Environmental Impact Assessment Report – Volume 1 Non-Technical Summary

Proposed Development
SDCC Ref. SD21A/0186
at DB8,
Plot 100,
Profile Park,
Nangor Road,
Clondalkin,
Dublin 22

On behalf of
Equinix (Ireland) Ltd

April 2023

Brock McClure
PLANNING & DEVELOPMENT CONSULTANTS

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1. Introduction

Requirement for an EIAR

This Environmental Impact Assessment Report (EIAR) is submitted in conjunction with and in addition to the cover letter prepared by Brock McClure Consultants, 63 York Road, Dun Laoghaire, Co. Dublin in response to the Clarification for Further Information by South Dublin County Council. This EIAR relates to Item no. 3 of the Clarification for Further Information which is inserted below.

The planning authority has requested that an EIAR should be carried out for the proposed development for the reasons and considerations set out in Item no. 3 that of the Clarification for Further Information which is inserted below.

> 3. Clarification of Item No. 8
>
> *"The Planning Authority do not agree with the EIA screening assessment provided. Having regard to the nature of the proposed modifications to power the data centre by gas instead of electricity, the number of similar exiting and permitted data centres close to the proposed development and the potential impact on Material Assets, it is considered that the proposal is likely to result in significant effects on the environment. The need for environmental impact assessment cannot, therefore, be excluded at preliminary examination.*
> *The applicant is requested to undertake an Environmental Impact Assessment of the proposed development."*

The guidelines state that where a project of a specified type does not meet or exceed the applicable threshold then the likelihood of the project having significant effects on the environment needs to be considered. The cumulation with other existing and/or approved projects has therefore met the criteria specified in Annex III 1(b) of the amended Directive 2014/52/EU and therefore triggered the need for an EIAR which is as follows:

Annex III *(CRITERIA TO DETERMINE WHETHER THE PROJECTS LISTED IN ANNEX II SHOULD BE SUBJECT TO AN ENVIRONMENTAL IMPACT ASSESSMENT)*

1(b) "The characteristics of projects must be considered, with particular regard to: cumulation with other existing and/or approved projects;"

This EIAR describes the findings of the EIA process to the Planning Authority to help determine a decision on the proposed development. As mentioned below the Overall Project will be assessed as part of this EIAR in addition to the proposed development. It also informs the relevant statutory consultees, interested parties and the public about the likely effects that the Proposed Development and Overall Project will have on the environment.

Content of the Environmental Impact Assessment

This EIA report has been prepared in accordance with the most relevant law including:

- EIA Directive (2011/92/EU) as amended by EIA Directive (2014/52/EU)
- Planning and Development Act 2000 (as amended)
- Planning and Development Regulations 2001 (as amended)

This EIA report has also been prepared in accordance with the most relevant guidance including:

- Guidelines for Planning Authorities and An Bord Pleanala on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).
- Guidance on preparation of the Environmental Impact Assessment Report (European Union, 2017)

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022)
- Advice Notes on current practice in the preparation of Environmental Impact Statements (EPA, 2003)

Pursuant to EIA Directive, (Article (5) 1 of Directive 2014/52/EU), this EIAR specifically contains:

- A description of the project comprising information on the site, design, size and other relevant features of the project;
- A description of the likely significant effects of the project on the environment;
- A description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and if possible, offset likely significant adverse effects on the environment;
- A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.
- A description of the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be effected or the use of natural resources;
- A non-technical summary of the information referred to in points (a) to (d); and
- Any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project.

EIAR Project Team

An Environmental Impact Assessment Report must be prepared by competent experts. The applicant, Equinex Limited, approached Brock McClure Planning and Development Consultants to direct and co-ordinate the preparation of the EIAR. A team of qualified experts has prepared each individual chapter of the report. Contributing consultants to this EIAR are as follows:

- Brock McClure Planning and Development Consultants
- RKD Architects
- Red Consulting Engineers
- Malone O'Regan Environmental Consultants
- Digital Dimensions
- Pinnacle Consulting Engineers
- AWN Conuslting Engineers
- B – Fluid Buildings Fluid Diynamics
- Delta Simons
- Neil O'Flanagan

Structure of Environmental Impact Assessment Report

The EIAR is presented in 3 no. volumes as follows:

- Volume 1 – Non-Technical Summary
- Volume 2 – Environmental Impact Assessment Report
- Volume 3 – Appendices to Environmental Impact Assessment Report

2. Description of the Proposed Development and Site Context

This chapter provides a description of the subject site, Proposed Development and Overall Project.

Description of the Site

The site is located on a corner at the entrance to Profile Park Business Park immediately bounded to the north by the Nangor Road and to the west by Profile Business Park access road, known as Falcon Avenue. The site is located within the administrative area of South Dublin County Council.

The Business Park is situated 2km west of Clondalkin village on the outskirts of Dublin City (10km south west of the city centre), approximately 16 km south of Dublin International Airport. The Business Park lies between the M4 and M7 and is proximate to the M50.

The nearest residential dwelling is located adjacent to the Circle K Filling Station approx. c.55m from the sites northern boundary. Two detached units to the west of the site are either vacant/derelict and or planned for demolition. There are some residential areas to the east at Oldcastle Drive, including traveller accommodation c.600m distant. Casement Aerodrome is located c.800m south of the subject site. The site is approximately 5km west of the M50. There is a Quality Bus Corridor QBC route on the Nangor Road and Profile Park provides feeder bus services to connecting public transport options including LUAS.

The site is free from development and is characterised by the hedgerow and ditch separating the site from Grange Castle Golf Club lands to the east and south, which will be retained and reinforced as part of the proposal. The site is largely greenfield in nature with some hardcore and bare ground visible in some areas. The ground levels within the site area appear flat however with a gradual fall from north to south. The existing site levels differ by approx. 2m between the levels along the north boundary (75.5 O.D.) and levels along the existing dry ditch along the south boundary (73.24-73.5 O.D.).

The site has been used in the past for agricultural use (before the Profile Business Park has been built in 2006).

An ESB wayleave and SDCC Watermain wayleave are located to the north and west of the site running parallel with Falcon Avenue and Nangor Road. No above ground structures are proposed at these locations.

The site has formed part of the Profile Park Business Park since its establishment in the year c.2006 which is a 100 acre (40.5 Ha) fully enclosed, private business park. The surrounding land uses comprise of similar large industrial, manufacturing and data storage buildings that are similar to the permitted and proposed development that this EIAR relates to. Existing tenants within Profile Park and the surrounding business and enterprise parks include Google, Microsoft, Digital Realty Trust, Telecity and others. Immediately adjacent to Profile Park is the Castlebaggot 110 / 220 kV substation which provides electrical transmission connectivity to the national electricity transmission grid system. Figure 2.2 illustrates the surrounding land uses in Profile Park.

Figure 2.1 - Aerial Photo of Site outlined in Red

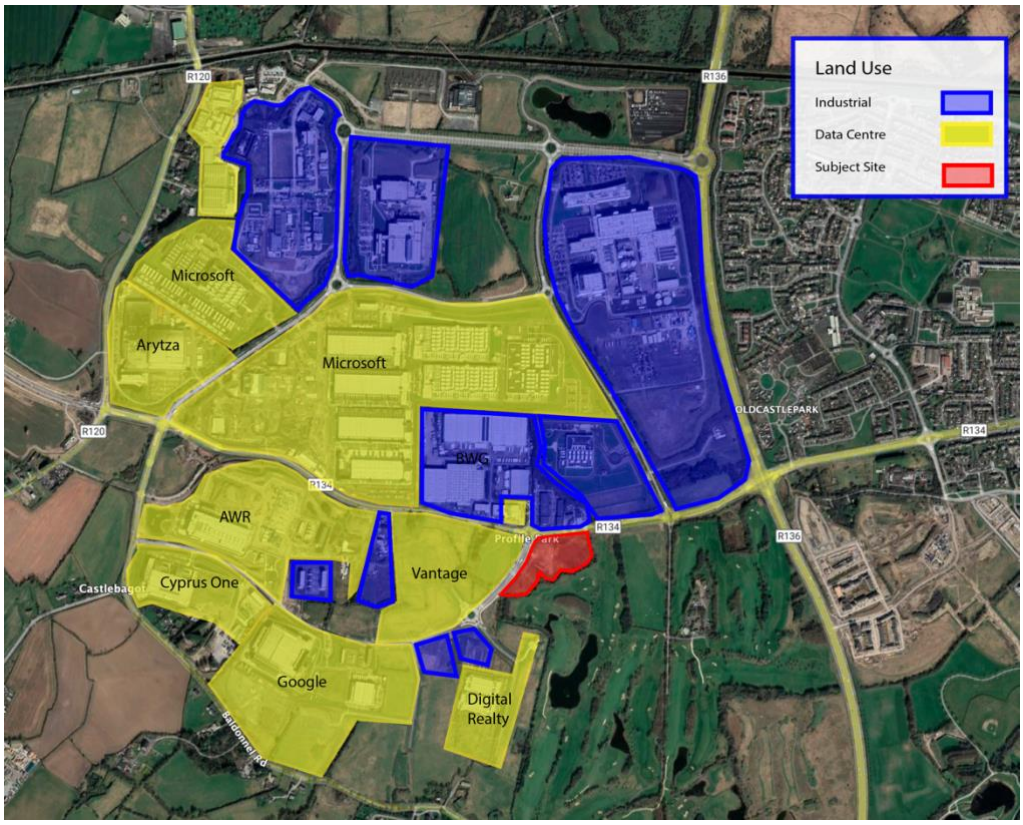

Figure 2.2 - Surrounding Land Use in Profile Park

Description of the Proposed Development and Overall Project

There is one permitted development and one proposed development on the subject site, therefore, as the proposed development consists of modifications to the permitted data centre development on the subject site this EIAR will assess the impact which the proposed development and the overall project may have on the environment.

This section of the EIAR describes the 2no. projects/developments that are subject of this EIAR which are summarised below.

1. The Proposed Development for which consent is being sought under SDCC Ref. SDA22/0156 includes modifications to the permitted Data Centre granted under SDCC Ref. SD21A/0186 and the construction of an Onsite Power Generation Plant OSPG and associated site works. We refer to section 2.3.1 below for a full description of the proposed development.

2. The Overall Project which includes the permitted development under SDCC Ref. SD21A/0186 comprising of a Data Centre Development and associated site works and the proposed amendment application under SDA22/0156. We refer to section 2.3.2 below for a full description of the Overall Project.

Permitted Development - Data Centre DB8 - Ref. SDA21/0186

For the purpose of this EIAR we have described the permitted development that forms part of the Overall Project and the Proposed Development.

For the purpose of this EIAR we note the permitted development is described in accordance with the plans, particulars and specifications lodged with the application, and as amended by Further Information received on the 10th of December 2021 and Clarification of Further Information received on the 25th of February 2022.

Equinix have been granted permission for the development of a Data Centre which is identified in figure 2.3 below. The overall height of the building is c.21m combined with a setback from the northern site boundary by c.33m.

