

Intended for
Vantage Data Centers DUB11 Limited

Date
November 2022

Project Number
1620014883

VANTAGE DUBLIN DATA CENTER VOLUME 1: MAIN ENVIRONMENTAL IMPACT ASSESSMENT REPORT

RAMBOLL

Volume 1: Main Environmental Impact Assessment Report

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Figure 7 Aerial view of site, showing location of previously excavated trenches and excavated enclosure (licence No. 21E0061)



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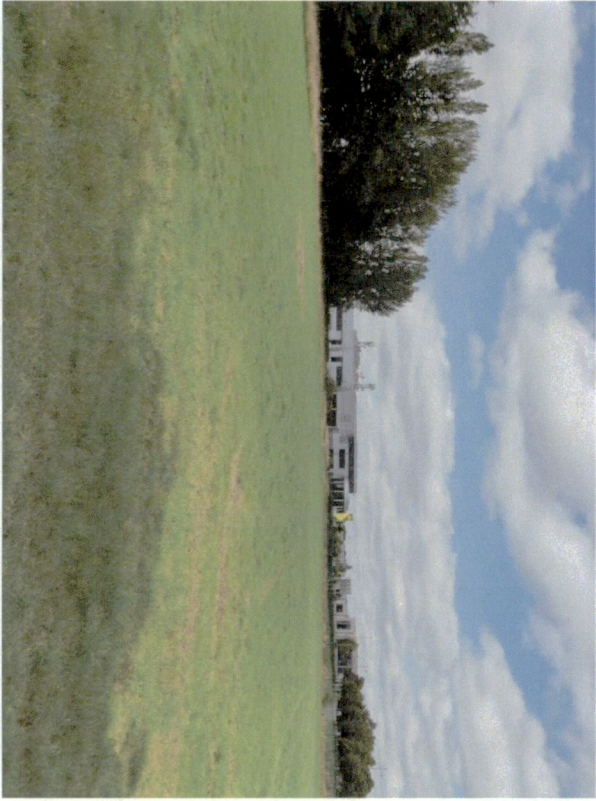


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Report on Geophysical Survey at
Profile Park,
Grange Castle, Ballybane, Dublin

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1 INTRODUCTION

1.1 Introduction

1.1.1 This Environmental Impact Assessment Report (EIA) has been prepared for Vantage Data Centers DUB11 Limited (the 'Applicant') – in accordance with the statutory procedures set out in the Planning and Development Act 2000 (as amended)¹ (the 'Act') and the Planning and Development Regulations 2001 (as amended)² (the 'Regulations') – to accompany an application (the 'application') seeking permission (also known as 'full permission') for a data centre building and associated development (the 'proposed development') on the Profile Park Site, Kiltarbery (the 'site'), situated within the jurisdiction of South Dublin County Council (SDCC).

1.1.2 The proposed development is not listed under Annex I of the EIA Directives^{3,4} and the site is below the 15 hectare (ha) threshold under Part 2, Schedule 5 of the Regulations at 3.31 ha in size. However, the Applicant has recognised that the scale and nature of the proposed development has the potential for significant effects on the environment and therefore commissioned an environmental impact assessment (EIA) for the proposed development, the findings of which are presented within this EIA.

1.1.3 The EIA comprises the following:

- Non-Technical Summary (NTS);
- Volume 1: Main Environmental Impact Assessment Report (this document);
- Volume 2: Landscape and Visual Impact Assessment (LVIA) and Cultural Heritage Assessment; and
- Volume 3: Technical Appendices.

1.1.4 EIA is a formal process in which the likely significant effects of certain types of development projects on the environment are identified, assessed and reported upon. For certain types of development, the process must be followed in order for such effects to be taken into account before a decision is made on whether planning permission should be granted.

1.1.5 This EIA presents the results of the EIA that has been undertaken of the proposed development. In accordance with the Regulations, the EIA reports on the potential environmental impacts and likely significant environmental effects of the proposed development during the demolition and construction stage, and the operation stage.

1.1.6 The EIA has taken into account mitigation measures that are being proposed by the Applicant, including those measures that have been integrated into the planning and design of the proposed development (i.e. 'embedded mitigation') and 'additional mitigation' to prevent and, where prevention is not possible, reduce and/or mitigate likely significant adverse effects. It then evaluates the significance of the residual effects.

1.1.7 Further information on how the scope of the EIA was formulated and on the structure of this EIA, is provided in Chapter 2: EIA Process and Methodology of this Volume.

1.1.8 SDCC is the 'relevant planning authority' for the purposes of the Regulations and will determine the application taking into account the likely significant environmental effects of the proposed development as determined through the EIA process.

1.1.9 This chapter provides a general description of the site, the relevant planning context, planning application details, as well as the content and structure of the EIA. More detailed information on the application site

is provided in the technical assessment chapters (6-15) of this Volume, as well as the landscape, visual and heritage assessments in Volume 2.

1.1.10 A description of the proposed development is provided in Chapter 4: Proposed Development Description and details of the demolition, and construction works are provided in Chapter 5: Demolition and Construction Environmental Management of this Volume.

1.2 Development Context

Site Location and Context

1.2.1 The site is located at Irish grid reference O 03911 30784, within Profile Park, as shown in Figure 1-1. Geographically, the site is located in Profile Park, approximately 10 kilometres (km) to the south-west of Dublin city centre, within South Dublin County.

1.2.3 Profile Park largely comprises commercial and industrial development, with numerous data centres in the vicinity (Figure 1-2). The site's surrounding context predominantly comprises Profile Park and industrial development to the north, Grange Castle Golf Club to the east beyond which are residential properties, agricultural land and industrial development to the south and the permitted Vantage data center development to the west, beyond which is Bolands Car Garage and further data centers.

1.2.4 In terms of public transport, the closest railway station to the site is at Clondalkin/Forthill approximately 2.8 km to the north-east from which frequent commuter services to/from Dublin city centre can be accessed. Citywest Campus Luas Tram Stop is approximately 3.5 km to the south-east of the site from which frequent train services to Dublin city and beyond can be accessed.

1.2.5 Bus stops are located adjacent to the site's northern boundary as well as east and west along New Naggor Road (R134) within 300 metres (m) of the site from which frequent routes operate between the site and Dublin city centre.

1.2.6 The pedestrian and cycle environment in the vicinity of the site is of a high standard, with wide, well-lit lengths of dedicated and segregated off-road cycle and pedestrian routes.

¹ Government of Ireland, 2000. Planning and Development Act 2000 (as amended). ISB, S.I. No. 30/2020.

² Government of Ireland, 2001-2022. Planning and Development Regulations 2001 (as amended). S.I. No. 609 of 2001, ISB.

³ European Union, 2011. Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment. Text with EEA relevance. Official Journal of the European Union, Document 32011L0092.

⁴ European Union, 2014. Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. Text with EEA relevance. Official Journal of the European Union, Document 32014L0052.

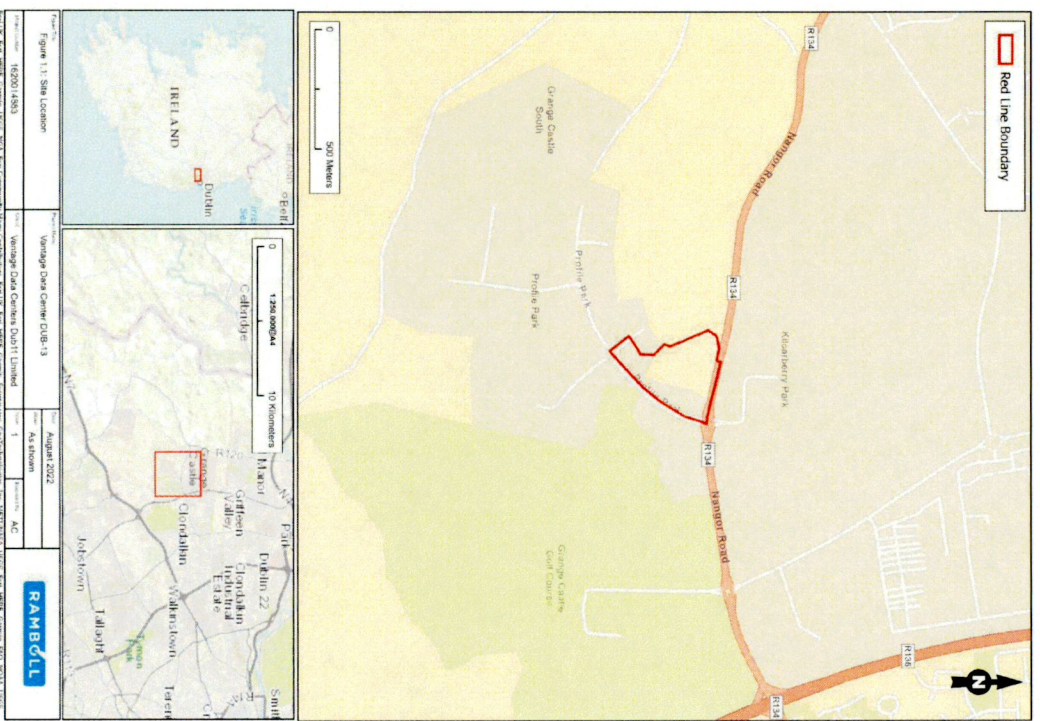


Figure 1-1: Site Location

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Figure 1-2: Surrounding Land Use Plan

Site Description

- 1.2.7 The site boundaries are defined by:
- New Nangor Road (R134) to the north;
 - Falcon Avenue, Equinix and Grange Castle Golf Club to the east;
 - Falcon Avenue to the south; and
 - The permitted Vantage data centre development (planning reference SD21A/0241) to the west, currently agricultural fields.
- 1.2.8 The site is a triangular parcel of agricultural land, with a residential dwelling located in the north-west corner of the site, and an area of hardstanding within the south-west of the site. The site covers a total area of 3.31 ha and lies at an elevation between approximately 74 and 75 m Above Ordnance Datum (m AOD).
- 1.2.9 The existing Baldonnell stream flows through the south of the site, orientated in a south-east to north-west direction, and entering in the south-east and flowing west.
- 1.2.10 The site can currently be accessed from three access points, two from the north off New Nangor Road (R134), and one from Falcon Avenue on the eastern border, which leads to a roundabout on the R134 New Nangor Road.

1-2

1620014883 Issue: Final



Figure 1-3: Representative Photographs of the Site (left upper image looking north-west across the site, left lower image looking south-west across the site, right upper image looking north-east across the site, and right lower image looking south-east at the residential dwelling on site)

Environmental Sensitivity

- 1.2.11 The environmental sensitivity's surrounding the site are presented in Figure 1-4.
- 1.2.12 The site is located within an established mixed-use area, comprising both industrial and agricultural land uses. The proposed development would be built upon agricultural land. Under the South Dublin County Development Plan 2022-2028⁵ the site is allocated within Zone EE: Enterprise and Employment. The stated aim is to provide for enterprise and employment related uses. The proposed use is a permitted use under this zoning. Significant precedent exists for the establishment of this use on other EE zoned lands in the area. EE zoned areas are established economic industrial areas running essentially in an arc northward from City West to Grange and Grange Castle.
- 1.2.13 The site benefits from good road network structure within Profile Park connecting to the local road network. The site is directly bordered to the north by New Nangor Road (R134) and to the east and south by Falcon Avenue.
- 1.2.14 The nearest surface water feature is the Baldonnell stream, located adjacent to the sites southern boundary which enters into the southern section of the site.
- 1.2.15 The Grand Canal is located approximately 2 km directly north of the site and is classified as a proposed Natural Heritage Area (NHA). No other ecologically protected sites (such as Special Protection Areas (SPA),

Special Areas of Conservation (SAC), National Parks or Nature Reserves) are located within 1 km of the site.

1.2.16 There are no structures included in the statutory Register of Protected Structures or assets on the Record of Monuments and Places or the Register of Historic Monuments within the site. The closest statutory designated heritage asset is Grange Castle (RPS, RM) located 1 km to the north.

1.2.17 The location of the site within a range of land types contributes to its fragmented character. Its proximity to urban area of Dublin gives the area an 'urban fringe' or 'transitional' character as you move from the urban to limestone farmland character type.

1.2.18 The surrounding landscape context is predominantly industrial to the north and west, agricultural to the south, with commercial and residential properties to the east and the Grange Castle Golf Club to the south-east (refer to Figure 1-2).

1.2.19 Although the surrounding context of the site is largely industrial and agricultural, the site is surrounded by some residential properties primarily located to the east and west of the site. The nearest existing residential properties are located approximately 600 m to the south of the site along Baldonnell Road. There is a hotel 200 m north-east of the site boundary. Grange Castle Golf Club is an outdoor amenity space located immediately east of the site.

⁵ SICC 2022 South Dublin County Council Development Plan 2022-2028 (online). Available at: <https://www.sicc.ie/en/regions/2022/development-plan/south-dublin-development-plan-writer>. <https://www.sicc.ie/en/regions/2022/development-plan/south-dublin-development-plan-writer>. Accessed on 23/08/2022.

