Intended for
Vantage Data Centers DUB11 Limited

Date
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Project Number
1620012232

VANTAGE DUBLIN DATA CENTER

VOLUME 1: MAIN ENVIRONMENTAL IMPACT ASSESSMENT REPORT

RAMBOLL

Volume 1: Main Environmental Impact Assessment Report

Table of Contents

1 INTRODUCTION

Introduction

1.1 This Environmental Impact Assessment Report (EIAR) has been prepared for Vantage Data Centers Dublin 11 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 two proposed data centers (the 'proposed development') on the Profile Park Site, Kilmatead (the 'site'), situated within the jurisdiction of South Dublin County Council (SDCC).

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 8.7 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 EIAR.

1.3 The EIAR 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.

1.4 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.

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

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.

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

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.

1.9 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 EIAR. 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.

1.10 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.

Development Context

Site Location and Context

1.11 The site is located at Irish grid reference O 03687 30780, within Profile Park, as shown in Figure 1.1.

1.12 Geographically, the site is located in Profile Park, approximately 10 kilometres (km) to the south-west of Dublin city centre, within South Dublin County.

1.13 The site's surrounding context is predominantly industrial to the north and west, agricultural to the south and west, with commercial and residential properties to the east and the Grange Castle Golf Club to the south-east (refer to Figure 1.2).

1.14 In terms of public transport, the closest railway station to the site is at Clondalkin/Fonthill approximately 3 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 4 km to the south-east of the site from which frequent tram services to Dublin city and beyond can be accessed.

1.15 Bus stops are located in east and west within 600 metres (m) of the site from which frequent routes operate between the site and Dublin city centre.

1.16 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. 30/2000.
[2] Government of Ireland, 2001-2019. Planning and Development Regulations 2001 (as amended). S.I. No. 600 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.