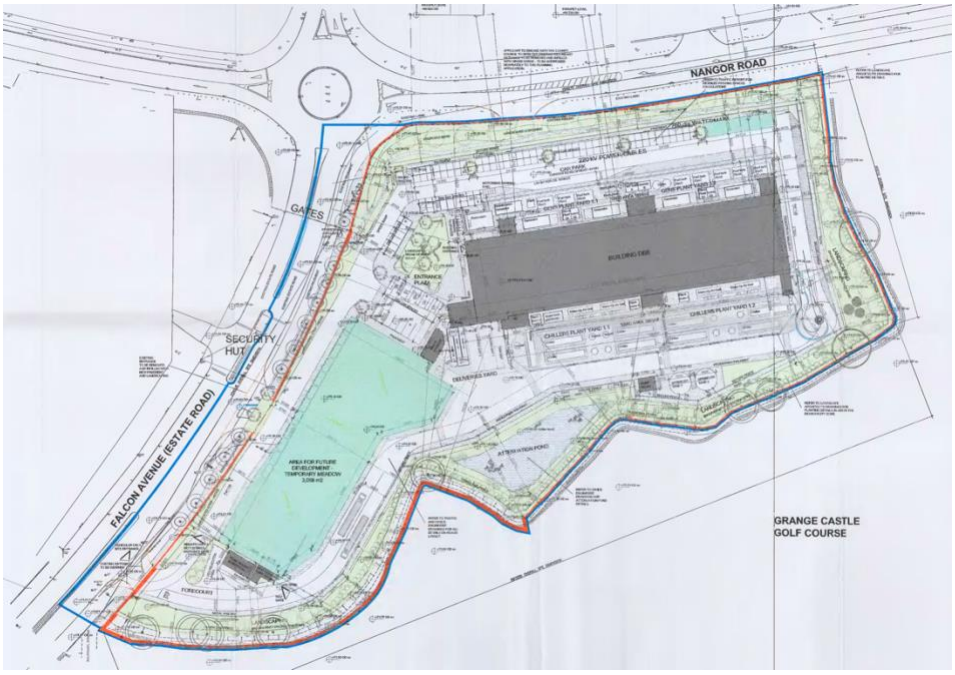

Figure 2.3 - Proposed Site Layout under Ref. SD21A/0186

The permitted Data Centre Development consists of the following:

- Construction of a 3 storey (part 4 storey) data centre known as 'DB8' to include data halls, electrical/plant rooms including internal generators, offices, lobbies, ancillary staff areas including break rooms and toilets, stores, stair/lift cores throughout and photovoltaic panels at roof level;
- The total gross floor area excluding hot air plenums is c.9,601sq.m and the overall height of the data centre ranges from c.16m to c.20m to roof parapet level and up to c.24.48m including roof top plant, flues which include a wire mesh cladding to rear of the front (north facing plenums) and lift overrun;
- Provision of 5 no. external generators, 8 no. fuel tanks and ancillary plant contained within a plant yard to the north of DB8 data centre building on the subject site ;
- Provision of a water tank plant room, air cooled chillers and ancillary plant contained within a chiller plant yard to the south of DB8;
- Provision of a water sprinkler pump room (c.23sqm), 2 sprinkler tanks (c.12m high each), heat recovery plant room (c.17sqm), ESB substation (c.44sqm), waste/bin stores (c.52sqm); total floor area of ancillary structures and plant (c.303sqm);
- 64 car parking spaces, 5 motorcycle spaces, bicycle shelter serving 14 spaces, smoke shelter, provision of a delivery yard and loading bays,
- PV panels that have an output of 0.04MV,
- Internal access roads and footpaths, vehicular and pedestrian access to the west from Falcon Avenue and closure of an existing vehicular entrance from Falcon Avenue;
- Additional tree planting to the northern boundary for enhanced amenity and screening purposes,
- Sustainable Urban Drainage Systems were proposed including the following SuDs We refer to the Landscape Masterplan (DB080-MA-LS-XX-DR-L-PLNT-1050) for more information;
    - Perimeter landscaping;
    - Bioretention Tree Pits;
    - Flow Control Devices;
    - Interceptors;
    - Permeable Paving;
    - Permeable Gravel Areas;
    - Green Roofs (combined area of 132sqm.);
    - Rain Water Harvesting (Office Building Area);
    - Swale 1;
    - Swale 2; and
    - Attenuation Pond

- All associated site development works, services provision, drainage works including attenuation, landscape and boundary treatment works including berming, hedgerow protection areas and security fencing;
- No buildings are proposed above the existing ESB wayleave and SDCC watermain wayleave to the west and north of the site;
- The area to the southwest of the site (temporary meadow) was reserved for a future data centre, subject of a separate application to South Dublin County Council on a site bounded to the east and south by Grange Castle Golf Club, to the north by Nangor Road (R134) and to the west by an estate road known as Falcon Avenue. This application was accompanied by a Natura Impact Statement.

Proposed Development - Modifications to the permitted data centre and development of On Site Power Generation - Ref. SDA22/0156

This section describes the proposed development that is subject to this EIAR.

Equinix intends to seek permission for the proposed development which consists of Modifications to the permitted data centre granted under SDCC Ref. SD21A/0186 and the development of an OSPG and associated works. The OSPG plant is proposed in the area to the south west of the permitted data centre that was previously reserved for a future data centre application. For the purpose of this EIAR, we note there were no amendments made at further information stage to the design of the OSPG. The site layout is illustrated in the Figure below.

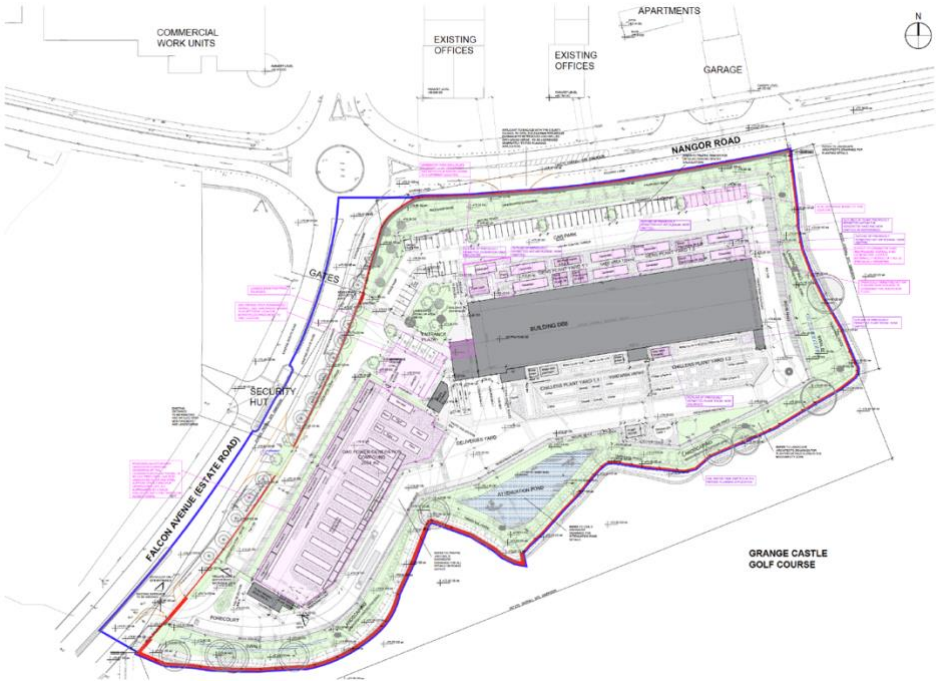

Figure 2.4 – Proposed Development illustrating OSPG Compound (southwest of the overall site)

The proposed OSPG and modifications to the permitted Data Centre development under Ref. SD21A/0186 consists of the following:

- Reconfiguration, alterations and amendments to the previously permitted scheme and data centre building under Ref. SD21A/0186 which include the following:
    - Omission of third floor level in the office block (removal of approx. 366sq.m of GFA the omission of the third floor has reduced the entire building to a 3 storey development.)
    - Alterations to the floor levels: floor levels within the admin area of the Data Centre have been changed in order to provide consistency throughout the building. One storey of the admin block has been omitted and floor to floor height changed to 5.3m in line with heights in the data halls. We refer to figure 2.5 below for an extract of this drawing that illustrates the alterations to floor levels.
    - parapet height increase of front of house to c.16.8m,
    - Increase of single storey Loading Dock GFA by approx. 60sqm
    - provision of storage at second floor level in lieu of relocated internal generators to the external generator yard and associated elevational alterations.
    - Extension of loading dock at ground floor level by c.60sqm in area with minor height increase to c.5.3m.

  - Alterations to the permitted generator plant yard to the north of the data centre to include removal of 4 no. internal generators and plant rooms spaces from 2nd floor and provision of same within the Generator Yard – Overall increase of number of external gens from 5 no. to 9 no. and increase of number of external electrical plant rooms from 4 no. to 8 no. All previously permitted free standing fuel tanks are now removed. This also includes increase of the yard size, rearrangement of the yard layout. Overall increase of external electrical plant rooms GFA is 49.66sqm.
  - Removal of 3 no. air plenums to the front (north) elevation and provision of screening to generator flues in lieu of omitted plenums.
  - Alterations at roof level to include removal of 2m high gantry screening.
  - Reconfiguration of plant within the permitted chiller plant yard to the south of the data centre.
  - Removal of 1 no. sprinkler/water tank and removal of stairs and door to the side of the waste compound.
  - Reconfiguration of car parking and motorcycle spaces and removal of 1 no. accessible spaces to 64 no. total number of car parking spaces .

- The proposal also includes provision of on-site gas power generation compound OSPG (c.2,604sqm in area) in the area which was previously reserved for a future data centre development under Ref. SD21A/0186 located to the south west of the now permitted data centre under Ref. SD21A/0186.
  - The OSPG compound comprises:
    - 7 no. modular plant rooms (totalling c.180sqm in area),
    - 10 no. gas fired generators and associated flues c.14.7m high,
    - gas skid, associated modular plant, boundary treatment surrounding the compound c.6.5m high and
    - 2 no. vehicular access points including general and emergency access.
- All associated site development works, services provision, drainage works, access, landscaping and boundary treatment works.
- No buildings are proposed above the existing ESB and SDCC wayleaves to the west and north of the site.
- The overall Gross Floor Area of the development is reduced by c.44sqm to c.9,795sqm from previously permitted under SDCC Reg. Ref. SD21a/0186.
- This application under SD22A/0186 was accompanied by a Natura Impact Statement.

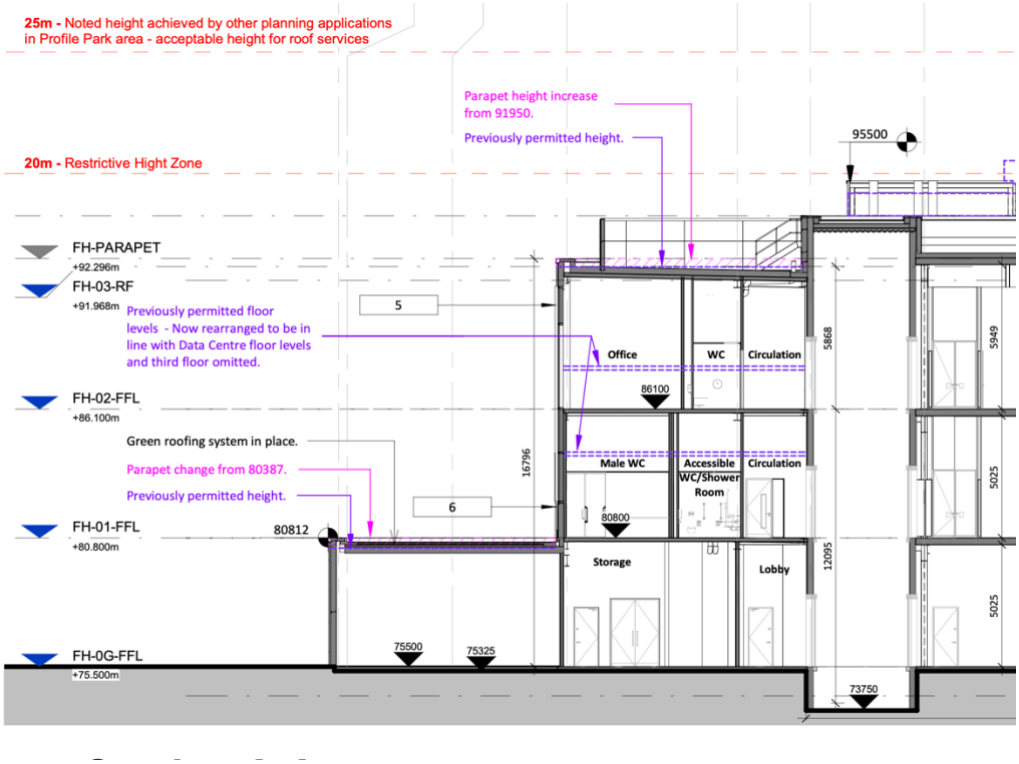

Figure 2.5 – Extract from Section AA in drawing no. DB081 -RKD -ZZ -ZZ -DR -A -ZZZZ -3200 that illustrates the alterations to floor levels proposed under SDCC Ref. SDA22/0156.

