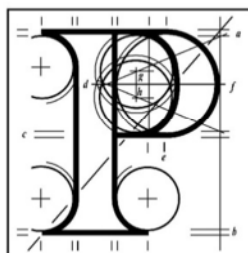


An Bord Pleanála



**Waste to Energy Facility
at Ringskiddy
County Cork**

**Addendum to
Inspector's Report**

04. PA0010

Volume V

OUTLINE	PAGE
INTRODUCTION.....	3
SECTION I	
EXAMINATION OF RESPONSE TO FURTHER INFORMATION REQUEST.....	4
Outline of information requested by the Board	
I	Revised drawings and Particulars
1.0	Reduction in the scale of buildings and other structures.....5
1.1.	Information requested
1.2	Applicant’s Response
1.3	Third Party submissions (objectors)
1.4	Submission by Pharmaceutical Ireland
1.5	Assessment
2.0	Works to Public Road to Prevent Flooding..... 10
2.1	Information Requested
2.2	Applicant’s Response
2.3	Third Party submissions
2.4	Assessment
3.0	Works to prevent coastal Erosion.....16
3.1	Information Requested
3.2	Applicant’s Response
3.3	Third Party Submissions
3.4	Submission by OPW
3.5	Assessment
II	Revised Environmental Impact Statement23
1.	Information Required
2.	Applicants Response / Addendum EIS
3.	Specific Areas EIS is required to address
(a)	Revised Emissions.....28
(b)&(c)	Hydrology and hydrogeology Impacts.....31
(d)	Impact on Visual amenity and cultural heritage.....36
(e)	Interactions42
4.	Conclusions43
SECTION II	
I.	UNSOLICITED FURTHER INFORMATION45
1.	Applicant’s Submission
2.	Third Party submissions
3.	Submissions By HSE.....51
II.	ECJ JUDGEMENT53

INTRODUCTION

I refer to the memo from the Board (dated 8th March, 2011) requiring further assessment and recommendation in this case, further to the notice issued under Section 37F(1) of the PDA 2000, of the submission by the applicants in response to the further information request, and submissions and observations from the third parties in relation to the said submission.

I have reviewed the submissions both by the applicants and by the third parties. Prior to assessment of the information in detail, I would like to bring the following to the Board's attention:

1. Both the applicant's response and third party observations contain information in areas not sought in the Board's Direction (further information request), particularly in areas of waste policy and impact on human beings /health impacts
2. There are a number of requests for re-opening of the oral hearing by the third parties, and questions regarding fairness of the procedures adopted by the Board during processing of the case, including non-circulation of further information to third parties, and lack of access to inspector's report
3. Some of the submissions maintain the changes required by the Board are so material as to warrant a new application, others question the wording 'generally acceptable' in the Board direction. Some maintain the revised proposal submitted by the applicant constitutes a new application. Others note that although the Board direction indicated 'five- year' permission, the applicant is asking for a 'ten-year' permission.

I note that submissions by the third parties (i.e. comments on the further information) were not circulated to the applicants.

Having regard to the above, I propose to carry out my assessment in two distinct sections:

Section I – In the first section I propose to confine my report to examination of the specific information provided within the context of and in response to the further information request.

Section II – In the second section I propose to examine unsolicited information provided in the submissions in order to facilitate an informed final decision by the Board.

I am of the opinion that re-opening of the oral hearing is not warranted having regard to the specificity of the further information required by the Board, quantum of information available to the Board prior to the further information request, and the level of detail provided in the written submissions both by the applicants and by the third parties following request of further information.

The procedures adopted in processing of this case are a matter for the Board, and outside the scope of my report. A chronology of Board directions and the submissions since the request of further information (Jan 2010) are attached to the end of my report for the Board's convenience.

SECTION I

EXAMINATION OF RESPONSE TO FURTHER INFORMATION REQUEST

Outline of Information requested by the Board

The Direction by the Board specified the following further information to be submitted by the applicants:

- I. *Revised drawings and particulars to include the fluidized bed and liquid burner elements and waste transfer station, but, omitting moving grate furnace and ancillary facilities designed primarily for municipal waste. It required that revised drawings and particulars should*
 - 1) *Provide for reduction in the scale of the buildings and other structures to reflect the omission of the municipal waste element of the development*
 - 2) *Provide full details of the works required to the public road to prevent flooding, including raising its level*
 - 3) *Provide further information in relation to nature, extent and impact of any works to prevent any significant erosion of the site should such be required in the future*

- II. *A revised EIS to relate to the effects on the environment of the modified development as a whole, that is for treatment of the hazardous / industrial waste element only and waste transfer station, addressing in particular:*
 - a) *Revised emissions*
 - b) *Flooding of the public road serving the site, the necessary remedial works to prevent such flooding and the consequential impact of same (indicating that the EIS is deficient in this matter)*
 - c) *Any necessary remedial measures in relation to coastal erosion and their consequential impact (indicating that EIS is deficient in this matter)*
 - d) *Impact on visual amenity, in terms of landscape and in relation to cultural heritage including consideration of the interlinked views to/ from the historic military structures in the harbor including the Martello tower south of the site*
 - e) *Interaction of the foregoing and other factors*

The submission by the applicants dated 3rd Aug, 2010 is contained in a box containing revised drawings and Addendum EIS.

In my assessment I propose to follow the same format referring to the main points of the request of information by the Board, outlining the submission by the first party followed

by comments by the third parties prior to carrying out my assessment, in the same order as the further information request by the Board, and under the following headings:

I. Revised drawings and particulars

1. Reduction in scale of building and other structures
2. Works required to prevent flooding of the road
3. Works required to prevent coastal erosion

II. Revised EIS

1. Information required
2. Applicant's Response / Addendum EIS
3. Specific Areas EIS is required to address
 - (a) Revised emissions
 - (b) Works to prevent flooding
 - (c) Works to prevent coastal erosion
 - (d) Visual, landscape, built, cultural heritage impact
 - (e) Interactions

I. Revised drawings and Particulars

1.0 Reduction in the scale of buildings and other structures

1.1 *Further information Request*

Provide for reduction in the scale of the buildings and other structures to reflect the omission of the municipal waste element of the development

1.2 *Applicant's Response to Further Information request*

1.2.1 Modified scheme

The modified scheme by the applicants provides for two furnaces (fluidized bed and moving grate) and all other components necessary for processing of hazardous waste / industrial waste as well as municipal waste, but in a reduced sized building (through use of different furnaces, omission of wet purge etc., and reconfiguration of the layout).

1.2.2 The description of the Modified scheme is provided in chapter 2 and summarized in the non-technical summary:

Revisions within appeal site

- Reduction of the scale of the main process building

- Re-configuration of the turbine building and aero-condenser building
- Re-arrangement of solvent tank, residue silos, and internal road layout within service yard
- Re-location of firewater storage tanks, pump house and re-location/enlargement of ESB compound
- Re-location of emergency access gate
- Re-alignment of public footpath
- Process effluent removal
- Re-alignment of gas pipeline diversion

1.2.3 Of these, the reduction of the scale of the main building is detailed as:

- Reduction of the footprint of the building by 9% (corresponding to a 5% reduction from the permitted development)
- Reduction of the height of the main process building by 7.5m at its highest point. The building height will vary up to a maximum of 35m
- Reduction of the length of the building by 20m (to 170m x 117m) remaining in L-shape
- Reduction of the plan area of the stem of L-shape by 10m (to 71m x 63m)
- Reduction of the roof heights in the control room and reception hall by 6.5m

1.2.4 Section 1.3 of the EIS provides the reasoning for the applicants approach.

Indaver understand and acknowledge that the Board was not satisfied that incineration facilities to deal with residual municipal waste at this site were appropriate at the time of the letter in January 2010. The modified scheme fully respects this understanding. Of course in line with best practice principles of sustainability, future proofing and common sense this revised and reduced scale of development does remain capable of accommodating such facilities at this site.”

It goes on to state:

“...turbine itself would have to be completely replaced if permission was granted for a moving grate line in the future. A turbine large enough to cope with both lines provides a more sustainable solution. For this reason a building large enough to accommodate such a turbine is proposed. The same could be said for the boiler feedwater tank and solidified area within main process building.”

It further states

“..construction of the main process building in two phases would not be practical, and would require the operating line of phase one to be shut

down for perhaps two years while construction of the second phase is completed, and it would make it difficult to achieve an overall visually desirable and cohesive architectural solution for a first phase that would allow for a possible second line at some future date...”

1.3 Third party submissions

1.3.1 Noting that the further information has not been circulated to the third parties, it is submitted by some that the material on the website does not appear to be a complete match of the material submitted to the Board.

1.3.2 It is also submitted that drawings do not give any information on what is being changed and what is being retained to facilitate understanding of what the effects of the changes would be.

1.3.3 A number of the submissions maintain that the applicant has responded ‘inappropriately’ to the request made by the Board for revised drawings and particulars omitting the municipal waste element of the development.

1.3.4 Other points include:

- The response did not adhere to specific request for omission of the municipal line / The applicant is still pushing for a municipal line although specifically instructed to omit
- Further information submitted is invalid as it contains elements that An Bord Pleanála asked not to be submitted, i.e. municipal incinerator
- The applicant did not comply with the Board’s request/ the applicant ignored the Board’s specific instructions, and should be dismissed
- By agreeing to a proposal which provides for a turbine, boiler and feedwater tank to accommodate incineration of municipal waste and a building large enough to accommodate the same the Board would be agreeing in principle to future development of the facility in line with what they stated is unacceptable on this site
- The statement that a phased development is not practical is unsubstantiated
- There will be significant reduction in ash production [When municipal line is omitted]. This is not reflected on drawings
- A grant of permission for the proposed development will prejudice outcome of future applications for coastal erosion protection works

1.4 The submission by Pharmaceutical Ireland state that both lines must be allowed to achieve economies of scale and municipal line is needed to comply with Landfill Directive.

1.5 *Assessment*

1.5.1 Further information request by the Board required submission of revised drawings to include the fluidized bed and liquid burner elements and a waste transfer station, but omitting the moving grate furnace and ancillary facilities which are designed to deal primarily with municipal waste. It further required reduction in the scale of the building and other structures to reflect the omission of the municipal waste element of the development.

As such the request had two main requirements:

- Omission of elements which deal primarily with municipal waste (moving grate furnace and ancillary facilities)
- Reduction of scale to reflect the omission of municipal waste element

1.5.2 The approach adopted by the applicant to provide a scheme to cater for a phased development for processing of both hazardous waste / industrial waste and municipal waste means the building has been designed to cater for both and for a processing capacity of 240,000 tonnes per annum rather than 100,000 tonnes per annum as prescribed in the Direction of the Board (Jan 2010) under item “A”.

1.5.3 It would be reasonable to assume that facility to cater for a capacity of less than half of the capacity envisaged by the applicants would need to have a much smaller building footprint perhaps corresponding to less than half of the size of the initial proposal (regardless of reduction in size arising from changes to some of the furnace designs / and other equipment).

1.3.4 In this case the length of the building is stated to be reduced by 20m, while the stem of the L is stated to be reduced by 10m. I now refer the Board to the site layout plans Drg.no 108040\CD\003 (received Nov 08) and 1030-003 (received Aug, 2010)¹ which indeed indicate that there is an approximately 20m reduction in the overall length of the building (along the road frontage to 170m). There is also some reduction in the width of the stem of the L (approximately 10m). I note however that there seems to be no reduction in the length of the stem, whereby the depth of the building remains at 119m, along the stem of the L.

1.3.5 While I do accept that there is a 9% reduction in the footprint of the revised scheme (mainly arising from 20m reduction of the length), as stated in the EIS, in my view this does not correspond to a reduction which would result from reduction of the capacity from 240,000 tpa to 100,000tpa, through omission of the municipal line (omission of moving grate furnace, reduction of the size of the turbine hall, boiler feed water tank, solidified area, ash bunker, etc).

