

mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values through the suppression of dust emissions. The EU ambient air quality limit values are based on the protection of human health. Therefore, the impact of construction of the Proposed Development will be **neutral, short-term** and **imperceptible** with respect to air quality and human health.

Climate

Construction traffic is the primary source of GHG emissions during the construction phase. Construction vehicles and machinery will give rise to CO₂ and N₂O emissions during construction of the Proposed Development. The Institute of Air Quality Management document 'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014) states that site traffic and plant is unlikely to have a significant impact on climate. There is the potential for the construction phase of the Proposed Development to coincide with the construction of the permitted Buildings B and C and potential future indicative development. However, as the Proposed Development will be constructed on a phased basis over an approximate 5 year period (see Chapter 2) the scale of the construction works will be less than if the entire development were to be constructed simultaneously. In addition, the development of the wider site will also follow a phased approach to construction. It can be concluded that due to the duration and nature of the construction activities, CO₂ and N₂O emissions from construction vehicles and machinery will have a **short-term, negative** and **not significant** cumulative impact on climate.

Operational Phase

Air Quality

Cumulative impacts to air quality during the operational phase of the Proposed Development may occur due to NO₂ emissions from the operation of the back-up generators in addition to NO₂ emissions from existing and Permitted Developments in the vicinity of the Proposed Development site. In terms of the potential for overlap of emission plumes the impact is largely confined to the immediate vicinity of the site and therefore, developments beyond 1 km of the Proposed Development boundary have not been included within the cumulative assessment. This is because there is minimal potential for overlap of emission plumes at increased distances. A review of relevant existing and Permitted Developments was conducted in order to inform the operational phase cumulative air quality assessment. The following developments were included within the cumulative assessment as per Section 9.2.3.1 of Chapter 9 – the IE licenced sites of BMS and Alexion as they are both within 1 km of the Proposed Development and both have licenced emissions of NO₂, the Permitted Developments on the wider site (Building A, B and C) and an indicative future development on the wider site to the north of Building G (Building D has no associated air emissions). No other developments of relevance were identified for inclusion in the cumulative modelling assessment. Emissions and proposed minimum stack heights for the 18 no. back-up diesel generators associated with the potential future data centre building were assumed to be the same as those for Buildings F and G for the purpose of the cumulative assessment. Building E has one associated generator and associated emission point. House generators associated with the relevant buildings were also included in the modelling assessment.

The NO₂ modelling results at the maximum location at and beyond the site boundary are detailed in Section 9.8.2.1 of Chapter 9. The results indicate that the ambient ground level concentrations are within the relevant air quality standards for NO₂. For the maximum year modelled, emissions from all back-up generators lead to an ambient NO₂

concentration (including background) which is 63% of the maximum ambient 1-hour limit value (measured as a 99.8th percentile) and 83% of the annual limit value at the maximum off-site receptor.

In conclusion the results of the cumulative impact scenario are in compliance with the relevant ambient air quality limit values at all locations at or beyond the site boundary. This results in a **long-term, slight, negative** impact to air quality.

Climate

As outlined in Section 9.7.2.3 of Chapter 9, cumulative indirect electricity usage for the overall site including the Proposed Development, Permitted Development and indicative future development would be equivalent to 607,523 tonnes of CO₂eq per year. As the Proposed Development is over 20 MW, a greenhouse gas emission permit will be required for the facility which will be regulated under the EU-wide Emission Trading Scheme (ETS). Electricity providers form part of the ETS and thus greenhouse gas emissions from these electricity generators are not included when determining compliance with the targeted 42% reduction in the non-ETS sector i.e. electricity associated greenhouse gas emissions will not count towards the Effort Sharing Decision target. Thus, any necessary increase in electricity generation due to data centre demand will have no impact on Ireland's obligation to meet the EU Effort Sharing Decision. On an EU-wide basis, where the ETS market in 2021 was approximately 1,308 million tonnes CO₂eq, the impact of the emissions associated with the Proposed Development in conjunction with the Permitted Developments and future indicative development, will be no more than 0.046% of the total EU-wide ETS market which is imperceptible.

Thus, given that the use of electricity to power the facility will achieve net zero by 2050 and the commitment to offset all interim fossil fuel derived GHG emissions by the purchase of CPPAs the predicted cumulative impact to climate is deemed to be **indirect, long-term, negative and slight**.

As per Section 9.7.2.4 of Chapter 9 the Proposed Development in conjunction with the Permitted Developments and future indicative development, will have an estimate peak operational demand 219.7MW per year in total which translates to 1,925 GWh (gigawatt hours) annually. The nitrogen oxide (NO_x) emissions associated with this electricity over the course of one year (i.e. 1,925 GWh based on 219.7MW for 8,760 hours per annum) will equate to 253 tonnes per annum which is 0.37% of the National Emission Ceiling limit for Ireland from 2020 onwards. Similarly, SO₂ emissions associated this electricity over the course of one year (1,925 GWh) will equate to 142 tonnes per annum which is 0.56% of the National Emission Ceiling limit for Ireland from 2020. Additionally, NMVOC emissions associated this electricity over the course of one year (1,925 GWh) will equate to 14 tonnes per annum which is 0.03% of the National Emission Ceiling limit for Ireland from 2020. The indirect NO_x, SO₂ and NMVOC emissions are all below 1% of the relevant National Emission Ceiling limits when considering the cumulative impact of the Proposed Development.

As discussed in Chapter 2 and Section **9.7.2.3** of this EIA Report, the Operator has a commitment to reach net zero carbon emissions by 2040, 10 years ahead of the Paris Agreement. As part of that commitment, the company is on a path to powering its operations by 100% renewable energy by 2025, five years ahead of its original 2030 target. Amazon is continuing to scale its renewable energy investments with a current total of 379 renewable energy projects around the world, marking significant progress on its path to powering 100% of its operations with renewable energy by 2025 - before the proposed Data Centre F & G are due to come into operation. Once fully operational, Amazon's current global renewable energy portfolio will generate 50,000 gigawatt hours

(GWh) of clean energy, which is the equivalent amount of electricity needed to power 13.4 million European homes each year.

