

Proposed Amendments to Annual Tonnage at Dublin Waste to Energy Facility, Pigeon House Road, Dublin

Environmental Impact Assessment Report
Volume 1: Non-Technical Summary

Dublin Waste to Energy Limited

Project number: PR-351653

March 2022

Prepared for:

Dublin Waste to Energy Limited

Prepared by:

AECOM Ireland Limited
4th Floor
Adelphi Plaza
Georges Street Upper
Dun Laoghaire
Co. Dublin A96 T927
Ireland

T: +353 1 238 3100
aecom.com

© 2020 AECOM Ireland Limited. All Rights Reserved.

This document has been prepared by AECOM Ireland Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1.	Introduction.....	1
2.	Project Description.....	2
3.	Waste Management.....	3
4.	Alternatives.....	3
5.	Population and Human Health.....	5
6.	Land and Soils.....	6
7.	Water.....	6
8.	Biodiversity.....	7
9.	Air Quality.....	7
10.	Climate.....	8
11.	Noise and Vibration.....	9
12.	Cultural Heritage.....	9
13.	Landscape and Visual.....	9
14.	Roads and Traffic.....	10
15.	Material Assets.....	11
16.	Major Accidents and Disasters.....	11
17.	Interactions.....	11

Figures

Figure 1-1 Facility Location.....	1
-----------------------------------	---

1. Introduction

Dublin Waste to Energy Ltd (hereafter referred to as 'the Operator') and Dublin City Council (the 'Applicant') are seeking planning permission for the proposed increase to the annual intake of waste at the Waste to Energy facility (hereafter referred to as 'the Facility') from the permitted 600,000 tonnes per annum to 690,000 tonnes per annum (hereafter referred to as 'The Proposed Tonnage Increase').

The Facility is located on the Poolbeg Peninsula, Dublin as shown in Figure 1-1 and comprises three buildings: the main process building; cooling water pump house; and security building, along with supporting infrastructure.

Current operation of the Facility is regulated by a waste management licence (W0232-01) (now an Industrial Emissions Licence) issued in 2008 by the Environmental Protection Agency pursuant to the Waste Management Act 1996-2019. The Waste Licence was initially granted to Dublin City Council but subsequently transferred to the Applicant in 2014, with a capacity to thermally treat up to 600,000 tonnes of waste annually.



Figure 1-1 Facility Location

The Facility's licence is for the incinerator to burn non-hazardous to recover energy in the form of steam and electricity for export to the national grid at Pigeon House Road, Dublin 4, and for the transfer of heat to a municipal district heating scheme, when such a system is available. A number of Technical Amendments have been approved by the Environmental Protection Agency since the initial Industrial Emissions Licence was granted. A Technical Amendment licence application was submitted to the Environmental Protection Agency in 2019 to accommodate the proposed increase in the amount of residual municipal non-hazardous solid waste the Applicant can accept at their Facility. This licence application is currently in consideration by the Environmental Protection Agency.

Court of Justice of the EU rulings have indicated that the concept of waste disposal within the Directive 2011/92/EU of the European Parliament and the Council on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU, must be given a broad construction and include all operations leading to either waste disposal or recovery. Therefore, any facility generating electricity from waste or combustible materials and biomass from waste with a capacity exceeding 100 tonnes per day falls within the scope of Class 10 of the regulations and requires a mandatory Environmental Impact Assessment. The proposed 90,000 tonnes per annum increase in capacity exceeds the 100 tonnes/day threshold.

As initially outlined in the Eastern Midlands Regional Waste Management Plan (2015-2020) and confirmed in the 'Waste Treatment Capacity Analysis-Q4 2019 & Projections 2020-2022 Bulletin', there is a clearly defined national need for additional thermal treatment capacity.

The Proposed Tonnage Increase would enable the Facility to process an additional 90,000 tonnes annually which would be more sustainable both in terms of national residual waste treatment and energy generation, than the current alternatives of landfill or the export of waste. This capacity is available immediately, subject to revision of the Industrial Emissions Licence, without any requirement for additional plant or investment.

The Proposed Tonnage Increase does not require any amendments to the existing Facility and as such, no construction or decommissioning works are required to facilitate the additional annual intake of waste. This EIAR therefore evaluates potential significant environmental effects arising from operation of the Facility only. Indeed it is important to note that at certain times during existing operations the Facility has already operated at a monthly pro-rata equivalent throughput of 690,000 tonnes per annum (57,500 tonnes per month) in 2017 and 2018 for example within licence emission limits, while staying within the overall annual 600,000 tonnes per annum limit at all times.