Overall Project - permitted development under SDCC Ref. SD21A/0186 comprising of a Data Centre Development and associated site works and the proposed amendments to this application as per application SDCC Ref. SDA22/0156

This section describes the Overall Project which includes the 2 no. developments that are summarized below:

1. The permitted development under SDCC Ref. SD21A/0186 comprising of a Data Centre Development and associated site works and;
2. The proposed development under SDCC Ref. SD22A/0156 consisting of an OSPG and modifications to the permitted Data Centre development under Ref. SD21A/0186.

The 2 no. developments which form the Overall Project are described in full below:

Permitted Development - Data Centre DB8 - Ref. SDA21/0186

Equinix have been granted permission for the development of a Data Centre which is identified in figure 2.3 below. The overall height of the building is c.21m combined with a setback from the northern site boundary by c.33m.

For the purpose of this EIAR we note the permitted development is described in accordance with the plans, particulars and specifications lodged with the application, and as amended by Further Information received on the 10th of December 2021 and Clarification of Further Information received on the 25th of February 2022.

The permitted Data Centre Development consists of the following:

- Construction of a 3 storey (part 4 storey) data centre known as 'DB8' to include data halls, electrical/plant rooms including internal generators, offices, lobbies, ancillary staff areas including break rooms and toilets, stores, stair/lift cores throughout and photovoltaic panels at roof level;
- The total gross floor area excluding hot air plenums, is c.9,601sq.m and the overall height of the data centre ranges from c.16m to c.20m to roof parapet level and up to c.24.48m including roof top plant, flues which include a wire mesh cladding to rear of the front (north facing plenums) and lift overrun;
- Provision of 5 no. external generators, 8 no. fuel tanks and ancillary plant contained within a plant yard to the north of DB8 data centre building on the subject site ;
- Provision of a water tank plant room, air cooled chillers and ancillary plant contained within a chiller plant yard to the south of DB8;
- Provision of a water sprinkler pump room (c.23sqm), 2 sprinkler tanks (c.12m high each), heat recovery plant room (c.17sqm), ESB substation (c.44sqm), waste/bin stores (c.52sqm); total floor area of ancillary structures and plant (c.303sqm);
- 64 car parking spaces, 5 motorcycle spaces, bicycle shelter serving 14 spaces, smoke shelter, provision of a delivery yard and loading bays,
- PV panels that have an output of 0.04MV,
- Internal access roads and footpaths, vehicular and pedestrian access to the west from Falcon Avenue and closure of an existing vehicular entrance from Falcon Avenue;
- Additional tree planting to the northern boundary for enhanced amenity and screening purposes,
- Sustainable Urban Drainage Systems were proposed including the following SuDs We refer to the Landscape Masterplan (DB080-MA-LS-XX-DR-L-PLNT-1050) for more information;
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- Flow Control Devices;
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- Green Roofs (combined area of 132sqm.);
- Rain Water Harvesting (Office Building Area);
- Swale 1;
- Swale 2; and
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- All associated site development works, services provision, drainage works including attenuation, landscape and boundary treatment works including berming, hedgerow protection areas and security fencing;
- No buildings are proposed above the existing ESB wayleave and SDCC watermain wayleave to the west and north of the site;

The area to the southwest of the site (temporary meadow) was reserved for a future data centre, subject of a separate application to South Dublin County Council on a site bounded to the east and south by Grange Castle Golf Club, to the north by Nangor Road (R134) and to the west by an estate road known as Falcon Avenue. This application was accompanied by a Natura Impact Statement.

Proposed Development - Modifications to the permitted data centre and development of On Site Power Generation - Ref. SDA22/0156

Equinix intends to seek permission for the proposed development which consists of Modifications to the permitted data centre granted under SDCC Ref. SD21A/0186 and the development of an OSPG and associated works. The OSPG plant is proposed in the area to the south west of the permitted data centre that was previously reserved for a future data centre application. The plan to provide this future data centre is no longer considered and has now been abandoned due to the requirement to provide on-site power generation as there is no availability of power in the Eirgrid networ. For the purpose of this EIAR, we note there were no amendments made at further information stage to the design of the OSPG. The site layout is illustrated in the Figure below.

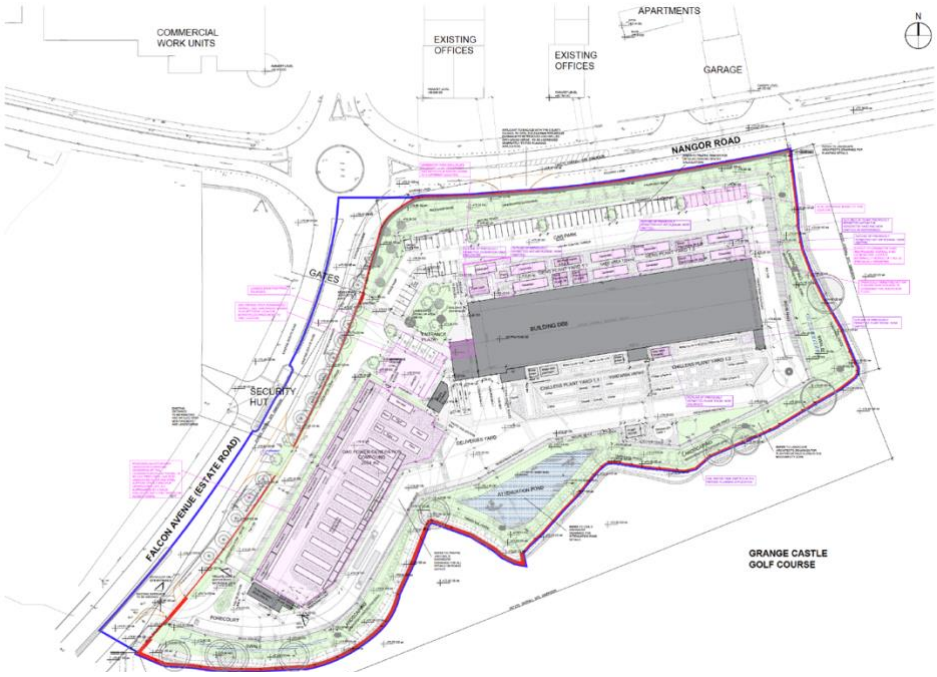

Figure 2.4 – Proposed Development illustrating OSPG Compound (southwest of the overall site)

The proposed OSPG and modifications to the permitted Data Centre development under Ref. SD21A/0186 consists of the following:

- Reconfiguration, alterations and amendments to the previously permitted scheme and data centre building under Ref. SD21A/0186 which include the following:
    - Omission of third floor level in the office block (removal of approx. 366sq.m of GFA the omission of the third floor has reduced the entire building to a 3 storey development.)
    - Alterations to the floor levels: floor levels within the admin area of the Data Centre have been changed in order to provide consistency throughout the building. One storey of the admin block has been omitted and floor to floor height changed to 5.3m in line with heights in the data halls. We refer to figure 2.5 below for an extract of this drawing that illustrates the alterations to floor levels.
    - parapet height increase of front of house to c.16.8m,
    - Increase of single storey Loading Dock GFA by approx. 60sqm
    - provision of storage at second floor level in lieu of relocated internal generators to the external generator yard and associated elevational alterations.
    - Extension of loading dock at ground floor level by c.60sqm in area with minor height increase to c.5.3m.
    - Alterations to the permitted generator plant yard to the north of the data centre to include removal of 4 no. internal generators and plant rooms spaces from 2nd floor and provision of same within the Generator Yard – Overall increase of number of external gens from 5 no. to 9 no. and increase of number of external electrical plant rooms from 4 no. to 8 no. All previously permitted free standing fuel tanks are now removed. This also includes increase of the yard size, rearrangement of the yard layout. Overall increase of external electrical plant rooms GFA is 49.66sqm.
    - Removal of 3 no. air plenums to the front (north) elevation and provision of screening to generator flues in lieu of omitted plenums.
    - Alterations at roof level to include removal of 2m high gantry screening.
    - Reconfiguration of plant within the permitted chiller plant yard to the south of the data centre.
    - Removal of 1 no. sprinkler/water tank and removal of stairs and door to the side of the waste compound.
    - Reconfiguration of car parking and motorcycle spaces and removal of 1 no. accessible spaces to 64 no. total number of car parking spaces .

- The proposal also includes provision of on-site gas power generation compound OSPG (c.2,604sqm in area) in the area which was previously reserved for a future data centre development under Ref. SD21A/0186 located to the south west of the now permitted data centre under Ref. SD21A/0186.
    - The OSPG compound comprises:
        - 7 no. modular plant rooms (totalling c.180sqm in area),
        - 10 no. gas fired generators and associated flues c.14.7m high,
        - gas skid, associated modular plant, boundary treatment surrounding the compound c.6.5m high and
        - 2 no. vehicular access points including general and emergency access.
- All associated site development works, services provision, drainage works, access, landscaping and boundary treatment works.
- No buildings are proposed above the existing ESB and SDCC wayleaves to the west and north of the site.

- The overall Gross Floor Area of the development is reduced by c.44sqm to c.9,795sqm from previously permitted under SDCC Reg. Ref. SD21a/0186.
- The application was accompanied by a Natura Impact Statement which is appended in this EIAR.

Overall Project Data Centre Facility and Onsite Power Generation OSPG

The permitted data centre development will provide information storage capacity for individuals and businesses. The location of the facility in Ireland allows for the data halls to be free cooled using outside air-cooling systems without the need for excessive mechanical cooling. Air handling units will be direct evaporative (adiabatic) cooling type also known as wet-bulb cooling is termed direct because there is a direct interaction between water and air utilised within the system. Water is directly evaporated into a stream of heated air to facilitate its cooling. This is the most widely employed adiabatic cooling technique worldwide. The data halls are arranged over three storeys and will be equipped with server cages and dedicated mechanical plant rooms.

The provision of on-site gas power generation compound (c.2,604sqm in area) in the area previously reserved for a future data centre will power to the permitted data centre outlined above. The compound comprises 7 no. modular plant rooms (totalling c.180sqm in area), 10 no. gas fired generators and associated flues c.14.7m high, gas skid, associated modular plant, boundary treatment surrounding the compound c.6.5m high and 2 no. vehicular access points including general and emergency access.