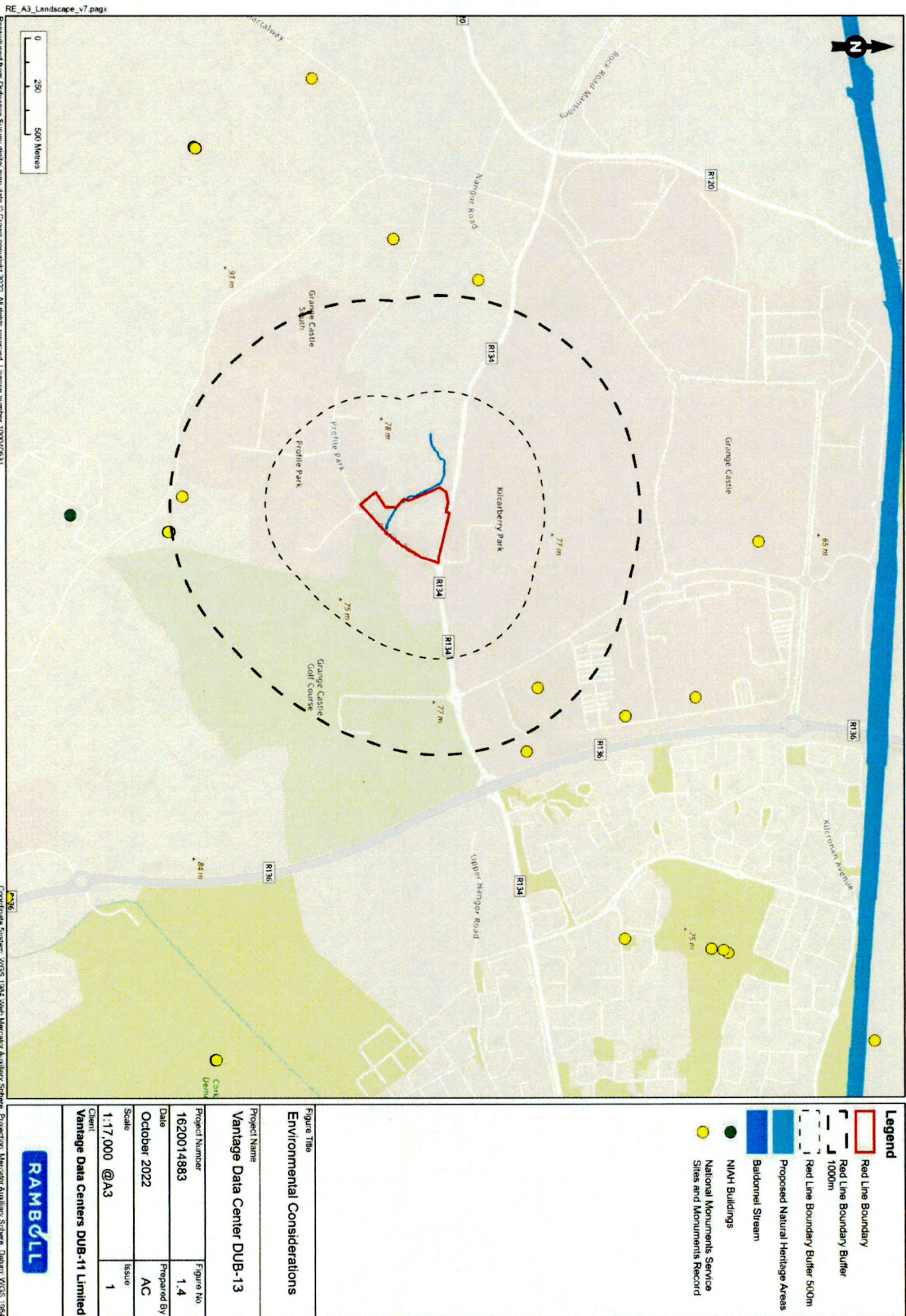


Figure 1-4: Environmental Considerations

1.3 Planning Context

Planning Policy Context

- 1.3.1 It is necessary to consider the proposed development against relevant policies and guidance at national, regional and local levels.

National Planning Policy

National Planning Framework (2018)

- 1.3.2 At the national level, planning policy is contained within the National Planning Framework (NPF) 2018⁶. The Department of Housing Planning and Local Government, on behalf of the Government of Ireland, published the NPF in February 2018 and is the Government's high-level strategic plan for shaping the future growth and development of our country out to the year 2040.

National Development Plan 2021-2030 (2021)

- 1.3.3 Additionally, the National Development Plan 2021-2030 (NDP)⁷ sets out the investment priorities that will underpin the implementation of the NPF, through a total investment of approximately €165 billion.

- 1.3.4 Finalisation of the NPF alongside the ten-year NDP will culminate one plan to guide strategic development and the infrastructure investment at the national level.

Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (2022)

- 1.3.5 The Government Statement on The Role of Data Centres in Ireland's Enterprise Strategy (2022)⁸ views data centres as core digital infrastructure that can play an indispensable role in our economy and society.

- 1.3.6 National Climate Action Plan 2021

- 1.3.7 The National Climate Action Plan⁹ for Ireland published in November 2021 is materially relevant to this EIA^R and is considered within the relevant technical assessments.

Regional Planning Policy

Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly (2019)

- 1.3.8 The Regional Spatial and Economic Strategy (RSES) for the Eastern and Midlands Regional Assembly (EMRA)¹⁰ includes Regional Policy Objective (RPO) 8.25 which states the following:

- "Local Authorities shall:
 - Support and facilitate delivery of the National Broadband Plan.
 - Facilitate enhanced international fibre communications links, including full interconnection between the fibre networks in Northern Ireland and the Republic of Ireland.
 - Promote and facilitate the sustainable development of a high-quality ICT network throughout the Region in order to achieve balanced social and economic development, whilst protecting the amenities of urban and rural areas.
 - Support the national objective to promote Ireland as a sustainable international destination for ICT infrastructures such as data storage facilities and associated economic activities at appropriate locations.
 - Promote Dublin as a demonstrator of 5G information and communication technology."

- 1.3.9 The site is therefore considered to be an appropriate location for the development of data centres under this Strategy.

Local Planning Policy

South Dublin County Council Corporate Plan 2020-2024

- 1.3.10 The SDCC Corporate Plan 2020-2024¹¹ identified SDCC's objectives and strategies for each of the council's principal activities. The plan builds in flexibility to meet the demands of a changing environment over the plan period.

South Dublin County Council Development Plan 2022-2028 (2022)

- 1.3.11 The relevant statutory development plan for the site is the SDCC Development Plan 2022-2028⁵, adopted in August 2022. The core strategy, included within the Development Plan, provides an overarching strategy for the spatial development of the County over the medium to longer term and will form the basis for policies and objectives throughout the Development Plan. It translates the strategic planning framework set out in the National Development Plan and the Regional Planning Guidelines for the Greater Dublin Area, to County level.

- 1.3.12 As outlined in the Development Plan, the site is classified under Objective EE: to provide for enterprise and employment related uses.

⁶ Government of Ireland, 2018. National Planning Framework (NPF) – Ireland 2040 Our Plan (February 2018) [online]. Available at: <https://ind.la.gov-content/uploads/Project/Ireland2040-NPF.pdf> [Accessed on 23/08/2022].

⁷ Government of Ireland, 2021. National Development Plan 2021-2030 (last updated 4 October 2021) [online]. Available at: <https://www.gov.ie/en/publication/77482-national-development-plan-2021-2030/> [Accessed on 23/08/2022].

⁸ Government of Ireland, 2022. Statement of the Role of Data Centres in Ireland's Enterprise Strategy [online]. Available at: <https://enterprise.gov.ie/en/publication/publication-186883-statement-of-the-role-of-data-centres-in-irelands-enterprise-strategy.pdf> [Accessed 23/08/2022].

⁹ <https://www.gov.ie/en/publication/publication-186883-statement-of-the-role-of-data-centres-in-irelands-enterprise-strategy.pdf> [Accessed 23/08/2022].

⁹ Government of Ireland, 2021. Climate Action Plan. Department of the Environment, Climate and Communications (last updated 2 June 2021) [online]. Available at: <https://www.gov.ie/en/publication/publication-186883-statement-of-the-role-of-data-centres-in-irelands-enterprise-strategy.pdf> [Accessed 23/08/2022].

¹⁰ Eastern & Midlands Regional Assembly, 2019. Regional Spatial & Economic Strategy 2015-2031 [online]. Available at: <https://emra.la.gov.ie/> [Accessed on 23/08/2022].

¹¹ SDCC, 2019. South Dublin County Council Corporate Development Plan 2020-2024. [online]. Available at: <https://emra.la.gov.ie/> [Accessed on 23/08/2022].

Planning History

- 1.3.13 There are no relevant historical planning applications at the site in the last five years.
- 1.3.14 The Applicant submitted a full planning application (planning reference SD21A/0241) in March 2022 for the "construction of 2 no. two storey data centers with plant at roof level of each facility and associated ancillary development that will have a gross floor area of 40,589 sqm" on land adjacent to the site's western boundary. The application was granted permission on 19 July 2022 (hereafter referred to as the 'July 2022 DUB-1 permitted development'). The application was accompanied by an EIAR which reported on the outcomes of the EIA undertaken in accordance with the Regulations (hereafter the 'DUB-1 EIAR'). The proposed DUB-13 development is an extension to, and final phase of, the July 2022 DUB-1 permitted development and would be operated as part of the wider co-ordinated data center campus. The site boundary of the proposed development and the DUB-1 permitted development are shown in Figure 1-5 below.

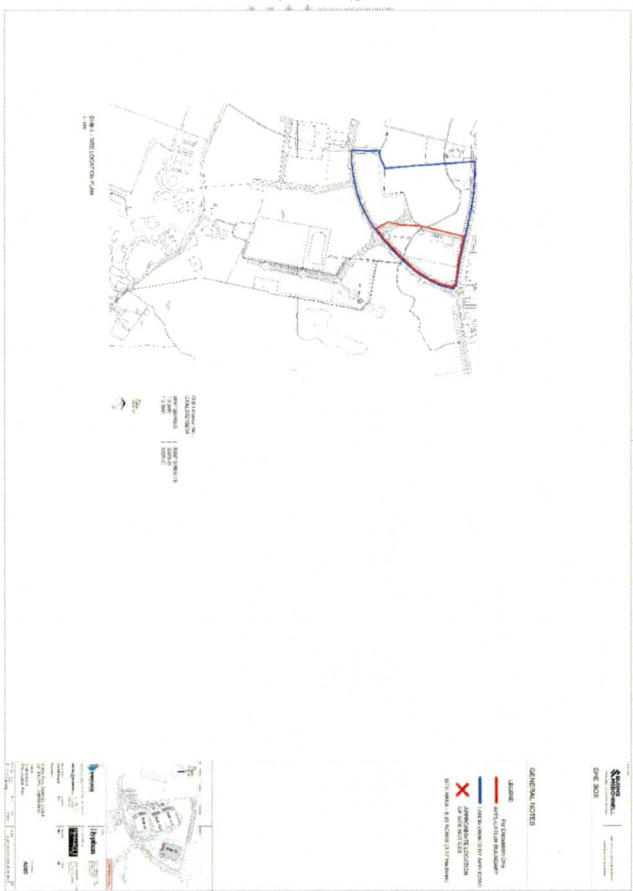


Figure 1-5: The proposed development (red) adjacent to the DUB-1 permitted development, all under ownership of the Applicant (blue)

1.4 Application Details

- 1.4.1 The description of the proposed development as stated on the application form is:
- 1.4.2 "Vantage Data Centers DUB11 Ltd. are applying for permission for development at this site that includes a two storey residential property on lands to the south of the New Nangor Road (R134), Dublin 22; and on land within the townlands of Ballybane and Kiltbride within Profile Park, Clondalkin, Dublin 22 on an

overall site of 3.79 hectares. The development will consist of the demolition of the two storey dwelling (207.35sqm) and associated outbuildings and farm structures (348.36sqm); and the construction of 1 no. two storey data center with plant at roof level and associated ancillary development that will have a gross floor area of 12,893sqm that will consist of the following:

- 1 no. two storey data center (Building 13) with a gross floor area of 12,893sqm. It will include 13 no. emergency/back-up generators of which 12 will be double stacked and one will be single stacked within a compound to the south-western side of the data center with associated flues that each will be 22.316m in height and 7 no. hot-air exhaust cooling vents that each will be 20.016m in height;
 - The data center will include data storage rooms, associated electrical and mechanical plant rooms, loading bays, maintenance and storage spaces, office administration areas, and plant including PV panels at roof level as well as a separate house generator that will provide emergency power to the admin and ancillary spaces. Each generator will include a diesel tank and there will be a refuelling area to serve the proposed emergency generators;
 - The data center will have a primary parapet height of 14.246m above ground level, with plant and screen around plus a plant room above at roof level. The plant room has an overall height of 21.571m;
 - Construction of an internal road network and circulation areas, with a staff entrance off Falcon Avenue to the east, as well as a secondary vehicular access for service and delivery vehicles only across a new bridge over the Baldonnel Stream from the permitted entrance as granted under SDCC Planning Ref. SD21A/0241 from the south-west, both from within Profile Park that contains an access from the New Nangor Road (R134);
 - Provision of 60 no. car parking spaces (to include 12 EV spaces and 3 disabled spaces), and 34 no. cycle parking spaces;
 - Signage (5.75qm) at first floor level at the northern end of the eastern elevation of the data center building; and
 - Ancillary site development works will include footpaths, attenuation ponds that will include an amendment to the permitted attenuation pond as granted to the north of the Baldonnel Stream under SDCC Planning Ref. SD21A/0241, as well as green walls and green roof. The installation and connection to the underground foul and storm water drainage network, and installation of utility ducts and cables, that will include the drilling and laying of ducts and cables under the internal road network within Profile Park. Other ancillary site development works will include hard and soft landscaping that will include an amendment to the permitted landscaping as granted under SDCC Planning Ref. SD21A/0241, lighting, fencing, signage, services road, entrance gates, and sprinkler tanks."
- An Environmental Impact Assessment Report (EIAR) has been submitted with this application. This application and EIAR may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of South Dublin County Council during its public opening hours of 9am – 4pm, Mon-Fri, and a submission or observation may be made to South Dublin County Council in writing and on payment of the prescribed fee (€20.00) within the period of 5 weeks beginning on the date of receipt by South Dublin County Council of the application."