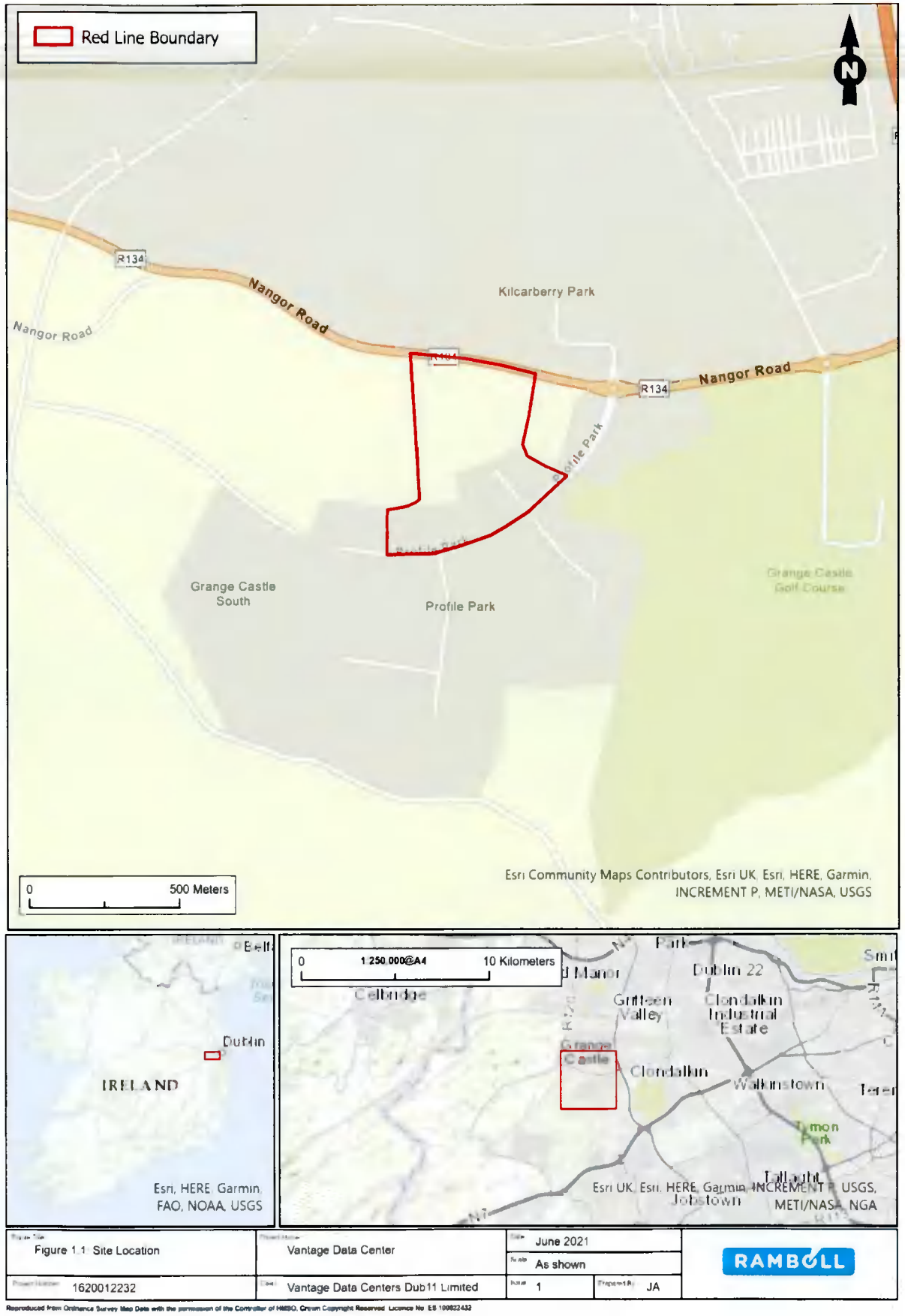

Figure 1.1: Site Location

Figure 1.2: Surrounding Land Uses Plan

Site Description

1.17 The site boundaries are defined by:

- New Nangor Road (R134) to the north, beyond is an industrial park;
- Agricultural fields to the east, beyond which is Profile Park Road and Grange Castle Golf Club;
- Profile Park Road and roundabout to the south; and
- A data center development on agricultural fields and Bolands Car Garage to the west.

1.18 The site is an irregular parcel of land and covers a total area of approximately 8.7 ha and lies at an elevation between approximately 71.47 and 76.11 m Above Ordnance Datum (m AOD).

1.19 As shown in the representative photographs of the site (Figure 1.3), the site currently comprises a single storey residential dwelling and agricultural fields. The existing Baldonnel steam runs through the site in a south-east to north-west direction, flowing towards the north-west.

1.20 The site is accessed from one access/egress point from Profile Park Road to the south, which leads to a roundabout on the R134 New Nangor Road.

Figure 1.3: Representative Photographs of the Site (left upper image looking north at residential dwelling onsite, left lower image looking north along Baldonnel Stream, centre looking south and right looking southeast at site boundaries)

Environmental Sensitivity

1.21 The environmental sensitivity's surrounding the site are presented in Figure 1.4.

1.22 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 2016-2022 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.

1.23 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 and to the east by Profile Park road and roundabout to the south.

1.24 The nearest surface water feature is the Baldonnel stream, located within the site. The proposed development involves the re-alignment of this stream (refer to Chapter 4: Proposed Development Description for more details).

1.25 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.

1.26 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) on the edge of the study area to the north.