3. Consideration of Alternatives

This chapter provides an outline of the main alternatives examined during the design phase. It sets out the reasons for choosing the development as now proposed and considers the environmental impacts of the chosen option that have arisen as part of the evolving design process.

The key issue is that whilst the proposal to power the permitted data centre by electricity was previously permitted, Equinix has not received a commercial or technical offer to supply permanent power to the site. It has been verbally confirmed by ESB that power to the site is likely to be available in 6-8 years.

Equinix will engage with Eirgrid to achieve a future connection for the grid to facilitate the delivery of renewable electricity via the electrical grid. The Equinix strategy is to utilise CPPAs. As such it is Equinix intent to continue to engage to achieve a grid connection form Eirgrid.

In the absence of a grid connection the proposal is to utilise On Site Power generation (OSPG) with energy supplied via the Gas Networks Ireland grid. The intent with the OSPG plant is that:

- The plant would be operational to bridge the gap in electrical utility availability i.e. be operational until electrical utility supply is available.
- The plant would act in a flex capacity to allow the DB8 demand to be removed from the grid if required by the utility provider.

Once the electrical utility is available and there is not a requirement for flex the intent is that the OSPG plant would be decommissioned. It is Equinix strategic target for Climate Neutral Data Centre and the electricity consumption at current operational data centres in Ireland to be matched 100% with renewable energy GOs through CPPAs so it is Equinix preferred solution to have a grid connection to help meet the company's global strategic targets.

Alternative Locations

As noted in Section 4.13 of the 2018 Guidelines "some projects may be site specific so the consideration of alternative sites may not be relevant."

Data Centre

Having regard to these various environmental and development considerations, Profile Park was considered the most appropriate location for the permitted data centre having regard to:

- Profile Park is marketed and promoted as Ireland's Data Centre Cluster;
- the co-locational benefits beside the existing DB2 Data Centre in Kilcarberry Business Park owned and operated by the Applicant Equinix;
- the gas connection to the national supply;
- excellent transport connections to the M50, N4 and N7; and
- largescale data centre requirements relating to site scale and size.

Proposed OSPG

No Alternative sites or locations for the proposed OSPG development were considered by the Applicant for the following reasons:

- The Proposed Development includes amendments to an already permitted data centre development located on this site,
- The purpose of the the Proposed Development specifically the OSPG (On Site Power Generation Plant) is to power the permitted data centre development on site due to the change in project scope as there is now no connection

agreement with Eirgrid to provide power from the grid to the permitted development. Therefore the proposed OSPG will provide power to the permitted development under SDCC Ref. SD21A/0186.

- The subject site has the space to accommodate the proposed OSPG to power the permitted development.
- The close proximity to the data centre, making the underground infrastructure most optimal.
- The Site is located in an area that is identified in South Dublin County Councils Development Plan as providing employment. The permitted development is dependant on the proposed OSPG in the absece of a formal connection agreement from EirGrid. This EIAR has presented 3 scenarios where the OSPG would be decommissioned until such a time that the grid is able to provide power to the site in 6-8 years, or retained on a flex agreement or retained for a longer period of time.
- There is no evidence of site contamination on the site making it suitable for development, we refer to chapter 6 of this EIAR for more details on the Land and Soil associated with the site.

Having regard to the site specific nature of the development, further consideration of alternative site locations are not considered essential in respect of the EIAR legislation and guidance.

Alternative Design

The design team carried out a number of studies for the Overall Project of the subject site, called 'Test Fits'.

Each arrangement considered the environmental sensitivities associated with surrounding areas: the nearest residential development and noise impact on them, the visual impact of the proposal on the landscape, impact on the existing hedgerow, ditch and Baldonnel Stream.

Option 4 was chosen, this option consists of the proposed OSPG development and the permitted development and comprises of the following key elements.

One Data Centre Building with a total floor area of 3,206sq.m and on site power generation building 2,604sqm.

Option 4 is the chosen design as there is a requirement to provide on site power generation and comprises only Building 1 (permitted data centre, a multi-storey building with a footprint of 3,206sq.m) – similar to Option 1. The narrow footprint allows the site to breath, minimising visual impact and creating adequate space for generator yards and vehicular access around the site. Building 2 has been omitted thus providing space for on site power generation (now subject to current planning application). Fully landscaped biodiversity zone of 8m along the south and east boundaries has been provided including an attenuation pond and 2 swales.

On Site Power Generation (OSPG) Technology

The Commission for Regulation of Utilities in Ireland requires all new data centres to provide an onsite power generation plant. This is mandated to help re-enforce the security of the grid so that when the grid needs more capacity, ESB can call on the customer to either supply their load themselves and or export power to the gird.

Equinix considered a number of technologies as part of the selection/screening process to identify the most suitable for the application within the proposed development. These technologies were:

- Natural Gas Generators – reciprocating engine
- Natural Gas Generators – single cycle turbines
- Diesel Generators - reciprocating Engines

- Natural Gas Fuel Cells

Whilst the use of on-site renewable energy was assessed for this project, it is the intent of the Client to provide a power plant solution that is ready to interface, operate and support Ireland's de-carbonised utilities when they start to come online from 2030 onwards.

By building an on-site power plant this in itself has the biggest impact in supporting the use of renewable energy. Once the project receives a utility power supply, and the OSPG is able to deliver power, this will directly allow the wider transmission electrical grid to take on more input power from wind and solar sources knowing that projects like this one, can self-support power during times when the sun and wind sources are not at full levels of production.

Data Centre Technology

The global development of data centres has seen significant design and construction improvements relating to energy efficiency of buildings. Use of alternative technologies were explored as part of the process.

The environmental impact of the permitted development is minimised through energy saving technologies including solar power/PV panels, low energy lighting, sensor lighting controls, heat recovery and variable speed pumps.

The internal office space, workshops and storage spaces require heating and cooling. Whilst cooling could be provided by the main chilled water system it is unable to generate sufficient heat to maintain ambient temperature during the winter cycle. Therefore, airside heat recovery systems with air-to-air heat pumps shall be installed to provide heating and cooling to the office areas.

Energy efficient fans and motors shall be utilized, and variable speed drives (VSD's) will be utilized to control larger AC motors. The effect of using these types of motors and control is minimum power consumption wide range of control possibilities for optimum energy consumption.

Premium Efficiency motors will be specified on all equipment.

All the data centre's servers are housed in the data halls which are also known as "white space". The ambient temperature of the white space will be maintained at 25 Degrees Celsius and free cooling is utilised whenever the external ambient temperature permits.

For 7-9 months of the year when the external ambient temperature is below 150C, the air-cooled chillers will operate in "free cooling" mode where the refrigeration component of the chillers are not required to run. This not only reduces the capital expenditure associated with the refrigeration systems but the associated electrical infrastructure to power them.

The free cooling chillers helps reduce the operational carbon footprint as well as the embedded carbon of the data centre.

Equinix have developed and tested cooling solutions for data centres over many years of operation and strive to reduce energy consumption across all their developments.

Equinix adhere to the Climate Neutral Data Centre Pact (CNDCP) which mandates that by 1 January 2025, new data centres operating at full capacity in cool climates will meet set efficiency targets for new data centres. This target takes into account all new and emerging technologies and the efficiencies achievable with all associated plant and equipment.

4. Population and Human Health

This chapter has been produced to assess the likely effects if any associated with Population and Human Health that may arise from the Overall Project.

In accordance with the Guidelines on the Information to be contained in Environmental Effect Assessment Reports (EPA 2022), Draft Advice Notes for Preparing Environmental Effect Statements (EPA 2015), Advice Notes on current practice in the preparation of Environmental Effect Statements (EPA, 2003) and European Commission Environmental Effect Assessment of Projects: Guidance on the preparation of the Environmental Effect Assessment Report (EU 2017). This chapter considers the "existence, activities and health of people", with respect to "topics which are manifested in the environment such as employment and housing areas, amenities, extended infrastructure or resource utilisation and associated emissions".

The Chapter focuses on the human environment proximate to the Overall Project.

Study Area

The Overall Project is located in South Dublin County Dublin and is within the following electoral divisions:

- Clondalkin Village
- Clondalkin Dunawley

This study area was chosen as it relates to the surrounding environment of the subject site and captures the environmental sensitivity of the geographical areas likely to be affected by the Overall Project.

These electoral divisions are identified in the figure below with the location of the Overall Project identified with a red circle

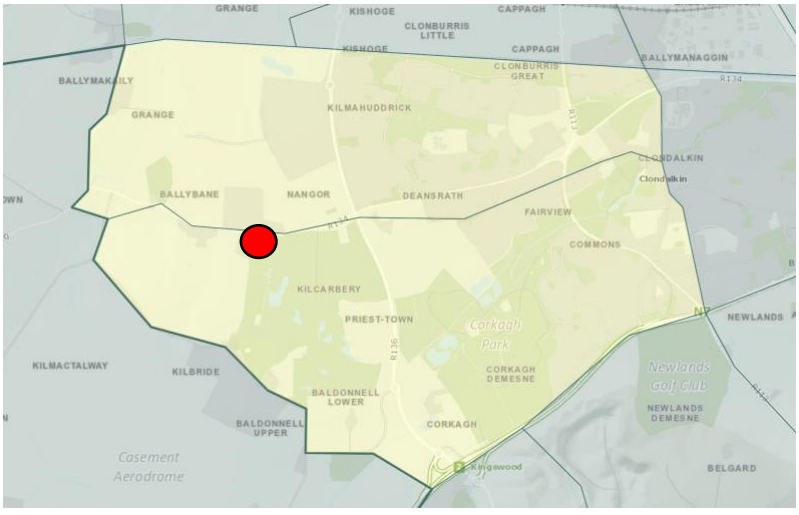

Figure - 4.1 - Clondalkin Village and Clondalkin Dunawley hatched yellow and subject site location identified as a red circle (Source: CSO annotated by author)

Receiving Environment

Taking into consideration the location of the proposed development, this chapter assesses the effect of the proposed development on the following topics:

Population and Demographics

The most recent population figures for Clondalkin Village and Clondalkin Dunawley areas are noted as 9,152 and 11,323 respectively, which shows a population increase of 7.8% for Clondalkin Village ED and 4.1% for Clondalkin Dunawley ED from 2011-2016.

Age Profile

A review of the Clondalkin Village and Clondalkin Dunawley age profile confirmed that communities in the surrounding areas have an age profile weighted generally towards an older population group who are in the working age group (30 to 44 years of age).

Population Density

The figures below are based on the electoral divisions in comparison the Dublin City and Suburbs which indicates that the population density of this areas is low in comparison to the County overall.

Table 4.2 – Population density of electoral divisions associated with the subject site 2016 (Source: CSO)

Electoral Division/ Area	**Population Density 2016 (persons/km^2)**
Clondalkin Village	1,556
Clondalkin Dunawley	2,419
Dublin City and Suburbs	3,677

Employment

There is a higher proportion of employment within the Commerce and Trade and Professional Services within the area as identified from the CSO data for the Clondalkin Village and Clondalkin Dunawley electoral divisions.

Labour force survey

The Labour Force Survey (LFS) is a large-scale, nationwide survey of households in Ireland carried out every three months. It generates labour force estimates which include the official measure of employment and unemployment for the state. The CSO is obliged to follow standard definitions and methodology when calculating the official estimates from the LFS.

Employment Rate

The LFS results nationally for Q3 2022 showed that there were 2,554,300 people employed in the state an increase of 3% from Q3 2021. The number of persons aged 15-74 years who were unemployed decreased by 30,000 (-20.1%) to 119,100 in the year to Q3 2022.