1.5 Applicant

1.5.1 The Application is submitted on behalf of the following entity:

Vantage Data Centers DUB11 Limited,
1-2 Victoria Buildings,
Haddington Road,
Dublin 4,
Dublin,
Ireland

1.6 Project Team

1.6.1 The Applicant has appointed a consultant team to assist in the development of the application and concurrently appointed an EIA team to undertake the EIA and prepare this EIA. In accordance with Regulations aforementioned. The team members and their respective roles are presented in Table 1-2: Design and EIA Team.

Table 1-2: Design and EIA Team	
Company	Role
Vantage Data Centers DUB11 Ltd	Client/Development Manager
Turner & Townsend	Project Manager
Burns & McDonnell	Principal Architect/Project Manager/Project Manager (Power plant development and substation)/Mechanical Engineer/BIM 360 Coordinator/GFS Power and Energy Project Manager and Engineer
Hyphen Architects	Local Architect
Kevin Fitzpatrick Landscape Architecture	Landscape Architects
Marston Planning	Planning Consultant
Ramboll	EIA Project Manager and Coordinator; Environmental Consultants for Population and Human Health, Transport, Air Quality, Noise and Vibration, Water Resource and Flood Risk, Ground Conditions, Climate Change, Waste, Material Assets and Landscape and Visual Assessment.
Neo Environmental	Ecology Consultant
Terence O'Rourke	Cultural Heritage Consultant
Geraghty Energy Consultants	Sustainability and Energy Consultant
Jansen Hughes Fire Consultants	Fire Engineering Consultant
O'Herlihy Access Consultants	Disability Access Consultant
Pinnacle	Structural and Civil Engineer and Flood Risk Consultant
Punch Consulting	Health and Safety Consultant
Found Digital	Fibre and Power Consultant

1.6.2 The EIA has been carried out by Ramboll UK Limited ('Ramboll') and a number of technical specialists. The technical specialists appointed are regarded as being competent experts within their relevant fields.

1.7 Structure of the Environmental Impact Assessment Report

1.7.1 The EIA comprises the following documents:

- Non-Technical Summary (NTS);
- Volume 1: Main Environmental Impact Assessment Report, comprising the following chapters:
 - Table of Contents, List of Figures, List of Tables
 - Chapter 1: Introduction
 - Chapter 2: EIA Process and Methodology
 - Chapter 3: Alternatives and Design Evolution
 - Chapter 4: Proposed Development Description
 - Chapter 5: Demolition and Construction Environmental Management
 - Chapter 6: Population and Human Health
 - Chapter 7: Transport and Accessibility
 - Chapter 8: Air Quality
 - Chapter 9: Noise and Vibration
 - Chapter 10: Water Resources and Flood Risk
 - Chapter 11: Ecology
 - Chapter 12: Ground Conditions
 - Chapter 13: Climate Change
 - Chapter 14: Waste
 - Chapter 15: Material Assets
 - Chapter 16: Cumulative Effects
 - Chapter 17: Residual Effects and Mitigation
 - Glossary of Terms and Abbreviations
- Volume 2: Landscape and Visual Impact Assessment and Cultural Heritage Assessment
- Volume 3: Technical Appendices
 - Technical Appendix 1.1: IEMA Quality Mark Checklist
 - Technical Appendix 7.1: Traffic Flow and Distribution Diagrams;
 - Technical Appendix 7.2: Accident Data;
 - Technical Appendix 7.3: Cumulative Schemes Daily Traffic Flow Diagrams;
 - Technical Appendix 7.4: Proposed Development Trip Generation;
 - Technical Appendix 8.1: Air Quality Modelling Inputs;
 - Technical Appendix 8.2: Air Quality Detailed Results;
 - Technical Appendix 9.1: Acoustic Terminology;
 - Technical Appendix 9.2: Construction Noise Calculations;
 - Technical Appendix 10.1: Engineering Planning Strategy;
 - Technical Appendix 10.2: Site-Specific Flood Risk Assessment;
 - Technical Appendix 11.1: Ecological Impact Assessment Report;
 - Technical Appendix 11.2: Appropriate Assessment Screening Report;
 - Technical Appendix 11.3: Biodiversity Management Plan;
 - Technical Appendix 12.1: Ground Investigation & Geotechnical Report; and

– Technical Appendix 12.2: Contaminated Land Interpretative Report.

1.8 Environmental Impact Assessment Report

Content of the EIAR

1.8.1 The required content of the EIAR is set out in Schedule 6 of the Regulations (2001 to 2022)² as presented in Table 1-3 indicating where in this EIAR the requirements have been met.

Table 1-3: Information which is required in an EIAR (Schedule 6 of the Planning and Development Regulations (2001 to 2022))

Required Information	Section of EIAR
1 Description of the project, including in particular: (a) a description of the location of the project; (b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases; (c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, and soil and subsurface pollution, noise, vibration, light, heat, radiation, etc.) and quantities and types of waste produced during the construction and operation phases.	Volume 1: EIAR Chapter 1: Introduction, EIAR Chapter 4: Proposed Development Description, EIAR Chapter 5: Demolition and Construction and Environmental Management. EIAR Chapters 6-15, Volume 1 EIAR Volumes 2 and 3
2 A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Volume 1: EIAR Chapter 3: Design Evolution,
3 A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Volume 1: EIAR Chapter 1: Introduction, EIAR Chapter 4: Proposed Development Description, EIAR Chapter 5: Demolition and Construction EIAR Chapters 16 and 17, Volume 1, EIAR Volumes 2 and 3.
4 A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydro-morphological changes, quantity and quality), air, climate (for example greenhouse gas	EIAR Chapters 6-15, Volume 1

Table 1-3: Information which is required in an EIAR (Schedule 6 of the Planning and Development Regulations (2001 to 2022))

Required Information	Section of EIAR
emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape	EIAR Chapters 6-15, Volume 1
5 A description of the likely significant effects of the proposed project on the environment resulting from, inter alia: (a) the construction and existence of the project, including, where relevant, demolition works; (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste; (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters); (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; (g) the technologies and the substances used. The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.	Volume 1: EIAR Chapter 16: Intra-Cumulative Effects Volume 1: EIAR Chapter 17: Summary of Residual Effects
6 A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Volume 1: EIAR Chapter 2: EIA Process and Methodologies EIAR Chapters 6-15, Volume 1
7 A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	EIAR Chapter 4: Proposed Development Description, EIAR Chapter 5: Demolition and Construction EIAR Chapters 6-15, Volume 1
8 A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European	EIAR Chapter 4: Proposed Development Description, EIAR Chapter 5:

Table 1-3: Information which is required in an EIAR (Schedule 6 of the Planning and Development Regulations (2001 to 2022))

Required Information	Section of EIAR
Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Demolition and Construction EIAR Chapters 6-15, Volume 1
9 A non-technical summary of the information provided under points 1 to 8.	Non-technical Summary
10 A reference list detailing the sources used for the descriptions and assessments included in the report.	EIAR Volume 1 and 2, all chapters EIAR Volume 3, all technical appendixes.

Good Practice

1.8.2 As with EIA, good practice in the preparation of the EIAR is defined in a number of sources, with more specific issues covered by EIAR review checklists. Many of these checklists are very detailed and go to some length. In terms of widely applicable and practical guidance, the recent IEMA Quality Mark indicator check has been referenced in producing this EIAR as described in Appendix 1.1: IEMA Quality Mark Checklist. Ramboll UK Ltd is a Registrant on the IEMA Quality Mark. Accordingly, as part of Ramboll's QA procedures and Quality Mark Commitments, this EIAR and EIA has been undertaken to meet the Quality Mark Commitments as set out in Appendix 1.1: IEMA Quality Mark Checklist. Additional detail on relevant guidance is provided within Volume 1, EIAR, Chapter 2: Process and Methodology.

2 EIA PROCESS AND METHODOLOGY

Introduction

- 2.1 This chapter of the Environmental Impact Assessment Report (EIAR) sets out the general approach to the process and to the methodology that is adopted when undertaking an Environmental Impact Assessment (EIA). It describes the legislative framework in which the EIA for the proposed development has been undertaken and identifies the key guidance that was considered. The EIA Scoping and consultation process that was adopted to identify the key environmental topics for inclusion in the EIA is outlined, as well as the overall EIA methodology adopted.
- 2.2 While the approach and methodology to the EIA are described in this chapter, further detail on how the methodology was tailored to each technical aspect of the EIA is presented in the relevant technical assessment chapters of the EIAR. Other supporting assessments for environmental aspects that were scoped out of the EIA are included as technical appendices to this EIAR.

Environmental Impact Assessment

- 2.3 Since the adoption of Directive 85/337/EEC¹ (on 27 June 1985) on the assessment of the effects of certain public and private projects on the environment, both the law and EIA practices have evolved significantly. The 1985 Directive was amended by Directives 97/11/EC², 2003/35/EC³ and 2009/31/EC⁴, and the Directive and its amendments were codified in 2011 by Directive 2011/92/EU⁵. The current Directive 2014/52/EU⁶ amends the 2011 codified Directive but does not replace it. The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018^{7,8} transpose the requirements of the 2014 Directive into existing planning consent procedures.
- 2.4 EIA provisions in relation to planning development consents are contained in the Planning and Development Act 2000 (as amended)⁹ (the 'Act') and in the Planning and Development Regulations 2001 (as amended)¹⁰ (the 'Regulations').
- 2.5 The Regulations set out the statutory process and minimum requirements for EIA and the contents of the EIAR. Specifically, they prohibit the grant of planning permission for developments likely to have significant effects on the environment (defined in the Regulations as 'EIA development') unless information on those effects is considered by the relevant planning authority in reaching its decision on a planning application. That information includes both the EIAR, which is the Applicant's own assessment, and any other information provided by consultees, the public, and any other persons about the proposal's environmental effects. This EIAR has been prepared pursuant to (and in accordance with) the Regulations.
- 2.6 In addition to the Regulations, there is guidance available on EIA and the application of the Regulations that has been considered in undertaking this EIA, including:

- Environmental Protection Agency's (EPA) Guidelines on Information to be Contained in an Environmental Impact Statement (2002)¹¹;
 - EPA's Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2003)¹²;
 - EPA's Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2015)¹³;
 - EPA's Guidelines on the information to be contained in Environment Impact Assessment Reports (2022)¹⁴;
 - European Commission's (EC) Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (2017)¹⁵;
 - EC's Environmental Impact Assessment of Projects – Guidance on Scoping (2017)¹⁶; and
 - Department of Housing, Local Government and Heritage's Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018)¹⁷.
- 2.7 Guidance of relevance to individual technical assessments have been set out in Chapters 6-15 of this EIAR Volume, as well as in Volume 2.
- 2.8 In accordance with the Regulations, this EIA has been undertaken based on the proposed development as described in Chapter 4: Proposed Development Description and details of the demolition and construction works in Chapter 5: Demolition and Construction Description of this EIAR Volume.

EIA Process

- 2.9 EIA is a process that identifies the likely significant environmental effects (both positive and negative) of a proposed development. The process aims to avoid, off-set and/or reduce any significant negative environmental effects, where these are identified, and to enhance any positive effects. Proposed developments to which EIA is applied (i.e., 'EIA development') are those that are likely to have significant effects on the environment by virtue of factors such as their nature, size, or location.
- 2.10 The process and outcomes of the EIA are presented in an EIAR. The contents of an EIAR are prescribed by the Regulations and should be a clear and concise summary of a proposed development and its likely environmental effects (including direct, indirect, and cumulative effects) on the natural, built and human environments. The EIAR is submitted to a relevant planning authority to accompany an application for planning permission. In this way, the aim of EIA is to protect the environment by ensuring that a local planning authority, when deciding whether to grant planning permission for a project which is likely to have significant effects on the environment, does so in the full knowledge of the project's likely significant effects and takes this into account in the decision-making process. Alongside this, an EIA's objective is

¹ European Union, 1985, Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, Document 31985L0337.
² European Union, 1997, Council Directive 97/11/EC of 3 March 1997 amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, Document 31997L0011.
³ European Union, 2003, Directive 2003/35/EC of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment, and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC - Statement by the Commission, Document 32003L0035.
⁴ European Union, 2009, Directive 2009/31/EC of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/7/EC and Regulation (EC) No 1013/2006 (Text with EEA relevance), Document 32009L0031.
⁵ European Union, 2011, Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, Text with EEA relevance Official Journal of the European Union, Document 32011L0092.
⁶ European Union, 2014, Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, Text with EEA relevance, Official Journal of the European Union, Document 32014L0052.

⁷ Government of Ireland, 2018, European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, S.I. No. 296/2018, 15B.
⁸ European Union, 2018, European Union (Planning and Development) (Environmental Impact Assessment) (Amendment) (Regulation) (EU) 2018/946, OJ L 158.
⁹ Government of Ireland, 2000, Planning and Development Act 2000 (as amended), S.I. No. 600 of 2001, 15B.
¹⁰ Government of Ireland, 2001, 2001-2019, Planning and Development Regulations 2001 (as amended), S.I. No. 600 of 2001, 15B.
¹¹ Environmental Protection Agency, 2002, Guidelines on the information to be contained in Environmental Impact Statements
¹² Environmental Protection Agency, 2003, Advice Notes on Current Practice in the Preparation of Environmental Impact Statements
¹³ Environmental Protection Agency, 2015, Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (Draft)
¹⁴ Environmental Protection Agency, 2022, Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)
¹⁵ European Commission, 2017, Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Impact Assessment Report.
¹⁶ European Commission, 2017, Environmental Impact Assessment of Projects, Guidance on Scoping
¹⁷ Government of Ireland, 2018, Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment 2018 (last updated 19 December 2019).

also to ensure that the public and statutory consultees are given early and effective opportunities to participate in decision making procedures and to enable the grant of required licences.

