Table 13-15: Summary of Residual Climate Change Effects

Noise and Vibration Sensitive Receptors	Potential interactions of climate change with the identified Noise and Vibration effects	None required	Imperceptible to Not Significant	-	R	D	L	P
Water Resources and Flood Risk Sensitive Receptors	Potential interactions of climate change with the identified Water Resources and Flood Risk effects	None required	Imperceptible to Not Significant	-	R	D	L	P
Ecology Sensitive Receptors	Potential interactions of climate change with the identified Ecological effects	None required	Imperceptible to Not Significant	-	R	D	L	P
Ground Conditions Sensitive Receptors	Potential interactions of climate change with the identified Ground Conditions effects	None required	Imperceptible to Not Significant	-	R	D	L	P
Waste Sensitive Receptors	Potential interactions of climate change with the identified Waste effects	None required	Imperceptible to Not Significant	-	R	D	L	P
Material Assets Sensitive Receptors	Potential interactions of climate change with the identified Material effects	None required	Imperceptible to Not Significant	-	R	D	L	P
Landscape and Visual Sensitive Receptors	Potential interactions of climate change with the identified Landscape and Visual effects	None required	Imperceptible to Not Significant	-	R	D	L	P
Cultural Heritage Sensitive Receptors	Potential interactions of climate change with the identified Cultural Heritage effects	None required	Imperceptible to Not Significant	-	R	D	L	P
GHG Emissions								
Global Climate	GHG Emissions	None required. It is recommended that opportunities to further reduce GHG emissions are considered at the detailed design stage.	**Significant**	**-**	**IR**	**D**	**L**	**LT**

Notes: * - = Negative/ + = Positive / +/- = Neutral; R = Reversible, IR = Irreversible; D = Direct, ID = Indirect; L= Likely, U = Unlikely; M = Momentary, B = Brief, T= Temporary, St = Short-term, Mt = medium-term, Lt = Long-term, P = Permanent, R = Reversible. ** Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant, Profound.

Cumulative Effects

Intra-Project Effects

13.111 As explained in Chapter 2: EIA Process and Methodology, intra-project cumulative effects are discussed in Chapter 16: Cumulative Effects. However, in the instance of this climate assessment, in line with IEMA guidance, intra-cumulative effects have been considered in the ICCI assessment.

Inter-Project Effects

CCR

13.112 The climate resilience effects identified as a result of the demolition and construction and completed development stages are limited in their spatial extent to the site boundary and the proposed development in isolation. Therefore, cumulative climate change resilience effects with other schemes have not been considered.

ICCI

13.113 The in-combination climate impacts identified as a result of the demolition and construction and completed development stages are limited in their spatial extent to the relevant technical assessments in the ES for the proposed development. Therefore, cumulative effects have been considered for each technical discipline as opposed to in-combination with cumulative schemes.

GHG Emissions

13.114 GHG emissions contribute cumulatively with all sources of GHG emissions globally to cause climate change. In line with IEMA guidance, this assessment has considered GHG emissions in the context of GHG emissions of Dublin and Ireland and no further consideration of the proposed developments GHG emissions with other sources of GHGs is necessary.

Summary of Assessment

Background

13.115 This chapter has detailed the potential climate change effects due to the construction and operation stages of the proposed development. The assessment of construction and completed development stages has been undertaken taking into account the relevant national and local guidance and regulations.

Demolition and Construction Effects

13.116 During demolition and construction works, it is expected that general climate trends for Ireland, including extreme weather events (e.g., increased wind speeds, drought, intensity of precipitation events) would continue to occur irrespective of whether the proposed development is built or not.

CCR

13.117 The CCR assessment has reviewed the potential vulnerability of the proposed development to extreme weather and projected climate change. Considering embedded mitigation measures, all effects have been of low or medium magnitude and therefore the effects are considered to range from **imperceptible to not significant**, **negative** in nature and **not significant** in EIA terms.

ICCI

13.118 The basis of this assessment was to review the identified effects, the receptors and embedded mitigation measures for each technical assessment contained within the EIAR. Professional judgement has been used bassess whether projected climate change could increase the magnitude of the effects as identified by the disciplines, change the sensitivity of the receptors, or reduce the effectiveness of embedded mitigation measures.

13.119 Overall, the effects are considered to be **imperceptible** to **imperceptible to not significant**, **negative** in nature and **not significant** in EIA terms.

GHG Emissions

13.120 The high-level GHG emissions assessment has estimated the demolition and construction of the proposed development would result in approximately 240,360 tonnes CO_2e over the course of the demolition and construction stage based on information available at the time of the assessment.

13.121 IEMA best practice guidance states all GHG emissions contribute towards climate change and are **significant**. However, implementation a CEMP with best practice measures would contribute to reducing GHG emissions associated with the demolition and construction stage of the proposed development.

Operation Effects

13.122 During the completed development stage, it is expected that general climate trends for Ireland, including extreme weather events, would continue to occur irrespective of whether the proposed development is built or not. This includes:

- an increase in mean annual temperatures;
- warming will be enhanced at the extremes with an increase in summer daytime and winter night-time temperatures;
- summer heatwave events are expected to occur more frequently;
- precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events;
- a mean reduction in wind speeds; and
- a decrease in the number of frost days and ice days.

CCR

13.123 The CCR assessment has reviewed the potential vulnerability of the proposed development to extreme weather and projected climate change. Considering embedded mitigation measures, a medium effect was considered for the flooding of the Baldonnel stream, and the overwhelming of drainage assets, causing secondary flooding. However, with the consideration of additional mitigation, i.e. the implementation of a Flood Risk Mitigation Plan, the residual effects have been of low or medium magnitude. This effect is therefore considered to be **imperceptible to not significant**, **negative** in nature and **not significant** in EIA terms.

13.124 Considering embedded mitigation measures, all other effects have been of low magnitude and are therefore considered to range from **imperceptible to not significant** to **slight to moderate**, **negative** in nature and **not significant** in EIA terms.

ICCI

13.125 The basis of this assessment was to review the identified effects, the receptors and embedded mitigation measures for each technical assessment contained within the EIAR. Professional judgement has been used bassess whether projected climate change could increase the magnitude of the effects as identified by the disciplines, change the sensitivity of the receptors, or reduce the effectiveness of embedded mitigation measures.

13.126 Overall, the effects are considered to be **imperceptible to not significant**, **negative** in nature and **not significant** in EIA terms.

GHG Emissions

13.127 The GHG assessment has estimated the operational proposed development would result in approximately 6,943,000 tonnes CO_2e during the operation stage of the proposed development. In addition, the GHG assessment has estimated the proposed development would result in approximately 7,183,500 tonnes during the demolition and construction and operation stage of the proposed development. IEMA best practice guidance states all GHG emissions contribute towards climate change and are **significant**.

13.128 The completed development is expected to contribute 1.88 % of Ireland's carbon budget (383 Mt CO_2e) for 2021 to 2030. The proposed development's GHG emissions would be minor in comparison to the Ireland Carbon Budget.

13.129 It is recommended that a more detailed carbon assessment is undertaken to identify and implement opportunities that arise at the detailed design stage to further reduce carbon emissions.

Cumulative Effects

CCR

13.130 The CCR identified are limited in their spatial extent to the site boundary and therefore no cumulative effect with other committed developments has been considered.

ICCI

13.131 The ICCI assessment identified are limited in their spatial extent to the relevant technical assessments in the EIAR for the proposed development. Therefore, cumulative effects have been considered for each technical discipline as opposed to in-combination with cumulative schemes.

GHG Emissions

13.132 GHG emissions contribute cumulatively with all sources of GHG emissions globally to cause climate change. This assessment has considered GHG emissions in the context of GHG emissions in Ireland and no further consideration of the proposed developments GHG emissions with other sources of GHGs is considered necessary.

14 WASTE

Introduction

14.1 This chapter of the EIAR reports on the likely significant waste effects to arise from the demolition and construction stage, and the operation stage of the proposed development.

14.2 The chapter describes the waste policy context; the methods used to assess the potential impacts and likely effects; the baseline conditions at and surrounding the site; the likely waste effects taking into consideration embedded mitigation; the need for additional mitigation and enhancement; the significance of residual effects; and inter-project cumulative effects.

14.3 There are no technical appendices supporting this chapter.

Methodology

14.4 The assessment has been informed by the following legislation, policies, and published guidance:

- International Legislation:
  - Waste Framework Directive (2008/98/EC)[1];
- National Legislation and Policy:
  - Waste Management Act 1996 (as amended)[2];
  - Waste Management (Licencing) Regulations 2004[3];
  - European Communities (Waste Directive) Regulations 2011[4];
  - Draft Best Practice Guidelines for the Preparation of Waste Management Plans for Construction Demolition Projects (2021)[5] – which revised previous Guidelines set in 2006[6]; and
  - Environmental Protection Agency (EPA) National Waste Statistics Summary Report for 2018[7].
- Regional Policy:
  - Eastern Midlands Regional Waste Management Plans 2015-2021 (2017)[8];
  - Construction and Demolition (C&D) Waste: Soil and Stone Recovery/Disposal Capacity, Update Report (2020)[9];
- National guidance and industry standards:
  - Waste Action Plan for a Circular Economy 2020-2025 (2021)[10];
  - Guidance on Soil and Stone By-Products (2019)[11];
  - Materials and Waste in Environmental Impact Assessment (2020)[12]; and
  - A Resource Opportunity – Waste Management Policy in Ireland (2012)[13].

Assessment Scope

14.5 In considering the generation and management of waste, it is important to define when, under current legislation and understanding, a material is considered to be waste. The Waste Framework Directive (2008/98/EC) defines waste as *"...any substance or object which the holder discards, intends to discard or is required to discard"*.

14.6 More specifically, the Waste Action Plan for a Circular Economy (2021) describes C&D waste as waste from any building works, demolition, and development (including transport infrastructure).

14.7 The IEMA guidance relating to Materials and Waste in Environmental Impact Assessment[12]/ EPA Best Practice Guidelines for the Preparation of Waste Management Plans for Construction Demolition Projects was used in the assessment. Furthermore, professional judgement, experience and best practice methods have been drawn upon to assess the significance of the potential effects of the proposed development. The assessment has taken account of all applicable legislation, policy, and industry guidance.

14.8 The site is located within the jurisdiction of South Dublin County Council (SDCC) and the SDCC Development Plan 2016-2022[14] sets out a number of objectives and actions for the South Dublin area in line with the objectives of the Eastern Midlands Region (EMR) Waste Management Plan (WMP) 2015-2021. The waste objectives with a particular relevance to the proposed development are as follows:

- IE5 Objective 1: To support the implementation of the EMR WMP 2015-2021 by adhering to overarching performance targets, policies, and policy actions.
- IE5 Objective 2: To support waste prevention through behavioural change activities to de-couple economic growth and resource use.
- IE5 Objective 3: To encourage the transition from a waste management economy to a green circular economy to enhance employment and increase the value recovery and recirculation of resources.
- IE5 Objective 8: To secure appropriate provision for the sustainable management of waste within developments, including the provision of facilities for the storage, separation, and collection of such waste.

14.9 The waste types and estimated quantities used in this assessment have been based on published data by the Environmental Protection Agency (EPA) in National Waste Statistics[15], data recorded from similar previous developments, and other available research sources.

[1] European Union, 2008. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance). Document 32008L0098.
[2] Government of Ireland, 1996. Waste Management Act 1996 (as amended). Updated to 27 August 2020.
[3] Government of Ireland, 2004. Waste Management (Licencing) Regulations, 2004.
[4] Government of Ireland, 2011. European Communities (Waste Directive) Regulations 2011.
[5] Government of Ireland, 2021. C&D Waste. Available at: https://www.gov.ie/en/publication/c305a-construction-and-demolition-cd-waste/ [Last Accessed 30/06/21].
[6] Department of the Environment, Heritage and Local Government, 2006. Best Practice Guidelines of the Preparation of Waste Management Plans for C&S projects. Available at: https://www.leanbusinessireland.ie/includes/documents/BPGConstructionand%20demolition.pdf [Last Accessed 30/06/21].
[7] Environmental Protection Agency (EPA), 2018. National Waste Statistics Summary Report for 2018. Available at: EPA_Nat_Waste_Stats_Report_Web.pdf [Last Accessed 4/8/2021]
[8] Eastern Midlands Region, 2017. Eastern Midlands Region Waste Management Plan 2015-2021. Available at: http://emwr.ie/emwr-plan/ [Last Accessed 04/08/21].
[9] Government of Ireland, 2020. C&D Waste Soil and Stone Recovery/ Disposal Capacity Update Report. Available at: http://southernwasteregion.ie/sites/default/files/National%20C%20%20D%20Report%20Dec%202020%20for%20Publication.pdf [Last Accessed 30/06/21].
[10] Government of Ireland, 2020. Waste Action Plan for a Circular Economy. Available at: https://www.gov.ie/en/publication/4221c-waste-action-plan-for-a-circular-economy/ [Last Accessed 30/06/21].
[11] EPA, 2010. Guidance on Soil and Stone By-products. Available at: https://www.epa.ie/publications/licensing--permitting/waste/Guidance_on_Soil_and_Stone_By_Product.pdf [Last Accessed 30/06/21].
[12] Institute of Environmental Management and Assessment (IEMA), 2020. Materials and Waste in Environmental Impact Assessment 2020. Available at: https://www.iema.net/resources/reading-room/2020/03/30/materials-and-waste-in-environmental-impact-assessment [Last Accessed 4/8/2021].
[13] Government of Ireland, 2012. A Resource Opportunity – Waste management policy in Ireland. Available at: https://www.gov.ie/en/publication/a9d98-a-resource-opportunity-waste-management-policy-in-ireland/ [Last Accessed 4/8/2021].

Technical Scope

14.10 The assessment of the likely effects of the proposed development due to the generation and management of waste has considered the remaining landfill void capacity that would be depleted by waste produced during the demolition and construction stage and operation stage of the proposed development.

Spatial Scope

14.11 There are two main study areas for the waste assessment:

- A wider study area of the Eastern Midlands Region of Ireland. This area has been used for baseline data investigation, and to locate potential sensitive receptors off-site, including surrounding landfill sites and other waste management infrastructure.
- A study area of 500 m from the site boundary. This area has been determined by means of a number of cumulative developments, listed in Chapter 2: EIA Process and Methodology of this EIAR Volume. An extensive review of these schemes is imperative for the cumulative stage assessment and for generating waste estimates for the proposed development.

Temporal Scope

14.12 The assessment has considered impacts arising during the demolition and construction stage which would be of expected to be temporary to short-term in nature (i.e. from Q4 2021 to Q4 2026 – 5 years) and from the operation stage which would be expected to be permanent in nature (i.e. >60 years).

Baseline Characterisation Method

Desk Study

14.13 In order to establish baseline waste conditions in the study area, relevant data was reviewed and assessed. Data was obtained from the following sources:

- South Dublin County Council Plan 2016-2022[16];
- EMR WMP 2015-2021[8];
- Draft Best Practice Guidelines for the Preparation of Waste Management Plans for Construction Demolition Projects[5];
- Waste Action Plan for a Circular Economy[10];
- C&D Waste Soil and Stone Recovery/Disposal Capacity Update Report 2020[9];
- Project Ireland 2040[17]; and
- National Development Plan 2018-2027[18].

Field Study

14.14 Field study/data collection was not required at the site as the data provided by other sources was deemed to be adequate and representative of the site conditions.

Assessment Method

Methodology

Demolition and Construction Stage

14.15 The impacts of the proposed development, arising from the generation and management of waste, has been assessed. Due to the absence of EPA/Irish guidelines for waste assessments in EIA, the assessment has considered the methodology specified in Institute of Environmental Management and Assessment (IEMA) Materials and Waste in Environmental Impact Assessment guidance documents[12]. An extensive document review to assist in identifying current and future requirements of waste management including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports has also been undertaken.

14.16 To assess the potential effects arising from the generation of waste during the construction, and operation stages, a desk study was carried out which included:

- A review of applicable policy and legislation to create the legal framework for waste management in Ireland.
- Description of the typical waste materials that will be generated during the construction and operation stages; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

14.17 The waste estimates calculated for the demolition and construction stage of the proposed development have been calculated from a detailed review of similar consented developments in the surrounding area, namely Microsoft Grange (SDCC planning reference: SD20A/0283) and Cyrus One (SDCC planning reference: SD18A/0134). When conducting the review, the proposed development's Gross Floor Area (GFA) was used to normalise the data and create key performance indicators to estimate potential waste volumes for the proposed development. Additionally, the assessment has taken into consideration published data by the EPA in National Waste Reports.