The census data illustrates the employment rate for the two electoral divisions that surround the site from the 2006 – 2016 census which indicates an increase in unemployment after the economic crash in 2008 and a subsequent decrease in unemployment as the economy recovered as reflected in the 2016 census data.

Deprivation

Deprivation in small areas is mapped using the Pobal HP Deprivation Index. This Index draws on data from censuses and combines three dimensions of relative affluence and deprivation: demographic profile, social class, composition and labour market situation.

The table below shows the Pobal HP Index Relevant Index Score figures at the electoral division level. Both areas can be classified as 'marginally below average' as they fit within the 0 to -10 relative index score.

Table 4.6 - Pobal HP Index Relevant Index Score

ED Name	Deprivation Score 2006	Deprivation Score 2011	Deprivation Score 2016
Clondalkin Village	-1.36	-1.17	0.23
Clondalkin-Dunawley	-10.19	-9.85	-9.45
Total	**-6.26**	**-6.04**	**-5.12**

Education

Census data presenting the highest level of education completed for key educational levels by people living in the 2no. electoral divisions surrounding the subject site are presented in the table below.

Table 4.7 Highest Level of Education Completed by Electoral Division

Highest Level of Education Completed by Electoral Division	Clondalkin Village	Clondalkin-Dunawley
Proportion with Primary Education Only 2006	14.63	20.26
Proportion with Primary Education Only 2011	13.49	20.15
Proportion with Primary Education Only 2016	11.71	16.79
Proportion with third level education 2006	24.8	17.49
Proportion with third level education 2011	22.88	14.07
Proportion with third level education 2016	27.7	17.3

Human Health

Life expectancy in Ireland by sex is a key metric for assessing population health; data for the study area is shown in Table 4.8. Dublin data shows that life expectancy for both males and females has increased consistently since the 2006 census to 2016, with female life expectancy consistently higher than males.

Table 4.8 Period Life Expectancy of County Dublin (Source: CSO)

Sex and Year	2006	2011	2016
Male	76.7	78.3	80.1
Female	81.2	82.7	83.4

A review of the general health data collected from the 2016 census confirmed that the majority of the population in the surrounding areas of the site in the Clondalkin Village and Clondalkin Dunawley electoral divisions have good general health according to the CSO census data.

Social Infrastructure,

There are a number of schools and emergency services located within 4km of the subject site.

Likely Effects of the Proposed Development on Population and Human Health

The Overall Project has been designed with consideration given to the health and safety risks of people living and working in the vicinity. The Overall Project including the OSPG and Data Centre facility has been designed by an experienced personnel in accordance with relevant standards, design codes, legislation that is referenced to throughout this EIAR.

The potential health and safety risks have been addressed for certain aspects including the vulnerability of the Overall Project to natural disasters flooding, air quality, noise and vibration and traffic we refer to Chapters 6,7,8,9,10,12 and 18.

The potential for major accidents has been considered with reference to Seveso/Control of Major Accident Hazards (COMAH) Regulations. The Overall Project will not be a Seveso/COMAH facility. The only substance stored on site controlled under Seveso/COMAH will be diesel for generators and the amounts proposed do not exceed the relevant thresholds of the Seveso Directive.

The activities of contractors during the construction phase will be carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013, as amended, to minimise the likelihood of any effects on the construction workers' health and safety.

There is a negligible risk of landslides occurring along the routes and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the routes. There are no active volcanoes in Ireland so there is no risk of volcanic activity.

The Overall Project will not pose any flooding issues we refer to chapter 7 and appendix 7.1 where flood risk assessment was carried out for the permitted development and is appended to this EIAR in appendix 7.1.

Therefore having regard to the reasons set out above the effects of the Proposed Development and Overall Project will have a ***Neutral, Moderate and Long Term effect*** on the health and safety of the population.

5. Biodiversity

There are no designated ecological sites either within, or in close proximity, to the Site. The Rye Water Valley / Carton SAC, which is ca.6km northwest, is the closest Natura 2000 site to the Site.

The Site is hydrologically connected to three (3No.) Natura 2000 Sites, the South Dublin Bay SAC, the South Dublin Bay SPA and River Tolka Estuary SPA via the Baldonnell Stream. The Baldonnell Stream discharges into the Grifeen River followed by the River Liffey (ca.6.1km downstream of the Site) and eventually drains into Dublin Bay (ca. 27.2km downstream of the Site). A Natura Impact Statement (NIS) has been prepared in support of this planning application. The NIS concluded that the Proposed Development, either alone or in-combination with other plans or projects, is not likely to result in any significant adverse effects on any Natura 2000 site or any of their designated features of interest following the implementation of appropriate mitigation measures.

Habitats

The Site was assessed on a number of occasions by suitably qualified Malone O'Regan Environmental (MOR) ecologists. The Site was determined to be of low ecological value within lands zoned for '*enterprise and employment related uses*.' The Site is comprised primarily of a construction compound, disturbed ground and spoil heaps, which have grown over with vegetation. The principle natural or semi-natural features noted during the surveys comprised of hedgerows, treelines, a drainage ditch which separates the Site from the Grange Castle Golf Club.

The loss of the recolonising bare ground, spoil and bare ground, and surface water ponds is not considered to be significant given their low ecological value. All hedgerows / treelines bordering the Site will be maintained and protected as part of the proposed works. Standard tree protection measures will be implemented as part of the proposed works in line with regional and national policies. Additional tree and hedgerow planting of native species has also been planned to bolster those present.

The drainage ditches onsite are not considered to be of significant value. However, they do have the potential to support local biodiversity. Therefore, water mitigation measures, as outlined in the NIS and the EIAR, will be implemented to protect this habitat and the habitats further downstream.

In addition to these mitigation measures, a number of ecological enhancement measures will be implemented onsite including:

- An attenuation pond and associated wetland habitat;
- Wildflower meadows;
- Hibernacula and habitat piles;
- Green roofs and trellises.

These areas have been designed to provide opportunities for biodiversity onsite.

Figure 5.1 - Habitat Map

Fauna

Following the initial assessment of the Site and to ensure a comprehensive assessment, specialist amphibian and bat activity surveys were undertaken.

No significant constraints were identified from these surveys. The proposed construction works may result in some temporary disturbance to wildlife in the area. However, specific mitigation measures have been included to protect birds, amphibians, badgers, bats, otters and other fauna whilst best practice guidance and general mitigation measures will be implemented to protect any mammals or other protected / notable fauna on the Site. Additionally, the landscape plan has been designed to maintain ecological corridors and provide additional foraging opportunities for local biodiversity.

Taking into account the nature of the Proposed Development and the enhancement measures to be implemented, we conclude that the Proposed Development will be consistent with the National, Local and Municipal planning policies and objectives, will support the protection and enhancement of the environmental quality of the area, and will have an imperceptible residual impact on local biodiversity based on the Site being of low ecological value and situated within a commercial area.

6. Land, Soil, Geology and Hydrogeology

The historical, current, and proposed use of the Site with respect to contaminated land and the underlying soils and groundwater has been assessed, both through background research (reference to historical maps, on-line sources of information etc) and by way of ground investigations (including sampling of soils and waters for chemical analysis).

Based on a review of the compilation of historical sources presented above dating back to 1837, it appears that the subject property was in agricultural use until the construction of the Profile Park access road on the Site's western boundary in around 2007-2009. Although a retail and office development was proposed for the Site and planning consent granted, it was not implemented, and the Site has been used intermittently as a construction compound and for stockpiling excavated soil and builders' rubble up to the present day. A strip of land along the northern edge contains a wayleave for a trunk water main and high voltage electricity cables. Based on the site history, there is limited potential for land contamination to be present. The construction phase would therefore commence with a low residual risk of existing significant contamination being released into the site's surroundings.

The development of any site can have the potential to cause detriment to the amenity of an area, such as through wind-blown dust from areas of exposed soils. Measures to mitigate against fugitive dust during earthworks (including the use of water bowsers to dampen down soils during periods of dry weather) would be implemented.

Through intrusive investigation, no existing residual contaminants of concern have been identified in concentrations which pose an unacceptable risk to the anticipated receptors (construction workers, maintenance workers, site users, adjacent users, adjacent residents, controlled waters and buildings, utilities and services).

The Baldonnel Stream flows from north-west to south-east adjacent to the southwestern boundary of the site. The assessment has identified areas of activity, particularly during construction, that have the potential to impact upon the quality of these watercourses (such as spills and leaks from on-site construction activities and storage areas, wash-down of machinery and sediment-laden runoff) unless appropriately mitigated.

The site is underlain by low permeability subsoil deposits of low permeability which will reduce and limit the migration of any residual existing contaminants or introduced contaminants, reducing the likelihood of impact to the High Vulnerability Aquifer underlying the sub soils.

These controls, and the adoption of appropriate Pollution Prevention Guidelines (PPGs), will be incorporated within a Construction Environmental Management Plan (CEMP) to mitigate risks to human health (construction workers) and controlled waters from previously unidentified hotspots (if encountered), which can be implemented via an appropriate condition to any planning consent granted for the scheme. The CEMP will need to incorporate a hotspot protocol to mitigate risks posed by encountering previously unidentified contamination during the construction phase. With the adoption of appropriate management plans and good working practices, no significant effects on the surrounding environment are therefore predicted.

The nature of the proposed development (i.e. a data centre) is such that its activities are unlikely to pose the same polluting potential as, for example, an industrial premises. Nevertheless, the proposals have the potential to introduce potential sources of contamination, such as the storage of fuels, oils and chemicals, or spillages from vehicles, that are not present currently given the site's storage use. There is, therefore, potential for groundwater and surface water to become contaminated should uncontrolled spillages and leaks from these sources occur.

Given the nature of the proposed development, the sources of these contaminants are considered to be in limited use. Potential risks would be managed by the implementation of mitigation measures, including the use of storage facilities with secondary containment

(e.g. bunded or double-skinned fuel tanks), the site will be covered in hardstanding which will direct any contamination towards the implemented spillage contingency measures - the incorporation of well-maintained petrol/oil interceptors into the surface water drainage systems to remove contaminants from drainage waters prior to their discharge from site.

7. Water

This assessment has considered the potential impacts and effects on the water environment that can be reasonably foreseen as consequences of the normal construction and operation of the Proposed Development during the construction and after-use phases.

The main receptors that required assessment were groundwater, surface water, on-site plant and infrastructure, infrastructure immediately adjacent to and downstream of the Proposed Development and human health (specifically existing water users) that could be secondarily affected by changes to the water environment.

The secondary effects on ecology and biodiversity were considered in Chapter 5 of the EIAR, Ecology and Biodiversity.

Impact Assessment and Mitigation Measures

The Huntstown Stream forms the southern boundary of the proposed development. The Site is classified as being at low flood risk (Flood Zone C).

During the construction and operational phases, the Proposed Development could introduce a range of sources that on their own or in combination have the potential to impact water quality or availability. During the construction phase disturbance of unidentified previously contaminated material could introduce substances to groundwater resulting in poorer groundwater quality for groundwater users.

Known design and construction management mitigation measures were accounted for in an assessment of initial impacts and effects; this included the management of all construction activities in line with the final Construction Management Plan and Construction Environmental Management Plan. Where additional mitigation measures were proposed to reduce the initial impacts and effects further, these were identified and included in an assessment of residual impacts and effects.

In summary, the significance of residual effects on water (and on human health from water) resulting from the different potential sources of impact are predicted to be no greater than slight adverse and, therefore, not significant.