As the Proposed Tonnage Increase involves additional volume of waste throughput to an existing operational Facility only, likely significant effects identified during scoping and carried forward for detailed assessment in the Volume 2 (Main Report), were limited to the following environmental factors: air; climate, waste management; material assets, specifically roads and traffic; and population and human health. The additional waste throughput would result in additional emissions to air from the Waste Delivery Vehicles and plant stacks and could potentially have a significant effect on air quality. The increase in Waste Delivery Vehicles could also potentially effect roads and traffic. Further assessment of topics associated with air quality and climate; roads and traffic; and population and human health were therefore scoped into the Environmental Impact Assessment Report. Further assessment of topics associated with major accidents and disasters and the interactions between impacts on different environmental factors were also scoped in, to align with Directive 2011/92/EU of the European Parliament and the Council on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU.

No likely significant environmental effects were identified in relation to the following environmental factors: land, soil, water, biodiversity, landscape, and cultural heritage, and therefore detailed impact assessments were not required. However, as outlined in the Environmental Protection Agency's 2017 draft 'Guidelines on the information to be contained in Environmental Assessment Reports', "*environmental factors themselves cannot be scoped out and must feature in the EIAR*" and to align with recent requests from the Environmental Protection Agency on a similar Environmental Impact Assessment Report; the aforementioned environmental factors remain as individual chapters within the Environmental Impact Assessment Report and detail the baseline environment only.

2. Project Description

The Facility was granted permission by An Bord Pleanála in 2007 and was subsequently constructed and started operations in 2017. The Proposed Tonnage Increase will not require physical changes to the Facility and its associated infrastructure. The waste types received and operational processes, procedures, environmental monitoring and reporting, and operational hours at the Facility will also remain unchanged. The current Facility layout and Waste to Energy plant items have sufficient capacity to accommodate the Proposed Tonnage Increase. As a result of variations in the annual average calorific value of the waste, the increase in nominal annual throughput can be achieved without the addition or modification of any Waste to Energy plant at the Facility nor any requirement to change any operational limit value or Emissions Limit Values.

Key changes to accommodate the throughput of an additional 90,000 tonnes per annum of waste would be restricted to the following:

- Additional waste delivery vehicles (20 additional two-way Waste Delivery Vehicles movements per average day);
- Increased throughput and operation of the Waste to Energy plant; and
- Management of additional residual solid waste produced; for example, incinerator bottom ash, which is expected to increase in proportion to the increase in capacity.

3. Waste Management

The Waste chapter outlines the relevant regulations, policies and statistics regarding waste management in Ireland, and assesses the impact of the Facility on these policies, particularly with respect to the waste hierarchy and the proximity principle.

Assessment of Impacts

Waste Policies

The Facility already provides significant capacity for managing residual waste in the Eastern Midlands Waste Region, thereby diverting this waste from landfill disposal. However, Environmental Protection Agency data shows that there is still a relatively large amount of residual waste within Ireland and in the Eastern Midlands Region which is either landfilled or exported to Europe for energy recovery.

The Proposed Tonnage Increase will provide an additional 90,000 tonnes per annum of capacity for managing residual waste, in addition to the 600,000 tonnes per annum already provided by the Facility. Review of Eastern Midlands Waste Region waste management data for 2017 indicates that there is likely to be approximately 615,000 tonnes per annum of municipal waste either landfilled or exported, even with the Facility operating at its existing licensed capacity of 600,000 tonnes per annum.

The Proposed Tonnage Increase is therefore expected to recover waste that is currently either disposed of to landfill or exported for energy recovery outside of Ireland. This is consistent with the waste hierarchy and the proximity principles set out in the European Union's Waste Framework Directive, and as reflected in Ireland's waste management policy.

The COVID-19 outbreak highlighted that the co-processing of mixed solid waste in cement kilns is potentially vulnerable to disruption. Expansion of capacity at the Facility will therefore increase the resilience of Ireland's waste management infrastructure to future disruptions.

Waste Generated by the Facility

The main waste materials generated by the Facility are incinerator bottom ash and air pollution control residues. Both incinerator bottom ash and air pollution control residues are exported from Ireland to continental Europe for recycling (in the case of incinerator bottom ash) or disposal (in the case of air pollution control residues).

The types of waste received, and the pollution control equipment utilised at the Facility are not expected to vary from the current situation, and therefore the quantities of incinerator bottom ash and air pollution control residues generated by the Facility are expected to increase in proportion to the increase in capacity. This is not expected to cause any significant impacts to the existing management arrangements for these residual wastes.

Cumulative Impact Assessment

The cumulative impacts of the Proposed Tonnage Increase in the wider context of waste management in Ireland are inherent within the waste assessment. It was determined that no further cumulative waste management impacts are expected.