14.18 Mitigation measures were also proposed to minimise the proposed development's environmental effects during the demolition and construction stages.

Operation Stage

14.19 The methodology for assessing likely operation stage effects is the same as that presented for the demolition and construction stage above.

Cumulative Scenario

14.20 The combined effects of the proposed development and the cumulative development on a given receptor have been assessed for both stages of the proposed development.

14.21 As part of the cumulative assessment, consideration has also been given to the proposed permanent electrical connection for the site that will be located <50m to the south-east of the site. This is likely to comprise a 110 kV gas insulated substation (GIS) substation and two underground circuit transmission lines and will be subject to a strategic infrastructure development (SID) application to An Bord Pleanála (ABP) in due course. This cumulative assessment has been considered qualitatively.

Assessment Criteria

14.22 The criteria used to assess if an effect is significant or not, is set out in subsequent sub-sections. This is determined by consideration of the sensitivity of the receptor, magnitude of impact and scale of the effect. In considering the significance of an effect, consideration has been given to the duration of the effect, the geographical extent of the effect and the application of professional judgement.

Receptor Sensitivity/Value Criteria

14.23 The sensitivity of waste relates to availability of regional (and where appropriate, national) landfill void capacity in the absence of the proposed development. Landfill capacity is recognised as an unsustainable and increasingly scarce option for managing waste.

[16] South Dublin County Council, 2016. Plan 2016-2022. Available at: https://www.sdcc.ie/en/services/planning/development-plan/plan-2016-2022/ [Last Accessed 30/06/21].
[17] Government of Ireland, 2019. Project Ireland 2040 Documents and Information. Available at: https://www.gov.ie/en/collection/580a9d-project-2040-documents/ [Last Accessed 30/06/21].
[18] Government of Ireland, 2018. National Development Plan 2018-2027. Available at: https://www.gov.ie/en/policy-information/07e507-national-development-plan-2018-2027/?referrer=/en/national-development-plan-2018-2027/ [Last Accessed 30/06/21].

14.24 Information presented in Table 14.1 has been used to determine the sensitivity of landfill void capacity. For the purposes of EIA, 'negligible' and 'low' are classed as Low; 'medium' is classed as Medium and 'high' and 'very high' are classed as High.

Table 14.1: Receptor Sensitivity Criteria

Sensitivity	Criteria
Negligible	Across construction and/or operation phases, the baseline/future baseline (i.e., without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity.
Low	Across construction and/or operation phases, the baseline/future baseline (i.e., without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce minimally by <1 % as a result of wastes forecast.
Medium	Across construction and/or operation phases, the baseline/future baseline (i.e., without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce noticeably by 1-5 % because of wastes forecast.
High	Across construction and/or operation phases, the baseline/future baseline (i.e., without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce considerably by 6-10 % because of wastes forecast.
Very High	Across construction and/or operation phases, the baseline/future baseline (i.e., without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce very considerably (by >10 %); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.

Impact Magnitude Criteria

14.25 The magnitude of impact has been classified as 'no change', 'negligible', 'minor', 'moderate' and 'major' in accordance with the criteria set out in Table 14.2. For the purposes of EIA, 'no change' and 'negligible' are classed as Low; 'minor' is classed as Medium and 'moderate' and 'major' are classed as High.

Table 14.2: Impact Magnitude Criteria

Magnitude	Criteria
No Change	In construction and/or operation, a development is expected to achieve 100 % landfill diversion.
Negligible	In construction and/or operation, a development is expected to achieve 90-99 % landfill diversion.
Minor	In construction and/or operation, a development is expected to achieve 60-89 % landfill diversion.
Moderate	In construction and/or operation, a development is expected to achieve 30-59 % landfill diversion.
Major	In construction and/or operation, a development is expected to achieve <30 % landfill diversion.

Scale of Effect Criteria

14.26 Impacts have been assessed based on the value and sensitivity of receptors against the magnitude of impact to determine the scale of effect as presented in Table 14.3.

Table 14.3: Scale of Effect Criteria

Magnitude	Sensitivity of Receptors		
	Low	Medium	High
Low	Imperceptible to Not Significant	Not Significant to Slight	Slight to Moderate
Medium	Not Significant to Slight	Slight to Moderate	Moderate to Significant
High	Slight to Moderate	Moderate to Significant	Very Significant to Profound

14.27 Based on professional judgement, effects of 'moderate' significance and above are considered 'significant' in EIA terms. The description off effects used within this Chapter are in accordance with EPA Guidance as set out in Table 2.1 of Chapter 2: EIA Process and Methodology.

Nature of Effect Criteria

14.28 The nature of the effect has been described as either negative, neutral, or positive as follows:

- Positive – An advantageous effect to a receptor;
- Neutral – An effect that on balance, is neither positive nor negative to a receptor; or
- Negative – A detrimental effect to a receptor.

Assumptions and Limitations

14.29 The assessment for waste receptors has been based on a review of the baseline information available at the time of assessment. Whilst the baseline data sources used in this assessment have been obtained from the most recently available information, it is still possible that conditions could have changed since their publication.

14.30 The quantities of materials to be used for the demolition and construction stage of the proposed development design, sources of materials and their mode of transport are yet to be finalised. Values have been estimated based on data obtained from a review of other similar data center applications in the surrounding area. It has been assumed that these data sets have been reported correctly.

14.31 It has been assumed that a Site Waste Management Plan (SWMP) would be developed by the contractor. The SWMP will ensure suitable management of construction, demolition, and excavation (CDE) waste, prevent (where practicable) and minimisation of waste arising and maximisation of waste re-use and recycling.

Baseline Conditions

Existing Baseline

14.32 For waste planning purposes, Ireland is divided into three regions: Connacht-Ulster; Southern; and Eastern Midlands[10]. SDCC lies within the Eastern Midlands Region (EMR)[8]. Therefore, reference to Waste management, generation, and capacity of landfills will refer to both the wider EMR in addition to the local authority SDCC. In terms of waste management, the local authority responsible for setting and administering waste management activities in the site area is SDCC. Waste management activities within the area is governed by the requirements set out in the EMR WMP 2015-2021.

14.33 The EU Waste Framework Directive 2008/98/EC requires that a target of 70% recovery by weight of construction and demolition) C&D waste generated be met by the year 2020. The latest figures published by the Environment Protection Agency (EPA) state that Ireland is on track to meet this target.

14.34 In general, the largest element of C&D waste consisted of excavated soil (making up approximately 77% of total C&D waste)[5]. The remainder included concrete, brick, tiles, metal, glass, wood, plastic, and metal[10]. Currently, the majority of C&D waste generated in Ireland is recovered or reused. Where recovery or reuse is not feasible, it is disposed of at suitably licensed facilities.

14.35 Within Ireland, the total mass of waste produced in the year 2018 was 14.1 million tonnes across all sectors[7]. For C&D waste, approximately 6.2 million tonnes were collected by authorised waste collectors for treatment in 2018. This was significantly greater than the 4.7 million tonnes reported in 2017, which corresponded with increases in construction activity nationally[7]. In 2015, 5.1 million C&D waste was processed[7]. All C&D waste arise predominantly from demolition of existing structures, and from materials brought to site that were not used for their intended purposes, such as damaged items, cut offs and surplus materials.

14.36 According to the latest figures, most of the C&D waste collected in 2018 consisted of soil and stones (77%). The remainder was made up of concrete, bricks, tiles, and gypsum waste (12%) and mixed C&D waste (7%). Only three per cent of C&D waste was collected separately as single material streams (wood, glass, plastic, or metal). Soil and stone waste are typically managed at Local Authority–permitted infill sites. Backfilling activities account for a significant portion of the recovery rate being achieved. The most recent figures available for C&D waste arising in Ireland, and that waste's disposal and recovery routes, are shown in Table 14.4. It should be noted that these figures are likely to have increased since then and will continue to do so in the coming years, due to the renewed growth in the economy.

Table 14.4: Collection and Management of C&D Waste Excluding Soil and Stone

Management	Recycling (tonnes)	Energy recovery (tonnes)	Backfilling (tonnes)	Disposal (tonnes)	Total (tonnes)
Metal waste	185,000	0	0	0	185,000
Segregated wood, glass, and plastic waste	43,023	0	7,596	181	50,800
Concrete, brick, tile, and gypsum waste	181,192	11	592,479	20	773,702
Waste bituminous mixtures	19,943	0	40,603	0	60,546
Mixed construction and demolition waste	66,158	1,049	23,859	7,022	98,089
Waste soils, stones, and dredging spoil	7,804	14	4,664,819	26,242	4,698,879
Waste treatment residues	20,413	17,959	168,912	112,184	319,469
Total	**523,534**	**19,033**	**5,498,268**	**145,649**	**6,186,485**

14.37 According to the C&D Waste Update Report (2020)[9] there are 106 authorised facilities in the EMR for soil and stone acceptance, including:

- Four active licenced soil recovery facilities;
- Six licenced soil recovery facilities due to start providing capacity;
- Four active inert landfills;
- 49 permitted facilities; and
- 43 registered facilities with a Certificate of Registration (CoR).

14.38 Overall, licensed Soil Recovery Facility (SRF) capacities in the EMR are concentrated in the local authority areas of Fingal, Meath, Kildare, and Wicklow. There are no licensed SRFs outside the Greater Dublin Area (GDA).

14.39 Waste licence facilities in the EMR are of the scale required by the markets[5]. EMR's current active and available annual licenced market capacity for SRF (Soil Recovery facilities) is 2.4 million tonnes (Mt). Waste licence facilities in the EMR Region are of the scale required by the market. Six of the ten licenced sites have annual capacity of 300,000 tonnes or more and one facility is licenced to accept 1,500,000 tonnes of soil wastes each year. This capacity is concentrated in the Greater Dublin Area. Licensed capacity is authorised on an annual basis. The capacity for uncontaminated soil comprises of 2.4 million tonnes annual licenced capacity

14.40 The permitted and registered facilities offer a much smaller capacity to the Region. The EMR remaining permitted lifetime capacity is 1.3 million tonnes (at end-2018). The registered remaining lifetime capacity in the region is much smaller by comparison with just over 188,000 tonnes available (at end-2018). while permitted and registered capacity is authorised on a lifetime capacity, meaning that these cannot be aggregated and are reported separately, and 1.52 million tonnes lifetime capacity provided by permitted and registered sites.

14.41 The geographical spread of these sites is reasonably good. The local authorities within Dublin County have low counts of permitted or registered facilities with no area having more than one of each. A number of local authorities (Laois, Louth, Offaly, and Westmeath) have low registered capacities and are reliant on permitted facilities.

14.42 There are three inert landfills in Ireland, plus the Tara Mines facility, which are all located in the EMR, providing predominantly disposal capacity. The four active inert landfill facilities have approximately 6.1 million tonnes of remaining lifetime capacity to accept lightly contaminated soils.

14.43 The Integrated Materials Solutions Limited Partnership (IMS) facility had 3.9 million tonnes remaining, with 2.1 million tonnes remaining at Walshestown, at the end of 2018.

14.44 In addition, there are a number of non-hazardous municipal landfill sites in the region which have an ongoing requirement for soil and stone material for daily cover, capping and other remediation activities at the sites. These facilities relevant to the proposed development are presented in Table 14.5.

14.45 The acceptance of non-hazardous waste and inert soils has reduced since 2016 as available void capacity has diminished. At the end of 2018, the remaining capacity at Drehid was 636,085 m^3 compared to 5,006,968 m^3 of available capacity when the site commenced activity. Conversely, Ballynagran increased the intake of non-hazardous soil waste for recovery from 163 tonnes in 2017, to 22,002 tonnes in 2018 in response to market demand.

Table 14.5: Licensed Capacity at Active Landfills

Landfill Facility Name	Waste for disposal (maximum tonnes per annum	Waste types for disposal (maximum tonnes per annum)	Waste types for recovery (maximum tonnes per annum)
Knockharley Landfill - Co. Meath	175,000	100,000 household 45,000 commercial 30,000 industrial	25,000 (C&D) 70,000 (inert waste)
Ballynagran Residual Landfill - Co. Wicklow	175,000	62,500 household 67,500 commercial 45,000 industrial	28,000 (C&D)
Drehid Waste Management Facility - Co. Kildare	120,000	120,000 non-hazardous municipal, commercial, and industrial wastes	No limit for inert waste were used in landfill engineering
Total	**470,000**	-	-

14.46 There are also a number of materials recover facilities/waste transfer stations in operation in the region which are suitable for the acceptance of C&D wastes should they be required. Details of the facilities relevant to the proposed development are presented in Table 14-56.

Table 14.6: Licensed Waste Transfer Stations that could potentially accept C&D waste	
Waste Transfer Station Name	**Licensed Limitation from Acceptance of C&D Waste at Active Sites (tonnes per annum) at start of 2016**
Starrus Eco Holdings Limited (now Greenstar) – Bray Depot	54,040
Nurendale Ltd., trading as Panda Waste – Rathdrinagh	120,000
Greyhound Recycling and Recovery – Clondalkin	3,000
Thorntons Recycling Centre – Dunboyne	28,020
Nurendale Ltd., trading as Panda Waste – Finglas	40,000
Dean Waste Company Ltd. – Upper Sherriff Street	105,000
Labre Park Civic Amenity Site – Ballyfermot	6,000
Total	**356,060**

14.47 There is no dedicated 'hazardous waste to energy' or landfill treatment capacity in Ireland. Hazardous soil materials, depending on the nature of the contamination, are treated, and stabilised at specialised indigenous facilities. Treatment activities at some of these facilities can change the characterisation of soil wastes from hazardous to non-hazardous, whereby the soil can then be directed back to non-hazardous facilities. The lack of final treatment capacity for hazardous soils nationally creates a reliance on overseas facilities for final treatment.

14.48 There has been a significant increase in the treatment of contaminated soils in Ireland. This rise in treatment of hazardous soil waste domestically, is associated with a drop in the volumes exported; in 2018 Ireland exported almost 75,000 tonnes of hazardous soil, a drop of over 26,000 tonnes from 2017, as presented in Table 14.7.

Table 14.7: Hazardous Soil Treatment and Exportation in Ireland					
Type	**Waste (tonnes)**				
	2014	**2015**	**2016**	**2017**	**2018**
Irish hazardous waste treatment facilities	1,630	5,938	682	608	18,733
Exported	5,701	14,329	79,591	101,440	74,912

Future Baseline

14.49 Prediction of C&D waste was projected to increase to 8.2 million tonnes by 2025, and then increase again to 10 million tonnes by 2029. This figure is almost double that of the 2020 figure[9].

14.50 The generation of C&D waste, and the need for adequate management, is expected to grow over the medium- to long-term in line with the planned delivery of housing and infrastructure projects set out in Project Ireland 2040[17], which sets out Ireland's ambition and vision in terms of development over the next 20 years. The plan includes a number of major construction projects which presents huge potential in terms of preventing and recycling construction waste, as well as a challenge in terms of ensuring the generated waste is managed correctly.

14.51 If Ireland is to meet the targets as set out in the National Development Plan 2018-2027[18], it is vital that there is sufficient capacity for the recovery and/or disposal of the envisaged increased C&D waste. However, short-term growth is being negatively impacted by the COVID-19 pandemic, which has led to significant contraction in the economy, and this is expected to reduce C&D waste generation in 2021.

14.52 In July 2020, there were three license applications for new waste facilities in the EMR. The combined capacity of un-commenced facilities is 1.5 million tonnes per annum. This capacity contains 73 % of the future capacity expected nationally (including new applications and un-commenced operations), which is expected to exceed 2.1 million tonnes.

Sensitive Receptors

14.53 The receptors identified as sensitive to the proposed development and which have been 'scoped-in' to the assessment are summarised in Table 14.8.

Table 14.8: Summary of Sensitive Receptors	
Receptor	**Sensitivity**
Waste management infrastructure	High
Landfills (i.e. reduction in capacity from disposal of waste)	High

Assessment of Effects

Demolition and Construction Stage

Embedded Mitigation

14.54 Following the successful discharge of relevant pre-commencement planning conditions, and receipt of other required statutory permissions, on-site works would commence with enabling works (described in Chapter 5: Construction Description of this EIAR Volume and will be outlined in the CEMP).