Amazon has committed to offtake 100% of the power from renewable wind projects in Cork, Donegal, and Galway. In total, these three wind projects are projected to add 229 megawatts of renewable energy to the Irish grid, reducing carbon emissions by 366,000 tonnes of CO₂ each year, and producing enough renewable energy to power 185,000 Irish homes, per annum. These three wind projects will make Amazon the largest single corporate buyer of renewable energy in the country.

Thus, the cumulative NO_x, SO₂ and NMVOC indirect emissions associated with the operation of the Proposed Development, Permitted Developments and indicative future development are *indirect, long-term, negative* and *slight* with regards to regional air quality.

16.6 NOISE AND VIBRATION

Construction

During the construction phase of the Proposed Development and Permitted Developments, there will be some impact on nearby noise sensitive properties due to noise emissions from site traffic and other activities. During permitting of all developments the planning authority will apply noise and vibration limits and hours of operation to limit noise and vibration to the levels proposed in Section 10.2.4 of the EIAR. Management of noise and vibration in accordance with planning conditions will ensure that the cumulative impact is *slight, negative* and *short term* in nature.

Operation

An assessment of the cumulative effects of the operation of the Permitted Development, Proposed Development and future indicative development on the overall landholding is provided in Appendix 10.5 of Chapter 10 (Noise and Vibration). The assessment shows that the noise emissions from operation of the indicative masterplan within the overall landholding, will not exceed the adopted criterion at the façade of any nearby noise sensitive locations, as stated in Section 10.2.5 of the EIAR, under subheading *Recommended Criteria*.

The cumulative impact of the operation of the existing development with the permitted and Proposed Development has been thoroughly assessed in Chapter 10 (Noise and Vibration). As set out in Chapter 10, cumulative noise assessment of the existing development, Permitted Development, Proposed Development and indicative future development has been considered. As shown in Figure 10.10, the predicted noise levels at the nearest noise sensitive receptors (identified in Figure 10.4) are within the relevant adopted limits (ref chapter 10 section 10.2.5).

Once the mitigation measures outlined in Chapter 10 are implemented there will be no significant cumulative effects as a result of the Proposed Development.

In addressing cumulative effect, a review of the nature of the development and noise conditions of permitted and known developments in the wider area, (shown in Figure 16.1) has been undertaken and is summarised below:



Figure 16.1 Planning references in the vicinity of the Proposed Development

FCC Reg. Ref.: FW19A/0177

The Permitted Development consists of the provision of underground cabling over a route of 6.4km in length involving the excavation of a trench for sections and excavations to access existing ducting. There is potential for cumulative effects if the construction phases were to coincide. However, given the linear nature of the cable route, the construction activity progresses along the route and the effect on any individual noise-sensitive location is temporary, not significant. As the operating underground cable does not generate noise, there is no potential for cumulative operational noise effects.

FCC Reg. Ref.: FW18A/0121

The Permitted Development comprises inter alia construction of a two-storey office building with landscaped roof and central circular planted open courtyard along with vehicular access, landscaping and SUDs. Retention permission was also granted for a 2.4-metre-high fence to the northern and western site boundaries.

The amount of building services on this site will be significantly less than the Proposed Development, considering its use as a commercial building.

The environmental noise criteria are in keeping with those presented for the Proposed Development in this EIAR.

The planning condition for outward operational noise associated with this development is as follows:

- 14 v) Noise due to the normal operation of the Proposed Development shall not cause a noise nuisance to nearby noise sensitive locations shall not exceed the background level by 10dB(A) or more or exceed NG4 limits whichever is lesser. -Daytime (07:00 to 19:00 hrs) – 55dB -Evening (19:00 to 23:00 hrs) – 50dB -Night-time (23:00 to 07:00 hrs) – 45dB (measured from nearest noise sensitive location(s)) Clearly audible and impulsive tones at noise sensitive locations during evening and night shall be avoided irrespective of the noise level.

Similarly, this condition are in keeping with the noise criteria adopted for the Proposed Development. However, the nature of the development, which contains office space and fashion showrooms, is unlikely to have a significant requirement for plant, air handling, cooling or ventilation compared to the Proposed Development. It will also not require significant levels of plant will be required during night-time periods. The façade of the retail building is also at a greater distance from the noise-sensitive locations on the west side of the R121. Taking the above into account, it is considered that the cumulative effect of operational noise is not significant.

FCC Reg. Ref.: FW21A/0060 Swords Laboratories T/A Bristol Myers Squibb (BMS)

The Permitted Development comprises of inter alia a permanent construction compound, located to the centre of the BMS site.

The planning conditions for operational noise are as follows:

- 5 e) Consideration shall be given to the siting of all mechanical and plant services to prevent nuisance from noise or odours to the local businesses and/or residents in close proximity to the premises. Clearly audible and impulsive tones at noise sensitive locations during evening and night shall be avoided irrespective of the noise level.
- f) All activities on site shall be carried out in a manner which ensures that emissions from noise, air and odours do not result in significant impairment of, or significant interference with amenities or the environment beyond the site boundary.

REASON: In the interests of public health.

This development would result in a negligible change in noise level in the context of the BMS site as a whole, which is an EPA Licensed site. The existing noise from BMS is accounted for in the assessment of the Proposed Development through its contribution to the measured baseline noise levels. The Permitted Development (Buildings B and C) will also screen the noise emissions from the BMS development from the houses along the west side of the R121 road. It is considered that the cumulative operation noise effect is not significant.