Screening

2.11 EIA Screening is the term in the Regulations used to describe the process by which the need for EIA is considered in respect of a proposed development. Some developments require a mandatory EIA by reason of their size, nature, and effects. These projects, known as 'Schedule 5, Part 1 developments', include mainline railways, airports, waste facilities and large power stations. The proposed development is not such a Schedule 5, Part 1 development.

2.12 The need for an EIA for all other projects is determined on the basis of the following set criteria:

- The development is within one of the classes of development stated in Schedule 5 Part 2 of the Regulations; AND
- EITHER it meets or exceeds the size threshold for that class of development in Schedule 5 Part 2; OR a part of the project is in a sensitive area; AND
- It is likely to have significant effects on the environment by virtue of factors such as its nature, size, or location.

2.13 These are known as 'Schedule 5, Part 2 developments'. The proposed development is below the 15 ha threshold under Part 2 of Schedule 5 (10 (a)) of the Regulations. However, the scale and nature of the proposed development provides the potential for significant effects on the environment and the Applicant has therefore decided to undertake an EIA on this basis. Accordingly, a formal EIA Screening exercise with SDCC was not deemed necessary.

Scoping and Consultation

2.14 EIA Scoping is the term used in the Regulations whereby an applicant can request a formal 'scoping opinion' from the relevant local planning authority on the content of an EIA and the extent of the information to be considered in the assessments. The purpose of EIA Scoping is to focus the EIA on the environmental issues and potential impacts which need the most thorough attention; to identify those which are unlikely to need detailed study; and to provide a means to discuss methods of impact assessment so as to reach agreement on the most appropriate.

2.15 The Applicant has not produced a formal EIA Scoping Opinion Request Report, rather a more informal discussion was held with SDCC at the pre-application meeting on 21 September 2022. SDCC, the Applicant and Ramboll all attended this pre-application meeting. The purpose of this meeting was to discuss the scope of the EIA and the proposed approach that would be adopted for the EIA.

Scope of EIA

Non-Significant Issues

2.16 The aim of the EIA Scoping process is to ensure that the EIA is proportionate and focussed only on the likely significant environmental effects of the proposed development. Appraisals for each technical topic were undertaken as part of the informal EIA Scoping process to determine the existing baseline conditions and as a result, the potential for significant effects to arise.

2.17 Accordingly, the informal EIA Scoping process identified that the proposed development is unlikely to give rise to significant environmental effects in respect of the following environmental aspects and therefore would not need to be scoped in as discrete technical assessment chapters within the EIA:

- Daylight, Sunlight, Overshadowing and Wind Microclimate; and
- Major Accidents and Disasters.

2.18 Whilst significant environmental effects in respect of Major Accidents and Disasters is unlikely, consideration has been given to this topic within the following technical chapters in this EIA:

- Chapter 4: Proposed Development Description;
- Chapter 5: Demolition and Construction Description;
- Chapter 10: Water Resource and Flood Risk; and
- Chapter 13: Climate Change.

2.19 Standard best practice, mitigation and enhancement measures identified during the course of preparing these chapters were integrated into the proposed development as described in Chapter 4: Proposed Development Description and in Chapter 5: Demolition and Construction Description of this EIA Volume.

Potentially Significant Issues

2.20 The potentially significant environmental issues that were identified during the informal EIA Scoping process and that have been addressed within discrete technical assessment chapters are as follows:

- Population and Human Health (Chapter 6, EIA Volume 1);
- Transport and Accessibility (Chapter 7, EIA Volume 1);
- Air Quality (Chapter 8, EIA Volume 1);
- Noise and Vibration (Chapter 9, EIA Volume 1);
- Water Resources and Flood Risk (Chapter 10, EIA Volume 1);
- Ecology (Chapter 11, EIA Volume 1);
- Ground Conditions (Chapter 12, EIA Volume 1);
- Climate Change (Chapter 13, EIA Volume 1);
- Waste (Chapter 14, EIA Volume 1);
- Material Assets (Chapter 15, EIA Volume 1); and
- Landscape, Visual and Cultural Heritage (EIA Volume 2).

EIA Approach

Consideration of Alternatives

2.21 The Regulations require that an applicant provides a summary description of reasonable alternatives studied and to provide a description of their specific characteristics, as well as an indication of the main reasons for selecting the preferred option, including a comparison of the environmental effects. The Regulations do not define the term 'alternative' and EIA practice tends to consider alternative design proposals and to explain the process through which the proposed development has evolved.

2.22 Chapter 3: Design Evolution and Alternatives of this EIA Volume explores the objectives of the proposed development and describes how the development proposals have evolved in response to environmental and planning opportunities and constraints.

2.23 For the proposed development, the following alternatives have been considered:

- The 'Do-Nothing' alternative where the existing site condition remains in its underutilised state with no redevelopment; and
- Alternatives considered in the course of the design process (such as layouts and design) taking into account environmental and other relevant planning and design constraints as part of the design evolution.

2.24 In respect of the 'Do-Nothing' alternative, it is considered that, should the proposed development not be brought forward, the Applicant would implement the adjacent July 2022 DUB-1 permitted development.

Baseline & Future Baseline

2.25 The purpose of the EIA is to predict how environmental conditions may change as a result of a proposed development and to specify any investigative measures to be taken and/or required. This requires that

the current environmental conditions and those in the future, are established. This is referred to as the 'baseline' and is usually established through a combination of desk-based research, site surveys and empirical studies and projections. Together, these describe the existing and future character of a site and the value and vulnerability of key environmental resources and receptors, against which any changes or effects resulting from a proposed development can be identified, understood and assessed.

2.26 For the EIA of the proposed development, the existing baseline represents the existing environmental conditions of the site and the surrounding study areas at the time of the assessments as described in Chapter 1: Introduction of this EIA Report Volume.

2.27 When completed the proposed development would operate as an extension to the July 2022 DUB-1 permitted development campus and would utilise the wider campus for power provision. As the Applicant owns both sites there is certainty that power provision from the proposed development placed upon the July 2022 DUB-1 permitted development, would be delivered. Due to this relationship between the proposed development and the adjacent July 2022 DUB-1 permitted development, for the purpose of the EIA, a future baseline has been established for all technical assessment chapters based on the implementation of the permitted DUB-1 scheme. The future baseline for each chapter is described in each respective chapter.

2.28 Where linkages exist between the proposed development and the July 2022 DUB-1 permitted development, there is the potential for effects to be duplicated as the effects for the July 2022 DUB-1 permitted development have been reported on within the DUB-1 EIA. Therefore, the proposed development has been assessed against a future baseline which represents the projected environmental conditions in the future in 2025, which is the projected year when the July 2022 DUB-1 permitted development would become fully operational.

2.29 With specific reference to power generation, the proposed development would utilise both the EirGrid connection and the multifuel generation plant proposed as part of the July 2022 DUB-1 permitted development. For the operational air quality, noise and vibration and climate assessments consideration has been given to the modelling scenarios adopted for the DUB-1 EIA which are outlined in Table 2-1, with information provided on the relevant scenarios which are to be taken forward to the assessment of effects for the proposed development. The timeframes provided in Table 2-1 are indicative, but they provide a basis for assessment, including a reasonable 'worst case' at a particular point in time.

2.30 Further information on the linkages between the proposed development and the July 2022 DUB-1 permitted development are described in Chapter 4: Proposed Development Description.

Table 2-1: Air Quality, Noise and Vibration and Climate Operation Modelling Scenarios used for DUB-1

Assessment Scenarios described in the EIA for the July 2022 DUB-1 permitted development	Proposed Development EIA Scenarios
Scenario 1 (-/-) from Q4 2023 to Q1 2025) <ul style="list-style-type: none"> DUB 11 powered by northern block of MFGP using HVO as the fuel source. MFGP running 24/7. Emergency scenario below applies if there is the MFGP fails. 	Not relevant as the proposed development would become operational in 2025.
Scenario 2 (reasonable worst case from Q1 2025) <ul style="list-style-type: none"> DUB 11 and 12 powered from the EirGrid connection across Falcon Avenue. MFGP powered by gas from GNI. In a reasonable worst case this is assessed to be operational 24/7 using natural gas. Emergency scenario below applies if the gas connection from GNI to the 	Would form the operation assessment scenarios for DUB-13 with the emissions from DUB-13 assessed against these future baseline scenarios.

Table 2-1: Air Quality, Noise and Vibration and Climate Operation Modelling Scenarios used for DUB-1

Scenario 3 (reasonable best case from Q1 2025) <ul style="list-style-type: none"> DUB 11 and 12 powered from the EirGrid connection across Falcon Avenue MFGP not in operation. Emergency scenario below applies if there is a local grid network failure from EirGrid. 	Would form the emergency scenario for the proposed development.
Emergency Scenario <ul style="list-style-type: none"> Diesel used for day tanks for emergency backup generators for the data center in the unlikely event of an outage of the MFGP and grid connection (depending on scenario); MFGP and emergency generators would not be operational at the same time. 	

2.31 As such, the following scenarios will be used for Air Quality, Noise and Vibration and Climate modelling for the proposed development.

Table 2-2: EIA Air Quality, Noise and Vibration and Climate Operation Modelling Scenarios for Proposed Development

Scenario 1 (reasonable worst case)	<ul style="list-style-type: none"> DUB-13 powered from the EirGrid connection through wider DUB-1 campus. MFGP on wider DUB-1 campus powered by gas from GNI. In a reasonable worst case this is assessed to be operational 24/7 using natural gas. Emergency scenario below applies if the gas connection from GNI to the MFGP fails and there is a local grid network failure from EirGrid.
Scenario 2 (reasonable best case)	<ul style="list-style-type: none"> DUB-13 powered from the EirGrid connection through wider DUB-1 campus. MFGP on wider DUB-1 campus not in operation. Emergency scenario below applies if there is a local grid network failure from EirGrid.
Emergency Scenario	<ul style="list-style-type: none"> Diesel used for day tanks for emergency backup generators for the data center in the unlikely event of an outage of the MFGP and grid connection (depending on scenario); MFGP and emergency generators would not be operational at the same time.

2.32 The existing and future baseline conditions have been characterised by means of desk studies, site visits, surveys and modelling.

2.33 The technical assessments in EIA Volume 1 (6 to 15), EIA Volume 2 (1 and 2) and EIA Volume 3 provide a description of topic specific existing and future baseline conditions against which the proposed development has been assessed.

Receptors

2.34 Receptors that may be sensitive to potential environmental impacts as a result of the proposed development, can be summarised as follows, with further detail provided in respective technical assessments:

- Existing underlying geology and hydrogeology;
- Existing soils;
- Existing water resources, in particular ground water, surface water features and public potable water supplies;
- Existing utilities;
- Existing ecological receptors, in particular the Baldonnal Stream;

- Future users of and visitors to the site and surrounding study area;
- Future pedestrians at and around the proposed development;
- Existing community facilities in proximity to the site;
- Existing landscape character areas;
- Existing visual receptors and local and strategic views from publicly accessible locations such as roads, footpaths and open spaces;
- Existing above ground heritage assets such as archaeology and built heritage;
- Potential existing buried heritage assets on-site;
- Existing transport facilities, such as Nangor Road; and
- Demolition and construction workers.

Impact Assessment

Basis of the EIAR

- 2.35 In accordance with the Regulations, the EIA has been undertaken based on the:
- site, as shown and described in Chapter 1: Introduction, as well as the individual technical assessments (Chapters 6 to 15) of this EIAR Volume and EIAR Volume 2; and
 - proposed development and proposed demolition and construction works, as shown and described in Chapter 4: Proposed Development Description and Chapter 5: Demolition and Construction Description, respectively, of this EIAR Volume.
- 2.36 The proposed development has been assessed in the EIAR, as defined by the following documents and materials:
- Detailed planning application drawings;
 - Design Statement;
 - Planning Statement;
 - Engineering Planning Report; and
 - 3D model.
- Sources of Proposed Development Information**
- 2.37 In addition to the above, information on the proposed development has been drawn from the following application documents, as appropriate:
- Site notice;
 - Additional information response letter;
 - RFI individual responses from relevant consultants;
 - Architectural drawings;
 - Screening Report for Appropriate Assessment;
 - Landscape masterplan and drawings;
 - Site Lighting Plan, modelling and details;
 - Engineering Planning Report;
 - Flood Risk Assessment;
 - Engineering drawings; and
 - Environmental Impact Assessment Report, Appendices and Non-technical Summary.