4. Alternatives

A critical requirement of the Environmental Impact Assessment process is the consideration and presentation of reasonable alternatives studied which are relevant to the key project decisions in the context of environmental impact. An Environmental Impact Assessment Report should include an outline of the main alternatives studied by the developer and an indication of the main reasons for the final choice, taking in account the environmental effects. This chapter describes the reasonable alternatives considered and the main reasons for the selection of the preferred option under each of these headings.

It is important to note that the proposed increase in the annual intake of waste at the Facility does not require the delivery of any new physical infrastructure or construction works. Therefore, the Alternatives chapter only considers alternatives to the proposed operation of the Facility and does not assess any alternative infrastructure onsite.

To satisfy this requirement, the following key project decisions were evaluated:

- Alternative locations; and
- Alternative processes.

Alternative designs, technology, size or scale were not considered relevant for the assessment, as no physical amendments to the consented operational facility are necessary to facilitate the Proposed Tonnage Increase.

Alternative New Facility On Greenfield Site

The selection of the existing Facility to take the Proposed Tonnage Increase of waste minimises all of the environmental effects associated with constructing a new Waste to Energy facility on a new site. Developing a new Waste to Energy facility on a new site would require the acquisition of new land, the construction of a new waste processing building and supporting infrastructure and potentially the provision of new services. The existing Waste to Energy plant and equipment at the existing Facility has the capacity to accept and process the increased waste quantities within the specifications of its current design, no additional land resources would be required to facilitate the increase.

Alternative Processes

Disposal (Landfill)

An alternative option to the proposed increase of waste accepted at the Facility would be the transfer of the forecasted municipal waste volumes to various landfills across the region.

However, disposing of municipal waste to landfill would therefore create significant pressure on scarce void capacity of the existing landfills. The Eastern Midlands Region Waste Management Plan 2015-2021 has made several assumptions with regard to the phasing out of landfills as a repository for residual waste. This sentiment is further echoed in Department of Communications, Climate Action and Environment publication; 'A Waste Action Plan for a Circular Economy Ireland's National Waste Policy 2020-2025'.

Deposal of waste to landfill in Ireland has therefore been identified as the least desirable waste management option. Therefore, the alternative option to transfer the forecasted municipal waste volumes to various landfills across the region would not be in line with Ireland's waste management objectives as set out in the 'Waste Action Plan 2020 – 2025', the 'Eastern Midlands Region Waste Management Plan 2015 – 2021' and would be in breach of the Landfill Directive and the Waste Framework Directive and their transposing regulations and the waste hierarchy.

Increase Recycling Capabilities

Despite the objective to increase recycling capacity in Ireland, there will still be a need for the management of residual mixed solid waste that cannot be recycled. A potential shortfall in capacity to process residual mixed solid waste in the range of 42, 000 to 73, 000 tonnes for 2020 (taking into account an estimated export rate of 350,000 tonnes per annum), in the absence of progress on the provisions of waste infrastructure in Ireland has been identified. Therefore, the Proposed Tonnage Increase if consented will reduce the potential shortfall in capacity identified and will also reduce Ireland's reliance on export of waste overseas.

Export of Waste Overseas

The export of residual mixed solid waste overseas continues to be a significant activity for the successful management of residual mixed solid waste generated in Ireland. However, a growing dependence on the export market may lead to an over-reliance on overseas markets to manage waste in Ireland, which will in turn have consequences for national policy ambitions of becoming self-sufficient in treating residual wastes in indigenous thermal recovery facilities. In addition to this, the export of waste overseas reduces the potential energy output exported to the national grid from thermal processing in Ireland. Therefore, the need for the Ireland to become more self-sufficient in waste management has been identified.

Thermal Coprocessing (Cement Kilns)

Recovery of residual mixed solid waste in Ireland is achieved through direct thermal treatment, as well as co-processing in the cement manufacturing process. However, as outlined in the 2020 'Interim Report, Performance of the Waste Sector in Ireland, Covid 19- Initial Restrictions Phase', once construction activity was suspended in Ireland, all cement kilns closed as the demand for cement reduced. As a result, thermal coprocessing was identified

as a vulnerable waste management option that is heavily reliant on the strength and growth of the construction industry.

Do-Nothing Alternative

The do-nothing alternative means that the Proposed Tonnage Increase in annual intake of waste at the Facility would not be achieved and therefore alternative waste management options would need to be considered, including disposal to landfill, export overseas and thermal coprocessing. This is not compatible with aspirations for Ireland becoming self-sufficient in the treatment of residual waste, or the Landfill Directive and the Waste Framework Directives.

5. Population and Human Health

The Population and Human Health chapter presents the likely significant effects on amenity and local communities, employment and human health and well-being as a result of the Proposed Tonnage Increase.