FCC Reg. Ref.: FW20A/0153

The Permitted Development comprises inter alia the construction of 2 no. office buildings, (Block A and Block B).

The planning conditions for operational noise are as follows:

- 9 (f) All operations on site shall be carried out in such a manner to ensure that emissions from noise, air and odours do not result in significant impairment of, or significant interference with amenities or the environment beyond the site boundary.
- (g) Acoustic louvres shall be provided on the basement vents to minimise noise emissions from the basement. Plant at roof level shall be adequately screened to prevent excessive noise emissions. Amplified music shall not be permitted in outdoor areas of the development.
- (h) The cumulative noise emissions due to the operation of the development shall not cause a noise nuisance to nearby noise sensitive location i.e. shall not exceed the background level by 10dB(A) or more or exceed the limits below whichever is lesser. Daytime (07:00 to 19:00 hrs) – 55dB LAr, 30mins Evening (19:00 to 23:00 hrs) – 50dB LAr, 30mins Night-time (23:00

- to 07:00 hrs) – 45dB LAeq, 15mins As measured 1 metre from the boundary of the nearest noise sensitive location/s. Clearly audible and impulsive tones at noise sensitive locations during evening and night shall be avoided irrespective of the noise level.
- (i) Noise and vibration monitoring shall be carried out by the developer for the duration of the site works. Copies of which shall be made available to the Environmental Health Unit, Fingal County Council or the Planning Authority on request.
 - (j) The generator enclosures shall be acoustically sealed. Generator testing shall be carried out during daytime periods (i.e. between 07:00 to 19:00hrs Monday to Friday and shall not exceed a free field level of 55dB LAeq, 1hr at nearby residential noise sensitive locations.

REASON: In the interests of public health

The environmental noise criteria are in keeping with those presented for the Proposed Development in this EIAR.

This development contains office space and therefore the plant / ventilation / cooling requirements are significantly less than that for the data centre. Given the additional distance to the noise-sensitive locations considered for the Proposed Development, it is likely that the noise contribution to the same noise-sensitive locations is at least 10 dB lower than that of the Proposed Development. It is considered that the cumulative effect of operational noise is not significant and will not exceed the thresholds at these residences.

Kilshane Grid Connection (ABP SID Ref VC06F.313090)

Similar to the FW19A/0177 development mentioned above, there is potential for cumulative effects if the construction phases were to coincide. However, given the linear nature of the cable route, the construction activity progresses along the route and the effect on any individual noise-sensitive location is temporary not significant. As the operating underground cable does not generate noise, there is no potential for cumulative operational noise effects.

Based on the above assessment, it is concluded that there will be no significant cumulative construction or operational effects.

FW22A/0204 – Kilshane Energy Gas Turbine Power Generation Station

This application refers to a Gas Turbine Power Generation Station including ancillary buildings and plant

Section 10.4.21 of the Gas Turbine EIAR states the predicted noise level due to the Gas Turbine development in Table 10.16 therein, at a range of noise-sensitive locations in the vicinity of the Gas Turbine site. All noise levels are within the adopted criteria. Given the additional distance (of the order of 2.8 km) from the boundary of the Gas Turbine site to the Proposed Development, it is concluded that there will be no significant cumulative construction or operational noise or vibration effects.

16.7 LANDSCAPE AND VISUAL

The assessment of cumulative landscape and visual effects has considered the Proposed Development in combination with:

- the indicative future Data Centre Building (not subject to this planning application) to the north of the development site;
- the permitted office development at Cruiserath Drive (Register Ref. FW18A/0121) located immediately adjacent to the northern site boundary and comprising two floors of office space under a landscaped grass roof incorporating amenity pathways; and,
- the planned Kilshane GIS substation development by others and associated and national grid connection via a spare bay of the existing GIS substation within the Proposed Development site.

Construction

During construction, cumulative landscape and visual effects will vary depending on whether projects are constructed at the same time or not.

In the case of the indicative future Data Centre Building cumulative effects will most likely extend the duration of construction of the overall development site. Additionally, as the indicative future Data Centre Building will be located closer to Cruiserath Drive, the magnitude of construction will appear greater from receptors towards the northern part of the site including Cruiserath Drive and the Carlton Hotel. Cumulative landscape and visual effects during construction will be **temporary/short term, moderate** and **negative** based on an assessment of expected views from locations in the vicinity of the northern end of the site and reducing substantially from receptors further along the R121 and Cruiserath Road.

In the case of the permitted office development, cumulative effects during construction if implemented at the same time as the Proposed Development will give rise to an intensification of construction activity along the Cruiserath Road in particular with the additional construction site being secured and enclosed by separate hoarding and accessed directly from the Cruiserath Road. Despite the relatively small scale of the office building compared to the Proposed Development, the location of the construction site along the Cruiserath Road is such that construction will give rise to a greater sense of landscape and visual disruption from the vicinity of the road and is likely to distract from and even restrict visibility of the Proposed Development construction activity to the south. Cumulative landscape and visual effects during construction will be **temporary, moderate** and **negative** from locations along the Cruiserath Road.

The planned Kilshane GIS substation is unlikely to give rise to any significant landscape and visual cumulative effects. The only interface with the Proposed Development would be the transmission line approaching and entering the Proposed Development site and connecting to the spare bay on the existing GIS substation within the site. This element of the project is a small portion of the overall and cumulative construction stage landscape and visual effects will be **short term, localised, slight** and **neutral**.

Operation

During operation, cumulative landscape and visual effects will also vary depending on the project considered.

In the case of the indicative future Data Centre Building, cumulative landscape and visual effects will be greater from locations in the vicinity of the northern end of the site as the

future Data Centre Building will be closer to the public road and most likely of a similar scale to Buildings F and G. As such, the future Data Centre Building will appear more prominent from locations around the northern end of the development site and potentially give rise to **moderate** and **negative** cumulative landscape and visual effects. Note that potential cumulative landscape and visual effects of the indicative future Data Centre Building are illustrated in Appendix 11.1, Photomontages, in which the outline of the future Data Centre Building is indicated on the third version of each photomontage view using a yellow outline.