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

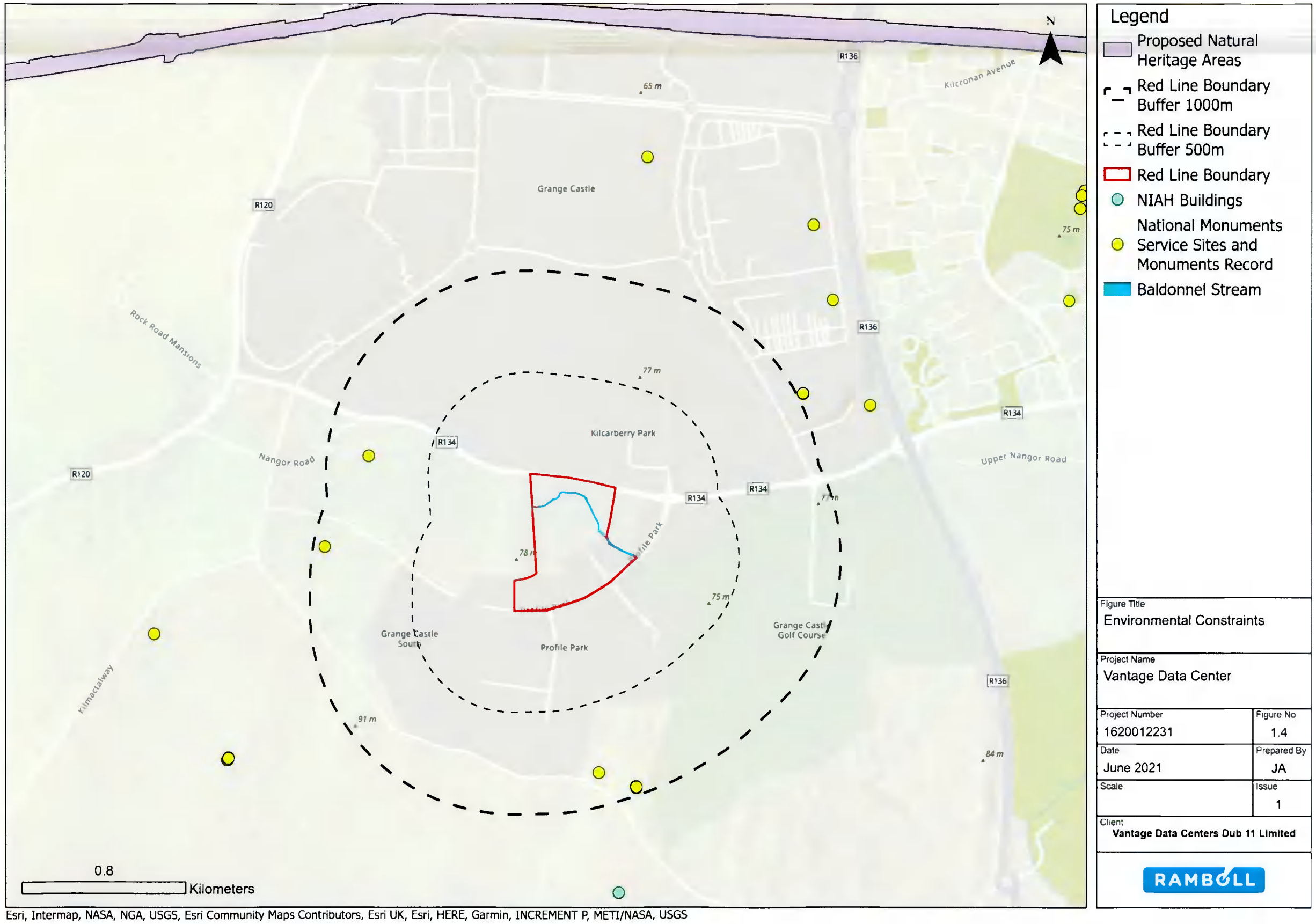

Figure 1.4: Environmental Constraints

Planning Context

Planning Policy Context

1.28 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)

1.29 At the national level, planning policy is contained within the National Planning Framework (NPF) 2018[5]. The Department of Housing Planning and Local Government, on behalf of the Government of Ireland, published the NPF in February 2018 and is the Government's high-level strategic plan for shaping the future growth and development of our country out to the year 2040.

National Development Plan 2018-2027 (2018)

1.30 Additionally, the National Development Plan 2018-2027 (NDP)[6] sets out the investment priorities that will underpin the implementation of the NPF, through a total investment of approximately €116 billion.

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

National Spatial Strategy 2002-2020 (2002)

1.32 The National Spatial Strategy (NSS) (2002)[7] is a 20-year coherent national planning framework for Ireland. It aims to guide the achievement of a better balance of social, economic and physical development across the country, supported by more effective and integrated planning.

Regional Planning Policy

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

1.33 The Regional Spatial and Economic Strategy (RSES) for the Eastern and Midlands Regional Assembly (EMRA)[8] 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."*

1.34 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 Development Plan 2016-2022 (2016)

1.35 The relevant statutory development plan for the site is the SDCC Development Plan 2016-2022[9], adopted in May 2016. 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 NSS and the Regional Planning Guidelines for the Greater Dublin Area (2010), to County level.

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

Emerging South Dublin County Development Plan 2022-2028 (Ongoing)

1.37 It should be noted that SDCC commenced a review of the SDCC Development Plan 2016-2022[10] on the 31 of July 2020 and will create a new Development Plan for the period 2022 to 2028 over the next two years.

1.38 For the purposes of this EIAR, the EIA has not considered this emerging plan further as it is not a material consideration in terms of planning until adopted.

Planning History

1.39 This section summarises the key planning history of most relevance to the site and provides background to the existing and consented land uses of the site.

