16. Cumulative Impacts, Other Impacts and Interactions

16.1 Introduction

This chapter presents an assessment of the cumulative effects, indirect effects, secondary effects, transboundary effects and the interaction/inter-relationship of effects between the various environmental factors as a result of the proposed development. This chapter also addresses other environmental effects which have not been specifically addressed in the individual chapters of the EIS.

Only topics that could be logically linked to the proposed development have been examined in detail. Accordingly, when a topic is not mentioned, the authors have concluded that no potential for significant effects exists.

16.2 General

The requirements to address cumulative effects, indirect effects and interactions of effects comes from the Planning and Development Acts 2001 to 2024, the Planning and Development Regulations 2001 (as amended) and the 2011 EIA Directive as amended by Directive 2014/52/EU. Section 171A of the Planning and Development Acts 2000 to 2024 and Schedule 6 of Planning and Development Regulations 2001 (as amended) generally mirror the information provided in the 2011 EIA Directive and the Directive 2014/52/EU.

16.2.1 Cumulative Effects

Annex IV (5)(e) of the EIA Directive as amended by Directive 2014/52/EU provides that the EIAR contain:

"A description of the likely significant effects of the project on the environment resulting from, inter alia:

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;"

Furthermore, Annex IV (5) states that the EIAR shall contain:

"The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project".

Section 16.5 of this chapter presents a summary of the potential effects resulting from the assessment of the cumulative effects of the proposed development with other projects.

16.2.2 Interactions and Inter-relationships

Article 3 (1) of the EIA Directive as amended by Directive 2014/52/EU requires that:

"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape; ***(e) the interaction between the factors referred to in points (a) to (d)****".*

The interaction of effects within the proposed development in respect of each of the environmental factors, listed in Article 3(1) of the EIA Directive and in the Planning and Development Regulations 2001 to 2025, have been identified and addressed in detail in the respective chapters in this EIS. This chapter, however, presents a summary of each assessment of the interaction (inter-relationship) of effects, from the proposed development, between the various environmental factors.

Section 16.4 of this chapter presents an assessment of the interaction/inter-relationship of effects between the various environmental factors as a result of the proposed development.

16.2.3 'Do-Nothing' Effects

A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline thereof without implementation of the proposed development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge is provided in a number of chapters of the EIS.

Each specialist assessment chapter (**Chapters 6 – 15**) includes a detailed description of the baseline conditions with regard to the specific environmental aspect based on the best available environmental information and scientific knowledge. Each of these specialist assessments also includes an outline of the potential changes from the baseline scenario without the implementation of the proposed development – in the assessment of the 'do-nothing' scenario and for example, in the description of future year traffic growth rates during construction and operation as outlined in **Chapter 7** ***Roads and Traffic***.

16.3 Assessment Methodology

16.3.1 Guidance

As described previously in **Section 16.2**, the requirement to address interactions of effects and cumulative effects are set out in the EIA Directive as amended by Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment.

This chapter has been prepared in accordance with the following guidance:

- EPA (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports, May 2022.
- Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, August 2018.
- European Commission (2017) Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report. (Office for Official Publications of the European Communities 2017).
- EPA (2003) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements, 2003.
- European Commission (1999) Guidelines for the Assessment of Indirect and Cumulative Effects as well as Impact Interactions, (Office for Official Publications of the European Communities 1999).

16.3.2 Definitions

16.3.2.1 Cumulative Effects

The following definitions are generally used in the description of cumulative effects, indirect effects and interaction of effects.

Under the EPA guidance (2022) cumulative effects are defined as*:*

"The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects".

The EC guidance (2017) uses the following definition for cumulative effects:

"Changes to the environment that are caused by activities/projects in combination with other activities/projects".

EC guidance (2017) also states that:

"It is important to consider effects not in isolation, but together, that is cumulatively. [….] Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from:

The interaction between all of the different projects in the same area;

The interaction between various impacts within a single Project (while not expressly required by the EIA Directive this has been clarified by the CJEU [Court of Justice of the European Union] […]".

The EC guidelines (1999) use definitions as follows:

"Impact Interactions: The reactions between impacts whether between the impacts of just one project or between the impacts of other projects in the area".

16.3.2.2 Indirect Effects

The EPA guidance (2022) uses the following definitions:

"Indirect Effects (a.k.a. Secondary or Off-site Effects) – Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway."

The EC guidelines (1999) use slightly different definitions as follows:

"Indirect Effects: Effects on the environment, which are not a direct result of the project, often produced away from or as a result of a complex pathway (sometimes referred to as second or third level effects or secondary effects)".

16.3.2.3 Secondary Effects

The EPA Guidelines (2022) describe indirect and secondary effects as interchangeable as shown above:

"Indirect Effects (a.k.a. Secondary or Off-site Effects) – Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway."

In this EIS, secondary effects are described in the context of consequential development or projects that the proposed development may facilitate. Refer to **Section 16.6** below.

The EU EIAR guidance (2017), defines consequential development as:

"Consequential development is other Projects, not part of the main Project, stimulated to take place by implementation of the Project e.g. to provide new goods or services needed for the Project, to house new populations or businesses stimulated by the Project)."

16.3.2.4 Interaction of Effects

The EC guidelines (1999) use definitions as follows:

"Impact Interactions: The reactions between impacts whether between the impacts of just one project or between the impacts of other projects in the area".

The term *'impact interactions'* is equivalent to the term *'inter-relationship of effects'*. The EC guidelines (1999) accept that their definitions overlap to a certain extent. The EC guidelines also refer to '*Cross-Media Impacts'*, in which the impact in one environmental medium may also have an indirect impact on another medium.

As shown in **Section 16.3.3.1**, the EU EIAR guidance (2017) refers to the interaction of effects in the context of cumulative effects where by:

"Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from: […[T]he interaction between the various impacts within a single Project ….]."

16.3.3 Methodology

At the initial stage of preparing the EIS for the proposed development, the potential for significant interactions of effects, indirect effects and cumulative effects were examined, and any potential effects were identified. These potential effects were included in the scope and addressed in the baseline and impact assessment studies for each of the relevant environmental factors and were also addressed in the design of the proposed development.

There were numerous discussions and communications between the environmental specialists and the design team throughout the design process which helped to identify and minimise the potential for significant interactions of effects, indirect effects and cumulative effects arising in the first instance.

16.3.3.1 Cumulative Effects

Annex IV (5)(e) of the EIA Directive as amended by Directive 2014/52/EU provides that the EIAR contains:

"A description of the likely significant effects of the project on the environment resulting from, inter alia:

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; Furthermore, Annex IV (5) states that the EIAR shall contain:

"The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project".

At the initial stage of preparing the EIS for the proposed development, the potential for significant cumulative effects were examined and any potential effects were identified. These potential effects were included in the scope and addressed in the baseline and impact assessment studies for each of the relevant environmental factors.

Potential significant cumulative effects of the proposed development in-combination with other existing and/or approved projects for each of the environmental factors were initially identified, considered and assessed in respective chapters of the EIS.

Section 16.5 of this chapter presents a summary of the potential cumulative effects between the proposed development and relevant projects. Mitigation measures relative to those effects are addressed in the individual assessment chapters.