Assessment Methodology

General

- 2.38 The aim of the EIAR is not to assess the proposed development's compliance/performance against planning policy as this is considered within the Planning Statement that accompanies the application. Instead, reference has been made to national, regional and local policy (where appropriate) to inform the scope of the technical assessments, assessment methodologies applied and existence of any sensitive receptors to be considered. Detailed methodologies for the assessment of each of the environmental aspects scoped into the EIA as discrete technical assessment chapters are provided within each technical chapter of this EIAR Volume and EIAR Volume 2; however, in general terms, the assessments have been based upon the following approach:
- Review of the existing conditions at and surrounding the site for the environmental topic area under consideration via various sources of existing information, data and reports;
 - Desk-top studies;
 - Site surveys;
 - Consideration of relevant legislation;
 - Consideration of relevant planning policies (national, regional and local), guidance and standards;
 - Consultations with stakeholders and consultees as appropriate;
 - Consideration of potentially sensitive receptors that could be affected by the proposed development;
 - Use of published technical guidance and best practice;
 - Use of quantitative and qualitative assessment methods, professional judgement and expert opinion;
 - Identification of potential environmental impacts and likely effects, with an evaluation of their likely duration, magnitude and scale, taking into consideration embedded mitigation (where relevant); and
 - Recommendation for additional mitigation and/or enhancement measures, followed by an assessment of the significance of the residual effects.
- 2.39 How the proposed development might affect the environment relies on predictions about what impact a certain action would have. Some predictions can be made using mathematical or simulation models, particularly where there are well known relationships between cause and effect. For example, the degree to which noise levels may increase as a result of additional traffic flows can be predicted using a mathematical equation; or the level of air pollution from a known traffic flow can also be predicted from a computer-based simulation model; or the visibility of a building can be predicted by accurately superimposing its outline and position over a photograph. Other impacts are less easy to predict in quantitative terms; for example, whilst the extent of a loss of a habitat on the abundance of individual species is more difficult to predict. In such cases, the EIA attempts to quantify the anticipated scale of impact using empirical experience, literature and professional judgement.
- 2.40 In all cases, the overall approach and specific methods of predicting the likely nature and magnitude of impact, as well as the scale of effect is set out in each of the technical assessments. Where used, recognised specific predictive methods are referenced. Any assumptions or limitations to knowledge are stated. In either case, the thought process leading to the conclusions is based on reasonably reliable data and so is considered to be prudent and robust.
- 2.41 Where detailed information on the proposed development has not been available, reasonable assumptions have been made, and clearly set out, based on experience of other developments of similar type and scale to enable assessment of likely significant effects.

2.42 The proposed development has not yet been approved so the conditional tense ('would') has been used to describe the development proposals, situations, potential impacts and likely effects that could/would arise from the introduction of the proposed development, as well as the mitigation measures that would be delivered or would be required upon approval of the proposed development. This approach does not lessen the Applicant's commitment to deliver the proposed development as presented within this EIA. Furthermore, each technical assessment (and in particular summary tables at the conclusion of each chapter) clearly sets out the means by which any required mitigation measures relied upon, would be secured.

Proposed Development Stages

2.43 The EIA considers the following stages of the proposed development:

- Demolition and Construction stage;
- Operation stage; and
- Cumulative stage

2.44 Although the demolition and construction programme of the proposed development would be sequenced over an 11 month period, the EIA has assessed and reported on the environmental effects of the construction stage as a whole. The demolition and construction stage assessment is based on the information provided in Chapter 5: Demolition and Construction Description of this EIA Volume. The development programme and demolition and construction methods presented in this chapter have informed the identification of on- and off-site receptors for assessment, as well as potential 'worst-case' scenarios.

Assessment Scenarios

2.45 As noted earlier, the assessment of the proposed development has been carried out against the future baseline conditions as described in Chapter 1: Introduction of this EIA Volume, this Chapter and technical assessment chapters (6-15) of this volume and supplemented by relevant existing and updated surveys.

2.46 The 'future baseline' is a projection of likely environmental conditions in the future with the July 2022 DUB-1 permitted development constructed and operational.

Demolition and Construction Stage

2.47 The future baseline for the demolition and construction stage is the year of the most intensive demolition and construction works for the proposed development, in terms of traffic flows and the equivalent year of the construction and operation stages of the July 2022 DUB-1 permitted development. This is set out in Chapter 5: Demolition and Construction Description of this EIA Volume.

2.48 Accordingly, the following assessments scenarios have been considered:

- Scenario 1: Existing Baseline (2022);
- Scenario 2: Future Baseline (2024) Construction and Operation Stage flows for 2024 associated with the July 2022 DUB-1 permitted development;
- Scenario 3: Future Baseline (2024) Construction and Operation Stage flows for 2024 associated with the July 2022 DUB-1 permitted development + Year of Peak Demolition and Construction Works of Proposed Development (2024);
- Scenario 4: Future Baseline (2024) Construction and Operation Stage flows for 2024 associated with the July 2022 DUB-1 permitted development + Year of Peak Demolition and Construction Works of Proposed Development (2024) + Cumulative Development.

Operation Stage

2.49 The future baseline for the operation stage comprises the July 2022 DUB-1 permitted development year of full operation and the year in which the proposed development would be fully completed, occupied and operational.

2.50 Accordingly, the following assessment scenarios have been considered:

- Scenario 1: Existing Baseline 2022;
- Scenario 2: Future Baseline (2025) July 2022 DUB-1 permitted development Operational;
- Scenario 3: Future Baseline (2025) July 2022 DUB-1 permitted development Operational + Operational Year Baseline of the Proposed Development (2025); and
- Scenario 4: Future Baseline (2025) July 2022 DUB-1 permitted development Operational + Operational Year Baseline of Proposed Development (2025) + cumulative development.

Mitigation

2.51 Mitigation is the term used to refer to the process of avoiding where possible and, if not, reducing, controlling and/or off-setting the likely significant negative effects of a development. Mitigation measures relate to the design stage; the demolition and construction stage; or the activities associated with the operation stage.

2.52 As part of the EIA, an iterative approach has been adopted where significant environmental effects have been avoided where possible in the first instance through the design refinements and iterations (referred to as 'embedded' mitigation'), as reported upon within Chapter 3: Alternatives and Design Evolution of this EIA Volume. Where negative environmental effects were identified through early assessment work, opportunities to reduce or control impacts and effects, or in some cases, to compensate for impacts and effects, were identified and incorporated into the proposed development. In addition, opportunities to enhance the positive environmental effects of the proposed development have also been sought and incorporated into the proposed development.

2.53 Within each technical chapter of this EIA, the assessment of the effects that are likely to arise as a consequence of a potential impact/change to environmental receptors from the proposed development is initially presented. If any 'additional mitigation' measures are required, further to that already embedded into the proposed development throughout its design evolution, these are proposed, and the proposed development is reassessed to ascertain the likely residual effects and the likely significant environmental effects. This is reported on within each technical assessment chapter of the EIA.

2.54 In all cases, mitigation measures are presented as embedded, specific commitments or statements of fact. It is anticipated that the implementation of mitigation identified throughout the EIA, would be secured by means of approval of the planning drawings, appropriately worded planning conditions or planning obligations. Where the need for mitigation is identified, each assessment confirms how the mitigation will be secured.

Impacts and Effects

2.55 Unless otherwise required by published assessment guidance, the EIA has made distinction between:

- **Impacts:** the change or action; and
 - **Effects:** the result/consequence/outcome of the change.
- 2.56 As a general rule, the EIA assesses the effects that are likely to arise as a consequence of a potential impact to environmental receptors following the application/consideration of embedded mitigation measures.

2.57 The quality, magnitude and duration or potential effects are defined in accordance with EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports¹⁴. These are summarised below.

Table 2-3: Description of Effects	
Effect Characteristic	Description
Quality	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

Table 2-3: Description of Effects

Effect Characteristic	Description
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Significance	
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.
Duration of Effects	
Momentary	Effects lasting from seconds to minutes.
Brief	Effects lasting less than a day.
Temporary	Effects lasting less than a year.
Short-term	Effects lasting one to seven years.
Medium-term	Effects lasting seven to 15 years.
Long-term	Effects lasting 15 to 60 years.
Permanent	Effects lasting over 60 years.
Reversible	Effects that can be undone, for example through remediation or restoration.
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of the planned project, if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Type of Effects	
Indirect effects	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative effects	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.

Table 2-3: Description of Effects

Effect Characteristic	Description
'Do-nothing' effects	The environment as it would be in the future should the subject project not be carried out.
'Worst case' effects	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminant effects	When the full consequences of a change in the environment cannot be described.
Irreversible effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic effects	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog).

2.58 There are some exceptions to the conventions and terminology described above for certain topic specific assessments. This is set out in the relevant technical assessment chapter.

2.59 The scale of effects is typically determined through the use of the terminology above and the application of professional judgement and discretion of the particular technical specialist. Accordingly, a fixed/set/generic matrix has not been adopted for the EIA as a whole.

2.60 The specific benchmarks have been established by the project team using available national, regional and local policy together with other relevant guidance, recognised best practice and expert judgement. The development of these benchmarks is explained in more detail in each assessment or technical appendix.

2.61 Throughout the EIA, residual effects have been predicted as either '**Significant**' or '**Not Significant**'. Significant effects are considered material to the planning decision process. Residual effects of moderate, significant, very significant and profound are typically considered '**Significant**', but would be dependent on the relevant technical assessment, as well as the existence of published assessment guidance. Where published assessment guidance is not definitive in respect of categorising/determining significant environmental effects, professional judgement has been applied, taking into account the duration, extent and context of the effect, to determine significant effects.

Cumulative Assessment

2.62 The Regulations require that all likely significant effects of a development are taken into account, including cumulative effects.

2.63 There is no prescriptive guidance on the methodology for the assessment of cumulative effects in Ireland. However, the Institute of Environmental Management & Assessment (IEMA) Guidelines¹⁸ identifies two types of cumulative effects:

- **Type 1 - Intra-Project Effects:** Combined effects of different types of impact or 'impact interactions', for example the multiplying effects arising from noise, dust and visual impacts during the construction of the proposed development on a particular sensitive receptor; and
- **Type 2 - Inter-Project Effects:** Combined or additive effects generated from the proposed development together with other planned or likely foreseeable developments and also referred to as 'in-combination effects'. These other developments may generate their own individually insignificant effects but when considered together could amount to significant cumulative effects, for example,

combined transport and accessibility impacts from two or more (proposed) developments. Additive effects were considered where relevant.

2.64 As Stated in Table 3-3 of the EPA Guidance, under 'Describing the Types of Effects' synergistic effects should be considered. Synergistic effects are considered within the inter-project cumulative effects; also known as additive effects. Where the proposed development would likely result in additive effects, these will be identified within the relevant EIA chapter.

Intra-Project Cumulative Effects

2.65 As mentioned above, there is no established EIA methodology for assessing and quantifying the intra-project cumulative effects of individual effects on sensitive receptors. Therefore, Ramboll has developed an approach which uses the defined residual effects of the proposed development to determine the potential for effect interactions and so the potential for intra effects of individual effects.

2.66 Intra-project cumulative effects from the proposed development itself on existing off-site and future on-site sensitive receptors during the demolition and construction stage and operation stage have been considered. It is possible, however, that depending on the predicted individual 'completed developments' effects, only the demolition and construction stage effects would actually be considered as often they generate the greatest likelihood of interactions occurring and hence significant effects. Indeed, demolition and construction stage effects are usually more negative (albeit on a temporary basis) than effects as a result of the operation stage.

2.67 Dependent on the relevant sensitive receptors, the assessment focusses either on key individual receptors or on groups considered to be most sensitive to potential interacting effects. The criteria for identifying those receptors which are considered to be potentially sensitive include existing land uses, proximity to the demolition and construction works and the site, and likely duration of exposure to impacts.

2.68 It should be noted that only residual effects that are slight, moderate, significant, very significant or profound in scale have been considered within this assessment. Imperceptible and not significant effects are not considered in the assessment. Due to the 'cross-boundary' and 'overlapping' nature of these effects across various environmental topics, and the assessment approach adopted, the results of intra-project cumulative effects are holistically presented within a discrete assessment chapter (Chapter 16: Cumulative Effects of this EIA Volume) and not within each of the technical assessment chapters. This avoids unnecessary duplication and repetition and presents a proportionate approach.

2.69 With regard to the potential for cumulative effects to occur, it is anticipated that standard mitigation measures as detailed in Chapter 5: Demolition and Construction Description of this EIA Volume can be applied to prevent temporary significant effects from the interaction of effects occurring on-site. It is also anticipated that a site-specific Construction Environmental Management Plan (CEMP) would be secured by SDCC by means of an appropriately worded planning condition.

Inter-Project Cumulative Effects

2.70 The Regulations require an assessment of potentially significant cumulative effects of a proposed development along with other existing and/or approved projects. There are no legislative or policy requirements which set out how an inter-project cumulative impact assessment should be undertaken.

2.71 Accordingly, inter-project effects arising from the proposed development in combination with, or in addition to, 'cumulative development' during the demolition and construction stage and operation stage, have been considered in the EIA.

2.72 Each technical EIA chapter presents the assessment of combined effects of the proposed development with certain other cumulative developments. Schedule 6 of the Regulations states that only developments which are existing and/or approved should be considered, i.e. developments built or under construction or with a planning permission.

2.73 Spatial considerations and scale of development criteria has been developed based on professional judgement to determine whether cumulative developments have the potential for cumulative effects when combined with the proposed development's effects. The criteria applied to the cumulative developments are those which are either:

- Data centres that are permitted/approved or have resolution to grant or are currently at early stage of demolition and enabling/construction; and
- are within 1km of the application site.

2.74 The cumulative developments have been quantitatively assessed on a topic by topic basis, subject to the availability of development information in the public domain. Where information is not available, or cumulative developments do not comply with the above criteria, qualitative approaches have been adopted based on professional judgement.

2.75 The location of the cumulative developments considered in the EIA is shown in Figure 2-1 overleaf and the description of each cumulative developments, is summarised in Table 2-4.

2.76 Where possible, the status of cumulative developments' construction works have been taken into account. For example, where construction has progressed to a material degree, such as to affect local views, traffic flows and air quality, such schemes have been considered as part of the existing baseline.