1.40 The planning history of the site is presented in Table 1.1.

Table 1.1: Planning History of the Site

Application Number	Development	Decision	Date of Decision
SD20A/0124	• Demolition of existing single storey dwelling; • Construction of a Distribution Warehouse Building comprising warehousing and ancillary areas at ground floor and support offices, staff areas and plant across two floors; • Provision of car parking, cycle parking, security gatehouse, landscaping and boundary treatments (including security fencing and gates); and • All associated site development and services works (including diversion/culverting/reprofiling of existing stream on site)	Consented	November 2020

1.41 The extant permission on the site (Application SD20A/0124), consented in November 2020, will not be built out by the Applicant. The Applicant is seeking planning permission for the proposed development detailed below. In the instance that the proposed development does not come forward the Applicant would not build out the extant permission and the site would remain vacant.

[5] Government of Ireland, 2018. National Planning Framework (NPF) – Ireland 2040 Our Plan (February 2018) [online]. Available at: https://npf.ie/wp-content/uploads/Project-Ireland-2040-NPF.pdf [Accessed on 28/06/2021].
[6] Government of Ireland, 2020. National Development Plan 2018-2027 (last updated 26 November 2020) [online]. Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/37937/12baa8fe0dcb43a78122fb316dc51277.pdf#page=null [Accessed on 28/06/2021]
[7] Government of Ireland, 2002. National Spatial Strategy 2002-2020 [online]. Available at: https://www.gov.ie/en/publication/2e94f-national-spatial-strategy/ [Accessed on 28/06/2021].
[8] Eastern & Midland Regional Assembly, 2019. Regional Spatial & Economic Strategy 2019-2031 [online]. Available at: https://emra.ie/dubh/wp-content/uploads/2020/05/EMRA_RSES_1.4.5web.pdf [Accessed on 20/07/2021]

[9] SDDC, 2016. South Dublin County Council Development Plan 2016-2022 [online]. Available at: https://www.sdcc.ie/en/services/planning/development-plan/plan-2016-2022/ [Accessed on 28/06/2021].
[10] South Dublin County Council, 2021. South Dublin County Development Plan 2022-2028 [online]. Available at: https://consult.sdublincoco.ie/en [Accessed 19/07/2021]

Application Details

1.42 The description of the proposed development as stated on the application form is:

"The development will consist of the demolition of the abandoned single storey dwelling and associated outbuilding (206sqm); and 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 40,589sqm that will consist of the following:

- *1 no. two storey data center (Building 11) that will be located to the south of the site and will have a gross floor area of 24,667sqm. It will include 22 no. emergency generators located at ground floor level within a compound to the western side of the data center with associated flues that will be 22.3m in height;*
- *1 no. two storey data center (Building 12) that will be located to the north of the site, and to the immediate north of Building 11 and will have a gross floor area of 12,915sqm. It will include 11 no. emergency generators located at ground floor level within a compound to the western side of the data center with associated flues that will be 22.3m in height;*
- *Each of the two data centers will includes 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 for each facility 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 overall height of each data center apart from the flues and plant at roof level is c. 14.23m above the finished floor level;*
- *Construction of internal road network and circulation areas, with main entrance off Falcon Avenue to the south, as well as a secondary vehicular access off Legacy Drive to the south-west, both from within Profile Park; footpaths, provision of 144 no. car parking spaces, and 66 no. cycle parking spaces;*
- *Single storey step-up substation (38sqm) as well as 2 no. single storey switch substations (121sqm);*
- *AGI Gas Regulator compound that include 3 no. single storey buildings (134sqm);*
- *construction of a gas powered generation plant in the form of a 13m high single storey building with a gross floor area of 2,714sqm that will contain 10 gas generators with associated flues that will be 25m in height, and grouped in pairs and threes. The Gas Plant will be located to the west of Building 11;*
- *Ancillary site development works, that will include reorientation of the Baldonnel Stream, biodiversity management initiatives, attenuation ponds and 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, lighting, fencing, signage, services road, entrance gates, sprinkler tanks and pump room; and*
- *A temporary gas powered generation plant within a fenced yard containing 22 no. generator units in containers, each with associated flues (each 25m high), 12 transformers and 10 containers of controls to be located to the west of, and associated with the first phase of Building 11, and will be required for a period of up to 2 years if connection to the national grid is delayed. This temporary plant will not be built if the connection to the national grid is in place prior to the operation of Building 11".*

Applicant

1.43 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

Project Team

1.44 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 EIAR 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 DC	Development Manager/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
KFLA	Landscape Architects
Marston Planning	Planning Consultant
Ramboll	Environmental Permitting; EIA Project Manager and Coordinator; Environmental Consultants for Population and Human Health, Transport, Air Quality, Noise and Vibration, Water Resource and Flood Risk, Ecology, 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
Jensen Hughes Fire Consultants	Fire Engineering Consultant
O'Herlihy Access Consultants	Disability Access Consultant
Pinnacle	Structural and Civil Engineer, Flood Risk Consultant and Stream Realignment Design
Punch Consulting	Health and Safety Consultant
Found Digital	Fiber and Power Consultant

1.45 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.