Amenity and Local Communities

Considering the range of air quality, noise and traffic effects which are dependent on the location of the receptors, the sensitivity of the affected local residents is assessed to be medium and the impact would be very low. Taking into account the results from the air quality, noise and traffic assessments, there are no residents or users of public rights of way, community facilities or businesses that would experience a significant effect on their amenity during operation of the Facility at an increased capacity of 690,000 tonnes per annum. Therefore, this would result in a permanent negligible (not significant) effect on amenity and local communities from a population and human health perspective.

Employment Opportunities

The existing workforce is considered sufficient to manage the new capacity levels at the Facility. As such, no new employment opportunities will be generated by the Proposed Tonnage Increase, nor will any positions be put at risk by the Proposed Project. Therefore, despite the Proposed Tonnage Increase, there is not expected to be any direct impacts on employment. Therefore, the influence of the Proposed Tonnage Increase on access to work and training during operation was assessed to have no effect on residents in the study area.

Human Health and Well-Being

The assessment of effects on human health and well-being is structured by health determinants as set out in the London Healthy Urban Department Unit's 'Rapid Health Impact Assessment Tool'.

Retaining secure, convenient and attractive open/green space can lead to more physical activity and reduce levels of heart disease, strokes and other ill-health problems that are associated with both sedentary occupations and stressful lifestyles. There is also a growing evidence base that suggests access to parks and open spaces and nature can help to maintain or improve mental health. Having determined that the air quality and traffic and transport effects of the Proposed Tonnage Increase are unlikely to result in any significant changes to the local air quality environment or road network, it is expected that the Proposed Tonnage Increase will not impact upon the ability to access existing open and natural spaces within the study area. Therefore, the impact of the Proposed Tonnage Increase on access to open space and nature as a determinant of human health and well-being was assessed to be neutral (0).

The quality of the local environment can have a significant impact on physical and mental health. Pollution caused by traffic and commercial activity can result in poor air quality, noise nuisance and vibration. Poor air quality is linked to incidence of chronic lung disease, heart conditions and asthma levels among children and young people. Noise pollution can have a detrimental impact on health resulting in sleep disturbance, cardiovascular and psycho-physiological effects. It was determined that emissions, noise creation and traffic generation associated with the Proposed Tonnage Increase will not result in any significant effects. Therefore, the impact of the Proposed Tonnage Increase on air quality, noise and neighbourhood amenity as a determinant of human health and well-being was assessed to be neutral (0).

Employment and income are key determinants of health and wellbeing. Unemployment generally leads to poverty, illness and a reduction in personal and social esteem. Work is also seen to aid recovery from physical and mental

illnesses. No direct impacts on employment or training opportunities are expected as a result of the operation of the Proposed Tonnage Increase. Therefore, retaining the existing workforce at the Facility means the impact of the Proposed Tonnage Increase on access to work and training as a determinant of human health and well-being was assessed to be neutral (0).

Reducing or minimising waste, including disposal, as well as encouraging recycling at all levels can improve human health directly and indirectly by minimising environmental impact. Increasing the capacity of the Facility from 600,000 tonnes per annum to 690,000 tonnes per annum is an intervention that seeks to further waste going to landfill. Therefore, the impact of the Proposed Tonnage Increase on minimising the use of resources as a determinant of human health and well-being was assessed to be positive (+).

There is a clear link between climate change and health. Mitigating climate change is expected to reduce health inequalities as those in the poorest health are generally hit the hardest by the impacts of climate change. Whilst there is minor adverse increase in greenhouse gas emissions as a result of the Proposed Tonnage Increase, the impact of the Proposed Tonnage Increase in terms of climate change as a determinant of human health and well-being was assessed to be neutral (0).

Cumulative Impact Assessment

The Proposed Tonnage Increase was also considered in combination with other consented, planned and reasonably foreseeable projects that could result in cumulative impacts on population and human health within the study area of influence. The assessment identified that the Proposed Tonnage Increase would lead to no new operational employment opportunities or negative human health impacts during operations; therefore, the cumulative impacts on operational employment opportunities are not expected to be significant and the Proposed Tonnage Increase will not contribute towards any cumulative impacts associated with human health during operation.

6. Land and Soils

The Environmental Impact Assessment Scoping identified no pathway to sensitive land and soil receptors and therefore no likely significant effects from the Proposed Tonnage Increase. The Land and Soils chapter therefore focuses on the baseline land and soils environment only.

The methodology for determining the land and soils baseline environment involved desktop review of a number of publicly available documents and online mapping websites.

Results from the desktop review showed that soils underlying the Facility are associated with reclamation activities and the underlying bedrock is dark limestone and shale of the Lucan Formation of Dinantian age (early Carboniferous era). The Facility is underlain by the Dublin groundwater body, which is described as a “*Poorly productive bedrock*”, with groundwater levels underlying the Facility at approximately 3 m to 4 m below ground level.