16.3.3.2 Indirect Effects

Each of the relevant assessment chapters has considered the indirect effects of the proposed development and described them where they have been identified as likely significant effects.

For example, in **Chapter 11 *Landscape and Visual Assessment***, indirect visual effects during construction may result from temporary or short-term changes in the intensity of use of public roads leading to the proposed development site but this will be consistent with such use for other developments in the area and will not be significant. Indirect effects may also arise from the perception that the land use is changing or continuing to evolve as a living and working harbour as it responds to contemporary needs, but in any event will be consistent with such ongoing development and will not be significant.

16.3.3.3 Interaction of Effects

The interaction of effects within the design of the proposed development and the mitigation measures relative to those interactions in respect of each of the environmental factors have been identified and addressed in detail in the respective chapters dealing with each environmental factor in this EIS. Thus, no additional mitigation is proposed in this chapter. This chapter presents a summary of each assessment of the interaction (inter-relationship) of effects (from the proposed development) between the various environmental factors. Mitigation measures relative to those interactions are addressed in individual chapters.

The matrix and expert opinion approaches, as outlines in the EPA Guidelines (2022), were used in the identification of the potential for significant interactions of effects. Refer to **Table 16.1** for the matrix of potential interactions. Modelling and carrying capacity analyses were used to evaluate interactive effects where appropriate in the respective chapters. For example, the interactive effects between road traffic and noise, has been modelled and assessed in **Chapter 10** ***Noise and Vibration*** for the construction and operation phase of the proposed development.

16.3.3.4 Secondary Effects

The potential secondary effects of the proposed development were identified as those that are reasonable given the nature of the proposed development as a waste-to-energy facility. These potential future projects identified, would be subject to assessment in their own right and therefore the potential effects of these future projects have not been assessed. Refer to **Section 16.6** below.

16.3.3.5 Transboundary Effects

Certain environmental effects of a proposed development have the potential to cross state boundaries, for example, air or water emissions, and have a 'transboundary effect'. Under the EIA Directive (2014/52/EU) the likely significant transboundary effects of a proposed development must be described.

Section 16.7 of this chapter considers the transboundary effects of the proposed development. All activities associated with the construction and operation of the proposed development were assessed for the likely significant transboundary effects.

16.4 Interaction of Effects in Different Environmental Media

16.4.1 Matrix of Potential Interactive Effects

All environmental factors are inter-related to some extent, and the relationships can range from tenuous to inextricable. The interactions between the identified environmental effects have already been considered and assessed within the individual chapters of this EIS. There have been numerous discussions and communications between the environmental specialists and the design team throughout the design process which helped to identify and minimise the potential for significant interaction of effects. Measures to minimise effects have been incorporated into the design and are also included in all of the individual assessments and the residual effects have been assessed.

For example, where it has been established in **Chapter 13** ***Soils, Geology, Hydrogeology, Hydrology and Coastal Recession*** that there is potential for emissions to surface water and groundwater arising during construction and operation, the assessment of these emissions on people, biodiversity and water has been addressed in **Chapters 6** ***Population and Human Health,*** **12** ***Biodiversity*** **and 13** ***Soils, Geology, Hydrogeology, Hydrology and Coastal Recession*** of this EIS respectively. Similarly, where **Chapter 8** ***Air Quality*** and **Chapter 10** ***Noise and Vibration*** have established that there will be air and noise emissions during both the construction and operational phases, **Chapter 6** ***Population and Human Health*** has assessed the effect of those emissions on human health and **Chapter 12** ***Biodiversity*** has assessed the effects of those emissions on sensitive flora and fauna. Measures to minimise the air and noise emission effects have been designed with consideration to those interactions and have been included in the assessments and the residual effects have been identified.

Table 16.1 presents the potential interactions between the environmental factors in a matrix format. The purpose of the effects matrix is to identify potential effects in different media. Actual effects and their significance are dealt with in the most relevant chapter.

The matrix examines the potential for the environmental factor or issue in the left-hand column to have an effect on the environmental factor listed in the top row of the matrix as a result of the proposed development. As discussed above, these potential interactions of effects were identified throughout the design process and measures addressing these effects have already been included within the individual chapters of this EIS. The paragraphs following **Table 16.1** present an assessment of the potential interactions of effects, mitigation measures and residual effects. This assessment is based on information contained within this EIS and the outcome of discussions and interactions between the environmental specialists and the design team.

If there is the potential for an effect during the construction phase, this is indicated by a ‘C’. An ‘O’ indicates the potential for an effect during the operational phase and ‘CO’ indicates the potential for an impact during both phases. If it is considered that there will be no potential for an impact, this is indicated by ‘none’.

For example, the construction of the proposed development will require traffic movements (left hand column) which could potentially generate negative effects (“C”) on a number of environmental factors (top row of table) such as noise, air quality and climate, noise and vibration, population and human health and biodiversity. These environmental factors could then in turn result in (secondary/indirect) effects on other environmental factors. For example, excavation activities will generate material (direct impact on soil and rock resource) some of which will require transportation (secondary impact on construction traffic) and disposal (secondary impact on resource capacity offsite). Air emissions (secondary impact) arising from this construction traffic could subsequently impact on population and human health. All of these interactions and secondary/indirect effects have been considered in each of the respective chapters of this EIS.

Table 16.1 Potential Interaction of Effects Matrix (C = Construction, O = Operational)

		Interacting Environmental Factor										
		Population and Human Health	Roads and Traffic	Air Quality	Climate	Noise and Vibration	Landscape and Visual	Biodiversity	Land and Water[1]	Heritage[2]	Material Assets	Major Accidents and Disasters
Environmental Effect	Population and Human Health		C + O								C + O	
	Roads and Traffic	C + O		C + O	C + O	C + O		C + O			C + O	
	Air Quality	C + O			C + O			C + O			O	
	Climate	C + O		C + O				C + O				O
	Noise and Vibration	C + O						C + O		C		
	Landscape and Visual	O						C + O		O		
	Biodiversity											
	Land and Water[1]	C	C	C		C	C	C		C	C	C + O
	Heritage[2]											
	Material Assets	C + O	C					C + O				

[1] Soils, Geology, Hydrology, Hydrogeology and Coastal Recession

[2] Archaeology, Architectural and Cultural Heritage

		Interacting Environmental Factor										
		Population and Human Health	Roads and Traffic	Air Quality	Climate	Noise and Vibration	Landscape and Visual	Biodiversity	Land and Water[1]	Heritage[2]	Material Assets	Major Accidents and Disasters
	Major Accidents and Disasters	C + O	C	C + O		C		C	C			

16.4.2 Potential Interactions

16.4.2.1 Noise and Vibration Emissions

There is the potential for noise and vibration, arising from the construction phase of the proposed development, to affect the Martello Tower (**Chapter 14** ***Archaeology, Architectural and Cultural Heritage***). The potential and predicted effects of noise and vibration during construction on buildings, including the Martello Tower, is addressed in **Chapter 10** ***Noise and Vibration*** of this EIS. There is the potential for noise and vibration, arising from both the construction and operational phases, to cause disturbance to fauna. The potential and predicted effects of noise and vibration during construction and operation on fauna are addressed in **Chapters 12** ***Biodiversity*** of this EIS**.** There is the potential for noise and vibration, arising from both the construction and operational phases of the proposed development, to effect human beings (**Chapter 6** ***Population and Human Health***). The potential and predicted effects of noise and vibration arising from both the construction and operational phases on human beings are addressed in **Chapter 10** ***Noise and Vibration*** of this EIS**.**