Table 2-4: Cumulative Development Descriptions

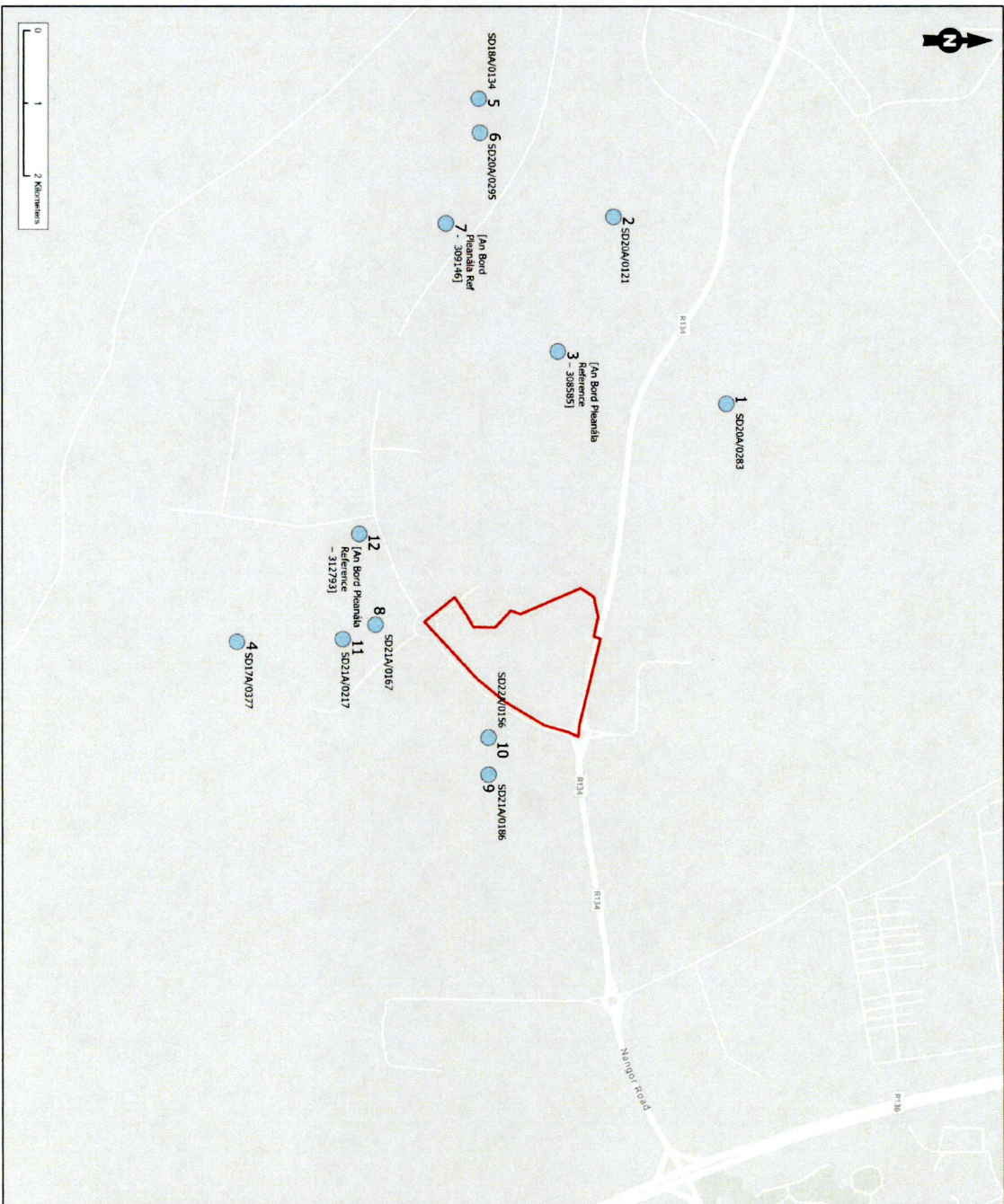
No.	Address (Application Reference)	Planning Application Description	Application Status
1	Microsoft - Grange Castle Business Park, Nangor Road, Clonsilla, Dublin 22 [SD20A/0283]	Demolition of existing single-storey vacant house, garage and outhouse (total gross floor area (GFA) approximately 291.2sqm) and removal of existing temporary construction car park; construction of a single one- to four-storey central administration building and two two-storey (with mezzanine) data centres (DUB14 & DUB15) all to be located west of data centres DUB9, DUB10, DUB12 & DUB13 within the MS campus.	Grant Permission - 29/03/2021 Enabling works in progress
2	UBC Properties - Townlands within Grange Castle South Business Park, Baldonnell, Dublin 22 [SD20A/0121]	The development will consist of the demolition of the existing two-storey dwelling of Ballybane and associated farm buildings (5655sqm) and the construction of three two-storey data centres with mezzanine floors at each level of each facility and associated ancillary development that will have a gross floor area of 80,269sqm on an overall site of 16.5 hectares (ha).	Grant Permission - 09/09/2020 Construction in progress
3	UBC Properties -Grange Castle South Business Park, Dublin 22 [An Bord Pleanála Reference - 308585]	Clutterland 110 kilovolt (kV) GIS Substation building and two underground single circuit transmission lines.	Approved 07/05/21
4	Digital Realty 'Trust - Profile Park, Baldonnell, Dublin 22, D22 TY06 [SD17A/0377]	Revisions and alterations of the permitted development of a data processing facility under planning Ref: SD12A/0002 on a 3.85ha site. The revised application consists of alterations to the DUB14 (previously DUB12) data centre/warehouse structure, granted in the previous application. The alterations to the DUB14 (previously DUB12) include: (i) two data halls 2137sqm (increase of 180sqm), (ii) offices/reception 478sqm (decrease of 190sqm), (iii) support space/staff facilities and	Grant Permission - 15/12/2017 Constructed

Table 2-4: Cumulative Development Descriptions

No.	Address (Application Reference)	Planning Application Description	Application Status
		Internal plant with a floor area of 953sqm (increase of 84sqm), (iv) external plant of 1,777sqm (footprint increase of 35sqm).	
5	Cyrus One - Grange Castle Business Park, Clondalkin, Dublin 22 [SD18A/0134]	Demolition of the existing single-storey house of 'Eraganah' and the construction of a two-storey data centre and delivery bays with associated three-storey office block and services that will have a gross floor area of 35,426sqm on an overall site of 9.2 ha.	Grant Permission - 24/09/2018
6	Cyrus One Townlands within Grange Castle South Business Park, Baldonnel, Dublin 22 [SD20A/0295]	Amendments and modifications to the permitted data centre development granted under Registration Ref SD18A/0134 - ABP Ref: ABP-302813-18 and the temporary substation	Grant Permission under SD19A/0300
7	Cyrus One - Grange Castle South Business Park, Baldonnel, Dublin 22 [An Bord Pleanála Ref - 309146]	Two 110KV transmission lines and a 110KV Gas Insulated Switchgear (GIS) substation	Grant Permission with conditions - 19/07/2021
8	Centrica Business Solutions - Profile Park, Baldonnel, Dublin 22 [SD21A/0167]	Construction of a gas fired power plant with an electrical output of up to 125MW with associated balance of plant, equipment and buildings.	Grant Permission - 19/07/2022
9	Equinix (Ireland) Ltd - Plot 100, Profile Park, Nangor	Construction of a three-storey (part four-storey) data centre known as 'DB8' to include data halls, electrical/plant rooms including internal generators,	Grant Permission - 05/05/2022

Table 2-4: Cumulative Development Descriptions

No.	Address (Application Reference)	Planning Application Description	Application Status
	Road, Clondalkin, Dublin 22 [SD21A/0186]	offices, lobbies, ancillary staff areas including break rooms and toilets, stores, stair/lift cores throughout and photovoltaic panels at roof level.	
10	Equinix (Ireland) Ltd - Plot 100, Profile Park, Nangor Road, Clondalkin, Dublin 22 [SD22A/0156]	10 year permission on a site for modifications to the permitted data centre granted under SDCC Reg. Ref. SD21A/0186 comprising the reconfiguration and alterations to the data centre building and associated development.	Request Additional Information - 25/07/2022
11	Digital Netherlands VIII B.V - Profile Park, Nangor Road, Clondalkin, Dublin 22 [SD21A/0217]	10 year permission for development consisting of removal of an existing unused waste water treatment facility on site and the erection of two data centre buildings, gas powered energy generation compound, and all other associated ancillary buildings and works; the two data centre buildings, DUB 15 and DUB 16, will comprise a total floor area of c. 33,577sq.m over two storeys.	Grant Permission - 02/08/2022
12	Vantage Data Centers Dub 11 Limited - Profile Park Business Park and partly within Grange Castle Business Park, Dublin 22 [An Bord Pleanála Ref - 312793]	110KV Gas Insulated Switchgear (GIS) Substation compound and 110KV transmission lines along with associated and ancillary works.	Due to be decided - 18/10/2022




<p>Legend</p> <ul style="list-style-type: none"> ● Cumulative Developments Red Line Boundary Red Line Boundary Buffer 1000m 	
<ol style="list-style-type: none"> 1 - Microsoft 2 - UBC Properties 3 - UBC Properties SID 4 - Digital Reality Trust 5 - Cyrus One 6 - Cyrus One 7 - Cyrus One SID 8 - Centrica Business Solutions 9 - Equinix (Ireland) Ltd 10 - Equinix (Ireland) Ltd 11 - Digital Netherlands VIII B.V 12 - Vantage SID 	
<p>Figure Title Cumulative Developments</p>	
<p>Project Name Vantage Data Center DUB-13</p>	
Project Number 1620014883	Figure No. 2.1
Date August 2022	Prepared By AC
Scale 1:50,000 @A3	Issue 1
<p>Client Vantage Data Centers Dub 11 Limited</p>	
	

Figure 2-1: Cumulative Development Locations

Assumptions and Limitations

- 2.77 The principal assumptions that have been made, and any limitations that have been identified, in undertaking the EIA are set out below. Assumptions specifically relevant to each environmental topic have been set out in each technical assessment of the EIA.
- Baseline conditions have been established from a variety of sources, including historical data, but due to the dynamic nature of certain aspects of the environment, conditions at the site and surrounding land uses may change.
 - The future baseline has been established based on the July 2022 DUB-1 permitted development as described within the EIA, which was prepared as part of that planning application.
 - The assessments contained within each of the technical assessments of this EIA Volume 1 and within EIA Volume 2 are based on the current legislative and policy framework, having regard to emerging policies and legislative changes.
 - It is assumed that information received from third parties is accurate, complete and up to date.
 - The assessments contained within each of the technical assessments of EIA Volume 1 and within EIA Volume 2 are based upon the application drawings submitted.
 - The assessments contained within each of the technical chapters are based on the assumption that embedded mitigation measures set out in the application drawings, through regulatory regimes or via the management controls as set out in Chapter 4: Proposed Development Description and Chapter 5: Demolition and Construction Description of this EIA Volume are implemented.
 - The assessments contained within the Chapter 8: Air Quality and Chapter 9: Noise and Vibration of this EIA Volume are based on industry-average specifications for construction, mechanical and services plant as project-specific details will be finalised during the construction planning and procurement stages.
 - Demolition, enabling and construction works across the site would take place substantially in accordance with the programme of works described in Chapter 5: Demolition and Construction Description of this EIA Volume.
 - Cumulative developments would be implemented substantially in accordance with information that is publicly available or that has been provided to the Applicant, and subject to the same regulatory regimes and good practice management controls.
 - Assessments have assessed the existing baseline conditions at the time of EIA preparation (mid-2022) and the future baseline as described above unless otherwise stated in the technical assessment chapter. In respect of transport baseline traffic flows have been taken from the July 2022 DUB-1 Permitted Development and have been pro-rated based on MW values.
 - The EIA does not include assessment of the decommissioning stage effects of the proposed development due to the long design life of the proposed development. It is assumed that an appropriate assessment of the potential decommissioning effects, and relevant mitigation proposed, would be undertaken prior to such works progressing.
- 2.78 A consistent approach to the presentation of EIA findings in the EIA has been adopted for each of the technical assessments, including:
- explanation of the information gathering and assessment methodology, including a review of policy and legislative requirements of relevance to the specific technical area;
 - description of the existing and future baseline conditions;
 - description of mitigation that has been embedded into the proposed development's design;

Technical Assessment Chapters

- 2.79 Each environmental topic considered in the EIA has been assigned a separate chapter in EIA Volume 1 (Chapter 6-15) with the exception of the landscape, visual and cultural heritage impact assessment which is presented separately in EIA Volume 2. Within each technical chapter the assessment is presented and reported in the following format:
- Introduction – a brief introduction to the assessment;
 - Methodology – an overview and review of policy and legislative requirements of relevance to the specific technical area, an outline of the technical, spatial and temporal scope of the assessment, a description of the methods undertaken to characterise the baseline, as well as an explanation of the approach to defining the significance of likely environmental effects;
 - Baseline Conditions – a description of the existing and future baseline conditions;
 - Assessment of Effects – an assessment of the likely significant effects of the proposed development and an evaluation of their significance against defined criteria taking into account embedded mitigation;
 - Assessment of Residual Effects – a description of the additional mitigation, if required and then an assessment of the likely residual effects of the proposed development;
 - Summary of Residual Effects – tabulated summary of the residual effects;
 - Cumulative Effects – cross reference to the intra-cumulative effects assessment in Chapter 16: Cumulative Effects (of this EIA Volume) and an assessment of inter-project cumulative effects; and
 - Summary of Assessment – brief summary of the technical assessment.