Should the permitted office development be constructed, it will alter the character of the Cruiserath Road by introducing a smaller scale development along the southern road frontage in place of the existing landscape boundary. The office development of itself will not give rise to any significant landscape and visual effects and is likely to increase the level of screening along the northern site boundary towards the Proposed Development. Cumulative landscape and visual effects are likely to be locally **slight/moderate** and **positive** from the Cruiserath Road environs, becoming slight and imperceptible with greater distance from the office development site.

The planned Kilshane GIS substation and national grid connection, once constructed, will not give rise to any additional landscape and visual effects. As such, there will be no cumulative landscape and visual effects.

16.8 ARCHAEOLOGY

Construction

No known features of archaeological interest have been identified within the overall landholding as part of this assessment. Nonetheless, any future planning applications for the future indicative masterplan within the overall landholding, will be subject to archaeological appraisal. Any archaeological remains identified at that stage will be subject to standard practice in line with the relevant licence requirements.

An assessment of the potential for cumulative effects of the Proposed Development with developments outside of the overall landholding, on archaeological, architectural and cultural heritage was undertaken by reviewing planning applications in the vicinity of the Proposed Development as described above. Where appropriate these developments were subject to archaeological, architectural and cultural heritage impact assessment as part of the environmental impact assessment or planning processes. Where the mitigation measures outlined in these impact assessments and/or planning conditions are carried out in full, no cumulative impact on archaeological, architectural or cultural heritage will occur. Therefore, the cumulative effect is **short term neutral** and **imperceptible**.

Operation

The operational phase is not predicted to have any cumulative impact on archaeological, architectural and cultural heritage as there will be no effects on these receptors during operation.

16.9 TRAFFIC AND TRANSPORTATION

There are Permitted Development's currently being constructed on the overall landholding, and an indicative future data centre northwest of the Proposed Development, and three notable other Permitted Development's (see section 13.3.5 Proposed Future Development in the Area) that are likely to be carried out concurrently with the

construction of the Proposed Development within the stated construction timeline. The existing operation traffic is included in the baseline and construction traffic for those developments has been accounted for in the background traffic flows used in the traffic model outlined in Chapter 13.

Construction

During construction, the potential for impact on transportation primarily arises from additional trips due to the works associated with the development. Design of the proposed construction and main site access junctions with Cruiserath Road and the R121 (NE) (undertaken as part of the permitted Building A development); respectively; has been done such that adequate sightlines are provided for all road users. Modelling confirms that although increased, traffic flow is maintained (section 13.5.1), given the temporary nature of the peak construction phase, the overall impact of the construction phase is considered **short-term, negative and not significant**.

Operation

The Proposed Development will necessitate additional movements of vehicles on the local road network. The scheme includes measures to provide onsite cycle and pedestrian facilities to align the works with improvements for such facilities in the broader transportation environment. Development in the immediate vicinity of the site of other general development is accounted for in background traffic flows as well as growth together with the addition of flows associated with committed office development. The operation of the Permitted Development will generate significant traffic and therefore minimal cumulative impact with the Proposed Development which generates 5-14% of the Permitted Development. Even accounting for the Permitted Development and background traffic growth, modelling undertaken (see section 13.5.2) shows that the Proposed Development will not have a significant impact capacity on the local network subject to the mitigation measures outlined in Chapter 13. The cumulative impact is concluded to have a **long term, negative and imperceptible** impact on traffic and transportation quality in the local environment.

16.10 MATERIAL ASSETS

The location of the Proposed Development within the well-developed area of Cruiserath means that it is well placed to access existing utilities and, therefore, will not have any significant impact and will not impact on capacity for off site development.

The water supply and drainage strategy for the overall landholding was discussed with Fingal County Council (FCC) Water Services and with Irish Water as part of the planning application for Buildings A, B and C as well as during the pre-application consultation (August 11th 2022) for the Proposed Development. Irish Water (IW) have agreed in principal that the water and drainage requirements for the development is feasible (COF dated Oct 19 2022).

The Proposed Development will have an overall maximum operational demand for all three buildings of 73.1MW, with an overall maximum operational demand for permitted, proposed and future indicative masterplan of c. 219.7MW. As described in Chapter 2 and 14, the power requirements for the existing, permitted and Proposed Development will be provided from the existing 220kV GIS substation on site (Building D) located south of proposed Buildings F and G, and to the east of proposed Building E. A connection agreement to supply the existing, permitted and Proposed Developments is in place with EirGrid. EirGrid has accounted for the Proposed Development and the indicative

masterplan in the All-Island Generation Capacity Statement 2017-2026 (published April 2017). The existing, permitted, proposed and future indicative development within the overall landholding were included in the 'material enquiry' cohort noted in the Capacity Statement.

The fibre optic cable distribution network installed for the Permitted Developments will be extended for Buildings E, F, G and the future data centre building. Consultation has confirmed that there is sufficient capacity available for these developments.

The cumulative effects associated with material assets will be **long-term** and **not significant**.

16.11 WASTE MANAGEMENT

The construction of the future indicative building to the north, should it proceed, would require site clearance, excavations and levelling which will generate additional waste. However, provided mitigation measures as set out in this EIA Report and OCEMP for the Proposed Development are implemented during construction, the cumulative impact will be **short term** and **imperceptible**.

The waste quantities to be generated from the operation of the permitted, proposed and future indicative developments within the overall landholding will be relatively small. As such, the predicted impact of the build out of the site on waste management will be **long term** and **imperceptible**.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative effects associated with waste generation and waste management. As such it is considered that the cumulative impact will be **long-term** and **imperceptible**.

