) since the peak levels of 2004. The documentary evidence is that amount of hazardous waste which is exported for incineration abroad and which has originated in Cork in 2007 is no more than 7,000-10,500tpa.

Therefore, notwithstanding the geographical distribution of hazardous waste arisings within the state and significant cluster of hazardous waste producing manufacturers in the Cork area, having regard to the extent and capacity of existing on-site dedicated incineration facilities of large producers, increased use of bio- based manufacturing processes which produce much smaller amounts of hazardous waste (compared to chemical based processes) by the companies locating in the area in recent times, changes in the required and preferred treatment of solvent based hazardous waste (which constitutes a major component of hazardous waste produced by the existing pharmachem industry in the area) through recovery and use as fuel in co- incineration in cement kilns, and having regard to the amount of hazardous waste which is generated in Cork area and which is exported for incineration to be no more than 10,500tpa; it is my considered opinion that a demonstrable need for location of a hazardous waste incinerator with 50,000tpa capacity at Ringaskiddy has not been proven.

The site of the proposed development although considerable in overall area, is quite restricted in terms of usable area. As such it is not suitable for provisions of an integrated national hazardous waste facility. I note during the hearing the applicant indicated an agreement with a landfill in Leinster for ash disposal.

I also note that the preferred option as expressed in the environmental report of the proposed National Hazardous Waste Management Plan 2008-2012 is for provision of a centrally located integrated hazardous waste facility to include solvent recovery, co-incineration and hazardous waste landfill. The proposed development arising from its significant distance from a central national location may prejudice achievement of the said ‘preferred’ option.

4. Thermal treatment with energy recovery as a key element of Irish Waste Management Policy is accepted and supported by various policy

*An International Review of Waste Management Policies* currently carried out is stated to be in advance stage, with a report due for completion late autumn.

Therefore, while the various policy documents published by the DoEH&LG such as *Changing Our ways, Delivering Change, Waste Management- Taking Stock and Moving Forward-2004* have not been rescinded, it is my considered opinion that in making their decision the Board also need to take into consideration of the policies expressed in the *Statement of Strategy 2008-2010*, and *Circular WPRR 04/09*.

5. The waste management plans of the two planning authorities, based on the waste strategy for the region are inline with the most up to date requirements of the Waste Framework Directive 2008, of prevention, reuse and recycle, followed by disposal with energy recovery. The Bottlehill landfill which has stringent acceptance criteria is ready for operation, and consultants have been appointed by the Councils to identify the best from of MBT / anaerobic digestion facilities, to treat residual waste prior to landfill, and to achieve energy in the process. The region has already achieved recycling rates of 47% which is significantly above the 36% national average, the local authorities are confident that they will be in a position to meet the landfill directive targets. Based on the information before me I have no reason to conclude that this will not be so. (In this regard I also accept that the Directive requirement for diversion of biodegradable waste away from landfill is at the national and not local authority level).

I further accept that there has been a stabilisation of Municipal waste arisings in Cork city in the last five years, and having regard to the current economic climate, I am satisfied that a significant/ discernable increase in municipal waste arisings is not likely to occur in the short to medium term.

Therefore, and having regard to the existing and planned facilities in Cork waste region by the local authorities for the recovery / disposal of municipal solid waste, including mechanical biological treatment with energy recovery followed by landfilling of residual waste, the recycling levels achieved by the region, and stabilisation of waste arisings, I am satisfied that there is a realistic likelihood of achievement of landfill diversion targets within the region, and as such it is my considered opinion that a demonstrable need has not been proven for incineration of municipal waste to facilitate compliance with landfill diversion targets, for the region.
I accept the proposition by the planning authority that the proposed development could undermine effectiveness and achievement of the policies set out in the waste strategy for the region and the waste management plans of the two planning authorities (as confirmed in the 2009, County Development Plan).

Having regard to its considerable distance to Bottlehill landfill, and the planned MBT facility both of which are located on the northern half of the County, I am not satisfied that the proposed development would promote achievement of integrated municipal waste facilities in the region.

6. The Waste Framework Directive 2008, places a distinction between disposal and recovery operations, based on the efficiency of energy recovery. Those classified as recovery activities are placed firmly higher on the waste hierarchy, and above the level of disposal. This is identified through an ‘energy efficiency criteria’ (R1). Based on the evidence before me I am satisfied that the proposed facility is not likely to meet the energy efficiency threshold as set out in said criteria and as such would be classified as a disposal operation, i.e. at the same level as other disposal operations, such as landfill.