3 ALTERNATIVES AND DESIGN EVOLUTION

3.1 Introduction

3.1.1 The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018^{1,2}

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018^{1,2} requires that information provided by the developer in an EIA shall include a description of the reasonable alternatives studied by the developer³. These are reasonable alternatives which are relevant to the project and its specific characteristics (e.g., in terms of design, technology, location, size and scale), studied by the Applicant and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

3.1.2 This chapter of the EIA therefore explores the objectives of the proposed development, its design evolution and the reasonable alternatives considered. In doing so, the chapter considers the analysis of the site and existing environmental conditions which informed the design evolution of the proposed development.

3.1.3 The following three alternatives were considered:

- The 'Do-Nothing' alternative;
- Alternative locations and uses; and
- Alternative design/layouts of the proposed development.

3.1.4 Further details can be found in the Design Statement which accompanies the application.

3.2 Development Objectives

3.2.1 The proposed development aims to develop the existing low grade agricultural land to meet development aspirations set out within local and regional policies.

3.2.2 The specific development objectives for the proposed development are to deliver:

- Add to Ireland's national IT and data storage infrastructure;
- Generation of employment;
- Provision of 4 data modules;
- Create a high-quality Business Park environment;
- Provision of SUDs and green infrastructure;
- Increased biodiversity;
- Increase the ecological value of the Baldonnell stream; and
- Reduced climate impact of the proposed development and increase climate resilience.

3.3 Development Considerations

Policy Considerations

3.3.1 The development considerations for the site are set out in the following planning policy and guidance documents at national, regional and local levels:

- National Planning Framework (NPF) (2018)⁴;
- National Development Plan (NDP) 2021-2030 (2021)⁵;
- National Climate Action Plan 2021⁶;
- Regional Spatial and Economic Strategy (RSES) for the Eastern and Midlands Regional Assembly (EMRA)⁷ – In particular Regional Policy Objective (RPO) 8.25: "Support the national objective to promote Ireland as a sustainable international destination for ICT [information and communications technology] infrastructures such as data centres and associated economic activities at appropriate locations"⁸;
- South Dublin County Council Corporate Plan 2020-2024⁹;
- South Dublin County Council (SDCC) Development Plan 2022-2028⁹ – in particular Objective EE: "To provide for enterprise and employment related uses".

Site Considerations

3.3.2 The following site considerations informed the design process:

- Sensitive residential receptors located 600 m south of the site boundary, north of Baldonnell road and a hotel 200 m north-east of the site boundary;
- Site allocations under aforementioned planning policies;
- On-site environmental features, such as Baldonnell stream and existing trees and hedgerows.

Environmental Considerations

3.3.3 The design has considered the following primary environmental constraints:

- Baldonnell Airfield Height Limit for the area;
- On-site trees and hedgerows;
- The surrounding landscape and visual character;
- Greenhouse gases;
- Flood risk at the site (primarily from the blocked downstream culvert) and infiltration associated with the Baldonnell stream;
- Biodiversity of the site and Baldonnell stream; and

¹ Government of Ireland, 2018. European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018. S.I. No. 296/2018. ISB.

² Later amended to: Government of Ireland, 2018. European Union (Planning and Development) (Environmental Impact Assessment) (Amendment) Regulations 2018. S.I. No. 666/2018. ISB.

³ See Article 5(1)(d) of Directive. See Schedule 6(1)(d) to the Regulations.

⁴ Government of Ireland, 2018. National Planning Framework (NPF) – Ireland 2040 Our Plan (February 2018) [online]. Available at: <https://npl.ie/wp-content/uploads/2018/09/Project-Ireland-2040-NPF.pdf> [Accessed on 26/09/2022].

⁵ Government of Ireland, 2021. National Development Plan 2021-2030 (last updated 4 October 2021) [online]. Available at: <https://www.gov.ie/en/publication/Z7462-national-development-plan-2021-2030/> [Accessed on 26/09/2022].

⁶ Government of Ireland, 2021. Climate Action Plan. Department of the Environment, Climate and Communications

⁷ Eastern & Midlands Regional Assembly 2019. Regional Spatial & Economic Strategy 2019-2031 [online]. Available at: https://emra.ie/dub11/ndp-content/uploads/2020/05/EMRA_RSES_1.4_Sweb.pdf [Accessed on 26/09/2022]

⁸ SDCC, 2020. South Dublin County Council Corporate Development Plan 2020-2024. [online]. Available at: <https://www.sdcc.ie/en/services/outbound/policies-and-plans/corporate-plan-2020-24.pdf> [Accessed on 26/09/2022]

⁹ South Dublin County Council, 2021. South Dublin County Development Plan 2022-2028 [online]. Available at: <https://consult.sdblincoco.ie/en> [Accessed 26/09/2022]

- Water quality of the Baldonnell stream.

Consultation

Pre-Submission Consultation

- 3.3.4 As part of the pre-submission design process, pre-application consultation was held with SDCC on 21 September 2022, in which the design evolution of the proposed development was discussed. SDCC commented relating to design and policy expectations for the proposed development. The proposed development is considered to meet the design expectations and requirements and therefore no additional design changes have occurred following pre-application consultation.

3.4 Alternatives

Do-Nothing Alternatives

- 3.4.1 The 'Do Nothing' scenario is a hypothetical alternative conventionally considered, albeit briefly, in EIA as a basis for comparing the development proposal under consideration.
- 3.4.2 For the purposes of the EIA, the 'Do Nothing' scenario is where no development occurs on the site and therefore remains vacant and unchanged. Should the proposed development not be brought forward, the Applicant would implement the July 2022 DUB-1 consented development.
- 3.4.3 When considering the 'Do-Nothing' alternative, the following is noted:
- Whilst the site currently includes a single residential property it is largely unused agricultural land and the site needs to be re-purposed;
 - The site is located within Profile Park, on land which is designated in the SDCC Development Plan 2022-2028 as Objective EE to provide for enterprise and employment uses. This gives the encouragement for development which seeks to provide alternative uses to those that have recently occupied the site. Furthermore, the provision of the proposed data center would support RPO 8.25 to promote Ireland as a sustainable international destination for ICT infrastructures (such as data centres);
 - The Applicant owns the site and the adjacent site for which planning consent was secured in July 2022 for the development of two data centers (SDCC planning reference: SD21A/0241) (refer to Chapter 1: Introduction of this EIA Volume for further information);
 - The proposed development, consisting of one data center building, would sit within a cluster of data centres within Profile Park;
 - The Profile Park area has excellent fibre connectivity; and
 - The 'Do-Nothing' alternative does not meet any of the developers objectives for the site.
- 3.4.4 In the event the proposed development at the site, or any other development, did not come forward, a number of negative effects and lost opportunities would result:
- Loss of opportunity for further economic and employment growth;
 - Loss of opportunity to maximise the productive use of the site;
 - Loss of national and international data storage capacity and IT infrastructure;
 - Loss of opportunity to further establish Profile Park and the surrounding area as a data center hub; and
 - Loss of opportunity to improve on-site biodiversity.
- 3.4.5 The Applicant has therefore not considered the 'Do Nothing' alternative further.

Alternative Sites

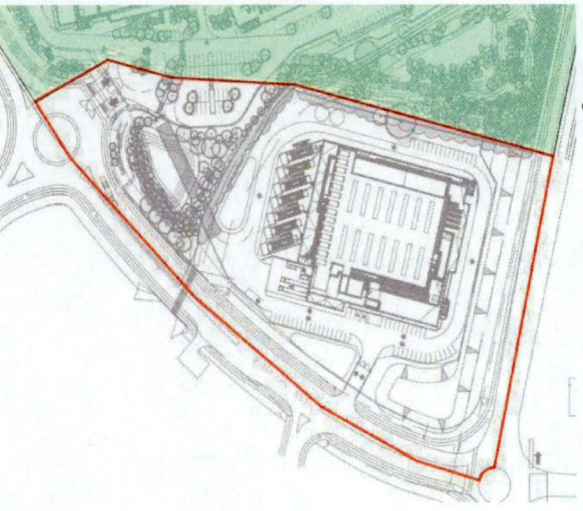
- 3.4.6 No alternative sites have been considered by the Applicant for the following reasons:
- The site is owned by the Applicant and therefore the Applicant did not consider alternative sites which are the property of a third-party;
 - The site is adjacent to the July 2022 DUB-1 consented development site which is under the Applicant's ownership and provides an opportunity for an extended and co-ordinated data center campus;
 - The site is located within an area identified in SDCC's Development Plan 2022-2028 as an area for enterprise and employment uses (as previously stated);
 - The site would provide a key development opportunity to contribute to the regeneration of an underutilised site and with the land use identified in ROP 8.25 (as previously stated);
 - The site sits within a wider area dominated by data centers which has good network provision and fibre suppliers, that suit the needs of the site and is thus an ideal location for the proposed development to be situated;
 - Alternative sites in the Dublin area may lack adequate power provision and alternative sites in the west of Ireland may lack fibre connectivity;
 - A new EirGrid substation is to be constructed, located to the immediate south of the site;
 - Under the July 2022 DUB-1 consented development, the Applicant will provide on-site power generation to provide support and capacity to ensure that the development would reinforce the grid and not lead to supply disruption in the surrounding area at peak demand;
 - Existing trees along the north and east boundaries creates a natural visual screen;
 - There is no evidence of site contamination; and
 - The level terrain is suitable for large floorplate buildings.


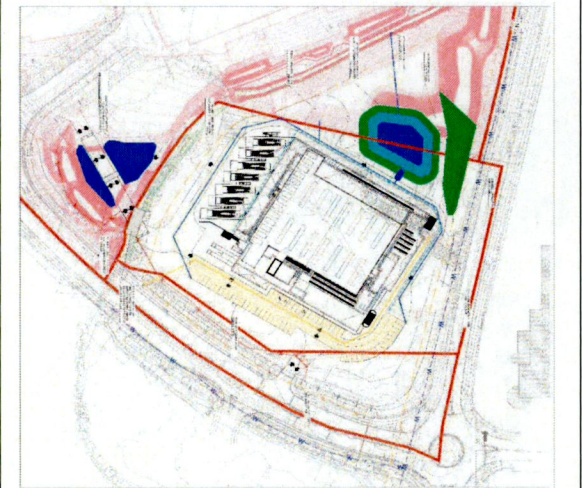
Alternative Land Uses

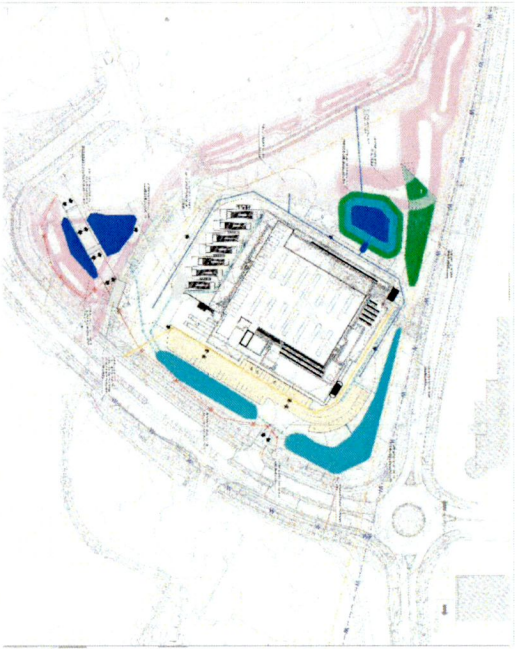

- 3.4.7 The proposed land use has been informed by prevailing local and regional policy (as previously stated). Accordingly, no other land uses were considered outside of the proposed development. Additionally, due to the site utilises connections and the surrounding uses the Applicant does not propose any other form of development.
- 3.4.8 The site shape and area meet the Applicant's requirements for the viability of building the data center due to the developable floor-space and space for the number of required data modules.

Alternative Layouts, Designs and Design Evolution

- 3.4.9 The following sub-sections of this chapter describe the design evolution process undertaken by the Applicant's design team. A series of site layout and built form options are presented and described along with an explanation of the decisions that have informed the evolution of the alternatives considered.
- 3.4.10 A series of concept options were explored throughout the design development process. These sought to define the most appropriate design response for the site. The alternative layouts, designs and design evolution of the proposed development is presented in Table 3-1.