16.4.2.2 Air Emissions

There is the potential for the air emissions, arising from both the construction and operational phases of the proposed development, to effect on climate, human beings and flora and fauna. The potential and predicted effects of air emissions arising from both the construction and operational phases on climate, human beings and flora and fauna are addressed in **Chapters 9** ***Climate*****, 6** ***Population and Human Health*** **and 12** ***Biodiversity*** of this EIS respectively**.**

The Department of Defence queried whether the emissions from the stack are likely to have pose a hazard to helicopters flying to Haulbowline and Spike Islands. As discussed in **Section 15.5.3.1**, this was assessed by two independent aviation experts and their reports are included in **Appendices 15.1** and **15.2** to this EIS. Both reports demonstrate that there will be no impact on the safety of helicopter operations and navigation out of the naval base. Refer also to the study in **Appendix 8.8**. The study confirmed that any risk from the Ringaskiddy RCC plume will be confined to within 14m of the stack tip, which is well within the 150m safety zone required by the Department of Defence. This is confirmed in their letter from July 2017 (**Appendix 15.3**), where the Department stated that if Indaver could confirm that any potential effects of the plume from the stack would be limited to within a 150m radius, then there would be no effect on their helicopter operations out of the Naval Base.

16.4.2.3 Emissions to Surface Water and Groundwater

There is the potential for emissions to surface water and groundwater, arising from both the construction and operational phases of the proposed development, to have an effect on human beings, flora and fauna. The potential and predicted effects of emissions to surface water and groundwater arising from both the construction and operational phases on human beings, flora and fauna are addressed in **Chapters 6** ***Population and Human Health,*** **12** ***Biodiversity*** and **13** ***Soils, Geology, Hydrogeology, Hydrology and Coastal Recession*** of this EIS respectively**.**

16.4.2.4 Landscape and Visual Effects

There is the potential for the landscape and visual effects arising from the operational phase of the proposed development, to have an effect on the cultural heritage features such as Martello Tower and Spike Island, and on the tourism potential and the residential and recreational amenity of the area. The visual effects on the cultural heritage features are addressed in **Chapters 11** ***Landscape and Visual Assessment*** and **14** ***Archaeological, Architectural and Cultural Heritage*** of this EIS. The landscape and visual effects on the tourism potential and the residential and recreational amenity of the area are addressed in **Chapters 11 Landscape and Visual Assessment** and **6** ***Population and Human Health*** of this EIS. There is the potential for the proposed planting for visual screening to have an effect on biodiversity. This is addressed in **Chapter 12** ***Biodiversity*** of this EIS.

There is the potential for the lighting around the site and on the stack, during the operational phase of the proposed development, to have an impact on the residential amenity and on biodiversity. The effects of the lighting on residential amenity and on biodiversity are addressed in ***Chapters 11 Landscape and Visual Assessment*** and **Chapter 12** ***Biodiversity*** of this EIS respectively and are not considered to be significant.

16.4.2.5 Socio-economic Effects

The additional employment of up to 320 construction workers in the construction phase and 63 personnel in the operation phase of the proposed development and the increased economic activity will lead to increased consumption of resources and generation of waste. The effects on the construction and operation of the proposed development on resources including waste has been addressed in **Chapter 15** ***Material Assets***.

The effect of the additional employment on the road network has been addressed in **Chapter 7** ***Roads and Traffic*** of this EIS and are not considered to be significant.

16.4.2.6 Traffic Effects

The increased traffic generated by the construction and operational phases of the proposed development has the potential to effect air quality, climate and human beings and to generate noise, which in turn could have an effect on human health and biodiversity. The effects of traffic on air quality and human beings due to the proposed development, and the effects of the noise generated by the proposed development are addressed in **Chapters 8** ***Air Quality,*** **6** ***Population and Human Health*** and **10** ***Noise and Vibration*** of this EIS, respectively. The traffic generated by the development will have a negligible effect on climate.

16.4.2.7 Residues and Wastes

The residues and wastes which arise during the construction and operational phases of the proposed development have the potential to have an effect on human beings, biodiversity and surface water and groundwater quality if disposed of incorrectly. The effects of the disposal of residues is addressed in **Chapter 15** ***Material Assets*** of this EIS and are not considered to be significant.

16.4.2.8 Soils and Geology

The working methods required to excavate and fill the site to the proposed new levels and to construct the foundations of the proposed development, have the potential to affect the air and water quality, human beings, biodiversity, the Martello Tower and to generate noise. These effects are addressed in **Chapters 8** ***Air Quality, 13 Soils, Geology, Hydrogeology, Hydrology and Coastal Recession,*** **6** ***Population and Human Health***, **10** ***Noise and Vibration*** and **14** ***Archaeological, Architectural and Cultural Heritage*** of this EIS, respectively. The nature of the material excavated from the site will determine its suitability for reuse as fill. If the material is not suitable for reuse it will be disposed of to a permitted site. The potential and predicted effects on material assets are addressed in **Chapter 15** ***Material Assets*** of this EIS. The potential and predicted effects on traffic are addressed in **Chapter 7** ***Roads and Traffic*** of this EIS.

16.4.2.9 Grid Connection

The waste-to-energy facility will be connected to the national electrical grid either via the 38kV electrical substation (known as Loughbeg substation) adjacent to the eastern boundary of the Hammond Lane facility or via the 110kV pylon directly south of the proposed development site. Both options require connection to ESBN infrastructure at the 38kV voltage level.

The lands over which the entire grid connection will be constructed lie within Indaver's ownership (save for a small section comprising associated works on the adjacent Loughbeg substation owned by ESBN if this substation is chosen as the point of connection by ESBN and a small section on the IDA land to the south if the 110kV pylon option is chosen by ESBN). These works will be carried out by ESBN and do not form part of the planning application. However, the effects of the potential grid connection options have been appraised in this EIS.

The works associated with both grid connection options will involve some minor excavation works and modifications to electrical equipment in order to connect the underground cable into the national grid. Refer to **Section 4.5.10.2** of **Chapter 4** for further details on the connection method.

No significant effects on the environment, whether direct, indirect or cumulative have been identified in relation to the grid connection works associated with either option.

16.4.2.10 Major Accidents and Disasters

There are no special or unique hazards associated with the construction of the plant on this site that would not be encountered on any normal construction site for an industrial building, as discussed in **Chapter 6 *Population and Human Health.*** Therefore, the potential interactive effects on the environment from an accident, disaster or incident during the construction of the proposed facility are those incidents identified and assessed in the respective chapters: ***Chapter 6 Population and Human Health, Chapter 7 Roads and Traffic, Chapter 8 Air Quality, Chapter 10 Noise and Vibration, Chapter 12 Biodiversity and Chapter 13 Soils, Geology, Hydrogeology, Hydrology and Coastal Recession.***

The effects of a major accident or disaster at the proposed development during operation are identified in **Chapter 6 *Population and Human Health*** as having the potential to have an interactive effect on human health and air quality. The chapter concludes that based on these assessments, and on the controls that will be implemented as risk reduction and risk mitigation measures, the risks associated with these scenarios were found to be as low as reasonably possible (ALARP).