Recent data outlined in the Facility’s 2019 Annual Environmental Report shows that potassium was detected above the Environmental Protection Agency’s Interim Guideline Values for the protection of groundwater; however, the elevated levels of potassium seen could be as a result of the proximity of the location of the Facility to Dublin Bay.

7. Water

The Environmental Impact Assessment Scoping identified no likely significant effects from the Proposed Tonnage Increase. The Water chapter therefore focuses on the baseline water environment only.

The methodology for determining the water baseline environment involved desktop review of a number of publicly available documents and online mapping websites.

The Facility is surrounded to the north by the Liffey Estuary Lower and Dublin Bay to the south and east. Dublin Port is located to the north of the Facility, across the Liffey Estuary Lower. As the Facility is located on reclaimed,

and essentially man-made land, there are no known streams or rivers located on the Facility and is not located in an area of prone to flooding.

Recent data outlined in the Facility's 'Quarterly Environmental Report For Period' from Quarterly Environmental Report's from 2018 and 2020 indicates that there were no incidents relating to cooling water discharges at SW-1. Thermal survey results from 2018 and 2019, which were carried out as per conditions set out in the Facility's Industrial Emissions Licence, show that the licence conditions were met at all stages of the tide.

The Proposed Tonnage Increase would not result in a change to the existing drainage infrastructure and the licensed wastewater discharge and abstraction limits prescribed in the Facility's Industrial Emissions Licence.

8. Biodiversity

The Environmental Impact Assessment Scoping identified no likely significant effects from the Proposed Tonnage Increase on sensitive ecological receptors. The effects of changes to air quality were considered in the air quality chapter. The biodiversity chapter therefore focuses on the baseline biodiversity environment only.

A desktop assessment of publicly available information was undertaken to determine the baseline environment.

The Facility is located entirely on made ground. Satellite mapping available from Google maps indicates there are no significant semi-natural vegetated areas within the Facility. There are a number of existing short 'defunct' treelines (i.e. with breaks) along each side of the Shellybanks Road and a wildflower meadow mound located at the front of the Facility. The nearest European site to the Facility is the South Dublin Bay and River Tolka Special Protection Area, part of which adjoins the Facility.

Results from a toxicity survey carried out in 2018 and 2019 and a biological survey carried out in 2018, carried out as per conditions set out in the Facility's Industrial Emissions Licence, showed that all surveys were as expected for estuarine waters in the area and showed no sign of marine pollution.

In addition, AECOM was commissioned by Dublin Waste to Energy to carry out an Appropriate Assessment Screening in relation to the Proposed Development. The Appropriate Assessment Screening Report concluded that, there were no likely significant effects from the proposed project on European sites, either alone or in combination with other plans or projects.

An Bord Pleanála granted the Proposed Development planning permission and in doing so agreed that there were no likely significant effects from the Proposed Development, and no requirement to proceed to stage 2 Appropriate Assessment (the preparation of a NIS). Upon submission of the IE license review, the EPA requested that an Natura Impact Assessment (NIS) be carried out for the permitted site. The NIS does not contain any additional information that would change the outcome of the Appropriate Assessment Screening carried out as part of the planning application to An Bord Pleanála and therefore does not involve the introduction of any mitigation measures to avoid significant effects on any European site as no such effects are identified.

9. Air Quality

The Proposed Tonnage Increase will increase emissions associated with Waste to Energy plant on the Facility itself and waste delivery vehicles on the local road network. However, with the increase, plant emissions will remain below the Emissions Limits set out in the Facility's existing Industrial Emissions Licence. The contribution of emissions at the Emission Limits previously quantified demonstrated no exceedance of an air quality standard or an effect that is significant. Furthermore, the Proposed Tonnage Increase is expected to increase waste delivery vehicles by no more than 20 two-way movements per average day.

The air quality assessment therefore quantified the air quality impact of the Proposed Tonnage Increase at the Facility. It has quantified the contribution of emissions from road traffic associated with the Facility operating at 690,000 tonnes per annum on annual mean concentrations of NO₂, NO_x, PM₁₀ and PM_{2.5}, and the impact of the Waste to Energy plant stack emissions operating at 690,000 tonnes per annum on the same pollutants. Modelling was undertaken following appropriate guidance and using dispersion modelling software accepted by the Environmental Protection Agency.

The assessment has quantified pollutant concentrations and impacts at a number of human health sensitive and ecologically sensitive receptors in the vicinity of the Facility, with the aim of capturing the worst-case impact at a receptor in each direction from the Facility. The assessment has quantified pollutant concentrations and impacts at a number of human health sensitive and ecologically sensitive receptors in the vicinity of the Facility, with the aim of capturing the worst-case impact at a receptor in each direction from the Facility. With the Proposed Tonnage Increase in operation, total pollutant concentrations and the magnitude of change are such that impacts are classed as imperceptible/negligible the majority of locations and slight adverse at one. In line with the guidance referred to in this assessment, the reported magnitude of impacts at locations where total pollutant concentrations are so far below the air quality standards does not constitute an effect that is significant.