14.55 Prior to commencement of construction works, a SWMP would be prepared and agreed with the planning authority. This would be in accordance with the most up to date WMP for the EMR. The following mitigation measures would also be implemented at the demolition and construction stage:

- All excavations would be carefully monitored by a suitably qualified person to ensure that potentially contaminated soil is identified and segregated, if encountered. If any potentially contaminated material is encountered, it will be segregated from clean/inert material, tested, and classified as either non-hazardous or hazardous and further classified as clean, inert, non-hazardous, or hazardous in accordance with the EC Council Decision 2003/33/EC[19], which establishes the criteria for the acceptance of waste at landfills. All excavated material would be used.
- Waste materials generated at the site compound would be stored in suitable receptacles in designated areas of the site compound.
- On-site segregation of waste materials would be carried out to increase opportunities for off-site reuse, recycling, and recovery, to ensure that the majority of construction materials are either recyclable or recoverable – it is anticipated that the following waste types, at a minimum, would be segregated: made ground, soils and stones and trees/shrubbery. In addition, the following wastes would be segregated at the site compound: organic (food) waste, packaging (paper/card/plastic), mixed dry recyclables and mixed non-recyclable waste.
- All waste contractors collecting waste from the site would hold a valid collection permit to transport waste, which is issued by the National Waste Collection Permit Office (NWCPO).
- Construction wastes would be taken to suitably registered/permitted/licenced waste facilities for processing and segregation, recycling, recover and/or disposal. As stated in the baseline section, there are numerous licensed waste facilities in the local region that have sufficient capacity to accept both hazardous and non-hazardous waste materials and could manage C&D waste from the proposed development.

[19] European Union, 2003. 2003/33/EC: Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC. Document 32003D0033.

- All waste leaving site will be reused, recycled, or recovered where possible to avoid material designated for disposal.
- All waste leaving the site would be transported by suitable permitted contractors and taken to suitably registered, permitted, or licenced facilities.
- All waste leaving the site would be recorded and copies of relevant documentation maintained.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) would also be segregated and would be stored in appropriate receptacles (in suitably bunded areas, where required);
- A waste manager would be appointed by the main contractor to ensure effective management of waste during the excavation and construction works.
- All construction staff would be provided with training regarding the waste management procedures.
- The waste from delivers into the two-bay truck loading bay would be compacted on-site.

14.56 These mitigation measures will ensure that the waste arising from the C&D phases of the development are dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, and associated regulations including the Litter Pollution Act 1997 (as amended to 2009)[20] and the EMR WMP (2015-2021). It will also ensure optimum levels of waste reduction, reuse, recycling, and recovery are achieved and will encourage sustainable consumption of resources.

Waste Generation

14.57 Waste arising from the site clearance, primary infrastructure and earthworks is expected to comprise of made ground/topsoil, rubble, bricks, concrete, tarmac from former hard standings, gravel, and clay material. It is important to note that the volume of waste generated from demolition will be more difficult to segregate than waste generated from the construction phase, as many of the building materials will be bonded together or integrated.

14.58 As stated in the methodology, the estimated waste arisings from the proposed development, presented in Table 14.9, have been calculated from an extensive review of surrounding relevant data centers and normalised using the GFAs.

Table 14.9: Estimated Demolition Waste and End Destination

Waste Type	Estimated Quantities	Reuse		Recycle/ Recovery		Disposal	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes
Glass	12	0	0	85	11	15	2
Concrete, bricks, Tiles, Ceramics	71	95	67	0	0	5	4
Plasterboard	6	0	0	85	5	15	1
Asphalts	114	0	0	95	108	5	6
Metals	21	0	0	95	20	5	1
Slate	11	0	0	85	9	15	2
Timber	17	0	0	90	15	10	2
Total	**251**	**-**	**67**	**-**	**168**	**-**	**16**

[NOTE: Values have been rounded to the nearest 1 tonne.]

14.59 Site preparation, excavations and levelling works required to facilitate construction of foundations, access roads and the installation of services would generate approximately 5,278 m^3 of excavated. It is currently proposed that all excavated material would be reused on-site.

14.60 The importation of approximately 108,727 m^3 of fill materials would be required for construction of foundations and other ground preparation works. If any soils/stones are imported onto the site from another construction site as a by-product, this would need to be carried out in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011.

14.61 As stated in the methodology, the estimated construction waste arisings from the proposed development, presented in Table 14.10, have been calculated from an extensive review of surrounding relevant data centers and normalised using the GFAs.

Table 14.10: Estimated Construction and Excavation Waste and End Destination

Waste Type	Estimated Quantities	Reuse		Recycle/ Recovery		Disposal	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D Waste	773	0	0	90	696	10	77
Timber	656	0	0	90	590	10	66
Plasterboard	234	0	0	90	211	10	23
Metals	188	0	0	100	188	0	0
Concrete	141	100	141	0	0	0	0
Other (including cabling, ducting, conduits, packaging, and plastic	351	0	0	80	281	20	70
Topsoil	39,432	100	39,432	0	0	0	0
Excavated materials	8,445	100	8,445	0	0	0	0
Total	**50,529**	**-**	**48,017**	**-**	**1,966**	**-**	**237**

[NOTE: Values have been rounded to the nearest 1 tonne.]

14.62 It is expected that wastes generated from other construction activities, such as from construction workers, would be imperceptible and not significant. These wastes would generally be organic/food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins, and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided at the site compound during the demolition and construction stage.

Waste Infrastructure and Landfill Sites

14.63 Recycling all inert and non-hazardous waste on-site and implementing the SWMP would ensure that impacts of construction waste are minimised. In this assessment, it has been estimated that approximately 50,500 tonnes of C&D waste would be generated and there would be 1,780,000 tonnes of capacity remaining in the waste management facilities and 470,000 tonnes of capacity remaining in landfill sites.

14.64 Therefore, the reduction in capacity of waste management facilities would be around 0.12 % and the reduction in landfill capacity would be around 0.05 %. In addition, it is expected that 99.5 % of the C&D

[20] Government of Ireland, 1997/2009. Litter Pollution Act 1997; Electoral (Amendment) (No. 2) Act 2009 – An Act To Regulate Expenditure By Political Parties And Candidates; To Amend The Local Elections (Disclosure Of Donations And Expenditure) Act 1999; To Amend The Litter Pollution Act 1997; And To Provide For Related Matters.

waste and over 90 % of operational waste would be diverted from landfill. This represents a minimal reduction in capacity of waste infrastructure in the region (less than 1 %) and therefore, the sensitivity is Low. As the diversion from landfill is over 90 %, the magnitude of impact is negligible and the effect on the waste management infrastructure and landfill sites is likely to be **temporary to short-term**, **imperceptible,** and **not significant** in EIA terms.

Operation Stage

Embedded Mitigation

14.65 The following mitigation measures would be implemented during the operation stage of the proposed development:

- On-site segregation of all waste materials into appropriate categories including (but not limited to): dry mixed recyclables, organic food/green waste, mixed non-recyclable waste, batteries (non-hazardous and hazardous), waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment and cleaning chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.).
- All waste materials would be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins would be clearly labelled with the approved waste type to ensure there is no cross contamination of waste materials.
- All waste collected from the development would be reused, recycled, or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available.
- A network of waste facilities would be used to ensure waste is managed efficiently. The waste hierarchy would be implemented, and waste recovery techniques would be employed if recycling is not possible.
- All waste leaving the site would be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.
- All waste leaving the site would be recorded and copies of relevant documentation maintained.
- Any waste classified as hazardous would be stored in a designated area (suitably bunded, where required) and would be removed off site by a licensed hazardous waste contractor(s).

14.66 It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices.

14.67 These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, and associated regulations including the Litter Pollution Act 1997 and the EMR WMP (2015-2021). It will also ensure optimum levels of waste reduction, reuse, recycling, and recovery are achieved.

Waste Generation

14.68 The proposed building's primary waste stream would come from use of toilets, with a calculated 45 staff per building, totalling 135 permanent staff once completed.

14.69 Waste would be managed to according to relevant national and regional legislation such as the waste framework directive. Waste collection vehicles would service the development regularly to ensure the resources are dedicated to ensuring efficient waste management practices.

14.70 Additionally, hazardous waste may be generated from batteries, contaminated chemical drums and other packaging. If the packaging contains residues of or if it is contaminated by dangerous substances, it may be classified as a hazardous waste (depending on the volume and concentration of contaminants).

14.71 If the waste materials are not managed and stored correctly on-site, it is likely to lead to litter, health issues or pollution events at the site and/or on adjacent developments. As stated previously, the secondary effect of litter issues is the potential presence of vermin.

Waste Infrastructure and Landfill Sites

14.72 The nature of the proposed development means that the generation of waste materials during the operation stage is unavoidable. However, it has not been possible to estimate the quantities of waste that would be generated by the proposed development due to the lack of data.

14.73 Networks of waste collection, treatment, recovery, and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion into recycled products (e.g. paper mills and glass recycling).

14.74 Overall, the effect on the waste management infrastructure and landfill sites is likely to be **permanent** and **imperceptible**, **negative** in nature and **not significant** in EIA terms.

Assessment of Residual Effects

Additional Mitigation

14.75 No additional mitigation measures are proposed in respect of waste.

Enhancement Measures

14.76 No enhancement measures are proposed in respect of waste.

Demolition and Construction Residual Effects

14.77 The residual effects are as previously report in the Assessment of Effects section, which are:

- Effect on waste infrastructure capacity: **temporary to short-term**, **imperceptible/not significant,** and **negative** (**not significant** in EIA terms); and
- Effect on void space in landfill sites: **permanent**, **imperceptible/not significant,** and **negative** (**not significant** in EIA terms);

Operation Residual Effects

14.78 The residual effects are as previously report in the Assessment of Effects section, which are:

- Effect on waste infrastructure capacity: **long-term**, **imperceptible,** and **negative** (**not significant** in EIA terms); and
- Effect on void space in landfill sites: **permanent**, **imperceptible,** and **negative** (**not significant** in EIA terms).

Summary of Residual Effects

Table 14.10 provides a tabulated summary of the outcomes of the waste assessment of the proposed development. Where **significant positive** effects are likely these are highlighted in bold green and where **significant negative** effects are predicted these are highlighted in bold red.

Table 14.10: Summary of Residual Ground Conditions Effects

Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect**	Nature of Residual Effect*				
				+ -	L U	D I	R IR	M B T St Mt Lt P
Demolition and Construction								
Waste Management Infrastructure	Effect on capacity	None required	Imperceptible/not significant	-	L	D	IR	T to St
Landfill Sites	Effect on void space	None required	Imperceptible/not significant	-	L	D	IR	P
Operation								
Waste Management Infrastructure	Effect on capacity	None required	Imperceptible	-	L	D	IR	Lt
Landfill Sites	Effect on void space	None required	Imperceptible	-	L	D	IR	P

Notes: * - = Negative/ + = Positive / +/- = Neutral; R = Reversible, IR = Irreversible; D = Direct, IR = Indirect; L= Likely, U = Unlikely; M = Momentary, B = Brief, T= Temporary, St = Short-term, Mt = medium-term, Lt = Long-term, P = Permanent, R = Reversible. ** Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant, Profound.

Cumulative Effects

Intra-Project Effects

14.79 As explained in Chapter 2: EIA Process and Methodology, intra-project cumulative effects are discussed in Chapter 16: Intra Cumulative Effects.

Inter-Project Effects

14.80 There are numerous cumulative developments planned for in the surrounding area (as presented in Chapter 2: EIA Process and Methodology) that would have a cumulative impact by in-combination effects throughout the demolition and construction stage, and operation stage of the proposed development. However, it is not considered possible to reasonably undertake a quantitative cumulative assessment of the likely significant effects regarding waste for the reasons explained in the Assumptions and Limitations section of this chapter. Therefore, a qualitative assessment has been carried out.

14.81 It is reasonably considered that all the cumulative developments would be developed in line with the similar policy requirements as the proposed development; in particular with the requirements for maximising reuse and recycling of CDE waste through a SWMP (or equivalent) and the meeting of targets for recycling and composting waste during operation. Therefore, results would be similar to that presented for residual effects; resulting in the following effects:

- Demolition and Construction Stage:
  - Effect on waste infrastructure capacity: temporary to short-term, imperceptible/not significant, and negative (not significant in EIA terms); and
  - Effect on void space in landfill sites: **permanent**, **imperceptible/not significant,** and **negative** (**not significant** in EIA terms);
- Operation Stage:
  - Effect on waste infrastructure capacity: **long-term**, **imperceptible,** and **negative** (**not significant** in EIA terms); and
  - Effect on void space in landfill sites: **permanent**, **imperceptible,** and **negative** (**not significant** in EIA terms).

Summary of Assessment

Background

14.82 This chapter has detailed the potential waste effects for the demolition and construction stage, and operation stage of the proposed development. The assessment has been undertaken considering the relevant national and local guidance and regulations.

14.83 The baseline assessment was undertaken using publicly available information and indicates that:

- The local authority responsible for setting and administrating waste management activities in the site area is SDCC.
- There are 106 authorised facilities in the EMR for soil and stone acceptance.
- Licensed SRF capacities in the EMR are concentrated in the local authority areas of Fingal, Meath, Kildare, and Wicklow.
- Waste licence facilities in the EMR are of the scale required by the current markets.
- The four active inert landfill facilities located in the EMR have approximately 6.1 million tonnes of remaining lifetime capacity to accept lightly contaminated soils.
- There are a number of non-hazardous municipal landfill sites in the region which have an ongoing requirement for soil and stone material for daily cover, capping and other remediation activities at the sites.
- There are a number of materials recover facilities/waste transfer stations in operation in the region which are suitable for the acceptance of C&D wastes (should they be required).
- There is no dedicated 'hazardous waste to energy' or landfill treatment capacity in Ireland.

14.84 Overall, the results of the baseline assessment identified numerous waste management infrastructure facilities and landfill sites within the surrounding area. Many of the facilities/sites were indicated to have sufficient capacity to support future influxes of C&D and operational waste.

Demolition and Construction Effects

14.85 During the demolition and construction stage, waste would be produced from the demolition of the single storey dwelling on-site, and the construction of the data centers and accommodating facilities.

14.86 Networks of waste collection, treatment, recovery, and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion into recycled products (e.g. paper mills and glass recycling). According to the C&D Waste Update Report (2020)[9] there are 106 authorised facilities in the EMR for soil and stone acceptance, three landfill sites for C&D waste and a number of materials recover

facilities/waste transfer stations in operation in the region which are suitable for the acceptance of C&D wastes should they be required.

14.87 It is anticipated that the proposed development would generate approximately 50,500 tonnes of C&D waste in addition to operational waste. However, mitigation measures such as segregating of waste, using appropriate storage, and implementing a SWMP (and CEMP) would reduce likely negative impacts and maximise the reuse and recycling and/or recovery of waste. Therefore, the reduction in capacity of waste management facilities, due to the estimated waste arisings from the proposed development, would only be approximately 0.12 % and the reduction in landfill capacity would be approximately 0.05 %. In addition, it is expected that 99.5 % of the C&D waste and over 90 % of operational waste would be diverted from landfill. This represents a minimal reduction in capacity of waste infrastructure in the region (less than 1 %) and therefore, the sensitivity is Low. As the diversion from landfill is over 90 %, the magnitude of impact is negligible and the effect on the waste management infrastructure and landfill sites is likely to be neutral or slight.

14.88 Overall, it is considered, with embedded mitigation in place, that the demolition and construction stage activities would result in a **negative**, **direct**, and **imperceptible/not significant** effect (**not significant** in EIA terms) on waste management facilities and landfill sites.

Operational Effects

14.89 During the operation stage, waste would be managed in accordance with relevant national and regional legislation such as the Waste Framework Directive. Waste collection vehicles would service the development regularly to ensure the resources are dedicated to ensuring efficient waste management practices.

14.90 Additionally, hazardous waste may be generated from batteries, contaminated chemical drums and other packaging. If the packaging contains residues of or if it is contaminated by dangerous substances, it may be classified as a hazardous waste (depending on the volume and concentration of contaminants).

14.91 Networks of waste collection, treatment, recovery, and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion into recycled products (e.g. paper mills and glass recycling).

14.92 Overall, the effect on the waste management infrastructure and landfill sites is likely to be **negative**, **direct**, **imperceptible,** and **not significant** in EIA terms.

Cumulative Effects

14.93 It is reasonably assumed that all the cumulative developments would be developed in line with the similar policy requirements as the proposed development, including the requirements for maximising reuse and recycling of CDE waste through a SWMP (or equivalent) and the meeting of targets for recycling and composting waste during operation. Therefore, results would be similar to that of the proposed development, resulting in a cumulative effect that is **negative**, **direct**, **imperceptible/not significant,** and **not significant** in EIA terms.

15 MATERIAL ASSETS

Introduction

15.1 This chapter of the EIAR reports on the likely significant material asset effects to arise from the demolition and construction stage and the operation stage of the proposed development.