16.5 Description of Cumulative Effects

16.5.1 Overview

This section provides an assessment of the potential effects of the proposed development on the environment resulting from the cumulation of effects with other existing and/or approved projects. The first stage as to identify the "other existing and/or approved projects". In addition, planned projects which have not yet been granted planning have also been considered where necessary. This process is described in **Section 16.5.2** below.

16.5.2 Identification of Projects

A review was carried out to identify other existing/and or approved projects, taking into account any existing environmental concerns relating to areas of particular importance likely to be affected or the use of natural resources. A review was carried out on the planning files for:

- Cork County Council (CCC)
- An Coimisiún Pleanála
- EIA Portal

As mentioned above, planned projects which have not yet been granted planning have also been considered where necessary and where a sufficient level of detail on said project was available.

Arising from this review, a number of projects were identified which could have the potential for significant cumulative effects (See **Table 16.2**).

The cumulative projects identified as having the potential to result in a cumulative effect, relevant to each environmental topic, are identified in the individual assessment chapters (**Chapters 6-15**).

Table 16.2 List of Cumulative Projects

Applicant Name	Planning Reference No.	Description	Status
Port of Cork	224356	A new vehicular entrance off the L2545, the temporary use of lands (for a period of 10 years) for open storage of port related cargo, and all ancillary works including road / kerbside re-alignment and security fencing	Granted
Cork County Council and Transport Infrastructure Ireland	HA04.HA0053/MA04.MA0014	M28 Cork to Ringaskiddy Motorway Scheme.	Granted
Port of Cork	OA04.321875	The works to assessed as part of this application are as follows: **Ringaskiddy East (Container Berth 2)** Construction of the remaining phases of a 200m Container/Multipurpose Berth which are not completed by 20thOctober 2025. The berth is under construction and being developed in 4 phases (1. Combi wall quay wall, 2. Concrete deck piling, 3. Structural slab and 4.Upper slab and yard surfacing), Dredging of the seabed to a level of -13.0 m Chart Datum (CD) Installation of link-span comprising a floating pontoon and access bridge Installation of container handling cranes Lighting and Fencing **Ringaskiddy West (Deepwater Berth Extension):** A new 182m extension to the existing Deepwater Berth (DWB) which will comprise a filledquay structure (of approximately 231m) extending no further seaward than the edge of the existing DWB Dredging works to varying levels to facilitate navigational access to the new facilities Lighting **Road Improvements:** Improvements to internal road network at Ringaskiddy East to facilitate future access tothe N28 Lighting and fencing	Pending
Janssen Sciences Ireland UC	254704	Permission for an upgrade and extension to the existing biomedicines manufacturing facility, including: 1) construction of a part single-storey and part two-storey extension to the northern elevation of the existing production building P01 with total floorspace of c. 1,718 sqm and a maximum height of c23.01m, 2) construction of a new medium voltage and low voltage (MV &LV) electrical sub-station with 2 no. single storey over service void building units with total floorspace of c.346sqm and maximum height c.6.33m, and to include a back-up generator, 3) construction of an extension to the existing central utility plant (CUP) to accommodate new boiler, heat pumps and plant rooms with total floorspace of c.482sqm and maximum height to parapet, c.14.2m and to include demolition of an existing boiler house of 68.6sqm, 4) works to upgrade and expand the existing on-site Waste Water Treatment plant (WWTP) incorporating new plant and equipment for increased hydraulic and biological treatment capacity; including a new single storey electrical substation with total floorspace of c.233sqm and maximum height c.5.29m, back-up generator, cooling towers, and odour control unit, 5) all associated site development, landscaping and ancillary works including re-profiling of the earthen berms in the vicinity of the WWTP and associated demolition works, boundary fencing, underground services, high-level pipe and cable racks, internal site roads, yards and temporary construction compounds.	Granted

Applicant Name	Planning Reference No.	Description	Status
		This application relates to development, which comprises an activity, which holds an Industrial Emissions Directive Licence (reg. no. P0778-02). An Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) has been prepared in respect of the development.	
Pfizer Ireland Pharmaceuticals	235834	Permission for construction of Bld. 124 - Site Lab Building. This will comprise a new five-storey building (circa 10,881 square metres with a maximum height of circa 30.2m above ground) which will include laboratories, a canteen, ancillary office space and plant and utility space, and associated site development works, including; roads, paths, yards, underground services and landscaping. The proposed development is covered by an existing Industrial Emissions Directive Licence No. P0013-05. As the development refers to a modification to an establishment to which the Major Accident Directive applies, information as specified in the Third Schedule of the Major Accident Regulations will be submitted with the application.	Granted
Electricity Supply Board	235104	Development is sought for a period of 10 years at a 10.22 hectares site within ESB Aghada Generating Station consisting of 1) Construction/installation of an open cycle gas turbine (OCGT) generating unit and associated plant and equipment, comprising the following main components with approximate dimensions as stated : Gas turbine air intake [24m x 18m x 26m high], Generator enclosure [24m x 18m x 14.5m high], Gas turbine enclosure [53m x 15m x 26m high], Exhauster diffuser [14.5m x 10.4m x 10.5m high], Exhaust stack [40m high, 8m diameter], Gas turbine control and electrical modules [20.5m x 18m x 10m high], Fin fan coolers [27m x 19m x 8m high], Main transformer [12.2m x 7.5m x 8.5m high] including 17.6m x 17.9m concrete bund; and 2 no. 12m high concrete blast walls, Auxiliary transformer [5m x 4.7m x 7.5m high] including 6.8m x 7.5m concrete bund; and 2 no. 12m high concrete blast walls, Demineralised water treatment plant [20m x 10m x 5.4m high], Demin water storage tank [14.63m high x 24.4m diameter], Raw water/Firewater storage tank [14.63m high x 15.2m diameter], Fuel oil storage tanks [two, each 12.19m high x 17.4, diameter], including 67m x 35m concrete bund, Fuel oil forwarding pumps [6m x 10m x 2.2m high], Firefighting pumphouse [10m x 7m x 5.4m high], Gas conditioning compound [42.3m x 11.5m x 6m high]. Above ground installation gas compound expansion [23m x 73m], Indoor switchgear building [20m x 30m x 18m high], Emergency diesel generator <1 MW [10m x 4m x 5m high], Generator circuit breaker [8.8m x 5.1m x 4m high], Continuous emissions monitoring skid [3.5 m x 2.5m x 5m high], Workshop/Stores/Administration building [35.9m x 12m x 15m], Hydrogen storage compound [8m x 4m x 2m high], Surface water drainage system, Vehicle parking, Internal roadways, 2) Demolition of an existing single storey stores building, 3) connection to the existing on-site above ground installation (AGI), 4) Connection to the National Grid by means of underground cable to existing on-site 220kV substation, 5) All associated works to facilitate the development such as temporary construction compounds, perimeter fencing, use of an existing access to public road, above ground pipe racks, underground cables on the site and crossing the R630 roadway, site lighting and telecommunications.	Granted
Cork National Roads Office	N/A	The proposed scheme will provide an active travel route along the existing N28, from the existing Port of Cork entrance to the car park at Gobby Beach. A new shared use pedestrian/cycle facility will be provided on the north side of the N28. Public Realm improvements to the village centre will include new paving, landscaping and junction improvement works. Speed reduction measures in the form of gateway features and raised pedestrian crossings are also included.	Under construction

16.5.3 Population and Human Health

16.5.3.1 Population and Human Health

It is not considered that there will be any negative cumulative effects on population and human health. **Chapter 8** ***Air Quality*** and **Chapter 10** ***Noise and Vibration*** confirm that no significant negative cumulative effects on air quality or noise and vibration are predicted.