Total annual mean NO_x concentrations were shown to be below the air quality standard for that pollutant in the existing baseline, 2019 baseline and 2019 operational scenarios. Concentrations are close to the standard, which is common at ecological sites within or near to large cities or conurbations. This is due to elevated background conditions. The impact of the Proposed Tonnage Increase to annual mean NO_x concentrations peak at 0.1 µg/m³ at receptors E1, E2 and E4. An impact of less than 1% of that standard does not constitute an effect that is considered significant.

Overall, it was concluded that the operation of the Proposed Tonnage Increase at the Facility will not cause an exceedance of an air quality standard, increase concentrations to put an air quality standard at risk of an exceedance, or worsen an existing exceedance, to an extent that would be considered significant.

Cumulative Impact Assessment

The air quality assessment is inherently cumulative in that it is informed by traffic data that accounts for growth in traffic flows as a result of consented, planned and reasonably foreseeable projects. Due to the limited impacts associated with the Proposed Tonnage Increase, cumulative impacts associated with industrial source emissions are not considered to be significant.

10. Climate

The Climate chapter reports on the findings of an assessment of the likely significant effects on climate change as a result of Proposed Tonnage Increase at the Facility.

In line with Institute of Environmental Management and Assessment guidance, consideration was given to the following aspects of climate change assessment:

- Lifecycle greenhouse gas impact assessment – the impact of greenhouse gas emissions arising from the Scheme on the climate during the lifecycle stages within the scope of the assessment.

The potential for effects on a single receptor (Type 1 effects) and the combined cumulative climate change effects (Type 2 effects) of the Proposed Tonnage Increase with other projects were considered in the Climate chapter. The greenhouse gas assessment by its nature is a cumulative assessment. It considers whether the Proposed Tonnage Increase will impact Ireland in meeting its carbon reduction targets.

Results from the assessment show that the gross annual emissions from the Facility is increased by 72,893 tonnes CO₂ equivalent with the Proposed Tonnage Increase. When the avoided emissions from waste disposal and displaced grid electricity are considered, the net annual increase in emission is reduced to 5,866.52 tonnes CO₂ equivalent with the capacity at 690,00 tonnes per annum. No mitigation and monitoring is required based on the assessment, the Operator will, however, continue to implement alternative waste disposal methods with reduced greenhouse gas impacts (e.g. reuse and recycling) for both Facility waste and by-products to minimise the generation of greenhouse gas emissions from the Facility with the Proposed Tonnage Increase.

The emissions are less than 25,000 tonnes CO₂ equivalent per year; therefore, when accounting for emissions arising from combustion of waste alongside the displaced emissions associated with diversion from landfill and alternative energy generation, according to the Institute of Environmental Management and Assessment's methodology, the magnitude of effects during operation is considered 'low' with the significance of effects being considered as 'minor adverse'.

By comparing the impact against national and sectoral budgets our assessment is inherently cumulative. The global atmosphere is the receptor for climate change impacts and as such it has a significant ability for holding greenhouse

gas emissions. Nevertheless, as stated by Institute of Environmental Management and Assessment, all greenhouse gas emissions re considered significant and therefore will contribute to climate change. While the impact of any individual scheme may be limited, it is the cumulative impact of many schemes over time that have a significant impact on climate change.

11. Noise and Vibration

As the Environmental Impact Assessment Scoping did not identify any likely significant effects associated with noise and vibration from the Proposed Tonnage Increase, the Noise and Vibration chapter therefore focuses on the baseline noise environment only.

A desktop assessment of client provided, and publicly available information was undertaken to determine the baseline environment.

The existing noise climate is influenced by waste delivery trucks, Facility traffic and general plant operation.

Noise monitoring carried out in January 2020 by Altum Scientific concluded that daytime and night-time noise levels at noise monitoring locations surrounding the Facility were within the allowable limits of the Facility's Industrial Emissions Licence.

The Proposed Tonnage Increase will not result in a change to the existing noise climate and the licensed noise limits prescribed in the Facility's Industrial Emissions Licence.

12. Cultural Heritage

As the Proposed Tonnage Increase does not involve change to the physical structure of the Facility and would involve a small increase in the volume of waste delivery vehicle's travelling to and from the Facility on existing roads only, no likely significant effects with cultural heritage were identified during the Environmental Impact Assessment scoping. The Cultural Heritage chapter therefore focuses on the baseline cultural heritage only.