¹Partial reproduction is attached for ease of comparison.

- 1.3.6 It is stated in the EIS that there would be a 40% reduction in the volume of the building, and that the building size would be reduced from 570,000m³ (2008) by 230,000 m³, to 340,000m³.

The building height as originally proposed would be 42.5m. While the height reduction is not uniform and varies between 7.5- 6.5m reducing to 4.5m – 2.5m, if one assumes an average reduction of 7m reduction in the height (of the main processing section, and waste reception hall), this would represent an approximately 16% reduction in the overall height (from 42.5 to 35.5). As the reduction in the footprint is only 9% in my view it would be reasonable to question whether a 40% reduction in the overall volume is an accurate figure².

- 1.3.7 I am unable to provide the Board with an approximate space requirement for a facility catering for hazardous waste /industrial waste only, because apart from two separate furnaces, all the other components such as reception hall, waste bunker, ash bunker etc. are presented as single entities. I have no documentary evidence before me to the size requirements of a turbine hall specifically catering for a hazardous waste incinerator, nor for space requirements for waste reception area, boiler feed water tank, solidified area catering for hazardous waste /industrial waste only.

- 1.3.8 I should note that there is also some reduction in the footprint of the built elements within the service yard, in particular along the rear section of the site as the revised scheme provides for a single building to accommodate both turbine hall and aero condenser structures instead of two separate structures. The single building is approximately 10m shorter than combination of the two previously proposed. I also note the revised building is stated to be “*large enough to accommodate a turbine which is large enough to cope with both lines*”. No information is provided what the building size would be for one line, only.

- 1.3.9 In view of the above, it is my considered opinion that while there is some reduction in the scale of the proposed structure, the modified scheme does not represent a level of reduction which would correspond to reduction of the processing capacity by more than half ‘*to reflect the omission of the municipal waste element*’ as prescribed in the Board Direction /request for further information.

In my view the requirement for reduction in the scale of the buildings and other components is associated with and arises from the substantive requirement for omission of the municipal line rather than being a requirement on its own. Therefore, a reduction in scale of the building alone would not meet the requirement.

² (In the absence of CAD figures and detailed volume calculations it is not possible to ascertain accuracy)

1.3.10 I note that there are several references in the EIS to a '*phased development*' as quoted above, where the hazardous waste component would form the 'first phase' with the municipal waste line as the 'second phase' of the overall development. There is no reference in the Board's Direction to a 'phased development' and in particular in the request for further information request. It would be reasonable to question whether the modified scheme to cater for a 'phased development' does constitute an appropriate response to the further information request of the Board.

1.3.11 Overall

- The revised submission is for a facility to cater for 240.000tpa hazardous, industrial and municipal waste.
- Omission of the 'moving grate furnace' to reflect the omission of the municipal line has not been provided.
- No information has been provided as to how a facility processing hazardous waste /industrial waste only would look like in terms of building and associated components.

Therefore, it would be reasonable to conclude that the information submitted does not comply with the specific requirements set out in the further information request.

2.0 Works to public road to prevent flooding

2.1 *Further information request*

2.1.1 The Board Direction required:

Revised particulars to be submitted to include full details of the works required to the public road to prevent flooding, including raising its level.

2.1.2 As such in my view the request had two main aspects:

- Works required to the public road to prevent flooding
- Raising its level

2.2 *Applicant's response*

2.2.1 The submission by the applicant notes that the applicants are not applying for planning permission to carry out the road upgrade works, but that they are provided in response to the further information request.

- 2.2.2 It states that the objective of the design was to develop a solution which would prevent flooding of public road L2545 (Haulbowline link road) serving the site in extreme weather conditions.
- 2.2.3 The submission further states that the design level was based on a 200 year flood, and outlines the objectives and constraints informing their design, such as minimizing impact on neighbouring properties, tie-ing back to existing road, existing utilities, existing drainage capacity, topography and proposed junction of the upgraded N28.
- 2.2.4 The road upgrade would include:
- Realignment of 520m long section of the road between west of first entrance to Logistics site and south of the bridge to Rocky Island
 - Raising the road level to design level of +4.55m from east of NMCI entrance to the coast
 - Longitudinal road gradient of 0.5% would be used to private entrances
 - The re-aligned road would consist of a 7m wide single carriageway, a 0.5m hard strip and a footpath on the northern side
 - Road drainage such as gullies would be located on the southern side of the road.
 - The level of the public car park would need to be raised, and the footpath to Gobby Beach would need to be modified in order to tie-in to the raised road
- 2.2.5 The submission states that given the above constraints it was decided that raising the level of the road would achieve design objective, whilst minimizing impacts and catering for existing entrances.
- 2.2.6 The camber of the road would fall towards the applicant's site, thus draining the surface water away from private entrance to the northern side of the road. Detailed design elements would be discussed and agreed with the Council and adjacent landowners during detailed design stage. This would include an assessment of the condition and capacity of the existing surface water sewer and also access to the sewer outfall to Gobby Beach. Other items would include detailed design of the footpath to Gobby Beach, on-road cycle lane provision, signage, road markings, public lighting, and new stone wall to replace any demolished etc.
- 2.2.7 The relevant drawings are SK003 and SK004 (also shown on figures 2.3.2 and 2.3.3 of the EIS).
- 2.2.8 The cross sections provided are 'typical' cross sections away from the existing entrances. They show 1:2 slopes on either side of the road (with a qualification of 'varies' in terms of distances, but no clear indication of what happens in these areas. It is stated that "*a longitudinal gradient of 0.5% would be used adjacent*

to private entrances to prevent surface water collecting at the entrances, while also minimizing the level differences between the re-aligned road and the existing entrances”.

- 2.2.9 The longitudinal section shows on the approach from Ringaskiddy village from the entrance to Logistics site at 2.854 to the highest point at 4.825 just after the turn of the road to Haulbowline. The road is raised by 2.139m at the main entrance to Indaver (250.000)³ from 2.65 to 4.789. There is a slight lowering at emergency access to Indaver (320.000) to 4.575 (raised by 1.855 from 2.72), at the entrance to Gobby Beach car park it is raised to 4.725 and reaches the highest at 4.825 just after the turn on the road (at 370.000).
- 2.2.10 While increment is gentle at (0.5%) as far as the entrance to NCMI, significant increase take place immediately afterwards (2.5%) within a short distance. The car park at 4.38 is below the road level at 4.75 (by 0.37m).

2.3 *Third party submissions*

- 2.3.1 A number of submissions refer to unsuitability of the site / area as whole for siting of the proposed development due to flooding and maintain that raising the road level along the boundary to the site will not resolve the issue. Other points include:
- The information provided is inadequate and leaving detailed design to a later stage is an indication that the proposal is no more than a desk-top study, and without hard data.
 - The submission does not provide information on failure of the existing surface water sewer to drain accumulated flood waters from the affected areas
 - The upgrading of the road is proposed to take place in advance of the works on the site. As the main cause of flooding is ingress from the coast to the east (2.3.5 EIS), upgrading the road whilst ignoring the coastal protection required is akin to dealing with symptoms as opposed to the cause
 - A proposal for a free-board of 0.5m (in the design of road platform) is insufficient in dealing with storm related and marine flooding

2.4 *Assessment*

- 2.4.1 As stated above the proposed realignment would start in front of the access to Logistics site located opposite the waste transfer station. As described in my original report of Oct, 2009, the site of the waste transfer station is low lying,

³ Grid reference on the drawings

and currently considerable amount of flood water from the road drains into the waste transfer station site. The proposal by the applicants is to raise the level of the waste transfer station site to 4.55mOD. As a result the site will no longer function as a 'soak / attenuation pond' for the excess surface water in the area.

- 2.4.2 The drainage of surface water from the road is proposed to be through road gullies / drainage channels located on either side of the road which would drain into the existing surface water outfalls at shore at Gobby Beach. No information is provided whether the sewer would have capacity to drain this new arrangement. As outlined in my report of Oct, 2009, there were concerns regarding adequacy of the existing drains / sewer. The further information is silent in this regard.
- 2.4.3 Similarly the submission is silent in relation to foul sewer and water mains. Determination of condition and capacity of all these are left to the detailed design stage. During the oral hearing the engineer for the planning authority had referred to necessity for replacement of the latter.
- 2.4.4 The applicants are proposing that the camber of the road would fall in the southerly direction, thus draining water towards the appeal site. This is reasonable. It is also stated that a longitudinal gradient of 0.5% would be used adjacent to private entrances in order to prevent surface water collection at the entrances. It is also stated “ *...northern edge of the carriageway is higher than the level of entrances.*”

While cross sections are not provided at these entrances the levels are provided at the longitudinal section. At the entrance near NMCI (150.000) the road at level 3.557 is 0.187 higher than the level at 3.37 inside the boundary. While this difference does not seem much, it still indicates a slope in the northerly direction towards NMCI from the road. I am not sure if this would be greater or less than the slope in the southerly direction (created through camber of the road), as no information is provided regarding the latter, to enable a comparison.

At the middle entrance (use not identified on the drawings) the road would be 0.401 higher at 3.281 than the existing level at the gate at 2.88m (i.e. a gradient of more than twice of the eastern most entrance to NCMI sloping in the northerly direction). Again it is not possible to compare the falls in southerly and northerly directions.

- 2.4.5 I draw attention to the area to the east of the entrance to NMCI where significant level drop is indicated between the road level/ footpath and grounds to the north. Drawings indicate a partial wall to be demolished and replaced (300.000-350.000), and a wall 'buried' (between 150.000 and 300.000). Although not all the levels are provided, some (between 250.000-300.000 are in the vicinity of 2.77 / 2.67, therefore, significantly below the proposed road levels at 4.67 and 4.789.

- 2.4.6 As it is proposed to raise the design levels considerably on the southern side of the road 4.55 at waste transfer station and 5.77, the water has no option but to drain through the channel on the southern side. In the case of the northern side, as the existing levels are lower than the proposed road levels, any accumulation of water on the southern side (either through sheer volume or through blockages by debris etc.) could easily lead to surface water draining into the properties on the northern side.
- 2.4.7 Even if a wall is provided along the entire boundary of the NCMI, generally lower levels of the ground would mean that the water would have no option but to flow into the northern properties through access openings, as significant raising of the ground on the southern side (i.e. appeal site) would mean displacement of all excess water to the northern side. There will also be water displacement from the areas currently operating as a soak pit, and from the road. There is no analysis of such displacement, (quantification of the volumes involved, order of affected areas etc.)
- 2.4.8 I now refer the board to my report of Oct, 2009, and reference to the evidence given by the area engineer to possible raising of the road by approximately 0.5m.

In the further information submitted by the applicants it is envisaged that the road would be raised by various amounts (largest increase by 2.235m at 360.000 from 2.54 to 4.725, though the highest point is immediately afterwards at 4.825 (increased by 2.075m from 2.75).

While the submission refers to various objectives and constraints in developing the proposed solution to flooding of the road in extreme weather conditions, no specific information is provided as to why raising of the road at levels more than quadruple of the amount suggested by the area engineer (during the oral hearing) was decided. I note these are also above the design level of the waste transfer station at 4.55.

- 2.4.9 I am somewhat puzzled as to why a slight dip is envisaged in the section of the road between reference points 260.000 and 370.000 where the levels are 4.82 on either end but 4.57 at 320.000. This is where the emergency access to the appeal site is envisaged.
- 2.4.10 Overall raising the road by such amounts is likely to prevent flooding of this section of the road, and therefore provides a response to the Board's request of further information. In the absence of information outlining the reasons for the chosen final levels, I consider the submission inadequate.
- 2.4.11 The submission indicates provision on either side of the road gullies for future public lighting. While gullies are indicated to drainage channels on either side of the road, in the absence of information regarding location and level of the existing sewer outlet, the connection between the two (and whether it is

workable) is not clear. Similarly no information is provided in relation to whether the sewer is a combined sewer or whether an independent surface water sewer is envisaged. As noted earlier, the area engineer had referred to necessity for relocation /relaying of the watermain. The submission is also silent in this regard. These constitute information deficit.