Jobs created as a result of the construction and operation of the projects listed above, along with employment generated as a result of the proposed development, will result in a slight, positive, long-term effect on the economy.

16.5.3.2 Major Accidents and Disasters

In the context of a discussion of cumulative effects, consideration was made of the risk that a major accident arising at the Indaver site could act as an initiator of a further accident. Consideration was also made of the risk that a major accident elsewhere could give rise to a major accident at the development.

The consequence modelling results in the HAZID&RA (**Appendix 6.1**) report show the extent of the effects from accident scenarios arising at Indaver. When considering the potential for cumulative effects, in which a fire or explosion could damage other plant or equipment, the following endpoints have been used:

- 4 kW/m^2: Sufficient to cause pain to persons exposed if unable to reach cover within 20 seconds. However, with appropriate protective clothing, emergency response actions lasting several minutes may be undertaken. The distance to this heat flux level is often used by fire responders when determining the limiting distance at which personnel can be deployed.
- 6.3 kW/m^2: This is the heat flux reported by the Chemical Industries Association (CIA) as a maximum level to which an emergency exit should be exposed.
- 8 kW/m^2: This is the threshold value reported in EI19 at which protective cooling water may be required to prevent escalation of a fire event to exposed items of plant and equipment.
- 12.7 kW/m^2: This level of thermal radiation is noted in the HSA's LUP guidance as the level at which the fire could spread to a building in the event of sustained fire attack.
- 25.6 kW/m^2: This level of thermal radiation is noted in the HSA's LUP guidance as the level at which the fire could rapidly spread to a building in the event of fire attack.

Referring to the model results in the HAZID&RA report (**Appendix 6.1**), the scenario giving rise to the longest hazard distances to these thermal radiation levels is that of a fire in the waste bunker.

As noted in **Section 6.6.2** of **Chapter 6** ***Population and Human Health***, Indaver will have controls in place to fight a fire in this area and prevent it escalating to become fully developed. However, in the worst case scenario if the fire escalated to this level, then the thermal radiation level of 25.6 kW/m^2 would not be experienced by people in the surrounding area, due to the elevation and shielding at the bunker, and 8 kW/m^2 could be experienced at a distance of up to 27 m. Based on these model results, there is no risk of domino / cumulative effects to any receptors off site from this scenario.

16.5.4 Roads and Traffic

The proposed development site is located in an area characterised by industrial land use and is generally surrounded by a number of pharmaceutical companies having large manufacturing facilities in the area, in addition to the Port of Cork facilities. The cumulative projects listed in **Table 16.2**, have been taken into consideration in the preparation of this chapter and in the modelling of junctions analysed in **Section 7.9** of **Chapter 7** ***Roads and Traffic***. The anticipated traffic generation of these committed and potential developments was accommodated for in the application of annual growth rates to the baseline traffic flow data. The baseline traffic data has also been adjusted for future year assessments using a 'Medium' growth profile as per the Transport Infrastructure Ireland Project Appraisal Guidelines.

Therefore, it is considered that this adjusted traffic growth is sufficient to account for the majority of the committed developments in the vicinity of the site. The Port of Cork operational traffic has also been included as a specific additional development (i.e. additional to the adjusted traffic).

In future year scenarios, specific additional allowance was included in the assessment for the Port of Cork expansion proposals at their Ringaskiddy site, based on traffic flow information contained in the relevant submitted planning documentation and to accommodate the anticipated redistribution of traffic on the N28 in future year scenarios in which the M28 motorway is operational based on traffic flow information contained in the relevant submitted planning documentation.

The construction of the M28 motorway is due to commence in Q3 of this year, with the project anticipated to be completed in Q3 2028. As the construction year for the proposed development is 2029, it is not anticipated to coincide with the M28 construction. However, a worst-case scenario has been considered in which the M28 construction and the construction of the proposed development do temporarily overlap, in which case it is important to note that, as stated in the M28 EIS, the construction of the M28 is predominantly offline. Therefore traffic-related construction impacts likely to be not significant. Where construction of the M28 is online, i.e. the section from Carr's Hill to Bloomfield Interchange, the existing N28 will always remain open to two-way traffic, except for short term managed road closures for critical works. The section of online construction will result in localised temporary traffic impacts with or without the addition of construction vehicles from the proposed development. However, it is important to state again that this is a worst-case scenario and should not occur due to the M28 scheduled completion in 2028 prior to the proposed development scheduled construction in 2029.

16.5.5 Air Quality

In terms of air quality, the EPA guidance document "Air Dispersion Modelling from Industrial Installations" (EPA, 2020) was consulted in order to determine which current and proposed developments should be considered in the air quality cumulative assessment. The potential for cumulative air quality effects as a result of the construction and operation of the proposed development and the projects identified in **Chapter 8 *Air Quality*** has been evaluated on this basis.

Following on from this evaluation, as outlined in **Section 8.2.4** of **Chapter 8 *Air Quality*** and **Appendix 8.4 *Cumulative Impact Assessment***, a detailed cumulative assessment of the proposed development and the relevant industrial emission sources has been carried out using the methodology outlined by the USEPA. The conclusion of the cumulative assessment study is that there is no significant overlap between the various emission sources and the proposed development and that all air pollutants emitted from the will remain in compliance with the ambient air quality standards.

Additionally, cumulative air modelling of road traffic emissions associated with the proposed development has also been undertaken and added to the existing worst-case background pollutant levels. Cumulative effects due to the other relevant projects as outlined above have been included in both the "do-nothing" and "do-something" scenario as outlined in **Appendix 8.3**.

16.5.6 Climate

In relation to climate, all global cumulative GHG sources are relevant to the effect on climate change. As a result, the effects of GHG emissions from specific cumulative projects in general should not be individually assessed. This is due to the fact that there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other (IEMA, 2022).

16.5.7 Noise and Vibration

16.5.7.1 M28 Cork to Ringaskiddy Motorway Scheme

Chapter 14 of the EIS relating to the proposed N28 Cork to Ringaskiddy Road scheme (2017) includes predicted future operational noise levels associated with the proposed motorway scheme at Martello Park residential properties. Calculated noise levels associated with the proposed road development are between 57 to 60dB L_{den} with night-time noise levels of 43 to 47dB L_{night}. Once operational therefore, the future noise environment will be This will increased the ambient noise environment at the rear of these properties.

Given the proposed Resource Recovery Centre will not add to the existing noise environment at these properties which is lower than the potential future noise environment with the M28 in operation, the proposed development will not add to the future noise environment.

16.5.7.2 Port of Cork Development

Review of the Port of Cork EIAR notes that predicted noise levels at the noise sensitive properties to the west of the proposed resource recovery centre (R4-R7) are calculated to be in the range of 49 to 51 dB LA_{eq} during the daytime period and 48 to 51 dB LA_{eq} during the night-time period from the Port of Cork development (Port of Cork Assessment locations 2 to 7).