Concept Option	Concept Layout	Environmental Considerations
<p>1 – Early-Stage Design</p>	<p>In the early stages of design and appraisal, DUB-13 was orientated parallel to New Nangor Road with offices facing north.</p> 	<p>This option limits space for natural solutions, SUDS, and green infrastructure to increase stormwater attenuation and reduce flood risk. The drainage strategy would have encroached onto the Baldonnell Stream riparian strip.</p> <p>From a transport perspective an existing access point to the proposed development is located to the south of New Nangor roundabout, along the eastern boundary. A second access point was added to the south of the proposed development in the form of a road crossing over the Baldonnell Stream.</p>
<p>2 – Shift in Orientation</p>	<p>A change in the size and shape of DUB-13, and a shift in orientation.</p>	<p>Landscape and Visual</p> <p>The clockwise shift in DUB-13 allows the more “aesthetically pleasing” face of DUB-13 to be seen from New Nangor Road. This alignment reduced the visual impact along the northern frontage, particularly the view from New Nangor Road roundabout.</p> <p>Berms and landscaping, consistent with the that implemented for the July 2022 DUB-1 consented development, were implemented along the northern and eastern boundaries to provide screening of the proposed development from New Nangor Road and Falcon Avenue, respectively.</p> <p>SUDS and Ecology</p> <p>This orientational shift resulted in the proposed development building footprint avoiding the riparian strip which runs adjacent to the site’s western boundary and enters the southern section of the site. An attenuation pond was proposed in the north western corner of the site.</p> <p>Berms and landscaping creation along the northern and eastern boundaries would act as a green infrastructure corridor linking new habitats and would act as an extension to the existing habitat created through the July 2022 DUB-1 consented development.</p> <p>Transport and Access</p> <p>The access strategy was refined to allow service and maintenance vehicles to cross between the July 2022 DUB-1 consented development and the proposed development. The aim of the second access was</p>

Concept Option	Concept Layout	Environmental Considerations
		<p>to increase health and safety through segregating service vehicles from the main site entrance proposed east off Falcon Avenue, used for cars, pedestrians, and cyclists. Despite improvements across the environmental factors above, this option was not taken forward because attenuation volume for the site could be improved.</p>
<p>3 - Attenuation Provision</p>		<p>SUDs and Ecology This option incorporates a second attenuation pond to the south of the proposed development to accommodate the required attenuation volume of the site. However, this option does not include landscaping and biodiversity improvements along the northern and eastern boundaries, which would have been detrimental to visual impacts.</p>

Concept Option	Concept Layout	Environmental Considerations
<p>4 – Wetland Provision to the North and East</p>		<p>SUDS and Ecology</p> <p>This option incorporates wetland/attenuation areas in the north and along the eastern frontages of the site. Although a benefit from a flood risk reduction and stormwater attenuation perspective, this limits space for further landscaping and biodiversity improvements which would have been detrimental to visual impacts.</p> <p>An attenuation outfall from wetland would connect to the attenuation pond in the south.</p>
<p>5 – The Proposed Development</p>		<p>This is the preferred outcome and best-balanced key environmental considerations including landscaping biodiversity, and surface water attenuation. The preferred development:</p> <ul style="list-style-type: none"> • Incorporates high quality architectural material palette along the dominant facades visible along New Nangor Road and Falcon Avenue; • Avoids the riparian strip and will result in a significant improvement to landscaping and biodiversity; • Retains existing trees along the site boundary; • Additional planting of beem and large trees along the northern and eastern frontages to provide further visual screening; • Planting hedgerow is proposed to act as a biodiversity corridor linking habitats and creating ecological connectivity between the July 2022 DUB-1 consented development and the proposed development; • Attenuation of surface water is provided through the two attenuation ponds and a permeable paving sub-base; and • Wetland meadows in the north west corner of the site are integrated with the landscape strategy for the July 2022 DUB-1 permitted development, providing biodiversity benefits. <p>Further detail on the environmental considerations of the proposed development is presented below.</p>

Water Resource, Flood Risk and Rainfall

- 3.4.11 The site is at risk of flooding due to the location of the Baldonnell stream and the culvert. The design has sought to minimise flood risk through incorporating natural solutions across the site through:
- Incorporating increased above ground attenuation ponds providing SUDs for flood water compensation and attenuation to aid the downstream culvert to reduce flood risk;
 - Collection of rainwater from roof generator yard areas and discharge of this into a new on-site attenuation pond; and
 - Hardstanding (where required) would be designed to collect and attenuate rainwater from the front road areas of the data halls to reduce flood risk.

- 3.4.12 The proposed development provides above ground surface water attenuation in the north-western section of the site and in the south western section of the site and SUDs to remove the need for below ground attenuation.

Landscaping

- 3.4.13 The site comprises mature trees and hedgerows. Trees located in the centre of the site would be removed as to not limit the layout of the site and building positions. The design has sought to protect existing trees and hedgerows as far as reasonably possible through:
- Retention of mature trees located near to the border of the site;
 - Implementation of a tree protection strategy; and
 - Achieving a net gain of trees and hedgerow the planting.

- 3.4.14 During the phasing sequence of the proposed development, landscaping would be undertaken at the earliest opportunity in order to help the features to mature ahead of the proposed development being fully built out and operational.

Biodiversity

- 3.4.15 The design has sought to create areas for biodiversity to thrive and create a network of habitats within an ecologically rich landscape. There will be significant habitat creation through the planting of woodland, hedgerows, wildflower meadow and wetland meadows which will support local flora and fauna, increasing local biodiversity, as well as connect to the existing vegetation around the site, enhancing green infrastructure links.

Landscape and Visual Impact

- 3.4.16 The built footprint of the proposed development has been orientated to reduce the landscape and visual impact through the reorientation of the data center so that the more "aesthetically pleasing" face of DUB-13 to be seen from New Nangor Road.

- 3.1.5 Additional planting of berm and large trees along the northern and eastern frontages will provide further visual screening. The inclusion of climbers up the stair towers creating "green walls" contributes to the high quality landscaping along the dominant facades and provides further visual screening.

Site Access

- 3.4.17 The layout of the site has been developed to allow segregated access for site operators and service HGVs from the data center workers. This would reduce disturbance and ease traffic management to/from the site, minimising impacts on the local road network.

Climate Change

- 3.4.18 Data centers are typically carbon intensive developments and therefore, the Applicant has looked to reduce climate impact through a variety of energy efficient measures, as well as the incorporation of PV panels to generate renewable electricity.

- 3.4.19 In addition, the applicant has designed the proposed development to incorporate the potential for a district heating provision in the future should there be demand in the area.

Policy Objective EE

- 3.4.20 During the design of the site, the Applicant looked to maximise efficiency in terms of net floor space and employment gain, further detail on which is contained in the Planning Report which accompanies the application.

4 PROPOSED DEVELOPMENT DESCRIPTION

4.1 Introduction

4.1.1 This chapter of the Environmental Impact Assessment Report (EIA) provides a description of the proposed development for the purposes of identifying and assessing the potential environmental impacts and likely environmental effects of the proposed development in the technical assessments of EIA Volume 1 (Chapters 6-15) and EIA Volume 2.

4.1.2 In accordance with the Regulations, this chapter sets out the physical characteristics of the built development, the proposed access arrangements, the landscaping strategy, utility requirements and estimated emissions and arising's.

4.1.3 A general description of the site is provided in Chapter 1: Introduction, with more detailed descriptions provided in each technical assessment within EIA Volume 1 and EIA Volume 2 and is therefore not repeated here.

4.1.4 Further detailed information on the proposed development can be found within the following application documents:

- Design Statement;
- Planning Report;
- Architectural Drawings;
- Landscape Masterplan and Drawings;
- Engineering Planning Report and Drawings;
- Energy Statement;
- Site Lighting Plan; and
- Flood Risk Assessment.

4.2 Planning Application

4.2.1 As indicated in EIA Chapter 1: Introduction, the Applicant is submitting a full planning application for the proposed development, described as follows in the application form:

4.2.2 "We, Vantage Data Centers DUB11 Ltd. are applying for permission for development at this site that includes a two storey residential property on lands to the south of the New Nangor Road (R134), Dublin 22; and on land within the townlands of Ballybane and Kibride within Profile Park, Clondalkin, Dublin 22 on an overall site of 3.79hectares. The development will consist of the demolition of the two storey dwelling (207.35sqm) and associated outbuildings and farm structures (348.36sqm); and the construction of 1 no. two storey data center with plant at roof level and associated ancillary development that will have a gross floor area of 12,893sqm that will consist of the following:

- 1 no. two storey data center (Building 13) with a gross floor area of 12,893sqm. It will include 13 no. emergency back-up generators of which 12 will be double stacked and one will be single stacked within a compound to the south-western side of the data center with associated flues that each will be 22.316m in height and 7 no. hot-air exhaust cooling vents that each will be 20.016m in height;
- The data center will include data storage rooms, associated electrical and mechanical plant rooms, loading bays, maintenance and storage spaces, office administration areas, and plant including PV panels at roof level as well as a separate house generator that will provide emergency power to

the admin and ancillary spaces. Each generator will include a diesel tank and there will be a refuelling area to serve the proposed emergency generators;

- The data center will have a primary parapet height of 14.246m above ground level, with plant and screen around plus a plant room above at roof level. The plant room has an overall height of 21.571m;

- Construction of an internal road network and circulation areas, with a staff entrance off Falcon Avenue to the east, as well as a secondary vehicular access for service and delivery vehicles only across a new bridge over the Baldonnel Stream from the permitted entrance as granted under SDCC Planning Ref. SD21A/0241 from the south-west, both from within Profile Park that contains an access from the New Nangor Road (R134);

- Provision of 60 no. car parking spaces (to include 12 EV spaces and 3 disabled spaces), and 34 no. cycle parking spaces;

- Signage (5.7sqm) at first floor level at the northern end of the eastern elevation of the data center building; and

- Ancillary site development works will include footpaths, attenuation ponds that will include an amendment to the permitted attenuation pond as granted to the north of the Baldonnel Stream under SDCC Planning Ref. SD21A/0241, as well as green walls and green roof. The installation and connection to the underground foul and storm water drainage network, and installation of utility ducts and cables, that will include the drilling and laying of ducts and cables under the internal road network within Profile Park. Other ancillary site development works will include hard and soft landscaping that will include an amendment to the permitted landscaping as granted under SDCC Planning Ref. SD21A/0241, lighting, fencing, signage, services road, entrance gates, and sprinkler tanks.

An Environmental Impact Assessment Report (EIA) has been submitted with this application. This application and EIA may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of South Dublin County Council during its public opening hours of 9am - 4pm, Mon-Fri, and a submission or observation may be made to South Dublin County Council in writing and on payment of the prescribed fee (€20.00) within the period of 5 weeks beginning on the date of receipt by South Dublin County Council of the application."

In summary, the proposed development would comprise the following:

- Demolition of the existing double-story dwelling and associated outbuildings and farm structures;
- Erection of DUB-13 along with associated emergency generators and flues with a gross floor area of approximately 12,893 m²; and
- Provision of 60 car parking spaces (includes 12 EV spaces and 3 disabled spaces) and 34 bicycle parking spaces provision.

The application redline boundary is shown in Figure 1.1 Chapter 1: Introduction and covers an area of 3.79 ha.

The proposed development site would deliver one data centre building: DUB-13. The detailed layout, scale, appearance, and landscaping of the proposed development are described within this chapter.

Accordingly, the figures that accompany the application are outlined in Table 4-1 and are presented in Figures 4-1 - 4-11.

Figure No.	Name	Description
4-1	Masterplan	Figure showing the layout of the Proposed Development
4-2	Proposed Ground Floor General Arrangement Plan	Figure showing the ground floor plan of the Proposed Development
4-3	Proposed First Floor General Arrangement Plan	Figure showing the first floor plan of the Proposed Development
4-4	Proposed Roof General Arrangement Plan	Figure showing the roof plan of the Proposed Development
4-5	Material Palette Detailing	Figure showing the material palette detailing
4-6	DUB-13 North-East and South-East Elevations	Figure showing the north-east and south-east elevations, material palette and façade of DUB-13
4-7	DUB-13 East and West Elevations	Figure showing the east and west elevations, material palette and façade of DUB-13
4-8	DUB-13 South (Generators) Elevation	Figure showing the south elevation with generators, material palette and façade of DUB-13
4-9	Landscape Masterplan	Figure showing the landscaping proposals
4-10	Selected Sections of the Landscape Masterplan	Figure showing selected sections of the landscape masterplan
4-11	Proposed Site Access Arrangement	Figure showing the vehicular, pedestrian and cycle access routes to the site

4.3 Proposed Development Site Arrangement

- 4.3.1 The site masterplan, detailing the site layout, is presented in Figure 4-1, overleaf.
- 4.3.2 As illustrated in Figure 4.1, DUB-13 would be constructed broadly orientated in the center of the site. DUB-13 would be screened by proposed extensive berms, planting, and landscaping to the north and east, to reduce the visual bulk of the data center from New Nangor Road and Falcon Avenue.
- 4.3.3 The proposed development would be oriented to allow the alignment of the Baldonnel Stream, located within the southern portion of the site, to remain as existing whilst also including measures to enhance the ecological value of the Baldonnel Stream. A box culvert would be installed at the proposed road crossing within the site.
- 4.3.4 The proposed landscaping in the north-western corner of the site, within the red line boundary, forms part of the proposed development. Proposed landscaping is consistent with the landscape approach adopted within the July 2022 DUB-1 permitted development, shown in green to the west of the red line boundary and to the north of the Baldonnel Stream.
- 4.3.5 DUB-13 would comprise a two-storey data center of 12,893 m². The data storage facility would include:
- Data storage rooms;
 - Associated electrical and mechanical plant rooms;

- Loading bay;
- Maintenance and storage space;
- Office administration areas;
- Plant at roof level;
- Sedum green roofs;
- 13 double stacked standby generators with integral fuel tanks for emergency power to the data halls, admin, and ancillary spaces, and with associate flues, each 22.3 m in height (95.95 m AOD), located to the south of the building;
- A house generator with integral fuel tanks that would provide emergency power to the admin and ancillary spaces; and
- A fuelling area to serve the proposed emergency generators.

4.3.6 The ground and first floor plans are shown in Figure 4-2 and 4-3 respectively, and the roof plan is shown in Figure 4-4.

4.3.7 New pedestrian and vehicle routes would be provided within the site. The proposed development would include the construction of an internal road network and circulation areas, dedicated pedestrian footpaths, provision of 60 car parking spaces (12 of which would be dedicated to electric vehicle (EV) charging, however all parking spaces would be ducted for future EV charging provision, and three for disabled users) and 34 bicycle parking spaces in double-stacked covered racks.

4.3.8 The two main entrances for the site would be from Falcon Avenue. One access/egress point would be from Falcon Avenue on the eastern border, for staff, pedestrians, and cyclists. HGVs, maintenance vehicles and delivery vehicles would access the site via the roundabout on Falcon Avenue, through the July 2022 DUB-1 permitted development, and cross over an attenuation pond and the Baldonnel Stream via a road crossing.

4.3.9 Entry gates would be separated to provide safe division from pedestrian, cycle, and car access from large HGVs and construction traffic during the phased development and ongoing maintenance of the data centers.