15.2 The chapter describes the material assets policy context; the methods used to assess the potential impacts and likely effects; the baseline conditions at and surrounding the site; the likely material assets effects taking into consideration embedded mitigation; the need for additional mitigation and enhancement; the significance of residual effects; and inter-project cumulative effects.

15.3 There are no technical appendices supporting this chapter.

Methodology

15.4 The assessment has been informed by the legislation, policies and published guidance identified within Chapter 2: EIA Process and Methodology.

Assessment Scope

15.5 The 2011 EIA Directive (2011/92/EU) state that material assets include architectural and archaeological heritage. In accordance with the 2014 EIA Directive, those heritage aspects are dealt with as components of cultural heritage which is assessed in EIAR Volume 2 Chapter 2: Cultural Heritage.

15.6 Additionally, the EPA Draft EIA Report Guidelines 2017 state that material assets are now taken to mean built services and infrastructure, roads, and traffic, as well as waste management.

15.7 In this EIAR, the impacts on the material assets listed above have been considered in the following Chapters and are not considered further in this Chapter:

- Chapter 6: Population and Human Health;
- Chapter 7: Transport;
- Chapter 8: Air Quality; and
- Chapter 14: Waste.

15.8 The European Commission refers to a number of examples of material assets including buildings, other structures, mineral resources, and water resources. The impacts on mineral resources and water resources have been considered in the following Chapters and are not considered further in this Chapter:

- Chapter 10: Water Resources and Flood Risk; and
- Chapter 12: Ground Conditions.

15.9 As there is no published or formalised technical guidance relating to the assessment of material assets effects, professional judgement, experience, and best practice methods have been drawn upon to assess the significance of the potential effects of the proposed development. The assessment has also taken account of applicable legislation, guidance, and policy.

Technical Scope

15.10 The technical scope of the assessment has considered the following:

- Direct disturbance and damage to existing or proposed infrastructure; and
- Indirect disturbance of assets in the surrounding area.

15.11 It has been assumed that the Proposed Development will not impact on any other structures.

15.12 The potential impacts on built services and infrastructure, if any, have been assessed in terms of the following:

- Power and Electricity Supply;
- Gas Supply
- Water Services (including surface water and foul drainage infrastructure and water supply); and
- Telecommunications.

15.13 As several of the assets mentioned above have been addressed in other chapters within this EIAR, they are not discussed in detail in this chapter, but references are provided to other EIAR chapters where appropriate.

15.14 Mitigation measures are proposed (where required) to minimise the effect of the proposed development on the environment during the demolition and construction and operation stages.

Spatial Scope

15.15 The site lies within the South Dublin County Council (SDCC) area in the north of the Profile Park. The study area is considered to comprise the surrounding utility network within Profile Park and the wider area.

Temporal Scope

15.16 The assessment has considered impacts arising during the demolition and construction stage, which would be expected to be temporary and short term (1-7 years) in nature, and from the operation stage which would be expected to be permanent and long-term in nature (i.e. more than 20 years).

Baseline Characterisation Method

Desk Study

15.17 In order to establish baseline material assets conditions in the study area, relevant data was reviewed and assessed. Data was obtained from the following sources:

- Proposed 220 and 11 ESB ducts drawing1
- Combined service and levels drawing2
- Engineering Planning Report[3]

Field Study

15.18 Field study/data collection was not required at the site as the data provided by other sources was deemed to be adequate and representative of the site conditions.

[1] Doherty Finegan Kelly, 2019. Proposed 220 and 110 ESB Ducts Sheet Legend, no. 01473/329
[2] Pinnacle Consulting Engineers, 2021. Combined Service and Levels, no. C290

[3] Pinnacle Consulting Engineers, 2021. Engineering Planning Report ref P210501

Assessment Method

Methodology

15.19 The EPA 2017 draft guidelines include information on the assessment of the effects of a development on material assets and advises on the nature of the material assets which should be examined as part of the preparation of an EIAR. These include the following:

- Economic assets of natural origin; and
- Economic assets of human origin.

15.20 Economic assets of natural origin, which include biodiversity, land and soil, cultural heritage, and the natural water environment, have already been addressed within other chapters of this EIAR. However, economic assets of human origin are considered in this chapter.

15.21 To assess economic assets of human origin, a desktop study was carried out on existing material assets found at the site and within the immediate surrounding area.

Demolition, Construction and Operation Stage

15.22 Projections of resource use on economic assets of human origin have been undertaken for the demolition, construction and operation stages of the proposed development, and the impacts have been assessed.

15.23 The baseline has been defined through a desktop review of existing and planned licences, studies, applications, and datasets. This established the current status of known and planned infrastructure within the study area.

Cumulative Stage

15.24 For the purposes of assessing the cumulative effects, consideration has been given to all cumulative schemes that have the potential to result in a significant cumulative effect alongside the proposed development. Full details of all the cumulative schemes are given in Chapter 2: EIA Process and Methodology. The baseline and assessment of significance, and the judgement of the magnitude of change stages are as above for the demolition and construction and operation stages. Only receptors for which the proposed development is predicted to result in a significant residual effect alone are included in this part of the assessment.

15.25 As part of the cumulative assessment, consideration has also been given to the proposed permanent electrical connection for the site that will be located <50m to the southeast of the site. This will comprise a 110 kV GIS Substation and two underground circuit transmission lines and will be subject to a strategic infrastructure development (SID) application to An Bord Pleanála (ABP) in due course. This scheme has been considered qualitatively.

Assessment Criteria

15.26 The criteria used to assess whether an effect is significant or not, are given in the EPA Guidelines 2017, and are set out in Table 2.1 in Chapter 2: EIA Process and Methodology. The significance of effects is determined by consideration of the sensitivity of the receptor, the magnitude of impact and scale of the effect. In assessing the significance of an effect, consideration has been given to the quality, duration, probability and type of the effect, and its geographical extent, and the application of professional judgement. There is some flexibility based on professional judgement to take account of any particular value a heritage asset or receptor may have because of its use or presentation for public amenity and tourism or education.

15.27 Based on professional judgement, effects of moderate significance and above are considered significant in EIA terms.

Assumptions and Limitations

15.28 The assessment has relied on data pertaining to existing licences or as-built infrastructure supplied by others. It has been assumed that these datasets have been reported correctly.

Baseline Conditions

Existing Baseline

Land Ownership

15.29 The subject site is as described in Volume 1, Chapter 4: Description of Development.

15.30 The application site is a material asset, as the land has been zoned for employment development. The nature of the proposed development means that the land's material asset should not be affected by the development and is not considered further.

Power and Electrical Supply

15.31 The main power supply to the Business Park is from the ESB EirGrid. This power network is known to be constrained in terms of providing electrical grid power to the area.

15.32 The power requirements for the proposed development will be provided via a connection to a 110 kV EirGrid ESB substation that will be constructed and will be subject to a SID application to ABP. The substation will then provide a 20 kV electrical power distribution at medium voltage throughout the site.

15.33 The gas-fired power generation facility will connect to the network via a step-up transformer to 20 kV and then distribute to the EirGrid substation and would be called upon for use on local network drops. This power generation unit does not provide power directly to the data centers and is proposed in response to EirGrid DCC OPP regulations. Power is only available from the EirGrid ESB substation that is proposed South of Falcon Avenue.

15.34 Whilst the connection to the EirGrid is implemented the data center during Phase 1A may be powered using temporary gas generators that would be located in the west of the site.

Gas Supply

15.35 The Business Park is served by the Gas Networks Ireland network, which is a natural gas network. Supply is understood to not be constrained in the area.

Telecommunications

15.36 Multiple connection service lines currently exist along Falcon Avenue and Concorde Drive, including

- Virgin Media Fibre Cable;
- BT Fibre Cable;
- Colt Fibre Cable; and
- Eu Network Fibre Cable.

15.37 In addition, there are numerous Chambers situated along both Falcon Avenue and Concorde Drive, owned by Magnet and Virgin Media (UPC/NTL), that provide access to the underground utility services listed above.

15.38 A telecommunications network would be installed at the site which would serve all of the data center buildings on the site. The connection to the regional network would be implemented by the statutory network operator.

Surface Water Infrastructure

15.39 The Baldonnel Stream runs through the site which will be realigned as part of the proposed development. The Flood Risk Assessment for the site undertaken by Kilgallen and Partners[4] has identified this water body as having capacity to accommodate the proposed surface water discharge from the site.

Foul Drainage Infrastructure

15.40 South Dublin County Council record drawings identify 3 No. 150mm / 225mm Ø spur connections, located adjacent to the southern boundary of the site and within Profile Park. Foul drainage is ultimately treated at the Dublin City Wastewater Treatment plant at Ringsend. The existing foul sewer network is understood to have adequate capacity to cater for the proposed discharge from the site and there are no known issues noted with the sewer network and Ringsend Wastewater Treatment plant. A pre-connection enquiry (PCE) form has been submitted to Irish Water and a response is awaited.

Water Supply

15.41 South Dublin County Council record drawings identify an existing 6" (160mm) Ø main located along the southern boundary of the site, within Falcon Avenue. Two 160mm Ø capped connections with sluice valves have been left off the aforementioned water main, in order to facilitate development at the site.

15.42 Additionally, there is an existing 700mm Ø trunk water main running parallel to the New Nagor Road adjacent to the northern boundary of the site.

15.43 From discussions with the South Dublin County Council, it is understood that there is adequate capacity within the existing watermain network to supply the proposed development.

Sensitive Receptors

15.44 The receptors identified as sensitive to the proposed development and which have been 'scoped-in' to the assessment are summarised in Table 15.1.

Table 15.1: Summary of Sensitive Receptors

Receptor	Sensitivity
Electrical grid capacity	High
Surface water infrastructure	Moderate
Foul water infrastructure network	Low
Gas Network	Low
Water supply network	Low
Telecommunications network	Low

Assessment of Effects

Demolition and Construction Effects

Embedded Mitigation

Construction Environment Management Plan

15.45 A project-specific Construction and Environmental Management Plan (CEMP) will be established and maintained by the contractors during the demolition and construction stage which will cover all potentially polluting activities and emergency response procedures. All personnel working on the site would be trained in the implementation of the procedures.

15.46 The measures identified below will be included in the CEMP to mitigate impacts to surface water during construction:

- Run-off from excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Earthwork operations will be carried out with adequate drainage, falls and profile to control run-off and prevent ponding and flowing. Correct management, as set out in the CEMP, will ensure that there will be minimal inflow of shallow/perched groundwater into any excavation.
- Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any off-site impacts. All run-off will be prevented from directly entering into any water courses or drainage ditches.
- Should any discharge of demolition or construction related water be required, discharge would be to foul sewer. Pre-treatment and silt reduction measures on-site would include a combination of silt fencing, settlement measures (e.g. silt traps, 20m buffer zone between machinery and watercourses, off-site refuelling of machinery) and use of hydrocarbon interceptors. Active treatment systems such as Siltbusters or similar may be required depending on turbidity levels and discharge limits.
- Refuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles/ equipment will take place in designated bunded areas where possible.

15.47 The aforementioned list of measures is non-exhaustive and will be included in the CEMP.

Power and Electrical Supply

15.48 During construction, contractors will require power for heating and lighting of the site and their onsite facilities. Some on site equipment/plant will also require power and a construction compound and temporary power supply will be installed for the demolition and construction stage.

15.49 Power and electrical supply receptors are of high sensitivity as the development is located in what is noted as a constrained area in terms of electrical grid capacity.

15.50 As the temporary gas generators are self-contained, they are not anticipated to have any offsite impact. The construction of the permanent gas-fired power generation facility will connect to the network via a step-up transformer to 20 kV on site and then distribute to the EirGrid substation. Connections to the EirGrid substation will involve excavations in the vicinity of and connections to exiting services and these will be carried out in consultation with ESB Networks to ensure there is not impact on existing supplies. The permanent electrical connection of the site to the EirGrid once constructed will subject to a SID application to ABP in due course and is not considered here. These connections would not be in place prior to construction commencing.

15.51 Overall, the power demand from the demolition and construction stage will be relatively minor and accordingly the power and electrical effects are considered to be temporary to **short term**, **imperceptible** and **neutral** i.e. **not significant.**

Gas Supply

15.52 Gas supply is not anticipated to be required during the demolition construction stage. Connections to the gas supply network will be carried out in consultation with Gas Networks Ireland to ensure there is no impact on existing supplies.

15.53 Overall, effects during the demolition and construction stage are considered to be **temporary to short term**, **imperceptible** and **neutral** i.e. **not significant**.

[4] Kilgallen and Partners (2021). Report on Site-Specific Flood Risk Assessment ref 21054-R-SSFRA.

Surface Water Infrastructure

15.54 The site currently drains into the Baldonnel Stream which will be realigned under controlled conditions at an early stage in the construction process in Phase 1A. Above ground surface water attenuation features will also be constructed at this stage meaning they will be in place during the majority of the construction stage, as outlined in Chapter 5: Construction Description.

15.55 As with all construction projects, there is potential for surface water runoff to become contaminated with pollutants associated with the demolition and construction works. Contaminated water which arises from construction sites can pose a risk to surface water quality within the stream. The potential main contaminants include:

- Increase in suspended solids due to muddy water with increase turbidity, arising from excavation and ground disturbance;
- Spills and releases of cement and concrete causing an increase turbidity and pH arising from the use of these construction materials;
- Spills and releases of wastewater (nutrient and microbial rich) arising from poor on-site toilets and washrooms.
- There also is a risk of accidental pollution incidences from the following sources:
- spillage or leakage of temporary oils and fuels stored on-site;
- spillage or leakage of oils and fuels from construction machinery or site vehicles;
- spillage of oil or fuel from refuelling machinery on site; and
- run-off from concrete and cement during pad foundation construction.

15.56 With consideration of the embedded mitigation measures outlined above within the CEMP predicted impacts from surface water runoff would be unlikely to occur. Effects are considered to be temporary to short-term, imperceptible, and neutral i.e. not significant.

Foul Drainage Infrastructure

15.57 Welfare facilities will be required for the construction compound and workers with portable toilets will be provided for construction workers. A temporary connection to the foul water drainage network within Profile Park may also be required to accommodate the site welfare facilities during construction. It is understood that the foul water drainage network has sufficient available capacity for the wastewater discharges for the short-term demolition and construction stage.

15.58 The permanent foul connection to the wider network in Profile Park would be undertaken in consultation with Irish Water to ensure there is no impact on the network when the connection is made.

15.59 Accordingly, foul drainage effects on the public sewerage network during the demolition and construction stage are considered to be **temporary to short term**, **imperceptible** and **neutral** i.e. **not significant**.

Water Supply

15.60 Welfare facilities will be required for the construction staff. A temporary connection to the mains water supply will be established for the construction phase. The water demand during the construction phase will not be significant enough to affect existing pressures and from discussions with the South Dublin County Council, it is understood that there is adequate capacity within the existing watermain network to supply the proposed development.

15.61 Effects associated with water supply are considered to be **temporary to short term**, **imperceptible** and **neutral** i.e. **not significant.**

Telecommunications

15.62 During the demolition and construction stage a mobile connection will be provided. A telecommunications network will be installed at the site which will serve all of the proposed data center buildings. The connection to the regional network would be implemented by the statutory network operator.

15.63 Effects associated with telecommunications during the demolition and construction stage are considered to be **temporary to short term**, **imperceptible** and **neutral** i.e. **not significant**.

Operation Stage Effects

Embedded Mitigation

Environmental Procedures & Fuel Storage

15.64 As detailed in Chapter 4: Description of Development, the Applicant would implement an Environmental Safety and Health Management System for the proposed development. Prior to operation of the proposed development, a comprehensive set of operational procedures would be established which will include site-specific mitigation measures and emergency response measures.

15.65 The primary potential impact on surface water infrastructure relates to a failure or accidental spill of diesel fuel which is stored and used on-site for back-up power generation.

15.66 In order to minimise any impact on the underlying subsurface strata from material spillages, the fuel storage tanks are located above ground in designated fuel storage bunds with an impervious base. Three 40,000 litre bunded tanks will be provided next to each data centre. They will be bunded to volume of 110 % of the capacity of the tank within the bund (plus an allowance of 30 mm for infiltration). Drainage from the bunds is be diverted for collection and safe disposal. Fuel delivery to the bulk storage tanks would take place within designated bunded unloading areas. Diesel would be piped from the bulk storage tanks to belly tanks at each of the back-up generator units. The belly tanks would be double skinned. Delivery of fuel will be undertaken following a documented procedure which minimises risk of spills and spill containment or clean-up kit shall be readily available on-site. It is anticipated, based on the Applicant's experience, that the back-up generators would rarely be used.