8. Noise

The baseline noise environment has been established through an environmental noise surveys conducted at the site in order to quantify the existing noise environment. The survey was conducted in accordance with ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.

Construction Phase

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities or An Bord Pleanála normally control construction activities by imposing limits on the hours of operation and/or applying noise limits for construction noise at noise-sensitive locations.

Reference has been made to BS 5228 2009+A1 2014 Code of practice for noise and vibration control on construction and open sites. Part 1 to set appropriate construction noise limits for the development site. Construction noise contours have been prepared on this basis using computer-based noise modelling.

Construction noise levels predicted at nearest sensitive properties are predicted to be below the threshold for significant impact during the general construction phase. The application of binding noise limits, hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact are minimised.

At noise sensitive locations in the surrounding area potential negative, not significant and short-term effects are likely.

Operational Phase

The primary sources of outward noise in the operational context are long term and will comprise noise from building services plant noise associated with the data centre building, the on-site power generation (OSPG) comprising gas-fired electricity generators, and, under emergency conditions, diesel-fired generators.

Detailed computer-based noise modelling of the site shows that the noise levels of the overall project, are within the noise criteria for normal operations for emergency operations and generator testing.

In respect of the OSPG, the noise effects of a number of options in the medium term and long term are also assessed; all noise levels are within the criteria.

In the context of the surrounding road network the proposed development will not generate significant additional traffic noise.

The overall effect is therefore **negative, not significant to slight and long-term.**

9. Air

This chapter of the EIA Report evaluates the impacts which the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG may have on air quality.

In terms of the existing air quality environment, baseline data and data available from similar environments indicates that levels of nitrogen dioxide, carbon monoxide, particulate matter less than 10 microns and less than 2.5 microns are generally well below the National and European Union (EU) ambient air quality standards.

Potential Impacts of the Proposed Development

Construction Phase

During the construction phase there is the potential for dust emissions to impact nearby sensitive receptors resulting in potential dust soiling and human health impacts. Best practice mitigation measures have been proposed for the construction phase of the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG in order to mitigate potential dust impacts. Provided the mitigation measures outlined within Chapter 10 are implemented construction dust impacts will be *short-term, localized* and *imperceptibly negative* at nearby sensitive receptors.

Operational Phase

Air dispersion modelling of operational phase emissions from the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG was carried out using the United States Environmental Protection Agency's regulatory model AERMOD. The aim of the study was to assess the contribution of operational emissions of NO_2 from the Proposed Development to off-site levels of this pollutant. Both the methodologies of the USEPA and UK Environment Agency were included within the assessment as per guidance issued by the Irish EPA. Modelling was conducted for the flowing three scenarios:

- Do Nothing Scenario: Under the Do Nothing Scenario existing air emissions from the data centres onsite will occur. The ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area, changes in road traffic, etc.). Therefore, this scenario can be considered *long-term, localised, negative and slight* in terms of air quality.
- Proposed Development - OSPG Scenario: This comprises the continuous operation of gas engines which will have a minimum stack height of 20m above ground level. The scenario also included weekly testing of all 8 diesel generators.
- Overall Scenario – Data Centre and OSPG: This Scenario is based on the continuous operation of gas engines and the operation of the backup diesel generators operating for 72 hours per year which involves the emergency operation of 7 of the 8 generators in addition to the nearby data centres and Industrial Emissions (IE) Licenced facilities. This scenario also included weekly testing of all onsite on-site diesel generators.

<u>USEPA Methodology</u>

The modelling assessment has found that ambient NO_2 concentrations as a result of the operation of the gas engines and the emergency operations and scheduled testing of the standby diesel generators are in compliance with the relevant ambient air quality limit values at all locations at or beyond the site boundary.

For the Proposed Development - OSPG Scenario, emissions from the site assuming continuous operation of the gas engines, scheduled diesel generator weekly testing as well as emergency operation of the standby generators for 72 hours per year will lead to an ambient NO_2 concentration (including background) which is 82% of the maximum ambient 1-hour limit value (measured as a 99.8th%ile) and 70% of the annual limit value at the worst-case location at or beyond the site boundary.

For the Overall Scenario – Data Centre and OSPG, emissions from the site and nearby emissions sources will lead to an ambient NO_2 concentration (including background) which is 86% of the maximum ambient 1-hour limit value (measured as a 99.8th%ile) and 75% of the annual limit value at the worst-case location at or beyond the site boundary.

UK EA Methodology

The results for the Proposed Development - OSPG Scenario indicate that in the worst - case year, the standby generators can operate for up to 1,950 hours per year before there is a likelihood of an exceedance of the ambient air quality standard (at a 98th percentile confidence level).

However, the UK guidance recommends that there should be no running time restrictions placed on these generators which (aside from testing) are only used to provide power on site only during an emergency scenario.

Mitigation Measures

A dust management plan will be implemented during the construction phase of the Proposed Development to ensure that no significant dust nuisance occurs outside the site boundary.

With regards to the operational phase, provided each stack is built to the minimum heights determined by the air dispersion modelling, no further mitigation measures are required.

Residual Impacts

Once the mitigation measures outlined in Section 10.6 are implemented, the residual impacts on air quality from the construction of the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG will be *short-term* and *imperceptibly negative* and for the operational phase of the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG will be *long-term, negative* and *slight.* Thus, in terms of air quality, both the construction phase and operational phase will be *not significant*.

Decommissioning

In terms of air quality, if decommissioning of the OSPG is required the mitigation measures outlined for the Construction Phase of the Proposed Development will also be employed for the decommissioning phase.

10. Wind and Microclimate

Introduction

A wind microclimate study has been carried out for the Proposed OSPG development and Permitted Data Centre granted under SDCC Reg. Ref. SD 21A/0186 (Overall Project) considering the possible wind patterns formed under both mean and peak wind conditions typically occurring on the site area. The wind microclimate analysis have included a scenario where the Overall Project is inserted in the existing environment (potential impact) and, for a scenario where the Overall Project is analysed together with the existing environment and any permitted development (not constructed yet) that can be influenced by the wind patterns generated by the Overall Project (cumulative impact).

The potential receptors include those areas, in the surrounding of the project, which can be exposed to potential risks generated by the elevated wind speed or building massing wind effects. Potential receptors for the wind assessment are all pedestrian circulation routes, building entrances and leisure open areas within the site and in neighbouring adjacent areas. The pedestrian level is considered at 1.5m above ground.

Predominantly, pedestrian activities will frequently occur in the following areas:

- For the Overall Project, the *on-site* receptor is the area immediately surrounding the development. This is the circulation area of the site where pedestrians/ workers could potentially carry out activities. However, no amenity area is designated in that location, therefore the activity considered is '*standing/strolling*' or '*walking*' and need to be considered safe.

- On the South/East, there is a large Golf Course area (Grange Castle) which is considered an *off-site* sensitive receptor for any wind impact which could be generated by the proposed development. This is considered an amenity area, where activities such as '*standing*' or '*walking*' are considered applicable.

- On the North and West, there are other data centre/office buildings which are considered *off-site* sensitive receptors; however, no amenity area are designated in the surroundings in these directions the area is a business/industrial zone therefore the activity considered is ' *standing/strolling' or 'walking*'.

The acceptance criteria which define the acceptable wind velocities in relation to the perception of comfort level experienced while carrying out a specific pedestrian activity is known as the "Lawson Criteria for Pedestrian Comfort and Distress". Lawson Comfort and Distress Map have been produced to identify where a specific pedestrian activity can be carried out comfortably during most of the time.

The assessment has involved simulations of the applicable wind conditions utilising Computational Fluid Dynamics (CFD). The scope of the numerical study is to simulate the wind around the development in order to predict the wind speeds pedestrians will be exposed to and consequently, the level of comfort pedestrians will experience when carrying out a specific activity (i.e. walking, strolling, sitting).

Methodology

The method for the study of wind microclimate combines the use of Computational Fluid Dynamics (CFD) to predict wind velocities and wind flow patterns, with the use of wind data from suitable meteorological station and the recommended comfort and safety

standards (Lawson Criteria). The effect of the geometry, height and massing of the proposed development and existing surroundings including topography, ground roughness and landscaping of the site, on local wind speed and direction is considered as well as the pedestrian activity to be expected (sitting, standing, strolling and fast walking).

The results of the assessment are presented in the form of contour maps of the Lawson criteria at pedestrian level.

"Lawson Comfort and Distress Criteria " has been adopted for wind microclimate studies as a means of assessing the long-term suitability of urban areas for walking or sitting, accounting for both microclimatic wind effects (i.e. site location and prevailing winds) and microclimatic air movement associated with wind forces influenced by the localised built environment forms and landscaping effects.

Further aspects of the assessments that have been considered in the study are outlined below:

- Topography of the site with buildings (proposed and adjacent existing/permitted developments massing, depending on the scenario assessed "*baseline, proposed or cumulative*") have been modelled using CFD OpenFOAM Software.

- Suitable wind conditions have been determined based on historic wind data. Criteria and selected wind scenarios included means and peaks wind conditions that need to be assessed in relation to the Lawson Criteria.

- Computational Fluid Dynamics (CFD) has been used to simulate the local wind environment for the required scenarios ('baseline, proposed, cumulative").

- The impact of the proposed development massing on the local wind environment has been determined (showing the wind flows obtained at pedestrian level).

- Potential receptors (pedestrian areas) have been assessed through review of external amenity/public areas (generating the Lawson Comfort and Distress Map).

- Potential mitigation strategies for any building related discomfort conditions (where necessary) have been explored and their effect introduced in the CFD model produced.

The significance of on-site measurement locations are defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, using the table provided by the Lawson Comfort and Distress Criteria.

The significance of off-site measurement locations are defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, prior and after the introduction of the proposed development.

Impacts of the Overall Project

The analysis carried out have shown that the wind patterns around the proposed overall Project create a minor wind circulation effect. This can be noted near the South-West side

of the development which receives the prevailing South-West and South-East winds at approximately 5m/s. However, considering that the baseline wind speed is ranging from 3.9ms/ to 6m/s, throughout the area, the wind is not accelerating to significant values and wind is also decelerated with respect to the undisturbed wind speed in some area due to the presence of the proposed development.

The assessment has shown that no area is unsafe, and no conditions of distress are created by the Overall Project also when analysed in a cumulative scenario which has considered the applications which can be impacted by the wind microclimate generated by the overall project (due to their limited distance from it). These applications are in particular:

- SD21A/0186, Applicant Equinix, granted: The development is located on the Subject Site and forms part of the Overall Project.

- SD23A/0035, Applicant: Vantage, under evaluation: The development is at 20m west from the site of the Overall project.

- SD22A/0420 Applicant: Vantage, under evaluation: The development is at 20m west from the site of the Overall project.

- SD21A/0241 Applicant: Vantage, granted: The development is at 20m west from the site of the Overall project.

When compared to the actual existing wind conditions on the same place, the Overall Project does not enhance any critical wind conditions also on the Golf Course area to the South or the other data centre offices to the North of the development.

The wind microclimate of the proposed development is comfortable and usable for pedestrians. As a result of the proposed development construction, the wind impact on on-site and off-site receptors remain the same when compared with the baseline situation (existing conditions). In this sense, the proposed Overall Project has no negative effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces.

Residual Impacts

Wind cannot be eliminated or totally mitigated as it depends on weather conditions which could vary. The data of the historical wind conditions collected and reported in the previous sections, show that the wind speeds likely to occur on the site are below critical values, and that pleasant and comfortable microclimate can be maintained for most of the time and under the most frequent wind scenarios.