17.0 INTERACTIONS – INTERRELATIONS BETWEEN THE ASPECTS

17.1 INTRODUCTION

This chapter of the EIA Report in accordance with the guidance (below), the potential interactions and inter-relationships between the environmental factors discussed in the preceding chapters. This covers both the construction and operational phase of the Proposed Development.

Directive 2011/92/EU, as amended by Directive 2014/52/EU, and section 171A of the Planning and Development Act, as amended, both provide that an EIA shall identify, describe and assess in an appropriate manner, in the light of each individual case, the interaction between the following factors:

- a) human beings, fauna and flora population and human health;
- b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- c) land, soil, water, air and climate and landscape;
- d) material assets, cultural heritage and the landscape.

This chapter has been produced following the requirements of the EIA Directive and *Planning and Development Act 2000*, as amended. The contents of the chapter have been prepared following *European Commission 'Guidance on Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report'* (2017) and the EPA EIA Report Guidelines 2022.

The interactions and inter-relationships between the environmental factors have been considered under the subheadings as set out in the EIA Report.

The majority of the EIA Report chapters have already included and described assessments of potential interactions between a number of environmental factors, where applicable. The quality, magnitude and duration of potential impacts are defined in accordance with the criteria provided in the EPA EIA Report Guidelines 2022 as outlined in Chapter 1 (Introduction). This section of the assessment presents a summary and assessment of the identified interactions.

17.2 POPULATION AND HUMAN HEALTH AND ITS INTERACTION WITH:

17.2.1 Land, Soils and Hydrogeology:

Construction Phase

The Proposed Development will be entirely located within an overall landholding. The site was previously used for arable crops and had been left fallow for the past number of years. However, in recent years the site has changed uses from agricultural to industrial due to the Data Centre Campus that was granted planning permission in 2017 under FCC planning reg. ref. FW17A/0025 (An Bord Pleanála ref. PL06F.248544) and in 2019 (permitted under FCC reg. ref. FW19A/0087).

The Proposed Development will not impact on domestic wells or any groundwater protection areas.

The construction phase of the development has the potential to impact on the ground water and soil quality through water contamination associated with construction activity and excavation works if adequate mitigation and design measures are not put in place.

Taking into account the design and mitigation measures set out in Chapter 6 of this EIA Report, there is no potential for negative interaction between Population and Human Health, and Land, Soils and Hydrogeology during the construction phase. The interaction is considered to be **not significant**, and **short term**.

Operational Phase

Accidental leaks or spills during the operational phase of the site have the potential to interact negatively on human health in the long term if not adequately mitigated.

Taking into account the design and mitigation measures set out in Chapter 6 of this EIA Report, there is no potential for negative interaction between Population and Human Health, and Land, Soils and Hydrogeology during the operational phase. The interaction is considered to be **not significant**, and **long term**.

17.2.2 Hydrology:

Construction Phase

The construction phase of the Proposed Development has the potential to impact on the surface water quality due to increased sediment runoff from the site, which have the potential to interact negatively on human health in the long term if not adequately mitigated.

The proposed construction phase mitigation set out in Chapter 7 has considered this the Proposed Development will not result in significant negative impact on surface water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 7 of this EIA Report, there is no potential for negative interaction between Population and Human Health, and Hydrology during the construction phase. The interaction is considered to be **not significant**, and **short term**.

Operational Phase

The operational development has the potential to impact on the hydrological regime due to alternations to site drainage, which have the potential to interact negatively on human health if not adequately mitigated. SUDs measures have been incorporated into the design to ensure there is an imperceptible change to the hydrological regime.

The potential risk of flooding was also assessed. As stated in Section 2.7 of Chapter 2 (Description of the Development) and Section 7.3.2.2 of Chapter 7 (Hydrology), a site-specific Stage 1 Flood Risk Assessment was carried out by CS Consulting Group in 2022. The site is in Flood Zone C as defined in the Flood Risk Management Guidelines and is not at risk of flooding from a 1% or 0.1% Annual Exceedance Probability (AEP) event. Furthermore, it is not expected that the Proposed Development would adversely impact on flood risk for other neighbouring properties.

The wastewater from the Proposed Development and the overall landholding ultimately discharges to Ringsend WWTP for treatment. The Proposed Development load

contributions to the Ringsend WWTP are a very small fraction of the overall influent load to the WWTP.

Taking into account the design and mitigation measures set out in Chapter 7 of this EIA Report, there is no potential for negative interaction between Population and Human Health, and Hydrology during the operational phase. The interaction is considered to be **neutral**, and **long term**.

17.2.3 Biodiversity:

Construction Phase

There are no potentially significant interactions identified between Population and Human Health, and Biodiversity during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Population and Human Health, and Biodiversity during the operational phase.

17.2.4 Air Quality and Climate:

Construction Phase

The greatest potential impact on air quality during the construction phase of the Proposed Development is from construction dust emissions as a result of excavation works, infilling and landscaping activities and storage of soil in stockpiles. This leads to the potential for nuisance dust.

Mitigation measures proposed to minimise the potential effects on human health in terms of air quality during the construction phase are set out in Chapter 9, Section 9.6.1. These include measures for dust control at the site as to ensure that no significant nuisance occurs at nearby sensitive receptors.

Construction traffic would be expected to be the dominant source of greenhouse gas emissions as a result of the Proposed Development. Construction vehicles and machinery will give rise to CO₂ and N₂O emissions during construction of the Proposed Development. The Institute of Air Quality Management document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2014) states that site traffic and plant is unlikely to make a significant impact on climate.

Initial commissioning activities will involve testing of the back-up generators on site in a similar manner to the operational phase testing, i.e. the first testing sequence will be commissioning of the standby generators. The operational modelling has considered testing of the generators on a weekly and quarterly basis and this does not result in a significant impact to air quality. Therefore, it is predicted that the initial commissioning tests will result in an imperceptible impact to air quality in the short-term.