Therefore, and notwithstanding the envisaged energy production, having regard to the efficiency levels of the said production, the municipal line of the proposed facility, is not a ‘recovery’ operation but rather a ‘disposal’ operation within the context of the Waste Framework Directive 2008. (I note hazardous waste incinerators are classified as disposal operations regardless of energy recovery.)

7. There will be energy production from the proposed facility, some of which would be exported to the national grid. This will be through conversion of the steam generated to electricity. While use of waste as a resource for energy production is accepted in principle, and supported by policy and guidance, the most efficient use of this energy is through use of the steam for district heating, rather than electricity production which is significantly less efficient.

In this case, while possible utilisation of the energy produced in the proposed facility in district heating of industrial facilities in Ringaskiddy is considered as a future option, this does not constitute a part of the current proposal. Furthermore, having regard to space heating provisions and base load of existing facilities, location of the site, and necessity for relevant infrastructure for distribution of heat I am not satisfied that achievement of district heating system for existing or future uses in the area is a realistic scenario in this case.

In this regard, I also note that energy production from other forms waste treatment such as MBT followed by anaerobic digestion, from
landfill gas (as currently achieved by City Council from Kinsale landfill). Other forms of thermal treatment with energy recovery such as pyrolysis while also possible do not yet seem to have reached efficient levels. Presently use of RDF (residual waste) as fuel in cement kilns as a fuel substitute (thus reducing requirement for energy import for production) seem to be the preferred method of extracting energy from the municipal waste.

8. Notwithstanding the zoning of the area for industry in general, the proposed development would contravene materially the specific objectives LAP 2-1 and ECON-1 of County Development Plan 2009, which exclude contract incinerators. I also accept the proposition that it is not supported by the zoning objective of the Carrigaline Plan I-15 for a large stand alone industry.

9. The proposed structure is quite large (190m x 55m). At 48mOD its height will significantly protrude over the hill of Ringaskiddy (43m OD). It is location at the edge of the peninsula together with is excessive scale, is likely to result in an ‘add-on’ man made mass to the existing topography at this exposed and central harbour location. It is not possible to integrate the structure into the receiving physical environment because of the sheer scale of the structure, and the restricted usable site area where the processing units are located, but also because of its exposed water edge location. In addition, arising from its function the proposed structure has an introverted design, which discourages interaction with the surrounding area at the interface between the water and the land.

Cork Harbour despite presence of a number of industrial and port facilities has a high visual quality, arising from its topography, landscape and historical heritage including its military fortifications. The visual and heritage quality of the harbour as an economic resource is recognised in the County Development Plan, CASP and a number of initiatives such as Cork Harbour integrated management strategy 2008, Cork Harbour Forum, and application for designation as a UNESCO world heritage site.

The existing industrial developments (apart from one large hilltop complex set back from the water’s age) do not intrude significantly into this visual context, because of their scale, and in particular their low height. Those located at the water’s edge are located away from the centre of the harbour, around inlets (such as Loughbeg, Monkstown Creek), or have adequate site areas for provision of effective screening through landscaping.

It is my considered opinion that arising from its excessive scale and its exposed, central location, and restricted site area, the proposed development would seriously impose on the landscape, visual and
historical context of the harbour, and would be contrary to the policies for protection and sustainable development of Cork Harbour.

10. The proposed development is not likely to have an impact on the structural integrity of the Martello Tower, a protected structure located at the apex of Ringaskiddy hill, in the adjoining site.

Martello Tower is the largest of five towers operating with a number of military fortifications around the harbour. It has a commanding position arising from its central location and panoramic views over the harbour. It also has a specific function of protection of Fort Westmoreland located on Spike island.

The proposed structure which would have a height of 48m OD (excluding the stack) would be higher than the hill (43m OD) on which the Martello Tower is located, and together with its excessive size (190mx55m) would create a mass of considerable scale, changing and challenging the topographical setting for the tower which currently enables panoramic views of the harbour.

By reason of its mass and location, it would also sever the visual relationship of the Martello Tower with Fort Westmoreland located on Spike Island, and render its specific function redundant.

It would therefore have significant adverse impact on the setting and function of the protected structure, and on the complex of historical military fortifications designed for the protection of the harbour. I am therefore satisfied that the proposed development would have adverse impact on the built heritage of Cork Harbour.

11. The proposed development would generate (344 movements of which 188 would be HGV). This section of N28 operates at or above capacity at rush hour, with serious congestion at two significant roundabouts at Shanbally and Shannon Park roundabouts. Shanbally roundabout in particular is quite substandard in terms of size and alignment. I am satisfied that any additional HGV movements would be hazardous.