Given the proposed Resource Recovery Centre will not add to the existing noise environment at these properties which is lower than the potential future noise environment with the Port of Cork expansion in operation, the proposed development will not add to the future noise environment.

16.5.7.3 Janssen Sciences Ireland UC – Site Expansion

Review of the noise impact assessment within the EIAR for the Janssen Sciences site expansion confirms that there is no increase in the ambient noise environment at any of the NSLs assessed for the proposed Resource Recovery Centre. There is therefore no potential cumulative noise effect from both. (It is noted, any operational noise emissions from the existing facility already forms part of the baseline noise environment measured during the baseline noise surveys).

16.5.7.4 Pfizer Ireland Pharmaceuticals – Bld. 124

The Pfizer Ireland Pharmaceuticals Lab building is sufficiently set back (>3km) from the proposed development and the nature of the proposal will not result in any cumulative effect in terms of noise. This is also confirmed in the EIA screening report for that proposed development.

16.5.7.5 ESB Aghada Generating Station

The ESB development and Aghada is set back over 5km from the proposed development and will not add to the cumulative noise environment with the proposed development.

16.5.8 Landscape and Visual

The proposed development site is situated within Ringaskiddy, which is an extensive industrial and employment area accommodating a number of existing facilities of various sizes and scale.

Additional effects on the landscape character and visual environment caused by the proposed development when considered in conjunction with other relevant proposed or permitted developments are addressed in this section. The assessment of cumulative effects is also guided by the visual scenarios as prepared in the accompanying Photomontages of key representative viewpoints (see **Table 11.1** of **Chapter 11** ***Landscape and Visual Assessment*** and **Figures 11.1 to 11.38**).

The Cork Lower Harbour landscape has undergone significant change in recent years with the construction and opening of the expanded Port of Cork deepwater berth and container cranes/storage area. The construction of the M28 which is currently underway will further intensify changes in the landscape character and visual environment, particularly during the construction stages.

There a number of planned or permitted projects in the surrounding area which have the potential to give rise to landscape and visual effects during Construction and Operational Phases.

Combined, these developments would represent a further intensification of the existing mixed use (industrial/employment/residential/amenity) character of Ringaskiddy and Cork Lower Harbour area.

The cumulative effect of these developments on the landscape character will be negative in the short term but is deemed to the positive in the medium to long term once operational as the area transitions from a slightly unkempt, semi-industrial area, to a more developed cluster of industry, energy and education campus style landscape. The proposed development will be seen in many ways as an extension of this landscape. This is considered to be within the expected trends of change for an area which includes large scale existing zoned industrial use, and which has experienced rapid industrial growth over the preceding decades.

Overall, the surrounding area is deemed capable of absorbing the proposed development without changing the character of the City Harbour Landscape, and the proposed development, in combination with other planned or permitted developments, will not give rise to any significant direct or indirect cumulative landscape and visual effects.

16.5.9 Biodiversity

Cumulative effects on fauna chiefly relate to increased noise and activity levels and the possibility of increased collision risk. Although increases in noise/disturbance could occur arise from several different projects in-combination the effect is likely to be most pronounced during construction. This is a short-term effect which will be localised. Given the nature of the projects proposed and distances between them, significant effects during operation are unlikely. Given the distance between existing wind turbines within the Cork Harbour area, the Aghada stack and the proposed Indaver stack, the cumulative collision risk or disturbance risk are predicted to be low. The potential cumulative effects which are considered relevant to the proposed development are listed below.

16.5.9.1 The Port of Cork Developments

The EIAR submitted to An Bord Pleanála as part of the application for permission in respect of the Port of Cork development at Ringaskiddy was reviewed during the preparation of this chapter. A development of a new vehicular entrance of the L2545 was also reviewed. In the absence of any predicted effect on marine ecology or bird usage of the area from the proposed development, no potential cumulative effects have been identified.

16.5.9.2 M28 Cork to Ringaskiddy Motorway Scheme

The motorway scheme is currently at the Advanced Works Stage, involving land acquisition and site clearance. A 1.5 km single carriageway section of the M28 Cork to Ringaskiddy Motorway Project, referred to as the 'Protected Road Scheme', is currently under construction. This section extends from Barnahely to the eastern side of Ringaskiddy and intersects the northwestern boundary of the proposed development site. The construction stage of the Protected Scheme is nearing completion at the time of writing this EIS. The remaining elements of the main M28 Cork to Ringaskiddy Motorway Project, which will upgrade the corridor to a dual carriageway standard, are expected to have a construction duration of approximately 36 months.. It is envisaged that the M28 motorway scheme would be in place by Q3 2028. However, the most eastern section of the proposed M28 between the proposed Loughbeg Roundabout and Ringaskiddy Roundabout is currently under construction and is expected to be completed in Q4 2025. Given that the protected scheme element of the M28 works will be complete prior to the construction of the proposed development, no cumulative effects due to increased noise and activity have been identified. Whilst there may be localised disturbance/displacement of fauna (including Badgers), the cumulative impact is not predicted to be significant.

16.5.9.3 Other Projects

Other projects include the Janssen upgrade to biomedicines facility (Planning reference 254704) and the Pfizer Bid.124 lab building (Planning reference 235834). While construction works may cause localised disturbance to fauna, given their location within existing licenced pharmaceutical facilities, no significant cumulative effects have been identified.

16.5.10 Soils, Geology, Hydrology, Hydrogeology and Coastal Recession

16.5.10.1 Soils, Geology, Hydrology and Hydrogeology

The M28 Cork to Ringaskiddy Motorway Scheme between the proposed Ringaskiddy and Loughbeg roundabout intersects the northwestern boundary (Area 1) of the proposed development. The project is currently at Phase 6 Construction and Implementation, and construction is due to finish by Q3 2028. Planning drawings for this section of the M28 in the M28 Cork to Ringaskiddy Project Environmental Impact Statement reveal the cut to be 11m deep at the centreline. Observations made during a site walkover undertaken in February 2025 revealed the southern cut face to be >11m in depth as the topography rises in this area. The stratigraphic profile of the southern cut face comprises of glacial till overlying mudstone/sandstone bedrock.

It is proposed to raise the existing ground levels in Area 1 (western field) to 4.55m OD using site won material. This activity could induce instability in the M28 cut slope face and therefore its effect is moderate adverse resulting in a significant/moderate effect. The potential effect can be mitigated in the earthworks design for Area 1.

It is not expected that the remaining projects as outlined above will have significant cumulative effects on soils, geology, hydrogeology, hydrology.

16.5.10.2 Coastal Recession

Future marine traffic due to Port of Cork Redevelopment may cause additional wave action due to vessels which might impact the wave erosion effects on cliffs in the future. However, compared with wave action from storms, any increased effect from shipping is expected to be negligible.

16.5.11 Archaeological, Architectural and Cultural Heritage

A number of existing and proposed development projects are located within the wider Cork Harbour area as detailed in **Table 16.1**. These include infrastructure works, industrial expansions and port-related developments, many of which are concentrated in or near the townlands of Ringaskiddy, Loughbeg and Ballybricken.