Gusts and storms can still occur however, and they can create unpleasant and sometimes unsafe conditions. The pedestrian activities concerning the Lawson Comfort and Distress Criteria are not in general carried out during those weather conditions.

Having considered the above, no further changes to the development design and further increasing of the landscaping is suggested, as safety and pedestrian comfort is maintained in accordance with Lawson Comfort and Distress Criteria.

11 Landscape and Visual Impact Assessment

This chapter of EIAR assesses the effects of the proposed development and of the overall project (as described in section 2.3) on the landscape and visual environment.

The Proposed Development for which consent is being sought under SDCC Ref. SD22A/0156 includes modifications to the permitted Data Centre granted under SDCC Ref. SD21A/0186 and the construction of an Onsite Power Generation Plant (referred to as OSPG) and associated site works.

The Overall Project which includes the permitted development under SDCC Ref. SD21A/0186 comprising of a Data Centre Development and associated site works and the proposed amendments to this application as per application SDCC Ref. SD22A/0156.

The site, which is currently (April 2023) a greenfield site, is located at the entrance to the Profile Business Park on the western outskirts of Dublin.

The site has been used in the past for agricultural use (before the Profile Business Park has been built in 2006). The site is bounded by an old townland boundary between Ballybane and Kilcarberry on the west and south, which is nowadays represented by an old hedgerow and a - mostly dry - ditch. There is little vegetation on the site. It mainly includes trees, tree groups and hedges along the southeast and east boundary and a contemporary screening hedgerow to the north boundary.

The wider area is currently a popular location for data centres, due to the development plan zoning and services availability. This is a current trend in this area. Lands to the north and west are characterised by large-scale built industrial developments.

Further to the west, the landscape is of rural typology with medium to large fields and individual houses. Field sizes are irregularly shaped and are separated by hedgerows and tree lines, which often block otherwise open landscapes.

The proposed site is designated as 'Newcastle Lowlands' landscape character area with Urban Fringe / Periurban character type. Visual sensitivity has been characterised as medium, due to flat open character and intervisibility with hills south of this area.

At a more localised level, the landscape can be described as an 'edge of city' type with increasing urban influences that impact the rural landscape character, resulting in a mixture of commercially developed land, agricultural land and one-off houses.

It can be considered that the land use zoning '*to provide for Enterprise and Employment related uses*' and the significant presence of large commercial/industrial developments means that the landscape has a high capacity to accommodate further developments without significantly altering its character.

The subject site has a character of an agricultural field including the hedgerow field boundary to the east and south, however, the site has already been visually incorporated into the industrial park as it is adjacent to the park entrance and estate road.

The landscape of the proposed site has little aesthetic qualities of note as the original agricultural landscape has been degraded in recent times. The only element of some quality would be the hedgerows along the east and south boundaries.

13 no. key locations have been selected around the site, from which the development may be visible. The verified photomontages have been prepared and the nature of visual effects has been assessed.

There will be localised, moderate temporary negative effects on the landscape and visual environment during the construction phase arising from earthworks and construction activities.

The impact of the Proposed Development will not be noticeable, given the context of the permitted Data Centre building with ancillary plant areas and site works. Proposed modifications to the Data Centre building will have a positive impact on the integration of the building into the surrounding landscape. The scale of the OSPG compound is not significant in the context of the permitted building and other buildings in the area.

The impact of the proposed development therefore can be rated as neutral, moderate in magnitude, and long-term / permanent in duration.

A high-quality building and landscape are proposed to minimise the visual effects of the Overall Project. It will cause a transition from a previously greenfield site to a commercial and employment use of the site. However, the character of the development is following the current and emerging trends in the area. The overall project spatial arrangement has been designed and laid out in a way that integrates well into the context of the area (industry, commercial and employment use).

The proposed landscaping and site works aim to provide a high-quality and well-integrated landscape at this location. The proposed landscape works will enhance the biodiversity on site through the use of native plants and the protection of existing hedge vegetation. It will also improve the appearance of the site from the public areas.

The project will improve the quality of the site (which is currently unused) via intensification of use of the site which is in line with the current trends. The changes therefore can be rated as positive in quality, moderate in magnitude, and long term / permanent in duration.

12 Traffic and Transport

An assessment of the impact on the local roads network was carried out in respect of the proposed development and predicted that there would be no significant impact on the local road network, particularly the Profile Park Road and the New Nangor Road.

It is proposed that all vehicles entering and exiting the proposed development will do so using the existing junction located on the Profile Park Road.

With a maximum uplift of 6.05% in the AM Peak traffic reaching the New Nangor Road from Profile Park Road as a result of the proposed development, the development will result in a minor uplift in congestion and delay locally with no significant effects on the wider road network. There will be no impact on the network PM peak period due to shift patterns falling outside of this time period.

There would be an increase in traffic resulting from the operation of the proposed development, specifically on Profile Park. The effects of the operation would be permeant during the operation of the proposed development including:

- Slight negative and not significant in EIAR terms for Pedestrian severance, delay, amenity, fear and intimation
- Slight negative and not significant in EIAR terms for driver delay
- Slight negative and not significant in EIAR terms of accident and safety

During the construction phase of the proposed development, there will be additional traffic movements to and from the site from construction personnel, security staff, professional staff (i.e., design team, utility companies), excavation plant, dumper trucks and deliveries/removal of materials (waste/spoil). The frequency of vehicles accessing the site will vary throughout the construction phase.

A site-specific Construction Traffic Management Plan (CTMP) has been prepared by Pinnacle Consulting Engineers and submitted with the planning documentation. The CTMP outlines the proposed construction traffic access measures for the proposed development, and mitigation measures to minimise the impact of construction traffic on the surrounding road network.

Following the implementation of the mitigation measures outlined in the CTMP the potential impacts on traffic and transportation are negative, moderate, and short term for the construction phase.

Following the implementation of the mitigation measures outlined in the CTMP the potential impacts on traffic and transportation are negative, slight, and short term for the construction phase.

The potential impacts on traffic and transportation are negative, slight, and long term for the operation phase.

13 Waste Management

Introduction

AWN Consulting Ltd. carried out an assessment of the potential impacts associated with waste management during the construction and operational phases of the proposed development. The receiving environment is largely defined by South Dublin County Council (SDCC) as the local authority responsible for setting and administering waste management activities in the area through regional and development zone specific policies and regulations.

Methodology

The assessment of the impacts of the Proposed Development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management, including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports. A summary of the documents reviewed, and the relevant legislation is provided in the Resource & Waste Management Plan (RWMP) Appendix 13.1 and section 13.12 of the chapter.

Baseline Environment

The current site is underdeveloped and generates no waste.

Potential Impacts of the Proposed Development

The proposed development will generate a range of non-hazardous and hazardous waste materials during the site construction, and operational phases. If waste material is not managed, stored or disposed of correctly, it is likely to lead to negative impacts via unnecessary landfill use, litter and pollution issues at the proposed development site on a local and regional level.

Construction Phase

During the construction phase (inc excavations), the mismanagement of waste, including the inadequate storage of waste, inadequate handling of hazardous waste, the use of inappropriate or insufficient segregation techniques, and the use of non-permitted waste contractors, would likely lead to negative impacts such as waste unnecessarily being diverted to landfill, litter pollution which may lead to vermin, runoff pollution from waste, fly tipping and illegal dumping of waste. In the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant** and **negative**.

Operational Phase

The potential impacts on the environment during the operational phase of the proposed development would be caused by improper, or lack of waste management. These impacts may arise in the form a segregation system which is not fit for purpose and may lead to waste unnecessarily being diverted to landfill. Inappropriately designed waste storage areas may also lead to litter pollution and potential fly tipping, which may have knock on effects such as the presence of vermin in the affected areas. Similarly, to the construction phase, the use of non-permitted waste contractors or insufficient collections may lead to negative environmental impacts or pollution. In the absence of mitigation, the effect on the local and regional environment is likely to be ***long-term, significant*** *and* ***negative***.

Mitigation and Residual Effects (Post-Mitigation)

Construction Phase

During the construction phase, typical construction waste materials will be generated which will be source segregated on-site into appropriate skips/containers, within designated waste storage areas and removed from site by suitably permitted waste contractors as required, to authorised waste facilities, by appropriately licensed waste

contractors. While the accurate keeping of waste records will be undertaken. All waste leaving the site will be recorded and copies of relevant documentation maintained.

Where possible, materials will be reused on-site to minimise raw material consumption or reuse of materials under Regulation 27 and Regulation 28 will be investigated for reuse on other sites. Source segregation of waste materials will improve the re-use/recycling opportunities of recyclable materials off-site. This will all be overseen by the main contractor, who will appoint a construction phase Resource Manager to ensure effective management of waste during the excavation and construction works. All construction staff will be provided with training regarding the waste management procedures on site.

A carefully planned approach to waste management and adherence to the site-specific Resource and Waste Management Plan (Appendix 13.1) and chapter 13 during the construction phase, this will ensure that the effect on the environment will be ***short-term, neutral*** and ***imperceptible.***

Operational Phase

During the operational phase, waste will be generated by the operator and staff. Dedicated waste storage areas (WSAs) have been allocated throughout the development for the use of staff. The WSAs have been appropriately sized to accommodate the estimated waste arisings from the development. The WSAs have been allocated to ensure a convenient and efficient management strategy with source segregation a priority. Waste will be collected from the designated waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.

An Operational Waste Management Plan or Strategy will be prepared by the operator prior to occupation which will provide a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including packaging waste, general non-hazardous waste, non-hazardous WEEE canteen/kitchen waste, landscaping waste, hazardous WEEE, waste filters, lube oil and other spares, waste diesel (replaced once a year from emergency generators if not used), waste batteries from the battery room, waste sludge from the petrol interceptors which will be pumped out/removed as required by a suitably permitted/licenced contractor . The plan complies with all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the development. This Plan will be made available to all staff from first occupation of the development i.e. once the first unit is occupied. This Plan will be supplemented, as required, by the operator as required with any new information on waste segregation, storage, reuse and recycling initiatives that are subsequently introduced.

Provided the mitigation measures outlined in chapter 14 are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be ***long-term, neutral*** and ***imperceptible.***

Cumulative Impact of the Proposed Development

Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase.

Due to the high number of waste contractors in the SDCC region, as provided from the National Waste Collection Permit Office and the EPA, there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all of the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential

cumulative effects associated with waste generation and waste management. As such the cumulative effect will be ***short-term, imperceptible*** and ***neutral.***

Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate any potential cumulative impacts associated with waste generation and waste management. As such the cumulative effect will be a ***long-term, imperceptible*** and ***neutral.***

14 Material Assets Utilities

A desktop study was conducted in relation to the material assets associated with the proposed development and their capacities. Projections of the resources were made for the construction and operational phases of the development for the following built services and infrastructure.

Land Use, Property and Access

The Proposed Development and Overall Project are located on the subject site, which is located in Profile Park in Clondalkin, Dublin 22 on a site area of c.2.65ha.

The site is located on a corner at the entrance to Profile Park Business Park immediately bounded to the north by the Nangor Road and to the west by Profile Business Park access road, known as Falcon Avenue. The site is located within the administrative area of South Dublin County Council.

The Business Park is situated 2km west of Clondalkin village on the outskirts of Dublin City (10km southwest of the city centre), approximately 16 km south of Dublin International Airport. The Business Park lies between the M4 and M7 and is proximate to the M50.