Power, Electrical Supply & Gas Supply

15.67 During operation the power demands of the proposed development will be managed in line the site phasing.

15.68 Data center 11.1 will be constructed first including 11 no. emergency generators. Within Phase 1A power will originate from the temporary gas generation plant located in the west of the site. These would be in operation for 24 hours a day for an anticipated time period of up to 2 years. As these generators are gas powered impacts on the electrical grid will be unlikely to occur.

15.69 When data centers 11.2 and 12 are constructed Phase 1B, 2A and 2B the temporary gas generation plant will be removed at the site will be powered by a permanent connection to the EirGrid that will be subject to a separate SID application to ABP.

15.70 The gas-fired power generation facility will connect to the network via a step-up transformer to 20 kV in the south of the site and then distribute to the EirGrid. This power generation unit does not provide power directly to the data centres and power is supplied from the EirGrid substation that is proposed to the south of Falcon Avenue.

15.71 The gas-powered generation plant will operate in response to signals proposed under the DCC OPP to support the EirGrid network when it is at capacity. The gas-powered generation facilities will have the capacity to provide equal energy to the amount consumed on site. In addition to this, in the event of a local grid network failure, the gas-powered generation facility on-site will have the capacity to provide equal energy to the amount consumed on site and as such would support the local power infrastructure requirements.

15.72 In the event of a loss of power supply, diesel powered back-up generators are provided to maintain power supply. The back-up generators are designed to automatically activate and provide power to the plant pending restoration of mains power and are only anticipated to be required in an exceptional event.

15.73 Photovoltaic panels will also be installed on the roof of the data centers to comply with Part L of the building regulations. These will generate on site renewable energy and will be back fed to the electrical general supply for the building, serving lighting, office area general services and office IT equipment.

15.74 The proposed development will be connected to a high-pressure gas point and there is understood to be sufficient capacity in the gas network to supply the proposed development.

15.75 Please refer to Volume 1, EIAR, Chapter 4: Proposed Development Description for a more in-depth description of the power generation plan and connection.

15.76 Given the phased construction, electrical and gas connections proposed and the design of the data centers the effects on power, electrical and gas supply are considered to be **permanent**, **imperceptible,** and **neutral**.

Surface Water Infrastructure

15.77 Surface water from the proposed development has been designed in accordance with the Greater Dublin Strategic Drainage Strategy. The is site currently greenfield and the proposed surface water measures incorporate SuDs and are aimed at improving the general surface water management of the site, by introducing interceptors, attenuation measures and by restricting the ultimate discharge to the existing surface water network and to the realigned Baldonnel Stream.

15.78 Surface water from the rear roofs of the data centers, will be directed via rainwater pipes into an on-site drainage system. The outflow from this system will be connected into the surface water drainage network collecting run-off from the road areas and will be discharged via attenuation ponds and below ground attenuation in to the realigned Baldonnel Stream.

15.79 The front roof areas of the data centers drain into the permeable paving sub-base, prior to discharge into the realigned Baldonnel Stream.

15.80 Surface water from car park areas and access roads / delivery areas will be drained via a series of on-site gullies and channels into a separate system of below ground gravity surface water sewers and permeable paving.

15.81 The southern attenuation pond will to be connected to the existing storm sewer located on Falcon Drive.

15.82 The outflow from the proposed development, will be restricted by way of a Hydrobrake facility, which will limit the total discharge to the calculated QBAR greenfield run-off rate.

15.83 Oil and fuel leaks from parked cars, service vehicles, HGV delivery's etc have the potential to impact surface water. This will be managed through the inclusion of hydrocarbon interceptors in the design for the surface water network draining these areas.

15.84 Surface water is discussed further in Chapter 10: Water Resource and Flood Risk and the Engineering Planning Report accompanying the application.

15.85 Effects associated with surface water during operation are considered to be **permanent**, **imperceptible,** and **neutral** i.e. **not significant.**

Foul Drainage Infrastructure

15.86 The proposed development will lead to an increase in foul water discharge from the site. It is proposed to discharge foul water via a 225mmØ gravity foul sewer outfall into the existing 225mm Ø spur connection laid across Falcon Avenue, which is connected to the existing foul sewer network laid along the western edge of Falcon Avenue. It is understood that the foul water drainage network has sufficient available capacity for the wastewater discharges during operation.

15.87 As such, foul drainage effects on the public sewerage network during the operation stage are considered to be **permanent**, **imperceptible,** and **neutral** i.e. **not significant**.

Water Supply

15.88 It is proposed to serve the proposed development via connection off the 150mm Ø network, as located in Falcon Avenue. Water meters, sluice valves and hydrants, in line with Irish Water requirements and specifications, will be installed at the connections onto the aforementioned existing water mains, as required. It is understood that there is adequate capacity within the existing water main network to supply the proposed development.

15.89 As such, effects on water supply during the operation stage are considered to be **permanent**, **imperceptible,** and **neutral** i.e. **not significant**.

Telecommunications

15.90 Multiple connection service lines currently exist along Falcon Avenue and Concorde Drive and there is understood to be sufficient capacity available in the network to supply the proposed development with telecommunications. As such, effects associated with telecommunications during the operation stage are considered to be **permanent**, **imperceptible,** and **neutral** i.e. **not significant**

Assessment of Residual Effects

Additional Mitigation

15.91 No additional mitigation measures are proposed.

Enhancement Measures

15.92 No enhancement measures are proposed aside from enhancements in flood risk and biodiversity associated with the realignment of the Baldonnel Stream which are discussed in Chapter 10: Water Resource and Flood Risk and Chapter 11 Ecology.

Demolition and Construction Residual Effects

15.93 The residual demolition and construction effects remain as reported in the assessment of effects section:

- **Temporary to short term**, **imperceptible** and **neutral** effects on power, electrical and gas supply.
- **Temporary to short-term**, **imperceptible,** and **neutral** effects on surface water infrastructure.
- **Temporary to short term**, **imperceptible** and **neutral** effects on foul drainage infrastructure and water supply.
- **Temporary to short term**, **imperceptible** and **neutral** effects on telecommunications.

Operation Stage Residual Effects

15.94 The residual operation stage effects remain as reported in the assessment of effects section:

- **Permanent**, **imperceptible,** and **neutral** effects on power, electrical and gas supply.
- **Permanent**, **imperceptible,** and **neutral** effects on surface water infrastructure, foul infrastructure, and water supply.
- **Permanent**, **imperceptible,** and **neutral** effects on telecommunications.

Summary of Residual Effects

15.95 Table 15.2 provides a tabulated summary of the outcomes of the material assets assessment of the proposed development. Where **significant positive** effects are likely these are highlighted in bold green and where **significant negative** effects are predicted these are highlighted in bold red.

Table 15.2: Summary of Residual Material Asset Effects

Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
				+ -	L U	D I	R IR	M B T St Mt Lt P
Demolition and Construction								
Power and Electrical Supply	Increased demand on the surrounding network	None required	Imperceptible	+/-	L	D	IR	T to St
Gas Supply				+/-	L	D	IR	T to St
Foul Water Infrastructure				+/-	L	D	IR	T to St
Water Supply				+/-	L	D	IR	T to St
Telecommunications				+/-	L	D	IR	T to St
Surface Water Infrastructure	Risks of contamination from increased run-off, machinery on site, concrete activities, and/or accidental spillages.			+/-	L	D	IR	T to St
Operation								
Power and Electrical Supply	Increased demand on the surrounding network	None required	Imperceptible	+/-	L	D	IR	P
Gas Supply				+/-	L	D	IR	P
Foul Water Infrastructure				+/-	L	D	IR	P
Water Supply				+/-	L	D	IR	P
Telecommunications				+/-	L	D	IR	P
Surface Water Infrastructure	Risk of contamination to surrounding water environment.			+/-	L	D	IR	P

Table 15.2: Summary of Residual Material Asset Effects

Notes:

* - = Negative/ + = Positive / +/- = Neutral; R = Reversible, IR = Irreversible; D = Direct, ID = Indirect;

L= Likely, U = Unlikely; M = Momentary, B = Brief, T= Temporary, St = Short-term, Mt = Medium-term, Lt = Long-term, P = Permanent.

** Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant, Profound.

Cumulative Effects

Intra-Project Effects

15.96 As explained in Chapter 2: EIA Process and Methodology, intra-project cumulative effects are discussed in Chapter 16: Intra Cumulative Effects.

Inter-Project Effects

15.97 Table 14.8 provides a summary of the likely cumulative effects resulting from the proposed development and the cumulative developments.

Table 14.8: Inter-Project Cumulative Effects

Cumulative Development	Demolition and Construction		Operational Stage	
	Cumulative Effects Likely?	Reason	Cumulative Effects Likely?	Reason
SD20A/0283 Microsoft, Grange Castle Business Park, Nangor Road Clondalkin, Dublin 22 VA06S.308585 SD20A/0121 UBC Properties, townlands within Grange Castle Business Park, Baldonnel, Dublin 22 UBC Properties - Grange Castle South Business Park, Dublin 22 SD17A/0377Digital Reality Trust - Profile Park, Baldonnel, Dublin 22, D22 TY06	No	There is some overlap with the demolition and construction stages of the Microsoft, UBC Properties and Cyrus One developments. However, during the demolition and construction stage demand on the network will be predominantly for minor temporary connections for welfare facilities and plant and or will be provided by mobile connections. The permanent connections to the wider network in Profile Park will be undertaken in consultation with statutory consultees to ensure there is no impact on the network when connections are made.	No	The design of the proposed development is such that cumulative effects are unlikely. In particular electrical and gas demand is managed though the site phasing. In Phase 1A power will originate from the temporary gas generation plant which will operate for up to 2 years. When data centers 11.2 and 12 are constructed the temporary gas generation plant will be removed and the site will be powered by a permanent connection to the EirGrid with power demand offset by the permanent gas generation plant onsite. The EirGrid substation will be subject to a separate SID application to ABP. Ongoing discussions are also underway with

Table 14.8: Inter-Project Cumulative Effects

Cumulative Development	Demolition and Construction		Operational Stage	
	Cumulative Effects Likely?	Reason	Cumulative Effects Likely?	Reason
SD18A/0134 Cyrus One - Grange Castle Business Park, Clondalkin, Dublin 22 SD20A/0295 (amendment to SD18A/0134) Cyrus One Townlands within Grange Castle South Business Park, Baldonnel, Dublin 22 VA06S.309146Cyrus One - Grange Castle South Business Park, Baldonnel, Dublin 22				statutory undertakers to confirm that there is suitable capacity to support the development.
Site proposed electrical connection and substation to EirGrid to the south	No	The permanent electrical connection to the substation would occur during Phase 1B and the connection will be undertaken in consultation with ESB to ensure there is no impact on the network when connections are made.	No	When operational the EirGrid substation will provide power to the site with power demand offset by the permanent gas generation plant onsite. The EirGrid substation will be subject to a separate SID application to ABP.

Demolition and Construction Cumulative Effects

15.98 Cumulative effects during the demolition and construction stage of the proposed development are unlikely for material assets and effects are considered to be temporary to **short term, imperceptible** and **neutral**.

Operation Stage Cumulative Effects

15.99 Cumulative effects during the operation stage of the proposed development are unlikely for material assets and effects are considered to be **permanent, imperceptible,** and **neutral**.

Summary of Assessment

Background

15.100 This chapter has detailed the potential material assets effects due to the construction and operation stages of the proposed development. The assessment of construction and operational stages has been undertaken considering relevant national and local guidance and regulations.

15.101 The site lies in the north of the Profile Park and the study area is considered to comprise the surrounding utility network with Profile Park and the wider area.

15.102 The main power supply to the Business Park is from the ESB EirGrid. This power network is known to be constrained in terms of providing electrical grid power to the area. The power requirements for the proposed development will be provided via a connection to a 110 kV EirGrid ESB substation that will be constructed and will be subject to a separate SID application to ABP. When operational the substation will provide a 20 kV electrical power distribution at medium voltage throughout the site. The gas-fired power generation facility will connect to the network via a step-up transformer to 20 kV on site south of this building and then distribute to the EirGrid substation to offset the demand of the data centers.

15.103 Whilst the connection to the EirGrid is implemented the plant is proposed to be powered using temporary gas generators that will be located in the west of the site. Emergency backup generators are also present within each data center in case of a network failure.

15.104 The Business Park is served by the Gas Networks Ireland network, which is a natural gas network. It is understood the network is not constrained.

15.105 The Baldonnel Stream runs through the site and will be realigned as part of the proposed development. Surface water sewers are present in Falcon Avenue.

15.106 Surface water from the proposed development has been designed in accordance with the Greater Dublin Strategic Drainage Strategy. The is site currently greenfield and the proposed surface water measures incorporate SuDs and are aimed at improving the general surface water management of the site, by introducing interceptors, attenuation measures and by restricting the ultimate discharge to the existing surface water sewers (car park areas, access roads, delivery areas and the southern attenuation pond) and to the realigned Baldonnel Stream (from the roof areas of data centers) which will be restricted by way of a Hydrobrake, limiting the total discharge to the calculated QBAR greenfield run-off rate.

15.107 Foul water will be discharged via gravity sewer into the existing connection Falcon Avenue.

15.108 Water supply will be from a network connection located in Falcon Avenue. Water meters, sluice valves and hydrants will be installed at the connections. It is understood that there is suitable capacity in the network to supply to proposed development.

15.109 A telecommunications network will be installed at the site which will serve all of the data centers and will be connected to the regional network by the statutory network operator. It is understood that there is suitable capacity in the network to supply to proposed development.

Demolition and Construction Effects

15.110 During the demolition and construction stage demand on the networks outlined above will be predominantly for minor temporary connections for welfare facilities and plant and or will be provided by mobile connections.

15.111 The permanent connections to the wider network in Profile Park will be undertaken in consultation with statutory undertakers to ensure there is no impact on the network when connections are made.

15.112 Overall, effects during the demotion and construction are considered to be **temporary to short-term, imperceptible,** and **neutral**.

Operation Stage Effects

15.113 The baseline assessment identified that there are adequate facilities in regard to gas, foul water, water supply and telecommunications supplies for the operation stage of the proposed development. Ongoing discussions are being undertaken statutory undertakers in this regard.

15.114 Power and electrical demand is managed though the site phasing, in Phase 1A power will originate from the temporary gas generation plant which will operate for up to 2 years. When data centers 11.2 and 12 are constructed the temporary gas generation plant will be removed and the site will be powered by a permanent connection to the EirGrid with power demand offset by the permanent gas generation plant onsite as described above.

15.115 Surface water from the proposed development has been designed in accordance with the Greater Dublin Strategic Drainage Strategy with restricted discharge at greenfield run off rates to the existing surface water network and to the realigned Baldonnel Stream. The network incorporates pollution presentation measures.

15.116 Overall, effects during operation are considered to be **permanent**, **imperceptible,** and **neutral**.

Cumulative Effects

15.117 Cumulative effects during the demolition and construction and operation stages of the proposed development are considered to be unlikely for material assets.

16 CUMULATIVE EFFECTS

Introduction

16.1 The Planning and Development Regulations require that the likely significant environmental effects of a development are taken into account, including cumulative effects which are defined in the EPA Draft EIA Report Guidelines 2017 as *"the addition of minor or significant effects, including effects of other projects, to create larger, more significant effects".*

16.2 The relevant Institute of Environmental Management and Assessment (IEMA) Guidance[1] identifies two types of cumulative effects:

- Inter-project effects - incremental changes caused by other development schemes occurring together with the proposed development and the cumulative effects combining to worsen the effect of a particular impact; and
- Intra-project effects - those effects that occur as a result of impact interaction between different environmental topics within the same project. For example, a project might affect bird species as a result of direct loss of habitat and by noise and light disturbance. Each of these when considered in isolation may have a limited effect but taken together the sum is greater than the parts.

Inter-Project Cumulative Effects

16.3 A list of cumulative schemes for consideration in the inter-project cumulative effect assessment of the proposed development was presented to the SDCC as part of the pre-application meeting. Details of the full list of cumulative developments (EIAR Volume 1, Chapter 2: EIA Process and Methodology).

16.4 Inter-project effects have been addressed in each technical chapter of the EIAR (Chapters 6-15 of EIAR Volume 1 and EIAR Volume 2), as appropriate. To avoid significant repetition, information on the potential combined effects of the proposed development together with cumulative schemes is not presented within this chapter of the EIAR.