When assessed collectively, these projects are not predicted to give rise to significant cumulative effects on known archaeological, architectural or cultural heritage of the area. Most developments are situated within already modified or industrialised landscapes.

However, certain large-scale projects - particularly the proposed Resource Recovery Centre, the M28 Cork to Ringaskiddy Motorway Scheme, and the Port of Cork redevelopment - will involve substantial ground disturbance, including marine-based works. These activities present a moderate risk of encountering previously unrecorded archaeological material. Should archaeological material be discovered during such works and preserved by record (i.e., fully excavated and documented), it will be permanently removed from the cultural landscape. While this represents a loss, it will be mitigated by adherence to archaeological best practices and regulatory guidance, thereby contributing to the broader understanding of the area's historic environment.

16.5.12 Material Assets

If the construction of the aforementioned projects were to be constructed at the same time as the proposed development, cumulative effects could occur. There would be a cumulative demand for construction materials such as concrete, sand, crushed rock and steel and for power, water and telecoms.

The operation of all aforementioned projects, apart from the M28 Cork to Ringaskiddy Motorway Scheme, is likely to result in a cumulative demand for power, water and other utilities. The proposed development will generate power to help meet power demand.

It is anticipated that the scale of the construction materials market in Ireland and the utilities capacity in the Ringaskiddy area are such that there will not be a significant cumulative effect on material assets as a result of the proposed development.

16.6 Secondary Effects

There is one potential project which may be associated with the Ringaskiddy Resource Recovery Centre: a potential future district heating system. This section assesses the potential for significant secondary effects to arise from this consequential development.

The secondary effects arising from the interactions between environmental factors within the proposed development itself (such as those examples provided above in **Section 16.4.1**) have been considered in each of the respective chapters of this EIS.

Separately, it is noted that a pre-treatment facility (waste transfer station) is not required for the operation of the Ringaskiddy Resource Recovery Centre and is not proposed as part of the current application. The provision of a waste transfer station, as a separate piece of infrastructure, was considered but ultimately not included, for the following reasons:

1. A transfer station is not required for the operation of the proposed development, as is evidenced by the Meath waste-to-energy facility, which does not have a transfer station and accepts the same waste streams as the proposed development
2. There are already transfer stations operating in Dublin, Shannon, Cork and Portlaoise.
3. Due to the advancement of waste management practices on industrial sites generating industrial waste, the provision of such a facility is not needed.

16.6.1 Potential Future Heat Network

The thermal energy generated in the waste-to-energy facility will be recovered as steam which can be used to generate electricity, directly in heat applications or in a combination of heat and power plant. The current facility design is to generate electricity from the steam and to allow for a future possibility to export heat.

Indaver is exploring the option to supply heat or steam to industries located in Ringaskiddy which has the greatest potential for the use of this resource of all of the industrially zoned lands in Cork. Refer to **Chapter 3** ***Alternatives***.

The main potential impact of such a district heating system would be a reduction in the use of the fossil fuels, which are currently used to generate steam or heat in the facilities being supplied. There would be a consequent reduction in the greenhouse gas emissions. The pipework to supply the steam or hot water would probably be laid in the roads (or above-ground alongside them) in the area and there would be some temporary disruption to road users for the duration of the construction phase.

16.7 Transboundary Effects

16.7.1 Introduction

This section describes potential trans-boundary effects from the proposed Ringaskiddy Resource Recovery Centre. The potential for trans-boundary effects arises as follows:

- Boiler ash and flue gas cleaning residues from the proposed development will be shipped to continental Europe for recovery or disposal if there is no suitable facility available in Ireland or Northern Ireland. Refer to **Section 16.7.2** below.
- Bottom ash could possibly be exported from the proposed development to continental Europe for recovery if there are no landfill or recovery options available at a given time. Refer to **Section 16.7.3** below.
- The proposed facility will treat up to 24,000 tonnes per annum of hazardous waste, which currently is shipped to waste-to-energy facilities in Europe. Refer to **Section 16.7.4** below.
- The proposed Ringaskiddy Resource Recovery Centre would have the capacity to treat municipal solid waste from Ireland, some of which is currently being exported. Refer to **Section 16.7.4** below.

16.7.2 Boiler Ash and Flue Gas Cleaning Residues

Circa 2,036 tonnes per annum of boiler ash and circa 9,271 tonnes per annum of flue gas cleaning residues will be produced in the Ringaskiddy waste-to-energy facility. The boiler ash and flue gas cleaning residues will be in the form of fine particles and will contain heavy metals.

It is expected that the boiler ash and flue gas cleaning residues from the Ringaskiddy facility will be similar in composition to the boiler ash and flue gas cleaning residues from the Indaver Meath waste-to-energy facility.

The boiler ash and flue gas cleaning residues will be suitable for use in a recovery operation to backfill the void space in an underground salt mine. Currently in Northern Ireland there is one underground salt mine, licensed to use material such as the residues for backfilling in Carrickfergus, Co. Antrim. This facility is currently being utilised by Indaver's waste-to-energy plant in Co. Meath and the facility is also suitable for receiving and treating similar hazardous residues from the Ringaskiddy Resource Recovery Centre. It is envisaged that the proposed development will also avail of this local solution in Northern Ireland.

Boiler ash and flue gas cleaning residues from Indaver's Meath facility are also shipped to underground salt mines in Germany where the residues are solidified and used to backfill the mine instead of using other raw materials.

It is proposed that, if the facility in Northern Ireland is not available, the boiler ash and flue gas cleaning residues from the proposed Ringaskiddy facility will also be shipped to underground salt mines in Germany and this activity is not likely to have significant negative effect on the environment.

16.7.2.1 Transport to and use of residues in Germany

Two container truck loads per week of boiler ash and seven to eight container truck loads per week of flue gas cleaning residues will be removed from the Ringaskiddy facility. If the facility in Northern Ireland is not available, the boiler ash and flue gas cleaning residue containers will be taken to a port, loaded onto a ship and shipped to Rotterdam in the Netherlands, or another container port in Europe. From the port of entry, the containers will be transported by road to the final destination. The proposed final destination is the Hattorf and Wintershall Reutilisation Facility, which is an underground salt mine in Germany. The facility has been approved for the reutilisation by the relevant authorities in Germany. Boiler ash and flue gas cleaning residues from Indaver's Meath facility are currently shipped to the Hattorf and Wintershall Reutilisation Facility.

As discussed in **Section 15.5.3.10** of **Chapter 15** ***Material Assets***, the regulation of the transport of the boiler ash and flue gas cleaning residues will be subject to Trans Frontier Shipment (TFS) licence which is a licence which must be approved by the origin/destination/transit authorities consenting to the movement/transit and acceptance of wastes between EU member states. The regulation governing this is EU Regulation 1013/2006. This licence tracks waste from origin to destination and ensures that each authority is aware of the status of the waste until final recovery when the individual TFS notification annex consigned with each shipment is signed off as having been received and treated by the receiver. This completed licence is then circulated back to Indaver as the producer as well as all relevant authorities this activity is not likely to have significant negative effect on the environment.