2.4.12 Further information request by the Board requires ‘details of works’ required to the public road, including raising its level’.

There is no information before me to indicate whether other types of works were investigated to prevent flooding of the road (other than its raising), providing some comparison with raising of the road. Therefore submission is silent in relation to the first aspect of the board’s request, and as such it is in my view incomplete/inadequate.

2.4.13 As I will refer to in a later section of my report while there are references to raising of the road prior to completion of the development in order to prevent future disruption, there is no specific information regarding timing of the works, whether the applicants have the legal interest to carry out the works, if not, who would actually carry out the works, and if it is to be carried out by the Council, how it would be paid for, and whether it is in the Council programme of road works.

I also note the further information request does not qualify the request regarding its timing (i.e. there is no reference to a requirement in the future- as in the case of coastal works). Lack of such information therefore constitutes deficit.

2.4.14 Overall

- This section of the submission complies with the Board’s request only partially (raising of the road only),
- It does not provide any information on alternatives for prevention of flooding of the road.
- It leaves the water /sewer infrastructure issues (capacity and condition) for determination at a later stage
- It is silent on the applicant’s legal ability to carry out the works, or who would be carrying out the works to raise the road

As such I consider the information submitted to be inadequate. I shall refer to environmental impact analysis in a later section of my report.

3.0 Works to prevent Coastal Erosion

3.1 *Further Information Request*

The request by the Board stated:

Further information is required in relation to the nature, extent and impact of any works to prevent any significant erosion of the site, should such works be required in the future.

3.2 *Applicant's response*

3.2.1 The submission notes that the applicant is not applying for planning permission to carry out the coastal protection works, but that they are provided in response to the further information request. Details are provided in Chapter 2 of the EIS and Appendix 2.4.1

The most likely protection type was selected and detailed with the information available.

3.2.2 Section 2.4.2 of the submission provides a brief comparison of various methods, and concludes that Rock Revetment had the following advantages:

- Can be constructed largely within the applicant's site
- Is already present in neighbouring sites along Ringaskiddy Coastline
- Is likely to have relatively small impact on the environment / coastline
- Less visually intrusive
- Less likely to cause changes to the beach profile
- Is a proven technology
- Is a one-off intervention with possible maintenance interventions during design life

3.2.3 The rock revetment design was based on the expected maximum wave height which in turn was calculated for the expected maximum wind speed over the site. The design was likely to be on the conservative side and is stated to achieve the objective of providing protection against coastal erosion to the Indaver site. At the scheme and detailed design stage further investigations and numerical modeling would be carried out to allow for the optimization of the design.

3.2.4 The rock revetment would remain as much as possible inside the land owned by Indaver. It would not occupy the sea front of any neighbouring lands to the south or north of the Indaver site. Two main elements were taken into consideration in the design namely water levels and waves. Using various sources a design water level of 3.60m OD was reached. The rock armour was sized using Van der Meer formula, which required 1-3 tonne standard grading rocks as the main

armourstone for revetment. Standard 60-300kg rock grading was used for the underlayer.

The crest height changed from +4m OD to +6m OD following the existing land contours, width increased to assure adequate protection against overtopping. The toe detail of the revetment was designed to be covered by the beach material following its construction and a formation level of -4.OD was decided. The level of toe would rise at both north and south ends. The crest of the revetment would have a minimum width of 5.6m fixed at +6mOD. The revetment was sloped at a 1 in 2 slope.

3.2.5 The drawings indicate the width of the toe to be 26m, the width of the armour in general would be 18m. The underlayer has a thickness not less than 0.70m and is separated from the existing /reshaped cliff soil by a non-woven geotextile. The upper cliff would be re-graded to a safe slope detailed by a geotechnical engineer. As part of the conclusion it is stated that ideally protection of this coastline would be continuous and the Indaver revetment would tie into a protection scheme for the neighbouring cliffs.

3.2.6 Appendix 2.4.1 “Coastal Protection Alternatives Report” is more comprehensive. It outlines the scope of the report in section 2.2 as:

‘...study to investigate the protection measures that may be implemented to halt or reduce the coastal retreat, should this be needed during the operative life of the proposed Plant’.

“...The data currently available is not sufficient to make a definitive decision on the type of protection that should be used. Amore detailed site investigation and a comprehensive study of the maritime and terrestrial erosion processes will be required.”

3.2.7 It then describes various alternatives (techniques such as detached breakwaters, sills, groynes, revetments, seawalls, bulkheads, cliff strengthening, shore nourishment, planting).

3.2.8 In section 6 ‘Conclusions’ it describes the stretch of coast under analysis as being like a hollow between two rock outcrops, which have been found to remain relatively stable through time, and states that methods relying on trapping sediment may prove to be unsuitable as the two rock outcrops may actually impede the transport of sediment in that direction.

Other techniques such as beach nourishment which need to be developed on a large area may be difficult as the area is not part of Indaver site.

3.2.9 In relation to causes of retreat in this specific location, it states (6.3):

“...photographs would suggest that the more likely causes are combination of wave action and cliff instability. Waves attack the bottom of the cliff

weathering its toe. This undermining of the cliff adds up to ground water percolation and together they lead to the collapse of the front of the cliff. This mechanism will need to be confirmed by further investigations and appropriate analysis.”

It further states that should this be the case the protection measures will include a combination of the techniques illustrated in the previous chapter, and the most likely overall protection scheme is likely to include a structure at the toe of the cliff (sea wall, gabions or bulkhead), and interventions at a higher level to stabilize the cliff (cliff nailing, netting, drainage etc).

- 3.2.9 The drawing no 5970-W-3802 (Rev03) provides sections, while the drawing no 5970-W-3803 (Rev 03) (entitled visual impact) provides the revetment plan. (EIS figures 2.4.2 and 2.4.1).
- 3.2.10 Approximately 130m long and curved following the topography, the armour would be approximately 26m wide at the base reducing to 18m at the top. It would be located approximately 25m distance from the edge of the car park and 20m from the footpath between the car park and beach.
- 3.2.11 No re-grading is proposed at the cliff edge in sections A,B,C, and G (northern section). In sections D,E, and F re-grading of the cliff is indicated as the cliff rises from +6.5m to 10.15m to smooth the sharp drop between the cliff edge and top or armour. This necessitates a re-grading of approximately 5m (horizontal) section of the existing cliff edge at 10m contour. Overall 1:2 slope is indicated along the smoothed cliff edge and rock armour.
- 3.2.12 The section of the armour buried under the water level would be 4m below the LWM (low water mark) or rock bed level whichever is shallower. A geotextile is indicated on the land side of the rock armour.
- 3.2.13 Re-graded cliff and rock armour would be tied together at the southern end, though the drawings indicate that this area requires periodic maintenance as the area is subject to erosion.

3.3 *Third party submissions*

- 3.3.1 A number of the submissions refer to the impact of the proposed revetment. I shall discuss these later as part of the impact analysis.
- 3.3.2 Others refer to the severity of the erosion taking place at this location. One in particular submission draws attention to location of ‘Golden Rock’ in 1842 maps and in Indaver photo number C1968.40 (Addendum EIS photo 35). The submission maintains this shows how much the rock moved away from the shore.

3.3.3 Comments specifically on the proposed measure include:

- Rock armour will not have any meritorious effect on this ongoing coastal erosion, quite the reverse in fact as the extent and the invasive type of building that the beach will suffer during installation of this armour will do nothing but harm the beach.
- Measures proposed are in areas outside the control of the applicant, and require planning permission outcome of which cannot be guaranteed by the applicant
- A condition cannot be imposed on areas outside the red line area. In this case proposed armour is not even inside the blue line entirely
- No programme has been agreed with OPW or local authority for integration of the revetment into an overall programme
- While EIS 14.14.3 states that mitigation measures are not required in respect of coastal recession and coastal flooding, S. 2.4.3 (Basis of Design) states that the serious threat posed by coastal erosion to this site is recognized in this addendum to the EIS
- The stage at which construction of such a rock revetment programme should be scheduled has not been stated. This constitutes an extraordinary omission.
- Scheduling of works in the interest of marine related flooding and coastal erosion should be assigned to the 30 year lifespan of the proposed development
- The cut and fill process purports to use the natural sandy till available on site. As is evident along the coastal section this till is easily eroded and is prone to collapse under conditions of super saturation.
- A height of +6m and a length of 130m is being suggested for rock revetment. No directly measured site specific hard data has been presented relating to critical influences such as wave height, tidal extremes, wind strength or storm influences.
- All predictions are based on computer generated or other models supported by information not specific to Gobby Beach. At the very least such data is necessary for validation
- A free board of 0.5m is insufficient when dealing with a combination of storm-related and marine flooding
- There is inconsistency in return periods (50 years /100 years)
- No information has been provided on tides or erosion patterns
- During oral hearing OPW advised of a full study, allowing for a full cycle of seasons (i.e. a year) to assess the impact on the surrounding coastal areas. The applicant have not provided this

3.4 Submission by OPW (Prescribed Body)

- 3.4.1 The submission states that if approval is granted in respect of the proposed development it should be made conditional upon the following:

A more detailed investigation and study of the maritime and terrestrial erosion and littorial processes is to be undertaken in advance of finalizing and specifying any future required coastal protection measures relating to this site.

The above requirement is generally a conclusion of Arup report on coastal protection alternatives in Appendix 2.4.1 of the submission but is not highlighted in detail elsewhere in the submission.

We would point out that lack of detail and considerable uncertainty about degree of erosion and effects of the proposed coastal protection were the principal 'negative' issues raised by the OPW at the oral hearing in relation to the original proposal.

3.5 Assessment

- 3.5.1 As referred to above and highlighted by the OPW, the Appendix 2.4.1 states:

"...The data currently available is not sufficient to make a definitive decision on the type of protection that should be used.

A more detailed site investigation and a comprehensive study of the Maritime and terrestrial erosion processes will be required to identify what causes the cliff and/or coastal erosion and what therefore is the most suitable protection method.

This mechanism will need to be confirmed by further investigations and appropriate analysis."

Therefore it would be reasonable to conclude that without such detailed study it is not possible to ascertain whether the chosen method is the most appropriate or the most effective for this particular location.

- 3.5.2 Based on the photos a most likely cause is stated to be a combination of wave action and cliff instability. This is a reasonable conclusion. In view of the fact that at locations where the cliff is made of rock the same wave action would not have the same effect, the cliff instability arising from its soil / geological characteristics which enables the wave action to become effective seem to be a very strong factor in this case.
- 3.5.3 There is no information before me to indicate that a more detailed examination of the cliff / soil conditions were carried out during the period between January

2010 and Aug 2010. The response to further information request therefore seems to be based on information gathered in 2008, and photos (paragraph 3.2.8 refers). This constitutes deficiency.

- 3.5.4 Another important factor in determination of the suggested method seems to be the land ownership, as some of the alternatives such as ‘beach nourishing’ were discarded as they would require lands outside the ownership of the applicant.
- 3.5.5 In this regard I would like to draw the Board’s attention to the drawings showing the extent of land in the ownership of the applicants. The first is drwg. No 18040\CD\001 entitled ‘Site Location Map’ received by the Board on 28 Nov, 2008. The site of the proposed development is outlined in red and the land in the ownership of the applicant is outlined in blue.

The second is drwg. No 1030-001 entitled ‘Site location Map’, received by the Board on 3rd Aug, 2010. The legend indicates that the area to which the application relates is outlined in red, and land under the control of the applicant is outlined in blue.