The nearest residential dwelling is located adjacent to the Circle K Filling Station approx. c.55m from the proposed development's northern boundary. Two detached units to the west of the site are either vacant/derelict and or planned for demolition. There are some residential areas to the east at Oldcastle Drive, including traveller accommodation c.600m distant. Casement Aerodrome is located c.800m south of the subject site. The site is approximately 5km west of the M50. There is a Quality Bus Corridor QBC route on the Nangor Road and Profile Park provides feeder bus services to connecting public transport options including LUAS.

Power and Electrical Supply

There are no electrical connections located in the proposed development, but the land does contain an ESB wayleave for a 220kV cable corridor. This is a buried utility and runs along the western and northern perimeter of the site.

The proposed development's on-site power generation plant is able to receive a power supply connection from ESB in order to comply with CRU requirements for Flex operation and dispatchable generation.

The power from the OSPG will distribute underground via a private 11kV cabling network arrangement to service the data centre, office areas, plant areas and fire pump room.

Surface Water Infrastructure

Storm water from the proposed development has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and ensures that Best Management Practice has been incorporated into the design.

It should be noted that the subject site proposed development currently comprises a greenfield site and the proposed surface water measures are aimed at improving the general surface water management of the site, by introducing interceptors, attenuation measures and by restricting the ultimate discharge.

Storm water from the roof areas of the proposed building units, will be directed via rainwater pipes into an on-site reticulation 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 ultimately discharged into a stormwater storage pond / below ground tanks.

Foul Drainage Infrastructure

South Dublin County Council record drawings have identified 3 No. 150mm / 225mm Ø spur connections, located adjacent to the western boundary of the property & Profile Park.

These spur connections were left out to facilitate development of these lands. These spur connections are joined into the reticulation network for Profile Park.

It is proposed to discharge foul water from the proposed development, via a 225mm Ø gravity foul sewer outfall, laid from a discharge manhole at the end of a 100mm Ø pumped main and discharge 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.

A Confirmation of Feasibility has been received from Irish Water in respect to the foul drainage connection for the proposed development.

Potable Water Supply

South Dublin County Council record drawings have identified an existing 6" (160mm) Ø main located along the western boundary of the property, within Falcon Avenue adjacent to the subject site.

It is intended to serve the proposed development via connection off the 150mm Ø network, as located in Falcon Avenue.

The water demand for this development is very low and domestic in nature and is only required for staff washrooms and staff welfare facilities. There is no process on site that requires water for operational purposes.

A Confirmation of Feasibility has been received from Irish Water in respect to the potable water connection for the proposed development.

Gas Supply

The proposed power plant will be connected to the Gas Networks Ireland (GNI) low pressure network.

The GNI network currently provides a natural gas supply with the sustainable decarbonising objective of blending natural gas with green Hydrogen before the end of the decade.

Once the development is connected to the Grid, it is Equinix corporate policy to purchase green energy through Corporate PPAs wherever these are available.

GNI have confirmed that the permitted development will receive a permanent connection and the agreement has been signed by Equinix and fees paid.

Telecommunications

There are existing underground carrier ducts adjacent to the site that will be utilised for the development. The connection into the wider telecommunications network will be undertaken by a statutory telecommunications operator.

The telecommunication utilities will land on the site in three locations through the operators ducting systems. The installation of a new fibre optic cable network within the proposed development will be carried out in accordance with Equinix design standards.

16 Cultural Heritage (Archaeological)

The proposed development is situated in a landscape which has yielded a rich array of archaeological features over the last two decades. It is also situated within a townland with ancient ecclesiastical associations, including the remains of a church and cemetery in the southern portion of Profile Park. There is therefore a strong possibility of archaeological remains being uncovered under the surface, and careful monitoring of should form part of the development process. Furthermore, the bulk of the eastern boundary of the proposed development forms part of an ancient townland boundary and the proposed development should ensure its preservation and integrity.

17 Cultural Heritage (Architectural)

There are no upstanding architectural remains within the proposed development. Several structures of outstanding interest are located some distance from the site and will not be directly impacted by the proposed development. The eastern boundary of the site is formed by the remains of an ancient townland boundary and its preservation and integrity should form part of the development process.

18 Climate

This chapter of the EIA Report evaluates the impacts which the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG may have on climate.

In terms of baseline data, provisional national total emissions (including LULUCF) for 2021 are 69.29 Mt CO_2eq, these have used 23.5% of the 295 Mt CO_2eq Carbon Budget for the five-year period 2021-2025. This leaves 76.5% of the budget available for the succeeding four years, requiring an 15.4% average annual emissions reduction from 2022-2025 to stay within budget.

Do Nothing Scenario – Construction Phase

Under the Do Nothing Scenario no construction works will take place and the previously identified impacts of GHG emissions from equipment and machinery will not occur. Therefore, this scenario can be considered ***neutral*** in terms of climate.

Construction Phase

Based on the scale and temporary nature of the construction works, the potential impact on climate change from the construction of the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG is deemed to be ***short-term, imperceptibly negative*** and ***not significant*** in relation to Ireland's obligations under the EU 2030 target.

Impact of Climate Change on the Construction Phase

Appropriate flood risk measures and extreme weather events have been considered as part of the construction planning. However, the potential for changes to long-term seasonal averages as a result of climate change are not considered to be as significant. Thus, the likelihood of extreme weather and flooding is assessed to be of either very low or low likelihood and with a moderate adverse effect leading to a finding of low risk and thus a non-significant impact.

Do Nothing Scenario – Operational Phase

Under the Do Nothing Scenario no GHG emissions will take place. The site will remain as per the baseline and will change in accordance with trends within the wider area, (changes in road traffic, etc.). Therefore, this scenario can be considered ***neutral*** in terms of climate.

Operational Phase

The Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG has the potential, in the absence of mitigation, to release significant quantities of GHG emissions during the operational phase of the project. However, as the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG 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 System (ETS) which necessitate operating under a "cap and trade" scheme.

The direct (due to onsite natural gas and diesel usage) and future indirect CO_2 emissions from electricity to operate the facility has been assessed below in the context of Ireland's national annual CO_2 emissions.

Through a series of measures including project replacement, a reduction in residual emissions through best practice and the implementation of a series of adaptive design

measures, the net impact of the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG is not significant. The applicant intends to undertake a Power Purchase Agreement which will provide a percentage of renewable power generation to the Irish grid. Given that the use of natural gas and electricity to power the facility will achieve net zero by 2050 and the facility will use CPPA as outlined above, the predicted impact to climate, after mitigation, is deemed to be ***long-term, negative*** and ***minor adverse***.

The project's GHG emissions for each scenario has been compared to the 2030 Emission Trading System budget and to the Electricity 2030 Sectoral Emission Ceiling based on the approach set out in IEMA guidance (IEMA, 2022). The assessment is presented both prior to and post mitigation. The impact of the project prior to mitigation would be deemed to be a moderate, significant, adverse impact. Although the project prior to mitigation is better than the "do-nothing" scenario of enterprise computers, the impact would still be significant in the absence of appropriate mitigation.

Through a series of measures including project replacement, a reduction in residual emissions through best practice and the implementation of a series of adaptive design measures, the net impact of the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG is not significant. Given that the use of natural gas and electricity to power the facility will achieve net zero by 2050 and the commitment to offset fossil fuel derived GHG emissions by the purchase of CPPAs either based on renewable electricity or biomethane the predicted impact to climate, after mitigation, is deemed to be ***long-term, negative*** and ***slight***.

Impact of Climate Change on the Operational Phase

Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. As a result of this there is the potential for flooding related impacts on site in future years. Chapter 7 (Water) has investigated the likelihood of flooding and has found that there is no current or predicted flood risk (either fluvial, pluvial or coastal) for the Site. Thus, the likelihood of extreme weather and flooding was assessed to be of low likelihood and with a moderate adverse effect leading to a finding of low risk and thus a non-significant impact.

Mitigation Measures

Construction Phase

The objective of the mitigation measures outlined below is to ensure that GHG emissions are minimized wherever possible during the construction phase. The measures will include:

- All vehicles will be required to switch off engines when stationary (no idling);
- All vehicles will be serviced and maintained to ensure emissions are minimised;
- Where practicable, materials will be reused within the extent of the Proposed Development; and
- Where practicable, materials will be sourced locally to reduce the embodied emissions associated with transport.

Operational Phase

The gas engines and diesel generators will be regularly serviced to ensure that they operate to their maximum efficiency. In addition, the data centre will be designed to minimize energy use including the the data centre is designed to minimize energy use including the use of PV roof panels. A heat recovery building is also provided in the event

future connection can be made to a district heating system in the area. In addition, an IT cooling system will cool water via free cooling air cooled chillers.

The facility is committed to running the data centre in the most environmentally friendly way possible with a long-term goal to power the facility using 100% renewable energy where feasible.

Residual Impacts

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. Based on the scale and temporary nature of the construction works and the intermittent use of equipment, the predicted impact on climate change from the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG is deemed to be ***short-term, imperceptibly negative*** and ***not significant*** in relation to Ireland's obligations under the EU Effort Sharing Agreement 2030 target.

Once the mitigation measures outlined in Section 19.6 are implemented, the residual impacts on climate from the operational phase of the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG will be ***long-term, negative*** and ***slight.***

Thus, in terms of climate, both the construction phase and operational phase of the Proposed Development - OSPG Scenario and Overall Scenario – Data Centre and OSPG will be ***not significant***.

Decommissioning

In terms of climate, if decommissioning of the OSPG is required the direct GHG emissions from the gas engines will not occur after 6-8 years and GHG emissions will occur indirectly from electricity generation from the National Grid.

19 Cumulative Effects

This chapter has been prepared to consider the potential for cumulative effects that may arise as a result of the proposed development and Overall Project in combination with any future development, as far as is practically possible, on the site and the cumulative impacts with both planned and permitted developments in the immediate surrounding area.

Cumulative impacts are the impacts that relate to the incremental/ additive impacts of the planned development to historical, present, or foreseeable future actions within reason. Cumulative impacts generally arise through the following:

- Persistent additions or losses of the same material or resource,
- Compounding effects due to the coming together of two or more effects.

The potential for cumulative effects is assessed within this chapter for each relevant environmental topic, and the predicted effect is described. With proper implementation of mitigation measures where appropriate, it is predicted that there will be no long term significant cumulative impacts.

The impacts to air quality from the cumulative operation of the Overall Project – Data Centre & OSPG Scenario and other nearby facilities are deemed ***long-term*** and ***slight*** in terms of significance and ***negative*** in terms of quality.

20 Interactions

This Chapter has been prepared to examine the potential interactions and interrelationship between the environmental factors as discussed in the preceding chapters.

All environmental topics are interlinked to a degree such that interrelationships exist on numerous levels. The relationships between each of the environmental topics covered within the Environmental Impact Assessment Report have been compared against each other to ensure that no negative impacts will arise from interrelationships between each individual aspect considered in combination.

In summary, the interactions between the environmental factors and impacts discussed in this EIA Report have been assessed and the majority of interactions are ***weak*** or ***neutral***.

There are no significant negative impacts predicted from the interactions of the constituent elements of the permitted Data Centre development and proposed On Site Power Generation and modifications to the permitted Data Centre development when viewed in the light of their associated mitigation measures.

21 Summary of Mitigation Measures

This Chapter provides a summary of the mitigation measures for the Proposed Development and Overall Project consisting of Modifications to the permitted data centre and development of On Site Power Generation - Ref. SDA22/0156 and the Overall Project – permitted development under SDCC Ref. SD21A/0186 comprising of a Data Centre Development and associated site works and the proposed amendments to this permitted application as per application SDCC Ref. SDA22/0156 for each relevant topic.