Structure of the Environmental Impact Assessment Report

1.46 The EIAR 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.

Environmental Impact Assessment Report

Content of the EIAR

1.47 The required content of the EIAR is set out in Schedule 6 of the Regulations (2001 to 2021) 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 2021)

	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 subsoil 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 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 hydromorphological 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 2021)

	Required Information	Section of EIAR
	emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape	
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.	EIAR Chapters 6-15, Volume 1 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 2021)

	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. W here 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

1.48 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/EEC[1] (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/EC[2], 2003/35/EC[3] and 2009/31/EC[4], and the Directive and its amendments were codified in 2011 by Directive 2011/92/EU[5]. The current Directive 2014/52/EU[6] 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 Draft Guidelines on the information to be contained in Environment Impact Assessment Reports (2017)[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 Board 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 European Parliament and 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 European Parliament and 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, 2008/1/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. ISB.
[8] Later amended to: Government of Ireland, 2018. European Union (Planning and Development) (Environmental Impact Assessment) (Amendment) Regulations 2018. S.I. No. 646/2018. ISB.
[9] Government of Ireland, 2000. Planning and Development Act 2000 (as amended). S.I. No. 30/2000. ISB.
[10] Government of Ireland, 2001-2019. Planning and Development Regulations 2001 (as amended). S.I. No. 600 of 2001. ISB.
[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, 2017. Draft Guidelines on the information to be contained in Environmental Impact Assessment Report (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, 2019. Guidelines for Planning Authorities and An Bord Pleanala om 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 1 developments', include mainline railways, airports, waste facilities and large power stations. The proposed development is not such a Schedule 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 of the Regulations; AND
- EITHER it meets or exceeds the size threshold for that class of development in Schedule 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 developments'. The proposed development is below the 15 ha threshold under Part 2 of Schedule 5 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 EIAR 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 produced a formal EIA Scoping Opinion Request Report (the 'EIA Scoping Report'), which was presented to SDCC at the pre-application meeting on 23 June 2021. The EIA Scoping Report set out a description of the then emerging proposed development; the potential key environmental impacts and likely effects to be considered as part of the EIAR; as well as the proposed approach that would be adopted for the EIAR including the proposed scopes and assessment methodologies to predict the scale of effects and to assess the significance in each case.

2.16 A formal EIA Scoping Opinion was not provided by SDCC. A pre-application meeting was held on 23 June 2021 in which SDCC, the Applicant and Ramboll attended. The purpose of this meeting was to discuss the scope of the EIA and the proposed approach that would be adopted for the EIAR. Overall, SDCC confirmed their agreement to the scope of the EIA as presented in the EIA Scoping Report, with comments regarding to Traffic and Transport and LVHIA. Details of the revised approach for Traffic and Transport and LVHIA is contained within Volume 1, Chapter 7 and Volume 2 of this EIAR, respectively. The EIA has been undertaken on the basis of the EIA Scoping Report and comments provided through pre application consultation with the SDCC.

2.17 A second pre-application meeting was held on 19 July 2021 in which SDCC, the Applicant and Ramboll attended. The purpose of this meeting was to discuss the partial realignment of Baldonnel stream.

Scope of EIA

Non-Significant Issues

2.18 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 EIA Scoping process to determine the existing baseline conditions and as a result, the potential for significant effects to arise.

2.19 Accordingly, the 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 EIAR:

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

2.20 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 EIAR:

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

2.21 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 EIAR Volume.

Potentially Significant Issues

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

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

EIA Approach

Consideration of Alternatives

2.23 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.

2.24 Chapter 3: Design Evolution and Alternatives of this EIAR 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, as well as consultation comments.

2.25 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.

Baseline

2.26 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.