The advice given by the NRA is that planned improvements on N28 are not included in the schedule of works for completion by 2015.

Therefore, having regard to its traffic generation, to the existing serious congestion at two significant roundabouts on the N28 providing access to the site (which operate at or above capacity), advice given by the NRA that planned improvements on N28 are not included in the schedule of works for completion by 2015; it is my considered opinion that the proposed development would exacerbate the congestion on the N28. In my view, particularly having regard to the configuration and capacity of the Shanbally village roundabout, additional traffic
movements associated by the proposed development particularly the additional HGV traffic, would endanger public safety by reason of traffic hazard.

12. Parts of the site (particularly the area where waste transfer station is located) as well as the road serving the site are liable to flooding (associated with coastal storm surge). Such a flooding event took place in 2004. The Flooding Guidelines recommend a sequential approach in areas subject to flooding giving priority to avoidance.

Historical evidence indicates that site along its eastern boundary is subject to coastal erosion /recession. It is projected that if continued at the same rate and at an even pace, the coastal erosion would be 55m in 100 years and as such 18-22m at the site during the lifetime of the facility (depending on commencement of operations on a ten-year permission). This would mean disappearance of the path (between Martello Tower and Goby beach) proposed to be re-located in this section. It is also likely that such erosion levels could pose a serious threat on the integrity of the access route to the waste reception area located at the rear of the facility.

In general the soil structure at the site is stated to be weak, and the site is stated to be located over a vulnerable aquifer.

The mitigation measures proposed by the applicant involve raising the design levels so as to locate the proposed incinerator facility on a platform of 5.77mOD (road at 2.55m OD), and anchoring the design platform to the rock below. In the case of the waste transfer station design levels is proposed to be increase to 4.55mOD, the foundation for the platform would not included anchoring to the rock.

No mitigation measures are proposed for prevention of coastal erosion. In any event, the applicants do not seem to have sufficient legal interest /estate to enable them carry out any mitigation measures at a future date. Secondly, the impact analysis of any mitigation measures, would also need to be carried out. These have not been done in the EIS.

Engineering solutions are mostly effective as prevention measures when used in conjunction with the natural characteristics of a site or in resolving a single problem. In this case, there are two main problems coastal recession and flooding. In this case the weak soil structure means there is no effective natural protection against these, and as such protection must be entirely dependent on engineering solutions. Despite anchoring of the design platform to the rocks (therefore it won’t make any difference if the entire ground underneath disappears) erosion of ground underneath is likely to effect the integrity of the access roads to waste reception area located outside the retaining walls. In the case of the waste transfer station double containment of storage
may not be effective against ground disturbance as the platform is not proposed to be anchored to ground rock. I am not satisfied the proposed mitigation measures would overcome the problems.

(I note the mitigation measures to locate the facility at levels significantly above projected flooding levels would exacerbate the negative visual impact of the proposed large structure)

Therefore, arising from the underlying weakness in the soil structure, coastal recession, flooding and location over a vulnerable aquifer; it is my considered opinion that the site is inherently unsuitable for location of a use which processes, and generates hazardous compounds.

13. The competent authority for health and safety in relation to major accident hazards is HSA. This competency which covers health and safety and limited technical land use advice based on modelling prediction of risk of fatalities, but does not extend to emergency planning, which is also a requirement under the Guidelines for Directive.

Arising from the inventory of the compounds stored at the site, the proposed facility would be classified as a lower tier SEVESO establishment, but can change to an ‘upper’ tier establishment through change of inventory or increase in the amount of substances, without a further consent process. The requirement for consultation with competent authorities for emergency planning apply only in the case of upper tier establishments, though the competent authorities are required to provide emergency response in the event of a major accident regardless. The competent authorities relevant in this case are HSE (health and safety executive), Gardai, and County Council. They were not consulted in relation to the proposal. They were not consulted.

The sole access to the site is by a single directional road (which as stated earlier is subject to flooding). Arising from its location, there is no possibility of provision of a secondary access. Such a secondary access is considered necessary for emergency response.

Having regard to location of a third level educational use whose sports facilities are used regularly by local primary and secondary schools, within 300m of the proposed facility (vulnerable receptor); it is my considered opinion that the views of the competent authorities who need to provide emergency response should be sought prior to a decision on the proposal.

There are areas of public use along the boundaries of the site in the form of a roadside path along the northern boundary and an amenity path between Martello Tower and Goby Beach proposed to be
relocated along southern and eastern boundaries. The usage levels of these paths have not been determined.