Intra-Project Cumulative Effects

16.5 The potential for intra-project cumulative effects is considered within this chapter.

Intra-Project Cumulative Effects

Assessment Approach

16.6 As indicated earlier, there is no established EIA methodology for assessing and quantifying the combined effects of individual effects on sensitive receptors. Accordingly, Ramboll has developed an approach which uses the defined residual effects of the proposed development to determine the potential for interactions between effects and consequently the potential for significant intra-project cumulative effects to arise. This is a tried, tested and robust approach that has been implemented and accepted on a wide range of planning applications over many years.

16.7 The approach comprised the following steps:

- First, a review of the likely residual effects (and in particular the likely significant environmental effects) presented within the EIAR was undertaken;
- Second, the likely receptors or receptor groups were identified;
- Third, the individual effects which may impact a singular receptor or receptor group were listed in a matrix format;
- Fourth, the potential for individual effects to interact for a given receptor was identified; and
- Fifth, the scale of the combined intra-project cumulative effects was assessed.

16.8 To ensure a proportionate approach, no/non-standalone imperceptible and not significant effects have been disregarded. Where a range of effects has been predicted, the full range has been considered e.g. imperceptible/not-significant to slight, negative.

16.9 It is noted that intra-project cumulative effects are more likely to arise when the receptor or receptor group is of higher sensitivity to change, such as human receptors.

16.10 Within this EIAR topics such as air quality, transport, noise and vibration and climate change are considered in their own right and also in the context of their associated human health effects; of which, these are then assessed against relevant receptor groups (which includes human health receptors and local residents etc.) as part of the population and human health assessment. Due to the nature of the population and human health assessment these are not considered within this intra-cumulative assessment, due to the need to ensure these effects are reported within their own right and are not double counted. As such, in the instance that human health effects result in an in-combination effect within the matrices presented in this section they are disregarded (as they are already considered from an intra- cumulative perspective in Chapter 6: Population and Human Health).

16.11 Where there is more than one effect likely to arise on a particular receptor or receptor group, the potential for effect interactions and the scale of the combined effect have been determined based on professional judgement and experience. The results of the assessment are presented within a matrix format in the Assessment Results section of this chapter.

Assessment Results

16.12 Based on the methodology detailed above, Figure 16.1, Figure 16.2 and Figure 16.3 present the results of the potential for interactions of individual effects on receptors during the demolition and construction stage and once the proposed development is in operation, respectively.

[1] Institute of Environmental Management and Assessment. The State of Environmental Impact Assessment Practice in the UK. 2011

Likely Residual Effects		Receptors and Receptor Groups																
		Existing Off-Site Human Health	Existing Off-Site Local Residents	Existing and Future Pedestrians	Existing and Future Cyclists	Existing Road Users	Surface Water Receptors	Groundwater Supply	Fluvial Flood Risk	Water Supply and Foul Drainage Network	Designated Sites	Habitats and Protected Species	Global Climate	Existing Character Areas and Landscape Features	Site Landscape Features	Existing Views	Archaeology - onsite
Human Health	Air Quality Effects																
	Noise Effects																
	Transport Effects																
Transport and Accessibility	Pedestrian Severance, Delay, Amenity, Fear and Intimidation																
	Driver Delay																
	Accidents and Safety																
Noise and Vibration	Demolition and construction noise																
	Demolition and construction traffic noise																
	Construction Vibration																
Water Resource and Flood Risk	Direct impacts on surface water quality and hydrodynamic status as a result of the proposed stream realignment and associated construction works																
	Disruption of Groundwater during Construction Excavations																
	Reduced capacity of Baldonnel Stream during realignment works																
Climate	GHG Emissions																
LVHIA	New uses and development in the wider setting of the landscape receptor																
	The appearance of the proposed development in the view and subsequent change to visual amenity																
Cultural Heritage	Knowledge gained through archaeological investigations																
Potential for Effect Interaction and so Combined Cumulative Effect?		**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Significant/Very Significant Positive
Moderate to Significant / Very Significant Positive
Moderate Positive
Slight to Moderate Positive
Slight Positive

Significant/Very Significant Negative
Moderate to Significant / Very Significant Negative
Moderate Negative
Slight to Moderate Negative
Slight Negative

Significant/Very Significant Neutral
Moderate to Significant / Very Significant Neutral
Moderate Neutral
Slight to Moderate Neutral
Slight Neutral

Imperceptible/Not-significant to Slight Negative
Imperceptible/Not-significant to Moderate Negative
Imperceptible/Not-significant to Significant/Very Significant Negative

Figure 16.1: Demolition and Construction Intra-Project Cumulative Effects

Likely Residual Effects		Receptors and Receptor Groups														
		Local Economy and New Workers	Existing Off-Site Human Health	Existing Off-Site Residents	Existing Pedestrians and Cyclists	Future Pedestrians and Cyclists	Road Users	Surface Water Receptors	Flood Risk	Ecology and Habitats onsite	Buildings and Infrastructure	Global Climate	Exisiting Character Areas and Landscape Features	Site Landcape Features	Existing Views	Heritage Assets
Population and Human Health	Creation of Employment															
	Air Quality Effetcs															
	Noise Effects															
	Transport Effects															
Transport and Accessibility	Pedestrain Severence, Delay, Amenity, Fear and Intimidation															
	Driver Delay															
	Accidents and Safety															
Air Quality	Change in NO2 levels due to Phase 1A temporary gas plant															
Noise and Vibration	Plant noise emissions Phase 1A															
	Plant noise emissions Phase 2B															
	Plant noise emissions Phase 2B + emergency kit															
Water Resources and Flood Risk	Long term change in surface water quality and hydrodynamic status of the Baldonnel Stream															
	Increased flood risk from the Baldonnel Stream															
	Changes to flood risk as a result of changes to the surface water runoff regime of the site															
Potential for Effect Interaction and so Combined Cumulative Effect?		**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

- Significant/Very Significant Positive
- Moderate to Significant / Very Significant Positive
- Moderate Positive
- Slight to Moderate Positive
- Slight Positive
- Significant/Very Significant Neutral
- Moderate to Significant / Very Significant Neutral
- Moderate Neutral
- Slight to Moderate Neutral
- Slight Neutral
- Significant/Very Significant Negative
- Moderate to Significant / Very Significant Negative
- Moderate Negative
- Slight to Moderate Negative
- Slight Negative
- Imperceptible/Not-significant to Slight Negative
- Imperceptible/Not-significant to Moderate Negative
- Imperceptible/Not-significant to Significant/Very Significant Negative

Figure 16.2: Operation Intra-Project Cumulative Effects (1 of 2)

Likely Residual Effects		Receptors and Receptor Groups														
		Local Economy and New Workers	Existing Off-Site Human Health	Existing Off-Site Residents	Existing Pedestrians and Cyclists	Future Pedestrians and Cyclists	Road Users	Surface Water Receptors	Flood Risk	Ecology and Habitats onsite	Buildings and Infrastructure	Global Climate	Exisiting Character Areas and Landscape Features	Site Landcape Features	Existing Views	Heritage Assets
Ecology	Ecolgical enhancements and creation of habitat															
Climate	Extreme heat events could result in overheating of the electrical equipment (e.g., data servers)															
	Increased mean temperatures and heatwaves leading to overheating in ancillary buildings and office spaces															
	Higher temperatures could damage the building structure															
	Higher temperatures leading to increased lightning strikes, resulting in damage to infrastructure or power loss.															
	Drought could lead to vegetation drying, increasing risk of vegetation fires															
	GHG Emissions															
LVIA	New uses and development in the wider setting of the landscape receptor															
Cultural Heritage	Change to visual qualities of setting															
Potential for Effect Interaction and so Combined Cumulative Effect?		**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Significant/Very Significant Positive
Moderate to Significant / Very Significant Positive
Moderate Positive
Slight to Moderate Positive
Slight Positive

Significant/Very Significant Neutral
Moderate to Significant / Very Significant Neutral
Moderate Neutral
Slight to Moderate Neutral
Slight Neutral

Significant/Very Significant Negative
Moderate to Significant / Very Significant Negative
Moderate Negative
Slight to Moderate Negative
Slight Negative

Imperceptible/Not-significant to Slight Negative
Imperceptible/Not-significant to Moderate Negative
Imperceptible/Not-significant to Significant/Very Significant Negative

Figure 16.3: Operation Intra-Project Cumulative Effects (2 of 2)

Demolition and Construction

16.13 As shown in Table 16.1, no effect interactions are likely to arise during the demolition and construction period.

Operation

16.14 As shown in Tables 16.2 and 16.3, effect interactions are likely to arise during operation in relation to off-site human health effects, however as previously discussed, in-combination human-health effects have been disregarded due to the nature of the human health assessment (i.e., as these effects have already been considered from an intra-cumulative perspective in Chapter 6: Population and Human Health).

16.15 Therefore, no further effect interactions are likely to arise during operation.

Conclusions

16.16 From the assessment of intra-project cumulative effects, no effects have been identified during demolition and construction or operation that have not already been discussed in Chapter 6: Population and Human Health.

17 RESIDUAL EFFECTS AND MITIGATION

Introduction

17.1 This chapter summarises the additional mitigation measures, the enhancement measures and the residual effects identified in the technical assessments of EIAR Volume 1 (Chapters 6-15) and EIAR Volume 2.

Additional Mitigation and Enhancement

17.2 As set out in Chapter 2: EIA Process and Methodology, the aim of an EIA is to develop measures to avoid, offset or reduce the significant negative environmental effects of a project and to enhance any beneficial effects.

17.3 Within each of the technical assessments, the need for additional mitigation measures has been considered in respect of likely significant negative effects as far as reasonably possible. In addition, opportunities for environmental enhancement have been explored where practicable. The proposed additional mitigation and enhancement measures are in addition to the embedded design and operational mitigation measures (as described in EIAR Chapter 4: Proposed Development Description) and standard embedded demolition and construction mitigation measures (as described in EIAR Chapter 5: Demolition and Construction Description), which have been considered within the technical assessments.

17.4 Table 17.1 presents a summary of the additional mitigation measures that have been identified over the course of the EIA of the proposed development categorised under the following stages:

- Demolition and Construction; and
- Operation.

17.5 It is noted that no enhancement measures have been identified within the individual technical assessments.

17.6 Reference should be made to individual technical assessment chapters for more detail.

Table 17.1: Summary of Proposed Additional Mitigation

Topic	Proposed Additional Mitigation
Demolition and Construction	
Population and Human Health	None
Transport and Accessibility	None
Air Quality	None
Noise and Vibration	None
Water Resource and Flood Risk	None
Ecology	• Pre-commencement checks recommended in Volume 3: Technical Appendix 11.3.
Ground Conditions	None
Climate Change	• It is recommended that opportunities to further reduce GHG emissions are considered at the next design stage.
Waste	None
Material Assets	None
Landscape and Visual	• Ensure protection to site hedgerows and associated trees to avoid damage.
Cultural Heritage	None
Operation	
Population and Human Health	None
Transport and Accessibility	None
Air Quality	None
Noise and Vibration	None
Water Resource and Flood Risk	• Site-Specific Flood Risk Mitigation Plan to be prepared and implemented throughout the operational life of the proposed development with an associated maintenance regime.
Ecology	None
Ground Conditions	None
Climate Change	• Regular inspection of drainage infrastructure and structures to assess conditions after extreme events. • Site-Specific Flood Risk Mitigation Plan to be prepared and implemented throughout the operational life of the proposed development with an associated maintenance regime. • It is recommended that opportunities to further reduce GHG emissions are considered at the next design stage.
Waste	None
Material Assets	None
Landscape and Visual	None
Cultural Heritage	None

Residual Effects

17.7 This section summarises the likely residual environmental effects of the proposed development following the adoption and inclusion of the additional mitigation measures that are set out in Table 17.1.

17.8 Reference should be made to EIAR Chapters 6-15 in EIAR Volume 1 and Volume 2 for a detailed description of likely significant residual environmental effects.

Demolition and Construction Residual Effects

17.9 Table 17.2 summarises the residual effects which have been identified by the individual technical assessments as likely to arise from the demolition and construction of the proposed development.

17.10 No significant positive environmental effects have been identified.

17.11 The following significant negative environmental effects have been identified and are highlighted in red text in Table 17.2:

Climate Change:

- GHG Emissions during demolition and construction.

Table 17.2: Demolition and Construction Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
Population and Human Health	Local Residents and Economy	Creation of employment	None	Non-significant – Slight	+	L	D/I	R	St
	Local Residents	Introduction of resident population	None	Non-significant – Slight	+	L	D/I	R	St
	Local Residents	Air quality effects	None	Non-significant – Slight	-	L	D/I	IR	St
	Local Residents	Noise effects	None	Non-significant – Slight	-	L	D	IR	St
	Local Residents	Transport effects	None	Non-significant – Slight	-	L	D	IR	St
	Local Residents	Amenity	None	Imperceptible	-	L	D	R	St
Transport and Accessibility	Pedestrians	Change in Pedestrian Severance, Delay, Amenity, Fear and Intimidation	None	Slight	-	L	D	R	St
	Road Users	Change in Driver Delay	None	Slight	-	L	D	R	St
	Road Users, Pedestrians and cyclists	Change in Accidents and Safety	None	Slight	-	L	D	R	St
Air Quality	Existing Off-site Human Health and Amenity	Dust Soiling and PM_{10} due to demolition and construction works	None	Imperceptible	+/-	L	D	IR	T to St
	Existing Off-site Human Health	Change in NO_2, PM_{10} and $PM_{2.5}$ levels due to vehicle emissions	None	Imperceptible	+/-	L	D	IR	T to St
Noise and Vibration	Local Residents	Demolition and Construction Noise	None	Slight	-	L	D	IR	St
	Local Residents	Demolition and Construction Traffic Nosie	None	Slight	-	L	D	IR	St
	Local Residents	Construction Vibration	None	Slight	-	L	D	IR	St
Water Resource and Flood Risk	Surface Water Receptors	Potential contamination as a result of silt-laden runoff across the demolition and construction site and potential for contaminants to be introduced to surface water by construction activities through leakages/spillages	None	Not Significant	-	L	D	R	St
	Surface Water Receptors	Direct impacts on surface water quality and hydrodynamic status as a result of the proposed stream realignment and associated construction works	None	Slight	+	L	D	R	St
	Groundwater Supply	Disruption of Groundwater during Construction Excavations	None	Slight	-	L	D	R	St

Table 17.2: Demolition and Construction Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
	Fluvial Flood Risk	There could be a potential for there to be periods of time when the capacity of the Baldonnel Stream channel through the site is reduced during realignment works	None	Slight	+	L	D	R	St
	Water Supply and Foul Drainage Network	Water Supply and Foul Drainage Capacity During Construction	None	Imperceptible	+/-	U	D	R	St
Ecology	South Dublin Bay and River Tolka SPA	Pollution	None	Imperceptible/Not Significant	-	L	I	IR	St
	Baldonnel stream	Pollution	None	Imperceptible	-	L	D	IR	St
	Terrestrial habitats	Habitat loss	None	Imperceptible	-	L	D	R/IR	St
	Terrestrial habitats	Pollution	Non	Imperceptible	-	L	I	R	St
	Bats	Commuting and foraging habitat loss	None	Imperceptible	-	L	D	R	St
	Birds	Disturbance / destruction of nest (if works are undertaken between March and August)	Pre-commencement checks recommended in Volume 3: Technical Appendix 11.3.	Imperceptible	-	L	D	IR	St
		Habitat loss as a result of displacement by disturbance	None required	Imperceptible	-	L	I	R	St
Ground Conditions	Construction Workers	Impact to human health from exposure to contaminated soils / dust / ground gases / water during enabling and construction works.	None	Imperceptible	+/-	U	D	IR	T to St
	Adjacent site users	Impact to human health from exposure to contaminated dust during enabling and construction works.	None	Imperceptible	+/-	U	I	IR	T to St
	Water environment (Baldonnel Stream)	Increased potential for leaching of contaminants from soils and mobilisation of contamination in surface water and groundwater during stream diversion and foundation works. Also, contaminants introduced to surface water by construction activities through leakages/spillages.	None	Imperceptible	+/-	U	D	IR	T to St
	Groundwater beneath the site (aquifers)		None	Imperceptible	+/-	U	D	IR	T to St
	Agricultural Land	Loss of agricultural land	None	Imperceptible	+/-	U	D	IR	P
Climate Change	CCR – Buildings and Infrastructure	Heavy rainfall leading to stockpile erosion and siltation of drainage assets	Implementation of Flood Mitigation Strategy	Imperceptible to Not Significant	-	L	D	R	St
	CCR – Buildings and Infrastructure	Heavy rainfall leading to an inability to undertake demolition/ construction activity and programme delays.	None	Imperceptible to Not Significant	-	L	D	R	Mt