- 3.5.6 I now draw attention to the alignment of the blue line at the eastern most section, and note the discrepancy between the two (by approximately 7-8m). The submission of Aug, 2010 seems to extend as far as the HWM, while the in submission of Nov, 2008, it is located further west at the cliff edge. No documentary evidence has been provided (such as land ownership maps) to explain the reasons behind the discrepancy/boundary change.

I further note in describing the ‘receiving environment’,(EIS, 3.7.3) it is stated

“the site area is now expanded to include the area of the local road serving the site (Haulbowline Island), the public car park adjacent to Gobby Beach and those parts of Gobby Beach that would be required for the implementation of remedial measures in relation to coastal erosion, should they be required in the future. The site area as such now extends to include the length of the local road, along the site frontage and parts of Gobby Beach”.

In the event of a decision to grant permission, I would recommend clarification is sought from the applicant on the extent of land ownership.

- 3.5.7 The drawings showing the proposed rock revetment do not provide details of ownership. Parts of the rock armour (area south of section DD) seem to extend beyond the ownership boundary /HWM⁴. Therefore it would be reasonable to question whether the applicant would have legal interest or estate to carry out such important works in the future should such be required. The submission

⁴ In the archeological section the HWM is stated to reach the base of the cliff in a number of places.

provides no information on whether a foreshore license would be required to carry out the works, and who would be likely to carry out the works.

- 3.5.8 In the absence of definitive and site specific information as to the cause of erosion at this particular site, and in particular the speed of erosion, it is not possible to ascertain whether the suggested method is the most appropriate to prevent any significant erosion of the site. Therefore the response remains a 'hypothetical' response.
- 3.5.9 There is no information regarding possible 'future date' and when /whether the coastal protection works would be needed during the lifetime of the plant.
- 3.5.10 As stated earlier clarification of the extent of lands in the ownership of the applicant (applicant's legal estate /interest) is necessary, as well as whether an off-shore license is required. These constitute information deficit.
- 3.5.11 Overall the response provided is more comprehensive than the 2008 submission, and provides an example of what coastal protection measures may involve. It is however, still not based on site specific data, but rather provides a generic solution and as such it remains inadequate.
- 3.5.12 I shall discuss the environmental impact analysis of the proposed method in the following section of my report.

II. Revised Environmental Impact Statement

1.0 Information required

1.1 The further information request by the Board stated

The revised Environmental Impact Statement should relate to the effects on the environment of the modified development as a whole that is for treatment of the hazardous waste/industrial waste only and the transfer station. In particular the EIS should address:

- a) Revised emissions*
- b) Flooding of the public road serving the site, the necessary remedial works to prevent such flooding and the consequential impact of same (indicating that the EIS is deficient in this matter)*
- c) Any necessary remedial measures in relation to coastal erosion and their consequential impact (indicating that EIS is deficient in this matter)*
- d) Impact on visual amenity, in terms of landscape and in relation to cultural heritage including consideration of the interlinked views to/ from the historic military structures in the harbor including the Martello tower south of the site*
- e) Interaction of the foregoing and other factors*

1.2 Therefore, the requirement had two main elements:

- A revised EIS on the effects of the modified development for hazardous waste /industrial waste only,
- specific areas the EIS should address (air emissions, consequential impact of works to prevent flooding and coastal erosion, impact on visual amenity and cultural heritage) and interactions,

1.3 In the following section of my report I propose to outline the main points of the Addendum EIS, prior to examining the specific areas required by the Board, following the same format in each section.

2.0 Applicant's Response/Addendum EIS

2.1 The submission by the applicants is in the form of an 'addendum EIS', in relation to the modified scheme which not only provides for processing of hazardous waste/industrial waste, but also for municipal waste.

2.2 Overall in terms of impacts it is stated "*the impacts arising from the modified scheme are no greater and substantially the same as those reported in the 2008 EIS*"

2.3 'Assessment of the Environmental impacts of the modified scheme and other works' is provided in Section 3 of the Addendum to the EIS, under a number of

headings, following the format of the 2008 EIS. (I note the Board Direction issued on ... stated an addendum EIS was acceptable)

- 2.4 In the following section I shall briefly outline the main points of the Addendum EIS:

Human beings

This section provides further literature review (which I shall refer to in later section of my report).

It is stated (page 29) under 'Review of New Air quality Modeling and Dioxin data' :

It is considered that the proposed amendments which do not result in a change to the primary process or the nature or characteristics of the emissions, will not result in an impact on human health...predict no exceedences of Air Quality Standards and results very much in line with those predicted for the 2008 facility.

Under 'Operation of a single industrial line' it is stated:

If the industrial line was in operation only, (i.e. fluidized bed and PCC, no solid municipal waste line), this would have the effect of reducing waste load and this could not have greater effects than those predicted for the joint facility and indeed any change would be for even less health effects

In conclusion it is stated:

Bearing in mind that an updated literature review did not change the assessment and that no significant changes in predictions on impacts on air quality or dioxin levels are predicted, it is therefore not considered necessary to reassess the potential impacts of the facility on human health.

Hazard identification Report

"This has not been updated as a result of proposed amendments. The major change made was movement (westward) of the solvent tank farm by 20m... which means that the thermal effects experienced by someone standing on Gobby Beach in the event of a pool fire in the tank bund are now slightly less than before..."

Dioxin Uptake

"The conclusion reached in the 2008 EIS that the predicted increase in PCDD/F intake is regarded as insignificant... is still applicable for the modified scheme... The same conclusion is applicable if the fluidized bed incinerator and liquid burner were in operation only."

Recreational amenity impacts

“The impacts of the modified scheme remain the same as those in described in the EIS...

The greatest impact on the locality from coastal protection works would be the protection of the cliff against retreat and increase of its stability. The width of the beach would be slightly reduced...the revetment and associated re-grading will remove the hazard of material falling onto the beach at the foot of the cliff...Gobby beach would have a more structured appearance than it does currently.

If the road upgrade was carried out a footpath would extend from NMCI as far as the car park...have a positive impact for the pedestrians..

During construction of the road upgrade the level of the car park would need to be raised, pedestrian path to Gobby Beach would need to be modified to tie into the raised road...access to the car park would be closed off during works...

It is envisaged that the road upgrade would be completed in advance of works on the Indaver site to minimize disruption to local traffic.”

Roads and traffic

“Construction traffic required to transport rock to the site for coastal protection works would be approximately 24 trucks per day... six weeks...road upgrade would be carried out over a longer duration...4-6months...the associated construction traffic required for fill would be approximately 6 per day...”

Air Quality assessment

“The impacts of the modified facility on air quality are no greater and even slightly less than those reported in the 2008 EIS. This is due to reduced building height relative to the stack height. Should industrial waste facility proceed without municipal waste option, air emissions would reduce slightly compared to operating both facilities at the same time”.

Climate

The impacts of the modified facility on climate are no greater and substantially the same as those in 2008 EIS. It is not envisaged that there would be significant impact on climate arising from the road upgrade or the coastal protection works. Should the facility proceed without the municipal waste option the impact on climate would reduce slightly compared to both facilities operating at the same time.

Noise and vibration

“The impacts of the modified facility on noise and vibration are substantially the same as those in 2008 EIS. Should the facility proceed without the municipal

waste option noise emissions would reduce slightly compared to both facilities operating at the same time...

During operational phase the plant and vehicles movements within site will comply with day time –night time criteria of 55dB_{L_{Aeq,T}} and 45dB_{L_{Aeq,T}} respectively.

Should the road upgrade or the coastal protection works be carried out in the future, noise impacts would arise during construction phase but these would be minor and of short duration. Limits prescribed in NRA Guidelines would be followed. Noise levels at the nearest sensitive receptors will be within recommended construction noise limits”.

Landscape and visual assessment

The revised proposal represents a substantial reduction in height compared to the 2008 proposal, though the stack will remain at 85m high. The roofline of the building reduced by 7.5m is now lower than the high point of the ridge, and in general the extent of visibility will be substantially lower, and will preserve the line of sight to and from military structures in Cork Harbour.

Changes to height, width, breakdown of massing of the building, swapping of locations of ESB substation and fire water storage area thereby facilitating extension of mounding and planting at higher level, additional planting to the east of building to screen from Gobby Beach will afford additional benefits.

Public car park will be elevated from the beach, perimeter planting will be reinstated and gradients revised to provide gentle slope from car park to the beach.

Flora and fauna

The impacts of the modified facility will be no greater than and substantially the same as reported on 2008 EIS.

Soils, geology, hydrology, and coastal recession

“The impacts of the modified facility are the same as those reported in 2008 EIS. Should the facility proceed without the municipal waste option, there would be no difference in impacts compared to operating both facilities at the same time...

Approximately 7200m³ of rock would be required for rock revetment for the coastal protection works. Approximately 6250m³ fill would be required for the road upgrade.

The road upgrade would result in reduction in flooding on public road.

The coastal protection works would result in protection of the cliff against retreat and increase of its stability..”.

Archeological, Architectural, and cultural heritage

The impacts of the modified scheme on the archeological, architectural and cultural heritage are the same as those reported in the 2008 EIS. Should the industrial waste facility proceed without the municipal waste option there would be no difference in impacts compared to operating both facilities at the same time. An archeological assessment was carried out in the area proposed for road upgrade, and coastal protection works, and detection survey of the foreshore of Gobby Beach.

Material Assets

The impacts of the modified scheme on material assets are no greater and substantially the same as those reported in 2008 EIS.

Indirect effects

These are described in 3.13.5. Transmission lines would have visual impact, road upgrade and coastal protections works would not have significant effect on property values, Seveso II status would not restrict off site uses, coastal works would have impact on visual and beach amenity. Raising the road and improving drainage would reduce road flooding.

Cumulative impacts

Section 3.13.6 refers to other chapters. A table is provided outlining potential impacts and mitigation measures both during construction and operational phases.

2.5 *Third party comments on the overall EIS*

2.5.1 A number of submission maintain that the information provided in the Addendum EIS is selective and inadequate. I shall refer to specific areas in further sections of my report. Some of the general comments include:

- The inadequacies of the EIS particularly in relation to coastal erosion and flooding were highlighted during 2004 application, but were not rectified in 2008 EIS. They question why the Board has to return to the applicants to provide the information.
- while the submission by the applicant at the oral hearing (May-2009) was that the proposed facility was robust and proven technology, the section 5 of executive summary of the addendum EIS states that “...*the design now presented has given the best solution with modern state of the art equipment....2008 application did not consider this approach...*”. They

ask how many EIS s would be permitted before the technology is presented with BAT.

- Despite the request for omission of the municipal line, the Addendum EIS is prepared for both lines. Although impacts on air quality, roads and traffic, noise and emissions are described as reducing only slightly, should the facility proceed without the municipal line, reductions such as 55% (traffic levels - 3.3.4), 50% (air emissions - 3.4.8) are not slight.
- Not reported at all is the significant reduction in ash production when the municipal line is omitted from the facility.
- While there are references to employment creation, there is no quantification of employment for both lines or for the industrial line only.
- Loss of right-of-way to Martello Tower (which has not been extinguished) has not been addressed.
- The EIS remains deficient and deliberately misleading.
- EIS should be accompanied by a non-technical summary capable of being understood by the lay person. The submission is not in compliance with the EIA Directive

3.0 Specific Areas the EIS is required to address

I shall now look at particular areas the Board required the EIS should address, following the same format.

(a) Revised Emissions

1.0 Applicant's Submission

This section of the addendum EIS is more comprehensive than most other sections and states that impact on air quality from the operation of both the industrial and municipal lines are assessed.