Having regard to the above and to the requirements of Article 12 of the SEVESO Directive, it is my considered opinion the views of the competent authorities providing emergency response and planning be sought prior to granting of a permission.

14. While the information submitted in the EIS is seriously deficient in terms of impact on natural heritage, I am satisfied that an appropriate assessment has been made possible through dedicated efforts of NPWS during the hearing. I accept the conclusions by Dr. Good that significant adverse impact is not likely to arise on the integrity of the European Sites.

15. Arising from deficiency of the information provided in the EIS in relation to identification and analysis of impact on human beings and in particular human health, I am not satisfied that it is possible to carry out an appropriate assessment.

In this regard, while the Board may consider requiring further information, it is my considered opinion that the information required to overcome the deficiency in the EIS can not be provided within a reasonably short period of time.

Accordingly, it is my considered opinion that the proposed development should be refused permission.

I recommend a schedule along the following lines.
REASONS AND CONSIDERATIONS

1. Notwithstanding the geographical distribution of hazardous waste arisings within the state and significant cluster of hazardous waste producing pharmaceutical industry in the Cork area; having regard to the increased capacity of dedicated solvent recovery and on-site incinerators employed by manufacturers of hazardous waste in the area, to the ongoing changes in the manufacturing processes to bio-pharma processes which produce much less hazardous waste, the recent developments in alternative and preferred methods for treatment of solvent based hazardous waste, and to the current levels of hazardous waste exports originating from Cork in the region of 7,000-10,500tpa; the Board is not satisfied that a demonstrable need has been proven for location of a national hazardous waste incinerator with 50,000tpa capacity at Ringaskiddy.

2. Having regard to the existing and planned facilities in Cork waste region by the local authorities for the recovery / disposal of municipal solid waste, including mechanical biological treatment with energy recovery followed by landfilling of residual waste, recycling rates which are significantly higher than the national average and stabilisation of waste arisings in the region; it is considered that there is a realistic prospect of achievement of landfill targets in the region and that a demonstrable need for incineration of MSW to facilitate compliance with requirements of the Landfill Directive has not been proven. It is further considered that the proposed development would contravene the provisions of the waste management strategy for the region and the waste management plans of the two relevant local authorities, and may prejudice their policy and objectives.

3. Having regard to its excessive scale and in particular its height protruding significantly above the ridgeline, it is considered that the proposed development would change the topographical setting and the commanding position of the Martello Tower which forms part of a complex of historical military fortifications designed for the protection of the harbour, and would adversely impact on the specific function of the tower for protection of Fort Westmoreland located on Spike Island by severing visual connection between the two. The proposed development would therefore have significant adverse impact on the historical heritage of Cork Harbour, and be contrary to proper planning and sustainable development of the area.

4. Having regard to its excessive scale and its exposed, central location within Cork Harbour; it is considered that the proposed development notwithstanding existence of a number of industrial and port related installations in the harbour, would seriously impose on the landscape, and visual context of the harbour, and would be contrary to the policies of the County Development Plan for protection and sustainable development of Cork Harbour.
5. Having regard to the existing traffic levels on the local road network, and on the N28 and in particular the congestion at Shanbally village and Shannon Park roundabouts (which operate at or above capacity), the advice given by the NRA that planned improvements on N28 are not included in the schedule of works for completion by 2015; it considered that the additional traffic movements associated with the proposed development particularly the additional HGV traffic, would exacerbate the congestion on the N28, and having regard to the configuration and alignment of the Shanbally village roundabout, would endanger public safety by reason of traffic hazard.

6. Having regard to the soil and geological characteristics of the site, nature and extent of erosion / coastal retreat along the eastern portion of the site, the accepted likelihood of flooding on the site and on the public road providing sole access to the site; it is considered that not withstanding the proposed mitigation measures to raise the design levels of the proposed facility, the site of the proposed development is inherently unsuitable for location of a use which processes, and generates hazardous compounds.

7. It is considered that notwithstanding the zoning of the area for industry in general, the proposed development would contravene materially the specific objectives LAP 2-1 and ECON-1 of County Development Plan 2009, which exclude contract incinerators.

8. The EIS is legally adequate. It is however deficient in content and impact analysis in a number of areas in identification and examination of likely significant direct and indirect impacts, interactions and cumulative impacts, and impacts arising from the proposed mitigation measures. Therefore, and notwithstanding the supplementary information provided during the hearing; it is considered that the information before the Board is insufficient to enable the Board to carry out an environmental impact assessment in an appropriate manner, and to form a basis for an informed decision on the application.

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Öznur Yücel-Finn
Senior Planning Inspector

30th October, 2009