Table 17.2: Demolition and Construction Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
	CCR – Human Health	Heatwaves and high temperatures leading to increased dust generation.	None	Imperceptible to Not Significant	-	L	D	R	Mt
	CCR- Human Health	Strong winds leading to damage of stockpiles and secondary impacts on site personnel welfare.	None	Imperceptible to Not Significant	-	L	ID	R	Mt
	CCR – Human Health	Heatwaves and high temperatures affecting site personnel welfare.	None	Imperceptible to Not Significant	-	L	D	R	Mt
	ICCI – Air Quality	Extended period of drought could increase exposure of sensitive receptors to dust generated from demolition and construction activities	None	Not significant	-	L	D	R	Mt
	ICCI – Air Quality	Extended period of drought could reduce availability of water for dust suppression which would reduce the effectiveness of embedded mitigation measures.	None	Not significant	-	L	D	R	Mt
	ICCI - Population and Human Health	Potential interactions of climate change with the identified Population and Human Health effects	None	Imperceptible	-	L	D	R	Mt
	ICCI – Transport	Potential interactions of climate change with the identified transport effects.	None	Imperceptible	-	L	D	R	Mt
	ICCI – Noise and Vibration	Potential interactions of climate change with the identified Noise and Vibration effects.	None	Not significant	-	L	D	R	Mt
	ICCI – Water Resource and Flood Risk	Potential interactions of climate change with the identified Water Resource and Flood Risk effects.	None	Imperceptible to Not significant	-	L	D	R	Mt
	ICCI – Ecology	Potential interactions of climate change with the identified ecological effects.	None	Imperceptible to Not significant	-	L	ID	R	Mt
	ICCI – Ground Conditions	Potential interactions of climate change with the identified Ground Conditions effects.	None	Imperceptible to Not significant	-	L	D	R	Mt
	ICCI – Waste	Potential interactions of climate change with the identified Waste effects.	None	Imperceptible to Not significant	-	L	D	R	Mt
	ICCI – Material Assets	Potential interactions of climate change with the identified material effects.	None	Imperceptible to Not significant	-	L	D	R	Mt
	ICCI – Landscape and Visual	Potential interactions of climate change with the identified Landscape and Visual effects.	None	Imperceptible to Not significant	-	L	D	R	Mt
	ICCI – Cultural Heritage	Potential interactions of climate change with the identified Cultural Heritage effects.	None	Imperceptible to Not significant	-	L	D	R	Mt
	GHG – Global Climate	GHG Emissions	Opportunities to further reduce GHG emissions should be considered at the next design stage.	**Significant**	**-**	**L**	**D**	**IR**	**Lt**
Waste	Waste Management Infrastructure	Effect on capacity	None	Imperceptible/not significant	-	L	D	IR	T to St
	Landfill Sites	Effect on void space	None	Imperceptible/not significant	-	L	D	IR	P

Table 17.2: Demolition and Construction Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
Material Assets	Power and Electrical Supply	Increased demand on the surrounding network	None	Imperceptible	+/-	L	D	IR	T to St
	Gas Supply		None	Imperceptible	+/-	L	D	IR	T to St
	Foul Water Infrastructure		None	Imperceptible	+/-	L	D	IR	T to St
	Water Supply		None	Imperceptible	+/-	L	D	IR	T to St
	Telecommunications		None	Imperceptible	+/-	L	D	IR	T to St
	Surface Water Infrastructure	Risks of contamination from increased run-off, machinery on site, concrete activities, and/or accidental spillages.	None	Imperceptible	+/-	L	D	IR	T to St
Landscape and Visual	Newcastle Lowlands Character Area	Increased construction activity within allocated business park area. Similar in size and scale to existing activity	None required	Slight	-	D	P	R	St
	Site Hedgerows and associated trees	Disturbance and impacts on function and character value	None required	Slight	-	D	T	R	St
	The Grand Canal	Disturbance of linked green infrastructure	None required	Slight	-	D	T	R	St
	NIAH Listed Features	Disturbance and impacts on character amenity and tranquillity	None required	Slight	-	D	T	R	St
	Baldonnel Stream	Disturbance and change resulting from realignment	None required	Slight	-	D	P	R	St
	Site trees	Removal and disturbance impact on function and character value	None required	Slight	-	D	T	R	St
	VP1-11	Contribution to ongoing construction within area	None require	Imperceptible	+/-	I	T	R	St
Cultural Heritage	On site archaeology	Knowledge gained through archaeological investigations	Specific pre-development trenching	Imperceptible	+/-	U	D	IR	P
	Built heritage	None identified	None	Imperceptible	+/-	U	D	IT	T to St

Notes:

* - = Negative/ + = Positive / +/- = Neutral; R = Reverisble, IR = Ireversible; D = Direct, ID = Indirect; L= Likely, U = Unlikely; M = Momentary, B = Brief, T= Temporary, St = Short-term, Mt = Medium-term, Lt = Long-term, P = Permanent.

** Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant, Profound.

Operation Residual Effects

17.12 Table 17.3 summarises the residual effects which have been identified by the individual technical assessments as likely to arise upon completion and operation of the proposed development.

17.13 The following significant beneficial environmental effects for the completed development stage have been identified and are highlighted in green text in Table 17.3.

Water Resource and Flood Risk:

- Changes to flood risk as a result of changes to the surface water runoff regime of the site.

Landscape and Visual:

- Site hedgerows and trees as a result of an increase in planting and strengthening of traditional landscape features.

17.14 The following significant negative environmental effects have been identified and are highlighted in red text in Table 17.3:

Climate Change

- GHG Emissions generated during operation

Table 17.3: Operation Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
Population and Human Health	Local Residents and Economy	Creation of employment	None	Non-significant – Slight	+	L	D	IR	Lt
	Local Residents	Air quality effects	None	Non-significant – Slight	-	L	D/I	IR	Lt
	Local Residents	Noise effects	None	Non-significant – Slight	-	L	D	IR	Lt
	Local Residents	Transport effects	None	Non-significant – Slight	-	L	D	IR	Lt
	Local Residents	Amenity	None	Imperceptible		L			Lt
Transport and Accessibility	Pedestrians	Change in Pedestrian Severance, Delay, Amenity, Fear and Intimidation	None	Slight	-	L	D	R	P
	Road Users	Change in Driver Delay	None	Slight	-	L	D	R	P
	Road Users, Pedestrians and cyclists	Change in Accidents and Safety	None	Slight	-	L	D	R	P
Air Quality	Existing Off-site Human Health	Change in NO_2, PM_{10} and $PM_{2.5}$ levels due to vehicle emissions	None	Non-significant	-	L	D	R	Lt to P
	Existing Off-site Human Health	Change in NO_2 levels due to Phase 1A temporary gas plant	None	Slight	-	L	D	R	Lt to P
	Existing Off-site Human Health	Change in NO_2 levels due to Phase 2B permanent power plant	None	Non-significant	-	L	D	R	Lt to P
	Existing Off-site Human Health	Change in NO_2 levels due to Phase 1A and Phase 2B emergency generators	None	Imperceptible	-	L	D	R	Lt to P
Noise and Vibration	Local Residents	Plant noise emissions Phase 1A	None	Slight	-	L	D	R	St
	Local Residents	Plant noise emissions Phase 2B	None	Slight	-	L	D	R	Lt
	Local Residents	Plant noise emissions Phase 2B + emergency kit	None	Slight	-	L	D	R	T
Water Resource and Flood Risk	Surface Water Receptors	Long term change in surface water quality and hydrodynamic status of the Baldonnel Stream	None	Slight	+	L	D	IR	Lt
	Flood Risk	Changes to flood risk as a result of changes to the surface water runoff regime of the site	Site-Specific Flood Risk Mitigation Plan and	**Moderate**	**+**	**L**	**D**	**IR**	**Lt**

Table 17.3: Operation Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
			associated maintenance regime						
	Groundwater	Potential to alter local groundwater flow paths and levels	None	Non-significant	-	L	D	IR	Lt
	Water Supply and Foul Drainage Network	Water Supply and Foul Drainage Capacity During Operation	None	Imperceptible	+/-	L	D	IR	Lt
Ecology	South Dublin Bay and River Tolka SPA	Pollution Ecological enhancement	None required	Imperceptible	+/-	L	I	IR	Lt
	Baldonnel stream	Ecological enhancement	None required	Slight	+	L	D	R	P
	Terrestrial habitats	Ecological enhancement	None required	Imperceptible	+	L	D	R	P
	Bats	Disturbance through lighting	None required	Imperceptible	+	L	D	R	P
	Birds	Foraging habitat enhancement	None required	Imperceptible	+	L	D	R	P
Ground Conditions	Adjacent site users	Impact to human health from exposure to residual contaminated soils / dust / ground gases / water.	None	Imperceptible	+/-	U	I	IR	P
	Future site users		None	Imperceptible	+/-	U	D	IR	P
	Water environment (Baldonnel Stream)	Contaminants released by operation activities through leakages/spillages.	None	Imperceptible	+/-	U	D	IR	P
	Groundwater beneath the site (aquifers)		None	Imperceptible	+/-	U	D	IR	P
Climate Change	CCR – Building and Infrastructure	Increased frequency of intense rainfall leading to overwhelming of drainage assets and flooding	Detailed flood mitigation strategy provided and implemented. Regular monitoring and maintenance of drainage facilities and culverts	Imperceptible to Not Significant	-	L	D	R	Lt
	CCR – Infrastructure	Flooding of the underground foundations or services (electrical cables)	None	Imperceptible to Not Significant	-	L	D	R	Lt
	CCR – Environment, Buildings and Infrastructure	Flooding of Baldonnel stream	Detailed flood mitigation strategy provided and implemented. Regular monitoring and maintenance of drainage facilities and culverts	Imperceptible to Not Significant	-	L	D	R	Lt
	CCR – Environment	Overflow of contaminated water, impacting nearby watercourses	None	Imperceptible to Not Significant	-	L	I	R	Lt

Table 17.3: Operation Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
	CCR – Buildings and Infrastructure	Increased frequency of intense rainfall leading to increased groundwater levels.	None	Imperceptible to Not Significant	-	L	D	R	Lt
	CCR – Human Health	Rainfall events resulting in wet pavement surface leading to reduced skid resistance leading to unsafe conditions	None	Imperceptible to Not Significant	-	L	D	R	Lt
	CCR – Environment	Drought conditions affecting landscape mitigation planting	None	Imperceptible to Not Significant	-	L	D	R	Lt
	CCR – Buildings and Infrastructure	Extreme heat events could result in overheating of the electrical equipment (e.g., data servers)	None	Slight to Moderate	-	L	D	IR	Lt
	CCR – Human Health	Increased mean temperatures and heatwaves leading to overheating in ancillary buildings and office spaces	None	Slight to Moderate	-	L	D	R	Lt
	CCR – Buildings	Higher temperatures could damage the building structure	None	Slight to Moderate	-	L	D	IR	Lt
	CCR – Buildings and Infrastructure	Higher temperatures leading to increased lightning strikes, resulting in damage to infrastructure or power loss.	None	Slight to Moderate	-	L	D	IR	Lt
	CCR – Buildings and Infrastructure, Human Health	Drought could lead to vegetation drying, increasing risk of vegetation fires	None	Slight to Moderate	-	L	I	R	Lt
	CCR – Human Health	Drought conditions affecting water and potable water availability	None	Imperceptible to Not Significant	-	L	D	R	Lt
	CCR – Buildings and Infrastructure	Freeze-thaw could damage of the proposed development, e.g., cracking	None	Imperceptible to Not Significant	-	L	D	IR	Lt
	ICCI – Population and Human Health	Potential interactions of climate change with the identified Population and Human Health effects	None	Imperceptible	-	L	D	R	P
	ICCI – Transport	Potential interactions of climate change with the identified transport effects.	None	Imperceptible	-	L	D	R	P
	ICCI – Air Quality	Potential interactions of climate change with the identified Air Quality effects	None	Not significant	-	L	D	R	P
	ICCI – Noise and Vibration	Potential interactions of climate change with the identified Noise and Vibration effects	None	Imperceptible to Not Significant	-	L	D	R	P
	ICCI – Water Resources and Flood Risk	Potential interactions of climate change with the identified Water Resources and Flood Risk effects	None	Imperceptible to Not Significant	-	L	D	R	P
	ICCI - Ecology	Potential interactions of climate change with the identified Ecological effects	None	Imperceptible to Not Significant	-	L	D	R	P
	ICCI – Ground Conditions	Potential interactions of climate change with the identified Ground Conditions effects	None	Imperceptible to Not Significant	-	L	D	R	P
	ICCI – Waste	Potential interactions of climate change with the identified Waste effects	None	Imperceptible to Not Significant	-	L	D	R	P

Table 17.3: Operation Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
	ICCI – Material Assets	Potential interactions of climate change with the identified Material effects	None	Imperceptible to Not Significant	-	L	D	R	P
	ICCI – Landscape and Visual	Potential interactions of climate change with the identified Landscape and Visual effects	None	Imperceptible to Not Significant	-	L	D	R	P
	ICCI – Cultural Heritage	Potential interactions of climate change with the identified Cultural Heritage effects	None	Imperceptible to Not Significant	-	L	D	R	P
	ICCI – Global Climate	GHG Emissions	Opportunities to further reduce GHG emissions should be considered at the next design stage.	**Significant**	**-**	**L**	**D**	**IR**	**Lt**
Waste	Waste Management Infrastructure	Effect on capacity	None	Imperceptible	-	L	D	IR	Lt
	Landfill Sites	Effect on void space	None	Imperceptible	-	L	D	IR	P
Material Assets	Power and Electrical Supply	Increased demand on the surrounding network	None	Imperceptible	+/-	L	D	IR	P
	Gas Supply		None	Imperceptible	+/-	L	D	IR	P
	Foul Water Infrastructure		None	Imperceptible	+/-	L	D	IR	P
	Water Supply		None	Imperceptible	+/-	L	D	IR	P
	Telecommunications		None	Imperceptible	+/-	L	D	IR	P
	Surface Water Infrastructure	Risk of contamination to surrounding water environment	None	Imperceptible	+/-	L	D	IR	P
Landscape and Visual	Newcastle Lowlands Charac-ter Area	Additional data centre development within a business park on the urban fringe with boundary treatments that contribute to biodiversity and green infrastructure	None required	Slight	+	D	P	R	Lt
	The Grand Canal	Improved green infrastructure linked to sight	None required	Slight	+	I	P	IR	Lt
	NIAH Listed features	Increased data centre development mitigated by increase in landscaping	None required	Not significant	+	I	P	IR	Lt
	Site hedgerows and trees	Increase in planting and strengthening of traditional landscape feature	None required	**Moderate**	+	D	P	R	Lt
	Baldonnel Stream and site trees	Realignment of stream with improved wetland features and tree planting	Some coniferous planting to increase screening during winter months	Slight	+	D	P	R	Lt
	VP 2, 3, 8, 11	Slight increase in data centre development within business park area	None required	Imperceptible	+/-	I	P	R	Lt
	VP 1, 4, 5, 6, 7, 9, 10	New large building within business park	None required	Slight	-	I	P	R	Lt

Table 17.3: Operation Residual Effects

Topic	Receptor	Description of Residual Effect	Additional Mitigation	Scale and Significance of Residual Effect **	Nature of Residual Effect*				
					+ -	L U	D I	R IR	M B T St Mt Lt P**
Cultural Heritage	On site archaeology	Potential for unidentified archaeology to be found on site	None	Imperceptible	+/-	U	D	IR	P
	Built heritage (TOR6-8)	Change to visual qualities of setting	None	Slight	-	L	D	IR	P
	Built heritage (TOR1-4, 12, 16, 17-24)	Change to visual qualities of setting	None	Imperceptible	+/-	U	D	IR	P

Notes:

* - = Negative/ + = Positive / +/- = Neutral; R = Reversible, IR = Irreversible; D = Direct, ID = Indirect; L= Likely, U = Unlikely; M = Momentary, B = Brief, T= Temporary, St = Short-term, Mt = Medium-term, Lt = Long-term, P = Permanent.

** Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant, Profound.

GLOSSARY OF TERMS

Accurate Visual Representations	A static or moving image which shows the location of a proposed development as accurately as possible; it may also illustrate the degree to which the development will be visible, its detailed form or the proposed use of materials. AVRs are produced by accurately combining images of the proposed building with a representation of its context.
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near (LAFeq,T).
Amenity	A pleasant or advantageous aspect of the environment.
An Bord Pleanála	Ireland's national independent planning body.
Annual Probable Sunlight Hours	The Annual Probable Sunlight Hours (APSH) is a measure of sunlight that a given window may expect over the period of a year, and where there is no obstruction, equates to a maximum of 1,486 hours. Sunlight is measured using a sun indicator which contains 100 spots, each representing 1 % of APSH (i.e. 14.86 hours of the total APSH).
Applicant	Vantage Data Centers DUB11 Limited
Application	Means the full planning application, for the proposed development on the site.
A-weighting Sound Pressure Level	The sound pressure level with the A-weighting applied. The A-weighting is used for most environmental noise measurements and is used to weight a spectrum of sound to match the sensitivity of the human ear.
Background Sound/Noise Level	These are amongst the lowest noise levels measured over a given period of time and exclude short term, intermittent noise sources. The background noise level is quantified by the LA90 descriptor and is therefore the level which is exceeded for 90% of a given period of time.
Baseline Studies	Studies of existing environmental conditions which are designed to establish the baseline conditions against which any future changes can be measured or predicted.
Biodiversity	The diversity, or variety of plants and animals and other living things in a particular area of region. It encompasses landscape diversity, ecosystem diversity, species diversity and genetic diversity.
Brief Effects	Effects lasting less than a day
Completed Development	A development scheme which has been build out and is operational.
Construction Environmental Management Plan	A documented management system with environmental procedures to monitor residual effects of the demolition and construction stage of a development.
Construction Logistics Plan	A documented travel plan specific for a construction site.
Construction Method Statement	A document which addresses the health and safety risks to workers and other personnel on-site during the demolition and construction stage of the development.
Cumulative Effects	Effects that result from incremental changes caused by other past, present or reasonably foreseeable actions.
Cumulative Developments	Developments that have received a resolution to grant planning permission or have a signed legal agreement in place. They are likely to be delivered concurrently with the Proposed Development assessed in the EIA.
Decibel	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.
Desk Study	A non-intrusive study and review of all available information pertaining to a site, including historical records, collated and monitored data, and consultation with relevant stakeholders.
Diffusion Tube	A passive sampler used for collecting NO_2 in the air.
Directive	European Union (EU) Directives impose legal obligations on European Member States. They are binding as to the results to be achieved but allow individual states the right to decide the form and methods used to achieve the results.
EIA Scoping	An initial stage in determining the nature and potential scale of the environmental impacts arising from a proposed development and assessing what further studies are required to establish their significance.
EIA Scoping Opinion	A written statement of the opinion of the relevant planning authority as to the information to be provided in the Environmental Statement.
EIA Screening	An initial stage in which the need for EIA is considered in respect of a development. Some developments are automatically subject to EIA by means of their inevitable size, nature and effects (Annex I developments). Other projects are made subject to EIA because it is anticipated that they are likely to have significant environmental effects (Annex II Developments).
Emission	A material that is expelled or released to the environment. Usually applied to gaseous or odorous discharges to the atmosphere.
Environmental Impact Assessment	A process by which information about the environmental effects of a development is collected and taken into account by the relevant decision-making body before a decision is given on whether the development should go ahead.
Environmental Impact Assessment Report	A statement that includes such information that is reasonably required to assess the environmental effects of a development.
Environmental Protection Agency	An independent public body established under the Environmental Protection Agency Act , 1992, responsible for protecting and improving the environment.
Equivalent Continuous A-Weighted Sound Pressure Level	The L_{Aeq} is an energy average and defined as the level of sound which, over a given period of time, would equate to the same A-weighted sound energy as the actual fluctuating sound.
Façade	The front or face of a building.

Fit-out	Installation of all non-substructure and non-superstructure items such as electrical water services, as well as final internal finishings.
Frequency	In sound, the number of cycles per second of a pressure fluctuation and frequency in sound is proportional to its pitch. Different frequencies are divided into octave and one third octave bands.
Frequency of Effects	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Frequency Weightings	Weightings can be applied to a spectrum of sound and act as a filter to account for different sensitivities and conditions.
Gross External Area	A measure of area of a building measured externally at each floor level.
Heavy Goods Vehicle	A vehicle with a gross vehicle weight greater than 3.5 tonnes.
Imperceptible Effect	An effect capable of measurement but without significant consequences
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Long-term Effects	Effects lasting fifteen to sixty years.
Maximum Noise Level	The maximum instantaneous noise level measured during a given period of time. The time weighting to which the meter is set for this measurement parameter is always indicated by either an F or S.
Medium-term Effects	Effects lasting seven to fifteen years.
Minimum Noise Level	The minimum instantaneous noise level measured during a given period of time. The time weighting to which the meter is set for this measurement parameter is always indicated by either an F or S.
Mitigation	Any process, activity of thing designed to avoid, reduce or remedy adverse environmental effects likely to be caused by a development project.
Mitigation Measure	Measure aiming at reducing an adverse environmental effect.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Momentary Effects	Effects lasting from seconds to minutes
National Planning Framework (2018)	At the national level, planning policy is contained within the National Planning Framework (NPF) 2018. The Department of Housing Planning and Local Government, on behalf of the Government of Ireland, published the NPF in February 2018 and is the Government's high-level strategic plan for shaping the future growth and development of our country out to the year 2040.
National Development Plan 2018-2027	The National Development Plan 2018-2027 (NDP) sets out the investment priorities that will underpin the implementation of the NPF, through a total investment of approximately €116 billion. Finalisation of the NPF alongside the ten-year NDP will culminate one plan to guide strategic development and the infrastructure investment at the national level.
National Spatial Strategy	The National Spatial Strategy (NSS) (2002) is a 20-year coherent national planning framework for Ireland. It aims to guide the achievement of a better balance of social, economic and physical development across the country, supported by more effective and integrated planning.
Negative/adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Nitrogen dioxide	Road transport and the burning of fossil fuels for power are the main sources of Nitrogen dioxide. In addition to being a greenhouse gas it also contributes to photochemical smog formation. It is an irritant to the respiratory system.
Noise Rating Level	This is a single figure value derived by plotting a noise spectrum against a set of curves. The curve under which the spectrum fits is the resulting Noise Rating Level.
Non-Technical Summary	A summary of the Environmental Statement in 'non-technical language'.
Normalised Element Level Difference	The normalised difference in sound level between a pair of rooms via a small element such as a trickle ventilator. The level difference in octave bands is normalised to a reference amount of absorption.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Objective EE	A classification under the South Dublin County Development Plan 2016-2022: to provide for enterprise and employment uses.
Ordnance Datum	Land levels are measured relative to the average sea level at Newlyn, Cornwall. This average level is referred to as 'Ordnance Datum'.
Particulate Matter	Discrete particles in ambient air, sizes ranging between nanometres (nm, billionths of a metre) to tens of micrometres (µm, millionths of a metre).
Pathways	The routes by which impacts are transmitted through air, water, soils or plants and organisms to their receptors.
Percentile Level	A-weighted sound pressure level obtained using time-weighting F, which is exceeded for N% of a specified time interval. An example of this is background noise which is quantified with the LA90 descriptor, which is the A-weighted level which is exceeded for 90% of the measurement period.
Permeant Effects	Effects lasting over sixty years.
Plant	A building's generator, heating, ventilation, and/or electricity-production system.
Positive Effects	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Profound Effects	An effect which obliterates sensitive characteristics.
Quality of Effects	An effect that is positive, neutral, or negative.
Receptor (Sensitive)	A component of the natural, created, or built environment such as human being, water, air, a building, or a plant that is affected by an impact.
Residual Effects	Those effects of a development that cannot be mitigated following implementation of mitigation proposals.
Reverberation Time	The time that would be required for the sound pressure level to de-crease by 60 dB after the sound source has stopped. The descriptor T, often includes other nomenclature to describe the type of reverberation time measurement or if the reverberation time is an average taken for specific frequencies.

Reversible Effects	Effects that can be undone, for example through remediation or restoration.
Regional Spatial and Economic Strategy (2019)	The Draft Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly includes Regional Policy Objectives.
Regional Policy Objective 8.25	A policy objective under the RSES which outline the responsibility of local authorities to support the implementation of ICT infrastructures such as data storage facilities at appropriate locations.
Risk Assessment	An assessment of the likelihood and severity of an occurrence.
Short-term Effects	Effects lasting one to seven years.
Significance of Effect	The impact of an effect on a receptor defined at one of the following significance levels: imperceptible, not-significant, slight, moderate, significant, very significant and profound.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Site	Located at Irish grid reference O 03687 30780, within Profile Park, Dublin.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Sound Exposure Level	A level of a sound, of 1 s duration, that has the same sound energy as the actual noise event considered.
Sound Power Level	This is the total sound energy radiated from a given source. The sound power Level is 10 times the logarithm to base 10 of the ratio of the reference sound power level (1x10-12) and the measured power.
Sound Pressure Level	This is the unweighted or linear level which is measured prior to any weightings being applied. The sound pressure level is 20 times the logarithm to base 10 of the ratio of the reference sound pressure (2x10-5) and the measured sound pressure.
Sound Reduction Index	The laboratory measured sound insulation properties of a material or building element in octave or third octave bands.
South Dublin County Council	The South Dublin County Council (SDCC) which is the local planning authority for South Dublin County.
South Dublin County Council Development Plan 2016-2022	The relevant statutory development plan for the Site, adopted in May 2016.
Specific Noise Level	The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source (the noise source under investigation) over a given time interval (LAeq,T).
Standardised Weighted Level Difference	The standardised, weighted difference in sound level between a pair of rooms, stated as a single figure. The level difference in octave bands is first normalised to a reference reverberation time and then plotted against a set of reference curves to establish a single figure value.
Statutory Consultees	Groups or bodies that, by law, must be consulted as part of the planning application process for EIA development.
Structure Borne Noise	Audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements.
Study Area	Defined impact assessment area surrounding the site relative to the technical topic in question and determined based professional judgement.
Substructure	Elements of a development below ground level, typically basements and foundations.
Superstructure	Elements of a development above ground principally the mega frame, supporting core and outer shell cladding.
Sustainable Development	Development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.
Temporary Effects	Effects lasting less than a year.
Time Weightings	A time weighting to denote the response of the sound level meter. For most measurements the Fast time weighting is selected (F) how-ever, a slow time weighting (S) is often used to for the measurement train noise and vibration.
Topography	The natural and man-made features of an area collectively.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Vibration	The periodic movements of structures transferred by ground and parts of the building, due to events such as train pass-by, piling, blasting or use of heavy machinery.
Vibration Dose Value	The Vibration Dose Value is the vibration dose a person is expected to be exposed to over the course of the day or night. It is given by the fourth root of the time integral of the fourth power of the acceleration after it has been frequency-weighted.
Weighted Sound Reduction Index	A single number which represents the sound reduction of a material. It is derived by plotting the sound reduction index against a set of reference curves. The curves are shifted until a best-fit is established and the curve which best fits the sound reduction spectrum is used to represent the single figure value.

ABBREVIATIONS

AA	Appropriate Assessment
AADT	Annual Average Daytime Traffic Flows
ABP	An Bord Pleanála
ADMS	Atmospheric Dispersion Modelling System
AEP	Annual Exceedance Probability
AOD	Above Ordnance Datum
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Standards
BAT	Best Available Technique
BH	Borehole
BMP	Biodiversity Management Plan
BT	British Telecommunications
CAFE	Directive 2008/50/EC on ambient air quality and cleaner air for Europe
CCTV	Closed Circuit Television
CDE	Construction, Demolition and Excavation
CDM	Construction Design and Management
CEMP	Construction Environmental Management Plan
CFA	Continuous Flight Auger
CFRAM	Catchment Flood Risk Assessment and Management
CGI	Computer Generated Image
CIEEM	Chartered Institute of Ecology and Environmental Management
CLEA	Contaminated Land Exposure Assessment
CLOCS	Construction Logistics and Community Safety
CLP	Construction Logistics Plan
CLR	Contaminated Land Report
CMP	Construction Management Plan
CO	Carbon Monoxide
COMAH	Control of Major Accident and Hazard
COSHH	Control of Substances Hazardous to Health
COVID 19	Coronavirus Disease
CSO	Central Statistics Office
CTMP	Construction Traffic Management Plan
DAS	Design and Access Statement
DC	Data Center
DMP	Dust Management Plan
DOAS	Dedicated Outside Air-handling Units
DS	Data Center
DSMP	Delivery and Servicing Management Plan
EB	East Bound
EC	Environmental Commissions
ED	Electoral Division
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIA	Environmental Impact Assessment
EMR	East Midlands Region
EMRA	Eastern and Midlands Regional Assembly
EPA	Environment Protection Agency
EPUK	Environmental Protection UK
EQS	Environmental Quality Standards
ERFB	Eastern Regional Fisheries Board
ESA	Ecological Survey Area
ESB	Electricity Switch Board
EU	European Union
EV	Electric Vehicle
EVCP	Electric Charging Point
FFL	Finished Floor Level
FM	Facilities Management
FRA	Flood Risk Assessment
FTE	Full Time Equivalent
GA	General Arrangement
GAC	Generic Assessment Criteria
GDA	Greater Dublin Area
GDSDS	Greater Dublin Strategic Drainage Strategy
GEA	Gross External Area
GFA	Gross Floor Area
GHG	Greenhouse Gases
GIS	Geographical Information System
GLVIA	Guidance for Landscape and Visual Impact Assessment
GSI	Geological Survey of Ireland
GTV	Groundwater Threshold Values
GWB	Groundwater Body

GWDTE	Groundwater Dependent Terrestrial Ecosystem
ha	Hectare
HDV	Heavy Duty Vehicles
HGV	Heavy Goods Vehicle
HRU	Heat Recovery Units
HSA	Health and Safety Authority
HV	High Voltage
IAQM	Institute of Air Quality Management
ICT	Information and Communications Technology
ID	Indirect
IDF	Intermediate Distribution Frame
IE	Industrial Emissions
IED	Industrial Emissions Directive
IEMA	Institute of Environmental Management and Assessment
IGI	Geologist of Ireland
IGR	Irish Grid Reference
IGV	Interim Guideline Values
IMS	Industrial Marine Silencers
IPPC	Integrated Pollution Prevention Control
IR	Irreversible
ISO	International Organisation of Standards
ITS	Irish Traffic Surveys
LCA	Landscape Character Area
LDV	Light Duty Vehicle
LGV	Light Goods Vehicles
LT	Long Term
LV	Low Voltage
LVHIA	Landscape, Visual and Heritage Impact Assessment
m	Metre
m AOD	Metres Above Ordnance Datum
MCPD	Medium Combustion Plan Directive
MMP	Materials Management Plan
MPOE	Main Point of Entry
Mt	Medium Term
MV	Medium Voltage
MW	Megawatts
N/A	Not applicable
NB	North Bound
NBDC	National Biodiversity Data Centre
NDP	National Development Plan
NHA	National Heritage Area
NIAH	National Inventory of Architectural Heritage
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxide
NPF	National Planning Framework
NPWS	National Parks and Wildlife Services
NRA	National Roads Authority
NSS	National Spatial Strategy
nZEB	Nearly Zero Energy Building
NRA	National Roads Authority
NSR	Noise Sensitive Receptor
NTS	Non-Technical Summary
NWCPO	National Waste Collection Permit Office
OCEMP	Operational CEMP
OPW	Office of Public Works
PAH	Polycyclic Aromatic Hydrocarbons
PC	Process Contribution
PCE	Pre-Connection Enquiry
PEC	Process Environmental Contribution
PEM	Project Environmental Manager
PI	Performance Indicator
PIA	Personal Injury Accident
$PM_{2.5}/PM_{10}$	Particulate Material of a particular size fraction
PPE	Personal Protective Equipment
PPG	Planning Practice Guidance
PPV	Peak Particle Velocity
PV	Photovoltaic
RPO	Regional Policy Objective
RSES	Regional Spatial and Economic Strategy
SA	Small Area
SAC	Special Area of Conservation
SB	South Bound
SCR	Special Catalytic Reduction
SDCC	South Dublin County Council
SFRA	Strategic Flood Risk Assessment
SID	Strategic Infrastructure Development

SRF	Soil Recovery Facility
SGV	Soil Guideline Values
SPA	Special Protection Area
SPOSH	Significant Potential of Significant Harm
ST	Short Term
SuDS	Sustainable Drainage Systems
SWMP	Site Waste Management Plan
TA	Transport Assessment
TRL	Transport Research Laboratory
USEPA	U.S. Environmental Protection Agency
VP	Viewpoint
WB	West Bound
WMP	Waste Management Plan
WMU	Water Management Unit
ZOI	Zone of Influence
ZTV	Zone of Theoretical Visibility