1.1 In section 3.4.8 it is stated:

A direct comparison between the scenario where both are running and the scenario where only the industrial line is running indicates that results based on running both incinerators is approximately 50% greater than running the industrial incinerator only... Process emissions are less than 26% of the limit values when both incinerators are in operation compared to 13% when only the industrial incineration is in operation... when background levels are taken into account, the comparison between the two is 57% for both lines, compared to 53% when only the industrial line is in operation.

1.2 In section 3.4.9 a comparison of the 2008 and 2010 schemes are provided:

A direct comparison between the two modeling assessments indicates that process emissions from the 2010 application are between 30-65% lower than 2008 application. When background levels are taken into

account the predicted environmental concentration is between 3-44% lower than 2008 application. The principle reason for the decrease in ambient concentrations is due to the reduced maximum building height which has significantly reduced building downwash and thus has aided plume dispersion.

1.3 In appendix 3.4.2 the Addendum EIS states:

'...as the area around Ringaskiddy is industrialized there are several other potentially significant sources of air emissions which would need to be taken into account, ...'

1.4 Through identification of EPA licenses, the addendum EIS identifies 6 such sources, including ESB Aghada.

1.5 Referring to USEPA guidance for impact ($1\mu\text{g}/\text{m}^3$), it outlines the methodology used for assessment of interactions and cumulative impacts of pollutants and determination of compliance with standards, and states:

- *No cumulative impact assessment would be carried out when the emissions from that pollutant would not increase the ambient levels by more than significant ambient impact level.*
- *No significant criteria was established for non- criteria pollutants (all pollutants except PM_{10} , NO_2 , SO_2 , CO and lead).*
- *A significance criteria of 2% was applied to all ' non-criterion' pollutants (NO_2 , SO_2 , HCL , HF , Dioxins , Cd , PAHs and Ni).*
- *As emissions of total dust (PM_{10}), CO and TOC were not significant, no cumulative impact would be carried out for these pollutants.*
- *As there were no significant releases of HCL , HF , PAHs , Cd , As and Ni in the vicinity of the facility no detailed cumulative assessment was considered necessary.*

1.6 Using this methodology, cumulative impact assessment was carried out for 3 of the pollutants [NO_2 , SO_2 and Dioxins (PCDD/F)] as emissions by Indaver facility would exceed the significance criteria, using 6 other sources referred to above. The submission provides for grid co-ordinates of maximum impact for each.

1.7 In the case of NO_2 the impact from all sources was minor, with cumulative impact at 6% of the limit value, with maximum concentrations at 22% (not including background concentration). The results would indicate contribution of each nearby sources were generally separated in time and thus did not lead to significant increase in levels above the impact of Indaver facility alone. The annual average cumulative assessment was likewise minor at the area of maximum impact of Indaver facility, leading to an increase of 4% , to cumulative level of 17%. (figure 9.12 and 9.13 appendix 3.4.1)

1.8 In the case of SO_2 , in the area of maximum impact, the impact from all sources was minor. The cumulative maximum concentrations rose to 15% of the limit value (not including background concentrations), with maximum concentrations

of Indaver alone at 14% of limit value. In the case of maximum one-hour concentrations the impact of Indaver at point of maximum impact of all nearby sources represented 0.4% of limit value. (figure 9.14 and 9.15, appendix 3.4.1)

- 1.9 In the case of PCDD/F s the impact from each source was minor. In relation to annual concentration at the location of maximum impact, the cumulative impact was only 0.8 fg/m³ in the absence of Indaver facility, 2.9fg/m³ when contributions from indaver and all other nearby sources. Thus the cumulative impact would lead to an increase in dioxin levels of approximately 22% as compared to indaver alone, including background concentrations. In the area of maximum impact of all nearby sources, the impact from Indaver was very small.
- 1.10 The appendices 3.4.1-3.4.4 provide detailed information on methodology, and maps showing maximum process concentrations for various substances.

2.0 *Third party submissions*

The main points include:

- There is still no comparison of the meteorological monitoring on site and meteorological data taken at Cork airport.
- The method of evaluating and modelling emissions based on Airport located 12 miles away and on high ground is still not acceptable
- While section 3.4.3.2 leads one to believe that the EIS is finally going to present an evaluation of air emissions for both maximum and abnormal conditions of operation for the proposed facility, the air emission values detailed in table 3.4.2 provide a worst-case scenario of maximum operating values only, while emissions during abnormal operating conditions are not predicted.
- There is no ambient air quality standard or deposition standard for dioxins and furans and The EIS cannot relate to abnormal emissions

3.0 *Assessment*

- 3.1 As stated above the section on air quality /emissions is more comprehensive than others. It provides some information on the emissions from the hazardous waste /industrial waste line only, as well as emissions / air quality when both furnaces are employed. It also provides quantified information and methodology outlines exclusionary criteria.
- 3.2 I consider the conclusion that process emissions from running both incinerators would be 50% greater than running only one incinerator (hazardous waste /industrial waste) to be plausible though given the capacity comparison between 100.000 tonnes and 240.000 tonnes per annum, explanation would be needed as to why it is not much higher. It is of course Important to note that for different substances this figure would differ.

- 3.3 I accept that there would also be reduction in environmental concentrations as a result of the new building design as reduction of the building height would increase the volume of air below the stack emission point (i.e. between stack and roof of building), thus reducing downwash and increasing dilution which would allow more effective plume dispersal from the stack.
- 3.4 In terms of modelling, the EIS does not provide a direct comparison of meteorological data between the site and Cork Airport. While the requirements of the models is that data from a designated meteorological station must be used (in this case Cork Airport), a comparison of site specific figures with Cork Airport figures would provide a clearer picture, (perhaps supporting the validity of using airport data). In the absence of such data for comparison the argument by the third parties that ‘airport data is not applicable to the central and lower altitude harbour’ remains reasonable.
- 3.5 I also consider the third party criticism regarding omission of abnormal operating conditions in worst case scenarios to be reasonable.
- 3.6 In terms of cumulative impact analysis this section of the Addendum EIS is superior to other sections. It provides emissions from 6 other sources, including nearby pharmaceutical plants such as Centocor, Pfizer which have dedicated licenced incinerators, though inclusion of ESB Aghada on the other side of the harbour could be questioned.
- 3.7 I am unable to comment on the validity of the criteria for determination of cumulative impacts resulting in examination of only 3 substances which exceed the thresholds set by the applicants. The Board may consider seeking comments by Prof. Broderick.

(b)&(c) Hydrology and Hydrogeology Impacts

1.0 Applicant’s submission

- 1.1 The submission by the applicant does not provide separate sections examining consequential impacts of remedial works to prevent flooding and coastal erosion. Impacts are referred to within various sections of the Addendum EIS. I shall refer to relevant entries briefly:
- 1.2 Section 3.9.4.2 of the Addendum EIS refers to section 14.13.2 of the EIS and states that construction and operation impacts remain the same for the modified scheme.

It further states

“...there is no difference in hydrology and hydrogeology between the 2010 to the road upgrade. The greatest impact on hydrology arising from the road upgrade would be a reduction in the risk of coastal flooding and improvement of the road surface water drainage...”

“One of the main potential construction impacts which could arise from the coastal protection works would be the risk that the sea could become polluted by accidental spillages of substances including fuels and oils as a result of construction activities.

Due to its porous nature, more permeable than the natural soil of the cliff, the revetment would not be expected to affect the ground water conditions behind the cliff.”

“In relation to coastal retreat the greatest impact of the coastal protection works on the locality would be the protection of the cliff against retreat and the increase of its stability. The width of the beach would be reduced slightly, although this has been minimised by design. Due to cliff being stabilised, the revetment and associated re-grading of the cliff would remove the hazard of material falling onto the beach at the foot of the cliff...”

1.3 Section 3.2.4.4 Recreational Amenity Impacts repeats some of the above.

1.4 In section 3.7.5 (Visual impacts) it is stated:

“The possible solutions requested by An Bord Pleanála for the local road and coastal protection measures at Gobby Beach will give rise to additional impacts but these will generally be limited to vantage points that are local to the works themselves.”

“During the construction phase, if it is decided to raise the local road and public car park by up to 2m, this will result in the removal of roadside hedgerow and planting primarily along the northern boundary of the carriageway.”

“If in the future coastal protection measures outlined are required, this will result in significant changes to the existing steep slopes and pebbled beach at Gobby Beach. Temporary hoarding would be provided across the beach for the duration of the works, which would include deep excavation ...”

“The coastal defence works on Gobby Beach ...would result in an additional significant negative impact arising from the replacement of the natural cliff edge with rock revetment over a length of 130m. This is considered long term and permanent impact, such works would be most evident during construction, but would integrate in time with the weathering of the rock armour.”

1.5 Figures 3.7.35 a/b provide photographic images of the beach / cliff before and after the rock revetment.

Figure 3.7.36 a/b show the photographic images before and after raising of the car park.

Figures 3.7 34a/b show before and after images from Spike island.

2.0 *Third party submissions*

- Shoring up this part of the coast line by throwing rocks onto the beach has implications for adjacent coastline areas.
- Any interference with road height would cause serious problems of flooding on neighbouring sites. The road will redirect flood waters to other facilities, not solve the problem.
- The applicant have not provided adequate information on the impact of raising the road
- Coastal erosion mitigation measures are an insult to the local and wider community and comprises robbing of public amenity
- The works show no regard to the local community effectively removing their only remaining amenity, i.e. Gobby Beach. This is regularly used by locals
- Photomontages show Gobby Beach will become unattractive to the local community. Such destruction already occurred on Loch beach on the other side of Ringaskiddy peninsula under the shadow of now Pfizer Loughbeg plant.
- The applicant did not provided adequate information on the impact of their work on Gobby Beach
- The proposed rock armour will not have any meritorious effect, quite the reverse in fact as the extent and the invasive type of building that the beach will suffer during installation of the armour will do nothing but harm the beach
- The coastal erosion works which are not part of the application and will be needed are destructive in their own right.
- Rock revetment will have adverse visual impact, lead to reduction in size of the beach, have impacts on wildlife habitats in relation to stabilisation revetment and associated re-grading of the cliff and impact on sediment transport /stream. These impacts have not been assessed.
- The stage at which the construction of such a rock revetment programme should be scheduled in relation to the proposed development has not been stated and constitutes an extraordinary omission.
- The beach has the distinction of being used by UCC students studying geology because of its unique tidal setting exposing rocks left from the ice age. The rock armour will cover the right hand side of this beach down to well below the low water mark
- The beach is for public use for leisure and to view the outer harbour and setting of Spike Island
- Relocation of public footpath to Martello Tower is not acceptable from health and safety view point. Families will have to walk the perimeter of the site to get to Gobby Beach or Martello Tower amenities
- Raising of the road to facilitate access by trucks to the site will danger safe movement of public by cars, bicycles, buses, on foot, funeral processions to crematorium, running/ training by navy personnel

3.0 Assessment

- 3.1 The request of information by the Board drew attention to the inadequacy of the EIS in relation to the flooding and coastal erosion, necessary remedial measures, and consequential impacts of the same.
- 3.2 As referred to earlier in Appendix 2.4.1 of the EIS states that data available is not sufficient to make a decision on the type of protection that should be used and a more detailed investigation and a comprehensive study of maritime and terrestrial erosion processes would be required. I also refer to the submission by the OPW which states that lack of detail and considerable uncertainty about the degree of erosion and effects of the proposed coastal protection were the principle 'negative' issues in relation to the original proposal.
- 3.4 There is no information before me to indicate that any further investigation has been carried out in response to the further information request or that the proposed measures are based on site specific data. In the absence of such information, identification of likely significant impacts arising from the proposed works also becomes problematic.
- 3.5 As stated earlier, in appendix 2.4.1 (Coastal Protection Alternatives Report), various techniques (such as detached breakwaters, sills, groynes, revetments, sea walls, bulkheads, cliff strengthening, shore nourishment, planting) and their impacts are discussed in general terms.
- 3.6 As indicated in the cross sections a considerable part of the proposed rock armour would be located below the water level (extending further into the harbour). There is no analysis of the impact of this on the beach in terms of its stability or usability.
- 3.7 There is no information regarding the weight of the armour that would be placed on this beach, only that 1-3 tonne rocks would be used followed by 60-300kg rocks, and that 7200m³ of rock would be required. Based on the information provided in the transport section (i.e. 24 trucks per day for six weeks), and assuming 40 tonnes capacity per truck, this would give approximately 960 tonnes per day, and 28,800 tonnes over a six week period assuming five-day deliveries. No impact analysis of imposition of such heavy weight on a 130m long section of the beach have been provided, particularly as a considerable section of it would be below the water level. No information has been provided as to how deep excavation below water would take place, and impact of removal of beach material.
- 3.8 Arising from the differences in the slope of the cliff edge and the slope of the rock armour proposed, the sections indicate considerable areas of re-grading (cut and fill) would be required along the cliff edge. No information has been provided regarding how filing of these areas at the interface between the geotextile and the cliff is envisaged, (materials, quantity, and whether additional material would be required). No information is provided on the proposed 0.70m underlayer (materials, quantity etc).