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

2.28 The proposed development has also been assessed against future baseline conditions as follows:

- For the air quality, traffic and transport and noise and vibration assessments, consideration has been given to two projected environmental conditions in the future:
  - 2022, the year of the most intensive demolition and construction works, in terms of the number of traffic flows;
  - 2023, the projected year of completion of Phase 1A of the proposed development, when the proposed development would become operational and would give rise to environmental effects; and
  - 2026, the projected year of completion of Phase 2B of the proposed development, when the proposed development would become fully operational.

2.29 The baseline conditions have been characterised by means of desk studies, site visits, surveys and modelling. As a result of the lockdown arising from the COVID-19 pandemic, alternative methods have been used to collect representative data, with more reliance placed on desk-based studies, which are considered equally robust.

Receptors

2.30 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 Baldonnel 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

2.31 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 6-15) 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.

2.32 The proposed development has been assessed in the EIAR, as defined by the following documents and materials:

- Detailed planning application drawings;
- Design Statement;
- Engineering Planning Report;
- 3D model; and
- Stream realignment design.

Sources of Proposed Development Information

2.33 In addition to the above, information on the proposed development has been drawn from the following application documents, as appropriate:

- Application form;
- Letters of consent;
- Newspaper notice;
- Site notice;
- Planning report;
- Architectural drawings;
- Design Statement;
- Screening Report for Appropriate Assessment;
- Energy Statement;
- Landscape master plan and drawings;
- Site Lighting Plan, modelling and details;
- Engineering Planning Report;
- Outline Construction and Environment Management Plan
- Flood Risk Assessment;
- Engineering Drawings; and

- Environmental Impact Assessment Report, Appendices and Non-technical Summary.

Assessment Methodology

General

2.34 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.

2.35 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.

2.36 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.

2.37 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.

2.38 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 EIAR. 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

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

- Demolition and construction stage (i.e. the proposed development being built out, with ongoing demolition and construction works on the site);
- Operation stage (i.e. when the proposed development is built out and operational in its entirety).

2.40 Although the demolition and construction programme of the proposed development would be sequenced over a two to six year period, the EIA has assessed and reported on the environmental effects of the operation stage as a whole. This is because no significant delay (i.e. of more than 12 months) is anticipated between the development phases and therefore a phase-by-phase assessment is not appropriate and has not been undertaken.

2.41 However, assessment of the phased delivery of the proposed development has been undertaken in the demolition and construction stage assessment based on the information provided in Chapter 5: Demolition and Construction Description of this EIAR 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

2.42 As noted earlier, the assessment of the proposed development has been carried out against the existing baseline conditions as described in Chapter 1: Introduction of this EIAR Volume, technical assessment chapters and supplemented by relevant existing and updated surveys.

2.43 However, in accordance with standard practice, Chapter 8: Air Quality and Chapter 9: Noise and Vibration of this EIAR Volume have carried out their assessments against 'future baseline' scenarios for the demolition and construction stage and operation stage.

Demolition and Construction Stage

2.44 The future baseline for the demolition and construction stage is the year of the most intensive demolition and construction works, in terms of the number of traffic flows, as set out in Chapter 5: Demolition and Construction Description of this EIAR Volume.

2.45 Accordingly, the following assessments scenarios have been considered:

- Scenario 1: Existing Baseline (2021);
- Scenario 2: Future Baseline (Q1 2022) Year of Peak Construction of Proposed Development; and
- Scenario 3: Future Baseline (Q1 2022) Year of Peak Construction of Proposed Development + Cumulative Development.

Operation Stage

2.46 The future baseline for the operation stage comprises the year in which the proposed development would be fully completed, occupied and operational.

2.47 Accordingly, the following assessment scenarios have been considered:

- Existing Baseline 2021;
- Demolition and Construction Baseline (2022 'Do Nothing');
- Demolition and Construction Baseline (2022 'Do Nothing') + cumulative development;

- Operational Year Baseline (2026 'Do Nothing') + cumulative development; and
- Operational Year Baseline (2026 'Do Nothing') + cumulative development + proposed development (2026 'Do Something').

2.48 The 'Do Nothing' scenario refers to the instance where the proposed development is not built out. If the proposed development is not brought forward the Applicant would not proceed with implementing the warehouse permission (SD20A/0124), for which permission is existing, as detailed in Chapter 1: Introduction of this EIAR Volume. Therefore, in this instance, the 'Do Nothing' scenario refers to the site remaining vacant.

2.49 The 'Do Something' scenario refers to the scenario where the proposed development is built out and operational in its entirety.