Taking into account the mitigation measures set out in Chapter 9 of this EIA Report, there is no potential for negative interaction between Population and Human Health, and air quality for the construction phase. The interaction is considered to be **neutral**, **short term** and **imperceptible**.

Operational Phase

As stated in Section 9.7.2.5 of Chapter 9, air dispersion modelling was undertaken to assess the impact of the development with reference to EU ambient air quality standards which are based on the protection of human health. As demonstrated by the dispersion modelling results, emissions from the site, assuming scheduled testing as well as emergency operation of the back-up generators, are compliant with all National and EU ambient air quality limit values and, therefore, will not result in a significant impact on human health. The interaction is considered to be **neutral, long term** and **imperceptible**.

17.2.5 Noise and Vibration:

Construction Phase

As detailed in Chapter 10 (Noise and Vibration), the construction noise assessment has shown that in accordance with the 'significance' thresholds presented in the *British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise* there will not be a significant impact at residential locations in terms of ambient noise levels subject to the implementation of appropriate mitigation measures on site.

In terms of noise associated with the additional construction traffic on local roads, the interaction with human health is considered to be **negative, slight and short-term**.

In terms of vibration, due to the distance of activities from the Proposed Development to the nearest sensitive locations and by controlling vibration levels to those detailed in Table 10.7 of Chapter 10, the interaction is considered to be **neutral, imperceptible and short-term**.

Operational Phase

Chapter 10 (Noise and Vibration) outlines that noise from external plant will be minimised by purchasing low noise generating equipment and incorporating appropriately specified in line attenuators for stacks and exhausts where necessary. With due consideration as part of the detailed design process, this approach will result in the site operating well within the constraints of the best practice guidance noise limits that have been adopted as part of this detailed assessment.

The interaction is considered to be **slight to moderate, negative, long-term** at the closest residences, based on conservative assumptions outlined in Chapter 10.

In terms of the nearest commercial property, the interaction is considered to be **moderate, negative, long-term**, however the character of the noise environment in the vicinity of this location will not be altered.

The operational noise assessment of vehicle movements associated with the site has shown that in accordance with the scale in the EPA EIA Report Guidelines 2022 there will be an **imperceptible** impact off site noise sensitive locations considering existing traffic volumes on the local road network.

17.2.6 Landscape and Visual Impacts:

Construction Phase

Effects on landscape character during construction for the residential areas to the immediate west of the R121 will be **temporary to short-term, slight/not significant** and **neutral** by virtue of the strong tree planting that defines the boundary between the residential areas and the R121. Further west within the heart of the residential developments, effects on landscape character will be **imperceptible** by virtue of the visual enclosure provided by the forms of buildings, streets and open spaces within the residential area.

Within the residential areas to the west of the R121, visibility will be limited to areas adjoining the R121 and where established boundary tree planting permits filtered views across the R121 towards the development site. Visual effects will be **slight/not significant** and **negative**. Visual effects from within the residential areas and open spaces further west of the R121, and from the elevated grounds of the church ruin at Mulhuddart Church and Graveyard to the south of the site, will be **imperceptible** and **neutral**.

Operational Phase

Effects on landscape character from residential areas to the immediate west of the R121 will be **slight** and **neutral** along the eastern edge of the residential areas by virtue of the separation provided by the mature trees along the western side of the R121. Further west from within the residential areas, effects on landscape character will be **imperceptible** by virtue of the enclosing nature of the residential buildings, streets and landscaping.

The residential areas to the immediate west of the R121 will have partial filtered visibility through the existing mature tree boundary towards the Proposed Development giving rise to visual effects that are **slight/not significant** and **negative**. Visual effects from the core of the residential area further west of the R121, and from the elevated grounds of the church ruin at Mulhuddart Church and Graveyard to the south of the site, will be **imperceptible** and **neutral**.

17.2.7 Archaeological, Architectural and Cultural Heritage:

Construction Phase

There are no potentially significant interactions identified between Population and Human Health, and Archaeological, Architectural and Cultural Heritage during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Population and Human Health, and Archaeological, Architectural and Cultural Heritage during the operational phase.

17.2.8 Material Assets, including Transport and Waste:

Construction Phase

The Proposed Development entails minimal use of material assets during construction. The contractor will be contractually obliged to put best practice measures in place and work in accordance with the CEMP and relevant planning conditions. In addition, the implementation of mitigation measures detailed each chapter and detailed in Chapter 13, 14 and 15 will ensure there are no residual negative impacts on the local population.

In terms of traffic, construction traffic will be managed to avoid unnecessary trips during peak hours. Temporary car parking facilities for the construction workforce will be provided within the site and the surface of the car park will be prepared and finished to a standard sufficient to avoid mud spillage onto adjoining roads. As detailed in Section 13.7 of Chapter 13, the predicted impact on traffic and transportation, will be **short-term, negative** and **not significant** for the construction phase.

Taking into account the design and mitigation measures set out in Chapters 13, 14 and 15 of this EIA Report, there is no potential for a significant negative interaction between Population and Human Health, and Material Assets during the construction phase. The interaction is considered to be **temporary-short term** and **not significant**.

Operational Phase

The Proposed Development will have a minimal demand on material assets such as surface water drainage and wastewater drainage. Water supply requirements will be supplemented by rainwater harvesting. The Proposed Development entails moderate power usage, however, a connection agreement to supply the Proposed Development is already in place with EirGrid. Chapters 13, 14 and 15 have reviewed the capacities of the available infrastructure to accommodate the Proposed Development and the implementation of the mitigation measure proposed in these chapters will ensure there are no residual negative impacts on the local population.

Taking into account the design and mitigation measures set out in Chapters 13, 14 and 15 of this EIA Report, there is no potential for a significant negative interaction between Population and Human Health, and Material Assets during the operational phase.