- 3.8 As the geotextile would be porous, the area behind it could get saturated as a result of high waves or heavy downpour. The EIS provides no information as to likely scenarios having regard to the soil characteristics of this area and whether erosion behind the rock armour could still take place, and if so whether subsequent mitigation is possible.
- 3.9 The EIS is silent in terms of impacts arising from the proposed revetment works on other areas, except that similar measures have been employed elsewhere, and that it would form part of similar protection works (but does not provide specific locations, and other details for comparison). The only reference to outside the immediately adjoining areas is at the southern end where maintenance is stated to be required due to erosion.

There is no information in relation to impact of the revetment on the subject site on the immediately adjoining area (whether it would lead to acceleration/deceleration of coastal erosion on the adjoining site).

There is no information on how effective the revetment would be if coastal erosion takes place at different paces at the site and on adjoining site, and whether coastal erosion at the adjoining site could render the protection works at the subject site less effective / ineffective.

- 3.10 The addendum EIS is silent in relation to timing of the works to prevent flooding and coastal erosion, i.e. when they are likely to be required.

I note while there is a ‘qualification’ in the further information request which states “*should such works be required in the future*”, in relation to coastal erosion there is no such qualification in the case of works to prevent flooding.

As noted earlier there is reference in the recreational impacts section to road works taking place prior to commencement of the proposed development to prevent subsequent disruption. In view of the fact that it is also stated that the applicant is not applying for a permission for raising of the road, information would need to be provided when and by whom the road works would be carried out, and who would be affected, as part of impact analysis arising from the same.

- 3.11 Having regard to the degree of coastal erosion referred to my report of Oct 2009, I am of the opinion that an indication of the time frame for revetment is also appropriate. I note in particular that revised drawings indicate relocation of the public path from the Martello Tower to Gobby Beach (re-routed to outside the site boundaries and along the cliff), in the westerly direction by approximately 15m, (at distance of approximately 4-7m from the vehicular access to waste reception, which is also relocated in the westerly direction by a corresponding amount). There is no explanation of why this has been decided. There is no impact analysis on the amenity value of the path of the revetment works and no impact analysis of the proposed pine and birch woodland on the eastern side of the path, effectively creating a path between the roadway to waste reception area and woodland trees, the latter screening seaward views.

- 3.12 While the Addendum EIS refers to ‘slight reduction of the beach’ there is no information on how this would affect the usability of the beach. Quantification of the affected area (reduction) in proportion to the existing area needs to be provided, as well as identification of types of recreational activities that would be affected. Impact of the rock placing up to 4m below water mark would also need to be examined in terms of other users of the water such as sail school.
- 3.13 In an earlier section of my report I have referred to some possible hydrology impacts on properties on the northern side of the road which may arise from raising of the road as the road would be above the levels of these properties. The Addendum EIS is silent in this regard.
- 3.14 In their request for further information the Board drew attention to deficiencies of the EIS in relation to flooding and coastal erosion.

In my view while the Addendum EIS provide some more information it remains deficient particularly in detailed investigation of reasons for flooding and coastal erosion at this particular location and specifics such as areas where the sea water breaches occur, how the existing properties are effected, how efficient the existing drainage is, and if not where the water accumulates / drains into. In my view it is also deficient in terms of identification, and quantification of likely significant impacts arising from the remedial works, and impacts arising from displacement of water that would drain to/ accumulate at the subject site.

- 3.15 The submission does not provide any information on the legal ability (interest or estate) of the applicant to carry out the works, and whether a planning permission or foreshore licence (or both) would be necessary. The statement that the applicant is not applying for a planning permission but rather providing information as requested by the Board is non-committal.

Accordingly, it is my considered opinion that the information submitted is still insufficient in relation to hydrological and hydrogeological aspects of the development (as modified).

(d) Impact on visual amenity and cultural heritage

1.0 Information required

- 1.1 The third specific requirement in the further information request was related to

“impact on visual amenity in terms of landscape and in relation to the cultural heritage including consideration of interlinking views to/from historic military structures in the harbour, including the Martello tower to the south of the site”.

- 1.2 As such it had two main components:

- Impact on visual amenity
- Impact on cultural heritage

2.0 *Applicant's response*

The response by the applicant is provided in two separate sections of the Addendum EIS (3.7 'Landscape and Visual Assessment' and 3.11 'Architectural, Archeological and Cultural Heritage').

2.1 **Landscape and Visual Assessment**

2.1.1 Stating that in consideration of this request and other factors the proposed development has been reduced both in footprint and in height, resulting in substantially reduced impacts, the submission maintains that it has also been possible to lower the original structural and soft landscaping proposals while still mitigating the reduced impacts.

2.1.2 In describing the receiving environment, (3.7.3) it is stated

“the site area is now expanded to include the area of the local road serving the site (Haulbowline Island), the public car park adjacent to Gobby Beach and those parts of Gobby Beach that would be required for the implementation of remedial measures in relation to coastal erosion, should they be required in the future. The site area as such now extends to include the length of the local road, along the site frontage and parts of Gobby Beach”.

2.1.3 Referring to the provisions of Draft CDP2007 and adopted CDP 2009, it is stated that none of the changes in subsequent versions of CDP alter the assessment carried out in the 2008 EIS. Similarly, the visual envelope and landscape character remained the same.

2.1.4 Repeating the changes to the design in terms of height and footprint, slopes of the roofs, cladding and varying colours and materials on the façade to minimize reflective light, it is stated that the revised building proposal will now give rise to substantially reduced landscape and visual impacts than previously proposed.

2.1.5 Other points include:

The possible solutions requested by An Bord Pleanála for the local road and coastal protection measures at Gobby Beach would give rise to additional impacts but these would generally be limited to vantage points that are local to the works themselves.

The impacts on the landscape arising from the development of the main site will remain as described in 2008 EIS, however, a number of features of the development if carried out will give rise to additional impacts. Raising of the road will result in the removal of roadside hedgerow, and primary planting along the northern boundary of the carriageway, though this will not alter assessment of significance.

Coastal protection measures will result in significant changes to existing steep slopes and pebbled beach, temporary hoarding will be provided

across the beach for the duration of the works which will include deep excavation and provision of rock revetments.

While construction works are temporary, permanent works could also result in a significant change where the existing cliff edge will be replaced by rock revetment over 130m. This would integrate over time with weathering of rock armour.

Solution presented to prevent flooding on public road will not give rise to additional significant impact on landscape character. Coastal defense works will result in additional negative impact arising from replacement of cliff edge with rock revetment, which will be long term and permanent.

Revised development will have the effect of reducing the visibility and prominence of the development from designated landscapes and from all viewpoints further reduce the already slight to moderate impacts identified in 2008 EIS.

The original proposal did not impact on view to and from Martello Towers at Ringaskiddy and Haulbowline Island. The revised proposal also maintained this line of sight. The original proposal did impact partially on the sight of lines between Fort Westmoreland on Spike Island and Ringaskiddy Martello Tower. The reduction in height is now such that this line of sight is now preserved. Figure 3.7.3.

Additional views are now provided from Fort Westmoreland from the eastern entrance to Ringaskiddy Martello Tower respectively. Visibility at the top of the structures from defense position would be even greater.

Revised view impacts are stated to be described in table 3.7.2. This in the main refers to reduced impacts arising from the reduced building scale.

2.1.6 The cumulative impacts would be as were described in 2008 EIS.

Mitigation measures such as reduced building height, reduced building dimensions, swapping of ESB station compound with fire water storage area facilitating an extension to mounding, and planting at higher level to the south west of proposal, additional mounding and planting to the east of building to enhance screening effect from Gobby Beach, will provide additional benefits.

While re-grading of the road would give rise to significant impact during construction, it is envisaged to reinstate existing planting along the northern and southern edges of the road. Upon maturation impacts will be no different than 2008 proposal.

The public car park to the beach would also be elevated from its current level, but perimeter planting would be reinstated, and the gradients would be revised to provide a gentle slope from the new car park to the beach.

The revetment works would result in significant visual disruption on the beach during construction. Mitigation measures include that most of the new works would in fact be below the existing beach surface and ultimately covered again by pebble to match the existing beach. The interface between the new rock armour and the cliff would be reinstated to match the existing vegetation.

Worst case scenario would be as described in 2008 EIS.

2.3 Impacts on Archeological Architectural and Cultural Heritage

2.3.1 This is presented in section 3.11 of the Addendum EIS, and is stated to include the results of an intertidal metal detection survey and an archeological assessment of the foreshore at Gobby Beach. It gives a description of the beach (shingle beach with occasional patches of sand, seaweed covered intertidal area).

2.3.2 Further points include:

On the landward side of the beach the ground rises gently at the northern end of the proposed works area to become a high steep cliff at the southern end. Rough vegetation dominates this area and there is obvious evidence of erosion at cliff edge. High water mark reaches the base of the cliff in a number of places. The intertidal area of the strand is approximately 70m wide at low water mark,

There would be no difference in impacts on archeological, architectural and cultural impacts between the modified 2010 scheme and 2008 scheme. There are no recorded archeological sites within the proposed development area either along the foreshore at Gobby Beach or along the L2545 public road.

Any proposed coastal protection works would involve ground disturbance that would impact on any potential archeological material that may survive below ground surface, and as such archeological monitoring of works associated with coastal protection is recommended.

3.0 Third party submissions

(photos and a CD provided)

- The conclusions of the EIS is dramatically at odds with the recommendations of the draft Landscape strategy for Cork Harbours very high sensitivity landscape.
- An example of how misleading the photomontages and consultants' judgements can be is illustrated in comparison between predicted visual impact and actual visual impact of the Combined Gas cycle turbine electricity generating station at Whitegate. They draw attention to the

stark difference between the visual impact predicted by Arup, and the visual reality of the plant after construction.