A desktop assessment of client provided, and publicly available information was undertaken to determine the baseline environment.

No cultural heritage assets including national monuments, protected structures, Record of Monuments and Places or National Inventory of Architectural Heritage sites are found within the Facility boundary. A number of granite blocks are located within the Facility boundary, integrated in its landscaping. The providence of granite blocks is unknown; however, these could be remnants of to the sea wall recorded monument. These granite blocks have been identified as being of nominal to low archaeological significance.

Two previous excavations were undertaken in the area in 2010 and 2014; however, nothing of significant archaeological significance was identified. Partially truncated remains of a metalled surface and walling was discovered during test trenching undertaken prior to the Facility's construction; however, these were covered with a protective layer of sand before backfilling.

13. Landscape and Visual

As the Proposed Tonnage Increase does not involve change to the physical structure of the Facility and would involve a small increase in the volume of waste delivery vehicle's travelling to and from the Facility only, no likely significant effects to landscape and the visual amenity of the area were identified during the Environmental Impact Assessment Scoping. The Landscape and Visual chapter therefore focuses on the baseline landscape surrounding the Facility only.

A desktop assessment of client provided, and publicly available information was undertaken to determine the baseline environment within the study area.

The landscape and visual character of the area is dominated by the presence of Dublin Bay, the enclosing coastal landscape of Dublin City, and the industrial infrastructure of the Poolbeg peninsula.

The lands surrounding the Facility have been described as being of significant landscape and visual interest due their setting on a coastal peninsula, with the views over surrounding Dublin Bay and Dublin City. However, the lands where the Facility is located is considered to be of low landscape sensitivity, dominated by industrial use. The principal industrial activities on the peninsula consist of power generation and utilities infrastructure, storage and port facilities.

14. Roads and Traffic

The roads and traffic chapter presents the operational traffic impact assessment of the Proposed Tonnage Increase at the Facility on Pigeon House Road, Poolbeg, Dublin 4, from 600,000 tonnes to 690,000 tonnes per annum.

The Facility proposes to increase its intake of waste per year to 690,000 tonnes. This represents an increase of 90,000 tonnes of waste per year compared to its extant approved licence. On average, the proposal will enable the Facility to manage 57,500 tonnes of waste per month.

There were three of the ten months assessed, where the Facility surpassed, or came close to, the 57,500 tonnes monthly benchmark associated with the proposed 690,000 tonnes per year waste capacity. These months were December 2017 (59,624 tonnes), January 2018 (62,013 tonnes) and May 2018 (57,360 tonnes), with an average of 59,666 tonnes of waste per month¹. Therefore, these three months, where tonnage accepted was highest during the 10-month period, have been used to assess the traffic impact for the Facility's proposal to accept 690,000 tonnes of waste per year as the upper end scenario. An assessment based on these three months showed that, on average, the Facility accepted this proposed level of waste at a trip generation rate of 105 Waste Delivery Vehicles per day (210 combined trips entering and exiting the Facility per day).

Separate assessments have been undertaken on other trip generators at the Facility, including Residual Waste Vehicles, services vehicles, and staff and visitor vehicles, to assess the total trip generation during the AM and PM peak hours for the existing and proposed scenarios. These assessments were based on 2018 traffic surveys undertaken at the Facility's site access.

It was concluded that, the traffic generated as a result of the proposed increase of the Facility's waste tonnage treatment from 600,000 tonnes per annum to 690,000 tonnes per annum has been assessed for an onerous assessment. The traffic analysis demonstrates that the impact of the Proposed Tonnage Increase will have not have a significant effect on the existing road network within the study area during the opening year and future year scenarios during the AM and PM peak times.

AM and PM peak Facility traffic is forecasted to be less than 5% of the existing AM and PM network traffic, in particular on the R131 (East Link Bridge) and the local road junctions in Irishtown and Ringsend (Sean Moore Road). While the Facility has a larger traffic impact on the junctions on the South Bank Road and Pigeon House Road, the traffic analysis (PICADY) demonstrates that the existing junctions will continue to operate well within capacity limits during the opening year and future year scenarios.

The impact assessment of roads and traffic is inherently cumulative in areas of the assessment as:

- Committed and permitted developments in the immediate vicinity of the study area have been incorporated within the analysis through the application of TII's Growth Factors within the baseline traffic flows;
- The traffic impact from the Former Irish Glass Bottle & Fabrizia Sites, Poolbeg West has been included within the analysis which results in a more robust traffic analysis of the proposed developments impact on the surrounding road network;
- The trip generation associated with the Proposed Tonnage Increase has been calculated in terms of the maximum number of additional vehicular movements for the overall duration of the development; and

¹ The EPA licence permits the Facility to treat up to 600,000 per year. However, there will be fluctuations in waste supply, with some months larger than others as was seen over December 2017, January 2018 and May 2018. The Facility has not and will not exceed its extant licence of 600,000 tonnes per calendar year.