17.3 LAND, SOILS AND HYDROGEOLOGY AND ITS INTERACTION WITH:

17.3.1 Hydrology:

Construction Phase

The proposed construction phase mitigation set out in Chapter 6 and 7 has determined that the Proposed Development will not result in significant negative impact on surface water quality in the local area.

Taking into account the design and mitigation measures set out in Chapters 6 and 7 of this EIA Report, there is no residual negative interaction between Land, Soil, and Hydrology during the construction phase. The interaction is considered to be **neutral**, and **short term**.

Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Hydrology during the operational phase.

17.3.2 Biodiversity:

Construction Phase

Dust emissions from exposed earthworks have the potential to settle on plants causing impacts to local ecology.

Taking into account the design and mitigation measures set out in Chapter 6, and 8 of this EIA Report, the interaction is considered to be **neutral**, and **short term**.

Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Biodiversity during the operational phase.

17.3.3 Air Quality and Climate:

Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils. The interaction is considered to be **negative**, but **imperceptible** and **temporary-short term**.

Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Air Quality and Climate during the operational phase.

17.3.4 Noise and Vibration:

Construction Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Noise and Vibration during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Noise and Vibration during the operational phase.

17.3.5 Landscape and Visual Impacts:

Construction Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Landscape and Visual during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Landscape and Visual during the operational phase.

17.3.6 Archaeological, Architectural and Cultural Heritage:

Construction Phase

As the lands in which the Proposed Development is located have been subjected to an extensive programme of archaeological geophysics (License no. 19R0030) and archaeological testing (Excavation no. 2019:699), and this work did not identify any archaeologically significant features and concluded that no further mitigation would be required on site, there no direct or indirect (visual) impacts on archaeological and cultural heritage associated with the Proposed Development. Therefore, there are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Archaeology and Cultural heritage during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Archaeological, Architectural and Cultural Heritage during the operational phase.

17.3.7 Material Assets, including Transport and Waste:

Construction Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Material Assets during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Material Assets during the operational phase.

17.4 HYDROLOGY AND ITS INTERACTION WITH:

17.4.1 Biodiversity:

Construction Phase

In the absence of mitigation, surface water run-off during the construction phase may contain increased silt levels or otherwise become polluted from construction activities. Suspended solids in runoff water may result in an increase in suspended sediment load, resulting in increased turbidity, which may damage downstream water quality and habitats.

Taking into account the design and mitigation measures set out in Chapter 7, and 8 of this EIA Report, there is no residual negative interaction between Hydrology, and Biodiversity during the construction phase. The interaction is considered to be **neutral**, and **temporary-short term**.

Operational Phase

The use of SUDs during operations will mean that the development will result in neutral water impacts in the operational phase with regard to runoff rates and flooding risk. Furthermore, with the implementation of design and mitigation measures there will be no measurable impact on the receiving water quality as a result of the development.

Taking into account the design and mitigation measures set out in Chapter 7 of this EIA Report, there is no residual negative interaction between Hydrology, and Biodiversity during the operational phase. The interaction is considered to be **neutral**, and **long term**.

17.4.2 Air Quality and Climate:

Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions that may deposit in surface waters. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and hydrology. The interaction is considered to be **negative**, and **temporary-short term**.

Operational Phase

There are no potentially significant interactions identified between Hydrology, and Air Quality during the operational phase.

17.4.3 Noise and Vibration:

Construction Phase

There are no potentially significant interactions identified between Hydrology, and Noise and Vibration during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Hydrology, and Noise and Vibration during the operational phase.

17.4.4 Landscape and Visual Impacts:

Construction Phase

There are no potentially significant interactions identified between Hydrology, and Landscape and Visual during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Hydrology, and Landscape and Visual during the operational phase.

17.4.5 Archaeological, Architectural and Cultural Heritage:

Construction Phase

There are no potentially significant interactions identified between Hydrology, and Archaeological, Architectural and Cultural Heritage during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Hydrology, and Archaeological, Architectural and Cultural Heritage during the operational phase.

17.4.6 Material Assets, including Transport and Waste:

Construction Phase

There are no potentially significant interactions identified between Hydrology, and Material Assets during the construction phase.

Operational Phase

The discharge from site will pass through hydrocarbon interceptors to remove any hydrocarbons and rubbish, debris and sediment from the surface water prior to discharge offsite.

There are no potentially significant interactions identified between Hydrology, and Material Assets during the operational phase.

17.5 BIODIVERSITY AND ITS INTERACTION WITH:

17.5.1 Air Quality and Climate:

Construction Phase

There is the potential for interactions between air quality in the form of fugitive dust emissions and biodiversity. Once the mitigation measures outlined within Section 9.6 are implemented dust related impacts are predicted to be **temporary-short-term** and **imperceptible**.

Taking into account the design and mitigation measures set out in Chapter 9 of this EIA Report, there is no residual negative interaction between Air Quality and Climate, and Biodiversity during the construction phase. The interaction is considered to be **neutral**, and **short term**.

Operational Phase

There is the potential for interactions between air quality and biodiversity. Air dispersion modelling results based on conservative assumptions indicate that ambient NO₂ concentrations as a result of the Do Nothing Scenario, the Proposed Development Scenario and the Cumulative Impact Scenario (see Appendix 9.3) are in compliance with the relevant ambient air quality limit values at all locations at or beyond the site boundary. The interaction is considered to be **imperceptible**, and **long term**.

17.5.2 Noise and Vibration:

Construction Phase

There are no potentially significant interactions identified between Biodiversity, and Noise and Vibration during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Noise and Vibration, and Biodiversity during the operational phase.