16.7.2.2 Quality Standards for shipping containers

As discussed in **Section 15.5.3.10** of **Chapter 15** ***Material Assets***, boiler ash and the flue gas cleaning residues will be loaded into a container truck in the Ringaskiddy facility. The container must have a valid safety approval plate or "CSC plate". CSC is the abbreviation for Convention for the Safe Containers. The CSC is an international regulation that has been developed for all the containers used for international transport, with the aim of achieving the highest possible level of safety of human life in the handling, stacking and transporting of containers. The "CSC plate" is the guarantee that the container is safe to travel. A safety certificate is issued by the container manufacturer. The certificate is renewed after 5 years, then every 30 months, by a certified inspector. Standards, such as EN ISO 6346 for compulsory identification marking, are also followed. Prior to loading the container, a check is carried out to ensure the container is fit for purpose. Therefore this activity is not likely to have significant negative effect on the environment.

16.7.2.3 Risk of shipping accident

Van Den Bosch is an international logistics services provider which transports boiler ash and the flue gas cleaning residues for Indaver. Van Den Bosch confirmed that in the 51 years of its history none of its containers has ever fallen overboard and no ship has sunk with its containers on board. Therefore, this activity is not likely to have significant negative effect on the environment.

16.7.2.4 Behaviour of boiler ash and flue gas cleaning residues in contact with water

If the boiler ash and flue gas cleaning residues come in contact with water, they will solidify. Thus, if there was a shipping accident, and the container entered the sea and was holed, the boiler ash and flue gas residues would solidify on contact with water. The solidified boiler ash and flue gas residues could then be removed from the seabed along with the container truck. Therefore, this activity is not likely to have significant negative effect on the environment.

16.7.2.5 Potential for impact at the reutilisation facility

The aforementioned salt mines in Germany are required to comply with the requirements of the EIA Directive and therefore were subject to the EIA process prior to the acceptance of any waste material. This Directive on Environmental Assessment aims to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the development of projects such as salt mines accepting hazardous waste with a view to reducing their environmental impact.

Similarly, the existing licensing process which all of these salt mines are subject to, requires compliance with an ongoing environmental monitoring regime in the form of stringent licence conditions. The issuing of such licences by competent authorities pursuant to the requirements laid down in the Waste Framework Directive stipulate that all necessary safety and precautionary measures, monitoring and control operations and closure and after-care provisions must be included in the granting of all such licences.

Such conditions set out the legal constraints under which salt mines must operate in order to ensure that all operations are conducted in compliance with the requirements of the Waste Framework and Landfill Directives and do not cause environmental pollution.

Therefore, the potential treatment of the boiler ash and flue gas cleaning residues is not likely to have significant negative effect on the environment.

16.7.2.6 Conclusion on Potential for Trans-Boundary Effects in the Netherlands and Germany

Netherlands

Given the low risk of a shipping accident, the low risk of leakage from the transport containers, and the fact that the boiler ash and flue gas cleaning residues will solidify on contact with water, if there is a release, it is not likely that there would be a significant adverse trans boundary impact due to the shipping of the boiler ash and residues to Rotterdam or another European container port.

Germany

Given the fact that the proposed final destination, the Hattorf and Wintershall Reutilisation Facility, has been approved for backfilling using material such as the boiler ash and flue gas cleaning residues by the relevant competent authorities in Germany, and that the operator and German authorities are subject to EU environmental legislation, it is not likely that there would be a significant adverse trans boundary impact due to backfilling of the residues in the Reutilisation Facility in Germany.

16.7.2.7 Boiler Ash and Flue Gas Cleaning Residue Transport to and use in Northern Ireland

As discussed in **Section 15.5.3.10** of **Chapter 15** ***Material Assets***, an underground salt mine in Northern Ireland now has the necessary consents to allow the backfilling, using pre-treated boiler ash and flue gas cleaning residues from waste-to-energy facilities. It is likely that pre-treated residues from the proposed Ringaskiddy Resource Recovery Centre would be transported by road to this facility in Northern Ireland.

Planning permission and a permit to operate have been granted by the relevant competent authorities in Northern Ireland. The export of the residues to Norther Ireland will also be subject to the Waste Shipment Regulations and will required a Trans Frontier Shipment (TFS) licence which is a licence which must be approved by the origin/destination/transit authorities consenting to the movement/transit and acceptance of wastes between EU member states or participating OECD countries.

The preparation process for consigning this material off site will consist of a simple dry-bagging system which will mix the residues, into 1m^3 FIBC bags. The preparation equipment will be located close to the flue gas residue silos within the main process building. In the event of an accident during transport, given the fact that the boiler ash and flue gas cleaning residues will solidify on contact with water, if there is a release, the material is easily recovered as a solid mass contained within individual bags.

The same type of residue is also being exported in dry form and in 1m3 FIBC bags to the Northern Ireland facility from the Indaver Meath waste-to-energy plant without incident.

As a result of the forgoing, it is not likely that there would be a significant adverse transboundary impact due to the backfilling of the residues in an underground salt mine in Northern Ireland.

16.7.3 Potential Trans-boundary Effects for Shipment of Bottom Ash to Continental Europe

As discussed in **Chapter 15** ***Material Assets*** and mentioned in **Section 16.6.1** above, there is a possibility of the export of bottom ash for recovery in continental Europe. The method of transport would be by ship and in bulk in consignments of 3,000 tonnes per shipment. The likely shipping route would be from Cork Port to Rotterdam. In the event of an accident during transport of the bottom ash at sea, the loss of the material to the seabed would not have a significant effect as the leachability of the bottom ash is low and it mainly constitutes, ferrous & non-ferrous metals, silicates (sand-type material) and inert material such as ceramics, glass and stones.

The facilities that the bottom ash would be sent for recovery have also been subject to the requirements of the Waste Framework and EIA Directives and the EIA process of the relevant jurisdiction. These outlets are also subject to a separate national licensing regime on an ongoing basis which is a constituent part of the European law framework as laid down in the Waste Framework Directive.

Consequently, it is not likely that there would be a significant adverse transboundary effect due to the recovery of bottom ash at a facility in continental Europe.

16.7.4 Potential Trans-boundary Effects due to Reduced Amounts of Hazardous and Municipal Solid Waste being Exported to Europe

Currently hazardous waste is exported from Ireland by ship for treatment in waste-to-energy facilities in Europe. The proposed Ringaskiddy Resource Recovery Centre would treat up to 24,000 tonnes per annum of this waste. This would reduce the amount of hazardous waste being exported by ship from Ireland to ports in Europe and transported onwards by road to the final destination. There would be a consequent reduction in the risk to the environment posed by the transport of this waste. However, according to Eurostat, around 9 million tonnes per year of hazardous waste are transported around Europe, with roughly 6-7 million tonnes being treated through recovery operations, which include waste-to-energy facilities. The positive effect of the reduction in risk to the environment would not be significant.

The proposed Ringaskiddy Resource Recovery Centre would have the capacity to treat municipal solid waste that is currently being exported. This would reduce the amount of municipal solid waste being exported by ship from Ireland to container ports in Europe and transported onwards by road to the final destination. However, 58 million tonnes per year of municipal solid waste are treated in waste-to-energy plants in Europe, the reduction in the amount of municipal solid waste being recovered in Europe would not be significant.

16.8 'Do-Nothing' Scenario

A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge is provided in the individual assessment chapters (**Chapters 6-15**).

16.9 References

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