- Photomontages both in the 2008 EIS and the addendum EIS fail to demonstrate how the intended site is virtually central in the highly sensitive landscape of Cork Harbour.
- The site is 750m from Spike Island. The EIS makes no reference to what is happening on the ground since the oral hearing. In July 2010 Spike Island was officially handed over to Cork County Council who intends to transform Spike Island into a major tourism and heritage centre as world class tourism destination highlighting the role the island played in Irish history. The island has been opened to casual visitors for the first time in 200 years, with guided tours. Even its derelict and overgrown state it has become the 6th most popular of Tripadvisor listed visitor attractions in County Cork.
- Also since the oral hearing, Camden Fort has also been opened (two rooms) every Saturday in Sept 2010 receiving 5000 visitors in 8 days. Plans for opening of another room and coffee shop in 2011. Fortifications have been inspiring creativity with projects with various projects, workshops, commissions, bringing artists together including music. Spike island has been adopted for development of computer technology applications by university College Cork. Spike Island is already delivering beyond Cork Harbour.
- Reduction of the height and footprint of the building, while an improvement over the 2008 proposal, is simply insufficient. Figures 3.7.3b and 3.7.37b illustrate how the view of the sea is lost from Martello Tower for a considerable area in the direction of Marlogue Point. If the basic function of a Martello Tower is defense, how can it defend what it cannot see?
- Figure 3.7.17b suggests that from spike island, the Ringaskiddy village Martello Tower will look a little more than a growth on the back of the building housing the incinerators.
- Figures 3.7.33b, 3.7.13b and 3.7.34b of the addendum EIS demonstrate even in its reduced size the diminution of the value of the Martello Tower and impact on the heritage of Spike Island, Fort Camden, and Fort Carlisle. The development would impinge upon a tremendously important component of the magic of Spike Island, its peace and tranquility.
- The proposed development will break the line of the hill of the Ringaskiddy village peninsula and in doing so would bring industrialization into the as yet relatively unspoiled lower harbour.

4.0 Assessment

- 4.1 Reduction of the height of the building by various amounts (up to 7.5m) and some reduction in the footprint (20m in length) is likely to reduce the visual impact arising from the new structure compared to the 2008 proposal in general terms.
- 4.2 The addendum EIS includes additional ‘view points’ including two from Spike Island, and as such represents an improvement to the 2008 EIS. I will now briefly refer to some of the viewpoints:
- 3.7.3b view from Martello Tower - northern section of Spike Island is not visible, partly due to the proposed building, partly due to the mounding and extra planted area to screen the buildings
 - 3.7.4b view from Haulbowline – despite reduced height the building breaks the skyline for a considerable distance
 - 3.7.5b (and 3.7.6) view from Monkstown-the structure is of a scale that creates dominance at the water’s edge of Ringaskiddy peninsula
 - 3.7.7b gives a good indication of the excessive scale in comparison with Ringaskiddy peninsula itself, and central location within the harbor
 - 3.7.10b view from Cobh – despite being viewed from high ground of Cobh, the building breaks the skyline of the Ringaskiddy peninsula and excessive scale of the structure is evident
 - 3.7.17 the setting of Martello Tower is changed by additional mounding and planting in the appeal site, in addition to breaking of skyline for a considerable distance
 - 3.7.21b the topography of the site is changed significantly, with steeply rising ground from the road’s edge, altering the locational context significantly. More importantly the water is no longer visible due to raising of the road
 - 3.7.35b The usable area of the beach is reduced considerably by the proposed rock revetment
 - 3.7.37b additional mounding and planting while screening the building from Martello Tower also blocks views of spike island and the water (similar to 3.7.3b)
- 4.3 Overall Ringaskiddy peninsula is not the highest in the context of the Harbour, but its importance particularly in terms of historic defense installations arise from its central location in the harbor, as well as its height. In addition it is not a headland with strong rocky ground and straight edges, but rather it slopes down in the north easterly direction (within site area) towards the water’s edge and to Haulbowline.

As a result, despite its lowered height, the proposed structure, (which is located on raised platform as a measure against flooding) together with the associated raised grounds to accommodate circulation areas etc., is still of a very large structure rising significantly above the locality. Despite efforts by the architects it is not capable of being inserted into the slope, but rather creates a second large mass at the edge of the water competing with the Ringaskiddy peninsula.

- 4.4 As referred to above the figures illustrate it is still not possible to maintain uninterrupted line between the military installations, in particular Martello Tower at Ringaskiddy and those in Spike Island/ Haulbowline.
- 4.5 The additional planting and mounding around the site designed to screen the proposed structure also screen the Martello Tower from the surrounding areas. Presently lack of any vegetation at base level help reinforce the commanding position of the Martello Tower exposing its full scale.
- 4.6 As can be seen from the sections (F-F) the mounding and planting particularly at the south western section of the site, themselves rise above the existing highest level of the peninsula, as such, breaking the skyline/ ridgeline on their own.
- 4.7 While there are repeated references to reduced impact of the proposed facility compared to 2008 proposal arising from reduced height and footprint, the EIS does not provide any information on visual impact arising from a facility designed to process only hazardous waste /industrial waste (with a capacity 100.000 tpa) as required by the further information.

It is not possible to assess the visual impact of such a facility as no indication of scale (capacity to process 100.000 waste with single incinerator and reduced area requirements for waste reception, ash bunker, turbine hall, feed water tank etc.) is provided.

- 4.8 Accordingly, it is my considered opinion that the Addendum EIS, basically provides a comparison of a facility housing two furnaces designed to cater for processing of 240.000tpa of hazardous waste/ industrial waste as well as municipal waste with the 2008 facility of the same capacity and two furnaces, and as such does not comply with the terms of the further information request by the Board; *“The revised Environmental Impact Statement should relate to the effects on the environment of the modified scheme as a whole, that is for treatment of the hazardous waste /industrial waste element only, and the transfer station”*.

In the absence of information at the appropriate levels, it is not possible to carry out visual impact assessment.

(e) Interactions

This is provided in section 3.13 of the EIS as part of ‘Cumulative impacts, Other impacts and Interactions’. It is stated that majority of these would be similar to those described in the 2008 EIS. It is stated that the section also addresses the interactions between different aspects of the environment likely to be affected by the road upgrade and coastal protection works, and if the industrial line only was operating.

The written section refers to individual sections of the EIS.

Table 3.13.1 provides a matrix for interactions, where entries of “C”(construction) and /or “O” (operation) for each heading are indicated.

In 3.14 a summary is stated to be provided of the impacts of operating the industrial line only compared to both lines. In table 3.14.1 impacts are listed separately for construction and for operation phases, referring to 2008 EIS under each heading. Separate entries state 'no difference', or 'reduced impact'.

This section of the Addendum EIS does not provide any additional information on interactions but rather lists the impacts referred to in other sections.

4.0 Conclusion

- 4.1 Overall the addendum EIS is presented as impact analysis of the modified scheme (that is a building of reduced size, but a facility processing 240,000 tpa waste). The impact analysis in relation to road upgrade and works to prevent coastal erosion are qualified as being 'works required by the Board'.
- 4.2 All the impact analysis are presented in the same format as the original EIS under the same headings, and in different sections rather than specific impact analyses of areas itemized in the further information request by the Board. For example impact analysis of coastal works are found under visual impact, noise impact, impact during construction, etc. and as such in dispersed manner. While I note a Board direction agreeing to presentation of the impacts as an 'addendum' to the EIS, there seems to be no attempt to provide information on the specific areas referred to in the further information request as being deficient, to overcome the deficiency.
- 4.3 Most of the addendum EIS is dedicated to the impact analysis of the modified building design stressing that impacts would be less than the 2008 scheme, rather than providing impact analysis of a development for treatment hazardous waste /industrial waste only as required by the further information.
- 4.4 The section on emissions/ air quality is of superior quality and provides information in relation to both the revised scheme and industrial line only, allowing some comparison. It also provides quantified information, though predictions based on modeling using non-site specific data remains questionable.
- 4.5 The section on visual and cultural impact while being more comprehensive than some others does not provide any information on the impacts of a facility processing only hazardous waste /industrial waste.
- 4.6 Most other sections only provide general information and opinion (that it would be less than the 2008 proposal), rather than specific identification of impacts and quantification.
- 4.7 The non-technical summary is of particular poor quality and does not provide information at the appropriate level. In particular it does not draw attention to some of the important information.
- 4.8 Decision on whether the submissions provide an appropriate response to their further information request is a matter for the Board.

Having regard to the specific details required in the further information request, it is my considered opinion however that the modified scheme and the Addendum EIS on the modified scheme are significantly different from that prescribed in the further information request, and as such do not comply with the terms of the further information request.

It is also my considered opinion that arising from the deficiencies of the Addendum EIS, there is insufficient information to enable the Board to carry out an environmental impact assessment in the appropriate manner, as required by the EIA Directive.

SECTION II

Submissions both by the applicants and by the third parties include information not specifically required by the Board. I do not propose to carry out an assessment of these but consider it appropriate to bring main points to the attention of the Board for an informed final decision⁵

I will also refer to the ECJ Case C-50 /90 briefly.

I. UNSOLICITED FURTHER INFORMATION

1. *Applicant's submission*

The Addendum EIS provides unsolicited further information in various sections, particularly in areas of policy and impact on human beings. These are provided in the form of update on policy and update on literature review on impact on human beings. I will refer to these briefly.

1.1 Update on Policy

1.1.1 In section 3 of the Non-Technical summary it is stated:

Indaver as been advised that the Board will have regard to, among other things, the policy existing at the time any decision on this application is made. For the sake of completeness, given the time since closure of the oral hearing on this application, an outline update on policy has been prepared and included in Appendix 1.4.

1.1.2 The outline update is stated to address review of Waste Management Plan for Cork County, the International Review of Waste Management Policy, the Draft statement of Waste policy, and EPA Technical Guidance Document on Pre-treatment and Residuals Management.

It is further stated:

“Before making its final decision, Indaver understands that the Board may need to refresh its understanding of the current strategy in respect of Waste Management in the County of Cork.”

1.1.3 In Appendix 1.4 it is stated:

In May 2009 the Cork County Council published a review of the Waste Management Plan for Cork County (2004), which was not available at the time of the hearing. It found that a complete review of the plan at that time would be premature to the outcome of the International Review of Waste Management Policy and subsequent policy statements. The International Review of Waste Management Policy Report was published in Nov 2009 with a series of recommendations relating to Irish waste policy. These recommendations were developed into policies in the

⁵I note this does not extend to all of the issues raised in third party submissions, but rather, it is confined to areas highlighted in the ‘unsolicited further information’ submitted by the applicants

Draft Statement of Waste Policy, which was published in July 2010 for consultation.

1.1.4 Noting the increase in landfill levy to €50 (in 2011) and to €75 (in 2012), and that this would have effect on regional strategies that are reliant on landfill for residual waste or other residues that are not fully stabilized, and that proposal for preventing local authorities from entering into contracts for treatment or disposal for quantities of waste that would exceed those within their or their agents' reasonable control it is submitted that this is likely to impact on any plans to enter into public private partnership for waste infrastructure.

1.1.5 It is further stated:

EPA Technical Guidance Document on Pre-treatment and Residuals Management finalized in March 2010 had introduced pre-treatment obligations, as such most of the landfills in Cork and neighboring regions (including Bottlehill Landfill) are subject to these obligations. Based on most recent landfill licence conditions (March 2010) EPA is restricting the quantity of biodegradable waste acceptable to landfill to 47% by 2010 and to 30% by 2013.

Dept of Agriculture, Food and Fisheries issued Guidance on operating facilities treating former foodstuff in accordance with Animal Byproduct Regulation (EC) No. 197/2006, which require that any former foodstuff residues treated to this standard can only be consigned to thermal treatment or disposal to landfill void. Much more restrictive conditions apply if the aim is to apply residues to landfill cover. Reusing and spreading such residues on land is not an option. This is likely to restrict options available for treated residues.

In July 2010 Indaver wrote to the Council seeking clarification regarding further review of the waste plan in lights of these developments. The Council replied on 28th July stating that 'an early review of waste management planning in County' will be necessary'.

For these reasons it is considered possible that the strategy for managing waste in the Cork region will be modified in the near term, to provide for a range of pre-treatment options as a compliment to existing recycling and landfill infrastructure. "

1.1.6 A copy of the Councils response to the applicants is included in the Appendix 1.4, which stated:

A review of the Council's Waste Management Plan was carried out in September, 2009, and it was decided that the Plan did not require variation or replacement pending the determination of National Waste Management Policy following the Minister's international review.