- The junction modelling analysis has assessed the traffic conditions during the busiest times of the day for local traffic (i.e. peak AM and PM hours).

15. Material Assets

The Environmental Protection Agency's guidance document 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (2017) describes material assets to be taken to mean "*built services*" (i.e. utilities networks including electricity, telecommunications, gas, water supply and sewerage), "*waste management*" and "*infrastructure*" (e.g. roads and traffic). The assessment of likely significant effects associated with "*waste management*" and "*infrastructure*" are included separately in Chapters 3 and 13 respectively.

The Environmental Impact Assessment Scoping identified no likely significant effects of the Proposed Tonnage Increase on "*built services*". The Material Assets chapter therefore provides an overview of the baseline built services at the Facility only.

The methodology for determining the baseline-built services environment involved desktop review of client provided data, including existing utility network drawings.

The desktop assessment highlights that there is an extensive network of utilities across the Facility. As the Proposed Tonnage Increase does not include any physical change to Waste to Energy plant or the Facility buildings, there will be no change to built services as a result of the Proposed Tonnage Increase.

16. Major Accidents and Disasters

The Major Accidents and Disasters chapter presents an assessment of the potential major accidents and disasters associated with the Proposed Tonnage Increase at the Facility.

Major accidents and disasters are by their nature very infrequent and low probability events, as such it would not be appropriate to consider the cumulative impacts associated with similar simultaneous events occurring at other nearby facilities where there is no direct connection. The assessment does, however, consider the possibility for 'domino' effects to occur, where a major incident at the Facility could cause an event at another site elsewhere to take place.

The assessment was based on a review of an existing Major Accident Hazard Assessment study produced for the Facility in 2006, which identified a number of hazards which have the potential to result in major accidents. The results of this review have determined that the Proposed Tonnage Increase will introduce no new hazards to the Facility; therefore, the potential major accidents and disasters are unchanged. Consequently, no changes are required to the existing hazard prevention and risk mitigation measures already in place at the Facility.

The risk of a major accident or disaster from the Facility is low, as the Facility has been designed, constructed and is managed by an experienced operator who adheres to all applicable regulations and good practice in controlling potential hazards. These risks are unchanged as a result of the Proposed Tonnage Increase, as the systems installed at the Facility are designed to operate efficiently at these levels. No additional assets or expansions are required for the throughput increase.

In accordance with best practice for facilities, regular reviews of major accidents and disasters will be undertaken within the Emergency Response Plan to ensure lessons are learned from any incidents at the Facility and at similar facilities worldwide.

17. Interactions

As a requirement of the EIA Directive, and considering best practice guidelines and advice notes, the inter-relationships between the following individual factors must be identified and assessed: population and human health; biodiversity, with particular attention to species and habitats protected under the Habitats Directive

92/43/EEC and Birds Directive 2009/147/EC; land and soil, water, air and climate, noise and vibration, material assets, cultural heritage, waste and the landscape. In accordance with this and to align with the environmental aspects assessed in this EIAR, a summary of the interactions (or inter-relationship) of impacts identified from the Proposed Tonnage Increase of waste intake at the Facility between the following environmental factors are outlined in this chapter:

- Population and human health;
- Air quality;
- Roads and traffic;
- Waste management; and
- Climate.

No likely significant environmental effects were identified in relation to the following environmental factors: land, soil, water, biodiversity, landscape, and cultural heritage, and therefore detailed impact assessments were not required. These environmental factors have not been considered in the Interactions chapter.

In summary, no potential for significant effects is from the interactions of the constituent elements of the Proposed Tonnage Increase is predicted.

Environmental Aspect / Interaction	Land & Soils	Water	Air Quality	Noise & Vibration	Biodiversity	Cultural Heritage	Landscape & Visual	Roads and Traffic	Population & Human Health	Waste Management	Material Assets	Climate	Major Accidents and Disasters
Land & Soils													
Water	x												
Air Quality	x	x											
Noise & Vibration	x	x	x										
Biodiversity	x	x	x	x									
Cultural Heritage	x	x	x	x	x								
Landscape & Visual	x	x	x	x	x	x							
Roads and Traffic	x	x	✓	x	x	x	x						
Population & Human Health	x	x	✓	x	x	x	x	✓					
Waste Management	x	x	x	x	x	x	x	x	✓				
Material Assets	x	x	x	x	x	x	x	x	x	x			
Climate	x	x	x	x	x	x	x	x	x	✓	x		
Major Accidents and Disasters	x	x	x	x	x	x	x	x	x	x	x	x	

✓	Weak / Some / Strong Interaction
x	No Interaction