17.5.3 Landscape and Visual Impacts:

Construction Phase

There are no potentially significant interactions identified between Landscape and Visual Impacts, and Biodiversity during the construction phase

Operational Phase

The landscape scheme proposes to build on and adapt the previously permitted site landscaping so as to avail of further landscape opportunities arising from the detailed design of the Proposed Development. Internal site landscaping will include a bio retention pond, a native wetland, wildflower meadows, copses and areas of native woodland and wetland planting, beehives, and reinforcement of existing perimeter landscape planting so as to provide visual screening and a rich biodiverse campus landscape that incorporates a network of ecological corridors.

The implementation of a high-quality landscaping scheme will have a **positive** and **long term** interaction with biodiversity.

17.5.4 Archaeological, Architectural and Cultural Heritage:

Construction Phase

There are no potentially significant interactions identified between Biodiversity, and Archaeological, Architectural and Cultural Heritage during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Biodiversity, and Archaeological, Architectural and Cultural Heritage during the operational phase.

17.5.5 Material Assets, including Transport and Waste:

Construction Phase

There are no potentially significant interactions identified between Biodiversity, and Material Assets during the operational phase.

Operational Phase

There are no potentially significant interactions identified between Biodiversity, and Material Assets during the operational phase.

17.6 AIR QUALITY AND CLIMATE AND ITS INTERACTION WITH:

17.6.1 Noise and Vibration:

Construction Phase

There are no potentially significant interactions identified between Air Quality and Climate and Noise and Vibration during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Air Quality and Climate and Noise and Vibration during the operational phase.

17.6.2 Landscape and Visual Impacts:

Construction Phase

There are no potentially significant interactions identified between Air Quality and Climate and Landscape and Visual during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Air Quality and Climate and Landscape and Visual during the operational phase.

17.6.3 Archaeological, Architectural and Cultural Heritage:

Construction Phase

There are no potentially significant interactions identified between Archaeological, Architectural and Cultural Heritage, and Landscape and Visual Heritage during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Archaeological, Architectural and Cultural Heritage, and Landscape and Visual Heritage during the operational phase.

17.6.4 Material Assets, including Transport and Waste:

Construction Phase

Construction traffic would be expected to be the dominant source of greenhouse gas emissions as a result of the Proposed Development. Construction vehicles and machinery will give rise to CO₂ and N₂O emissions during construction of the Proposed Development. The Institute of Air Quality Management document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2014) states that site traffic and plant is unlikely to make a significant impact on climate. Once the mitigation measures outlined in Section 9.6 of Chapter 9, are implemented the residual impacts on air quality or climate from the construction of the Proposed Development are considered to be **short-term** and **imperceptible**.

The interaction is considered to be *imperceptible* and *short term*.

Operational Phase

There will be minimal use of most material assets. There will be moderate power usage, however, a connection agreement to supply the Proposed Development is in place with EirGrid. There will be no significant additional traffic and waste generation will be minimised through a structured approach to waste management from the Proposed Development. The interaction is considered to be *imperceptible neutral*, and *long term*.

17.7 NOISE AND VIBRATION AND ITS INTERACTION WITH:

17.7.1 Landscape and Visual Impacts:

Construction Phase

There are no potentially significant interactions identified between Noise and Vibration, and Landscape and Visual during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Noise and Vibration, and Landscape and Visual during the operational phase.

17.7.2 Archaeological, Architectural and Cultural Heritage:

Construction Phase

There are no potentially significant interactions identified between Noise and Vibration, and Archaeological, Architectural and Cultural Heritage during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Noise and Vibration, and Archaeological, Architectural and Cultural Heritage during the operational phase.

17.7.3 Material Assets, including Transport and Waste:

Construction Phase

During the construction phase of Proposed Development there will be some impact on nearby noise sensitive properties due to noise emissions from site traffic and other activities. The application of noise limits and hours of operation (i.e. as per Table 10.5, 10.6 and Section 10.2.4 of Chapter 10), along with implementation of appropriate noise and vibration control measures (as summarised in Section 10.6.1 of Chapter 10), will ensure that noise and vibration impact is kept to a minimum.

There are no potentially significant interactions identified between Noise and Vibration, and Material Assets and Waste during the construction phase.

The interaction of noise and material assets is considered to be ***slight, negative temporary*** and ***short term*** in nature.

Operational Phase

Any change in noise levels associated with vehicles at road junctions in the vicinity of the Proposed Development is expected to be ***imperceptible***. The resultant interaction is considered to be ***neutral, imperceptible*** and ***long term***.

There are no potentially significant interactions identified between Noise and Vibration, and Material Assets and Waste during the operational phase.

17.8 LANDSCAPE AND VISUAL IMPACTS AND ITS INTERACTION WITH:

17.8.1 Archaeological, Architectural and Cultural Heritage:

Construction Phase

There are no potentially significant interactions identified between Landscape and Visual Impacts, and Archaeological, Architectural and Cultural Heritage during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Landscape and Visual Impacts, and Archaeological, Architectural and Cultural Heritage during the operational phase.

17.8.2 Material Assets, including Transport and Waste:

Construction Phase

There are no potentially significant interactions identified between Landscape and Visual Impacts, and Material Assets during the construction phase.

Operational Phase

There are no potentially significant interactions identified between Landscape and Visual Impacts, and Material Assets during the operational phase.

17.8.3 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE AND ITS INTERACTION WITH:

17.8.4 Material Assets, including Transport and Waste:

Construction Phase

There are no potentially significant interactions identified between Material Assets, and Archaeological, Architectural and Cultural Heritage during the operational phase.

Operational Phase

There are no potentially significant interactions identified between Material Assets, and Archaeological, Architectural and Cultural Heritage during the operational phase.

17.9 SUMMARY

In summary, the interactions between the environmental factors and impacts discussed in this EIAR have been assessed and the majority of interactions are neutral.

The reasoning behind the conclusion that certain interactions are considered to have a positive, neutral or negative effect is outlined in this Chapter.