The recent introduction of VAT on the Council's Waste Management Service and the general budgetary situation are requiring an assessment and evaluation of the Council's continued involvement in the waste collection area. The impact of developing waste policy on the Council's

investment in a regional waste landfill at Bottlehill will also be addressed.

It is expected that conclusion and determination of the forgoing issues will necessitate and early review of waste management planning in the County.

1.2 Update on literature review on impact on human beings

1.2.1 Section 3 of the Addendum EIS under ‘Assessment of Environmental Impacts of Modifications to Scheme and Other Works’ unsolicited information is also provided in section 3.2 “Human Beings”.

1.2.2 In section 3.2.3.2 it is stated:

“A comprehensive literature review was carried out for the 2008 EIS. However, as some time has passed since a literature review was carried out and because it was known that there had been some significant publications in that time, the review was repeated. Only studies not quoted in the 2008 EIS are detailed here.”

“...major disadvantage in interpreting the literature is that they are by nature historical. Many of studies date back some years but also many of the health conditions have along latent period, that is time between exposure and development of symptoms which for some effects such as cancer may be many years. They reflect practices which bear little relationship to modern incinerators...”

“Three important reviews have become available since the EIS was written.”

These are given as WHO Workshop, Porta Review, and Gusti Review. The submission includes extracts from each.

1.2.3 WHO Workshop (March 2007, published in 2008)⁶

“Evidence is inadequate to draw conclusions that can be used to determine optimal policy choice on incineration: relatively few good quality studies exist and they refer to old generation incineration plants – an important distinction as stack emissions from modern plants are much reduced compared to old generation plants. The adoption of emission abating technology, enforced by European Union has resulted in a less likely occurrence of measurable health effects on populations resident in the proximity of newer generation incinerators.”

⁶ See my report of Oct, 2009 for details (p.327)

1.2.4 The Porta Review 2009⁷

Systematic Review of epidemiological Studies on health effects associated with management of solid waste

“In most cases the overall review was inadequate to establish a relationship between a specific waste process and health effects; the evidence from occupational studies was not sufficient to make an overall assessment.

There was limited evidence of a causal relationship and a few studies were selected for quantitative evaluation. In particular, for populations living within two kilometres of landfills there was limited evidence of congenital anomalies and low birth weight with excess risk of 2 percent and 6 percent respectively. The excess risk tended to be higher when sites dealing with toxic wastes were considered.

For populations living 3km of old incinerators, there was limited evidence of an increased risk of cancer, with an estimated risk of 3.5 percent. The confidence in the evaluation and in the estimated excess risk tended to be higher for specific cancer forms such as non-Hodgkin’s lymphoma and soft tissue sarcoma than for other cancers.”

The submission states that this is in line with previous reviews, but notes that these findings relate to old incinerators...the proposed facility will have to comply with the strictest EU emission standards and simply cannot be compared to the older generations studied.

1.2.3 The Gusti Review 2009⁸

A review of waste management practices and their impact on human health

“The conclusion of the overall assessment of the literature is that the evidence of adverse health outcomes for the general population living near landfill sites, incinerators, composting facilities and nuclear installations is usually insufficient and inconclusive.”

The submission concludes:

Overall therefore the information which is available recently has supported the position presented in the 2008 EIS that modern incineration plants, properly operated, have at most minimal effects on human health.

⁷ Daniela Porta et al Environ Health, 2009 Dec 23

⁸ L. Gusti Faculty of Health and Life Sciences, UWE Bristol Waste Manag. 2009 Aug

2.0 *Third party submissions*

The submissions by the third parties also include unsolicited further information in relation policy and health and safety. I shall refer to the main points of the submissions.

2.1 **Update on Policy**

1. Update on policy is selective and incomplete.
 - “International review acknowledges that proximity to either landfill of an incinerator clearly effects property values...” (reference to a Dutch study).
 - International review not merely acknowledge dis-amenity but suggests the impact of incinerators may be far-reaching than those of landfill where it states: “...*the area of effected houses around the landfill site is limited to a buffer of 1 kilometre around the site. The impact area of incinerators in the Netherlands is assumed to reach as far as 5 kilometres from the actual site.*”
 - The Focus of the draft Statement of Waste Policy produced by the DoEHLG is not to support either incineration or landfill, but rather to “*move away from traditional landfill and mass burn incineration towards higher levels of recycling and mechanical and biological treatment*”.
 - It further clarifies that incinerator bottom ash will be presumed to be hazardous unless identified otherwise. New procedures to include ecotoxicity testing are to be developed by the EPA for the assessment of incineration bottom ash
 - The impression given by Indaver in relation to EU Regulation no 197/2006 is misleading, as it suggests that new guidance requires all former foodstuff to be incinerated, where as category 2 and 3 feedstocks are permitted to be treated by composting and bio-gas plants and permitted for use on land with less restrictions than use of sewage sludge on agriculture.
 - Update on policy does not mention *Section 60 Policy Direction Capping of Incineration of Municipal Waste and Other Matters* environmental Report, June 2009. The aim of the policy direction is to ensure that the targets of Article 5 of the Landfill Directive are met in such a way that it does not divert waste towards incineration and away from waste technologies higher up in the hierarchy. The Policy Direction suggests that the aggregate capacity of licensed incinerators should not exceed 30% of municipal waste arisings in any region (25% by 2015).
 - The addendum EIS does not mention 2009 report issued by the SEF (Sustainable Finance Initiative of the United Nations Environment Programme) entitled “*why Green Energy Public Investment Makes Economic Sense- the Evidence Base*”, which links investment in green programmes to economic growth and job creation, and cautions that

“incinerators produce more global warming pollution per unit electricity generated than most other kinds of power including coal, gas, and hydroelectric... incineration irreversibly destroys valuable materials and necessitates the extraction, refinement and assembly of more raw natural resources to produce new products”. The SEF advises that in a green economy, alternatives to incineration... conserve energy by efficiently using materials while creating 10times as many jobs... ”.

- There is no toxic landfill (centrally located) for the disposal of ash generated by the proposed development
- The existing pharmaceutical industry have their own in-house incinerators and have not supported Indaver’s plans for a commercial tolling of their waste

2. Addendum EIS contains no update on relevant local Policy

- Regional Planning Guidelines 2010-2022, differ quite considerably from those preceded them, which had a particular explicit aim of introduction of incineration facilities to serve the pharmachem sector (2.2.1) has no longer have a specific aspiration in this regard,
- In prg 5.6.20 the current Guidelines state: *“hazardous waste management in the region needs to be addressed from the perspective of the most environmentally sustainable approach and in line with best national practice”*.
- The only technologies mentioned as being needed are discussed in 5.6.17 *“an important issue relating to waste management is the need for a materials Recovery facility or Mechanical Biological Treatment to be developed at an early date in a sustainable location within Cork Gateway with good transportation links”*.
- Both the CDP 2009 and Regional Planning Guidelines 2010 refer to coming into force of the European Landscape Convention into Irish law in 2004.

2.2 Update on impact on Human Beings

1. Update on health and safety incomplete and unrepresentative
 - SEF noted that when incinerators are being located, disadvantaged communities are disproportionately burdened. This the case in Cork Harbour (36,000 people)
 - The choice of extract quoted in the addendum EIS is entirely selective. The WHO workshop cautions the overall impact of newer incinerators on the general environment and on human health through indirect mechanisms of action not yet evaluated:

“The health impact of waste management procedures cannot yet be properly evaluated, because of the afore-mentioned limitations of the current state of knowledge. However, absence of evidence is not evidence of absence”

- The extract quoted in the Addendum EIS suggests the study to claim that adverse health effects from incinerators are possible but inconclusive, whereas those from landfills appear to have a more demonstrable causal link. The extract avoids the fact that the landfills under study are of an age similar to that of the incinerators, in accordance with Directives landfills as well as incinerators are now subject to improved design, construction and operation.
 - Not discussed at all in either the EIS or the Addendum “EIS is the psychological impact of an incineration plant in the midst of a community. The US National Research Council Committee on Health Effects of Waste incineration has identified this as being a real health risk, well discussed in its publication *Waste Incineration and public Health*.
 - South West Regional Planning Guidelines 2010-2022 include physical and mental well-being as a factor in quality of the environment.
2. It is not possible for any reasonable person to draw any conclusions as to the health impacts of the proposed development from the EIS.
 3. The medical interpretation of the research is not within the EHS competency.
 4. The applicants did not carry a Health Impact Assessment.

3.0 Submissions by HSE (Prescribed Body)

There are two separate submissions.

3.1 Submission by Dr. Mary T O’Mahony (Specialist in Public Health Medicine, Department of Public Health HSE-S, Feb, 2011)

This is a completely new submission. Presented under the headings of ‘Context, Incineration and potential for public health exposure, Basis to nearby Residents Concerns and Health Protection Arrangements’, the submission is concise and clear, and provides some information not previously before the Board.

In particular it refers to a report of Oct 2009, by Health protection Scotland (HPS) on ‘*Incineration of waste and reported human health effects*’. I recommend it be read in full.

3.2 The submission by Principal environmental Health Officer (27th Oct, 2010) includes 3 entries

(1) *EHS- South Lee*

This provides a copy of their original report of Jan 2009 related to scoping. It also includes copy of relevant sections of the Addendum EIS and recommends that “*EHS has no further comments to make beyond those made in submission dated 29th Jan, 2009*”.

(2) Andy Walker (Health promotion Manager HSE South)

This is also a new submission. The main points include:

The addendum to EIS ... references the Porta Review 2009, which acknowledges an increased risk of cancer, particularly non-Hodgkin's lymphoma and soft tissue sarcoma, for populations living within 3km of 'old' incinerators. Whilst WHO report also quoted suggests that newer incinerators might reduce such risk, it acknowledges that 'Evidence is inadequate to draw conclusions and relatively few good quality studies exists and they refer to old generation incineration plants'.

In light of this it is essential should the proposed incinerator receive planning approval, that adequate monitoring of its impact on public health is put in place. A baseline assessment of the surrounding population should be undertaken in advance of the facility opening, and a robust system for monitoring health of local residents be established throughout the lifetime of the incinerator. This will not only provide potential protection of the public's health, but also provide data that may contribute to the evidence that the WHO acknowledge is currently inadequate.

It would be recommended that Indaver Ireland take responsibility for funding a reputable, independent body to undertake the appropriate public health surveillance and monitoring.

(3) Peter Daly (Chief emergency management officer - South)
(He had given evidence at the oral hearing of May 2009)

I would like to emphasise that the one are of concern that remains is there is no clearly identified mechanism to know what the inventory of material for incineration is, at any given time.

I would like to see a condition of the grant of licence that the compounds listed in the Annex to Directive 2003/105/EC specifically item (c), relating to carcinogens is enforced by requiring certification before these materials are brought on site.

The same certification should be applied as in the case of an establishment where no individual substance or preparation is present in

a quantity above or equal to the relevant qualifying quantities, so that the 'total amount' rule set out in the Directive is applied.

II. ECJ Judgment on Case C-50/09

- 1.0 The Board would be familiar with the recent judgment by the European Court of Justice (11th March, 2011), in particular in relation to:
 - 'Obligation on the competent authority to carry out an assessment of the effects of certain projects on the environment' and,
 - 'More than one competent authority' (separation of powers)
- 2.0 The appeal case is a licensable activity and as such would be affected by this judgment. As noted in my report of Oct, 2009, the applicants had obtained licence from the EPA in 200? for a facility to process 240,000 tonnes of waste in two lines (hazardous waste/industrial waste and municipal waste).
- 3.0 Having regard to the fact that in their further information responses the applicants have indicated changes to the furnaces and some other process equipment then previously proposed, the Board might consider it appropriate seeking the opinion of the EPA prior to determination of this case.

Öznur Yücel-Finn

Senior Planning Inspector

27st April, 2011