Mitigation

2.50 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.

2.51 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 EIAR 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.

2.52 Within each technical chapter of this EIAR, 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 EIAR.

2.53 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 EIAR, 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

2.54 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.

2.55 As a general rule, the EIA assesses the effects that are likely to arise as a consequence of a potential impact/change to environmental receptors following the application/consideration of embedded mitigation measures.

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

Table 2.1: 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).
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 fifteen years.
Long term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty 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.

Table 2.1: Description of Effects

Effect Characteristic	Description
Cumulative effects	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
'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).

2.57 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.

2.58 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.

2.59 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.

2.60 Throughout the EIAR, 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

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

2.62 There is no prescriptive guidance on the methodology for the assessment of cumulative effects in Ireland. However, the Institute of Environmental Management & Assessment (IEMA) Guidelines[18] 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.

2.63 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 EIAR chapter.

Intra-Project Cumulative Effects

2.64 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.

2.65 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.

2.66 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.

2.67 It should be noted that only residual effects that are minor, moderate or major in scale have been considered within this assessment, as negligible effects are, by definition, imperceptible in their nature. 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 EIAR Volume) and not within each of the technical assessment chapters. This avoids unnecessary duplication and repetition and presents a proportionate approach.

2.68 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 EIAR 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

2.69 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.

2.70 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.

2.71 Each technical EIAR 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.

[18] IEMA, 2004. Guidelines for Environmental Impact Assessment. IEMA.

2.72 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 consented/approved or have resolution to grant or are currently at early stage of demolition/construction; and
- are within 1km of the application site

2.73 The cumulative developments have been quantitatively assessed on a topic by topics 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.

2.74 The location of the cumulative developments considered in the EIAR is shown in Figure 2.1 overleaf and the description of each cumulative developments, is summarised in Table 2.3.

2.75 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 2.3: Cumulative Development Descriptions

No.	Address [Application Reference]	Planning Application Description	Application Status
1	Microsoft - Grange Castle Business Park, Nangor Road, Clondalkin, Dublin 22 [SD20A/0283]	Demolition of existing single storey vacant house, garage and outhouse (total gross floor area (GFA) c.291.2sq.m) and removal of existing temporary construction car park; Construction of a single 1-4 storey Central Administration Building and 2 2-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, Baldonnel, Dublin 22 [SD20A/0121]	The development will consist of the demolition of the existing two storey dwelling of Ballybane and associated farm buildings (565sq.m) and the construction of 3 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 80,269sq.m on an overall site of 16.5hectares.	Grant Permission – 09/09/2020 Construction in progress
3	UBC Properties -Grange Castle South Business Park, Dublin 22 [An Bord Pleanála Reference – 308585]	Clutterland 110kV GIS Substation building and 2 underground single circuit transmission lines.	Approved 07/05/21
4	Digital Reality Trust - Profile Park, Baldonnel, 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 3.85 hectare 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) 2 data halls 2137 sq.m (increase of 180sq.m), (ii) offices/reception 478sq.m (decrease of 190 sq.m), (iii) support space/staff facilities and internal plant with a floor area of 953sq.m (increase of 84sq.m), (iv) external plant of 1,777sq.m (footprint increase of 35sq.m).	
5	Cyrus One - Grange Castle Business Park, Clondalkin, Dublin 22 [SD18A/0134]	Demolition of the existing single storey house of 'Erganagh' 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 35,426sq.m on an overall site of 9.2 hectares.	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 Reg. Ref. SD18A/0134 - ABP Ref. ABP-302813-18 and the temporary substation	Permission granted under SD19A/0300
7	Cyrus One - Grange Castle South Business Park, Baldonnel, Dublin 22 [An Bord Pleanála Ref - 309146]	2 no. 110kV transmission lines and a 110kV Gas Insulated Switchgear (GIS) substation	Due to be decided
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 125 MW with associated balance of plant, equipment and buildings.	Due to be decided

2.76 The application by Centrica Business Solutions, for the construction of a gas fired power plant, was submitted at the end of June 2021. At the time of writing the publicly available information on the SDCC planning portal is limited. On this basis, the cumulative effects associated with this development have been assessed on a qualitative basis with EIAR Chapter 8: Air Quality and EIAR Chapter 9: Noise and Vibration.

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

2.78 Both of these developments fall under the control of the Applicant and therefore their development programmes have been used to inform the defined existing and future baselines scenarios as discussed previously.

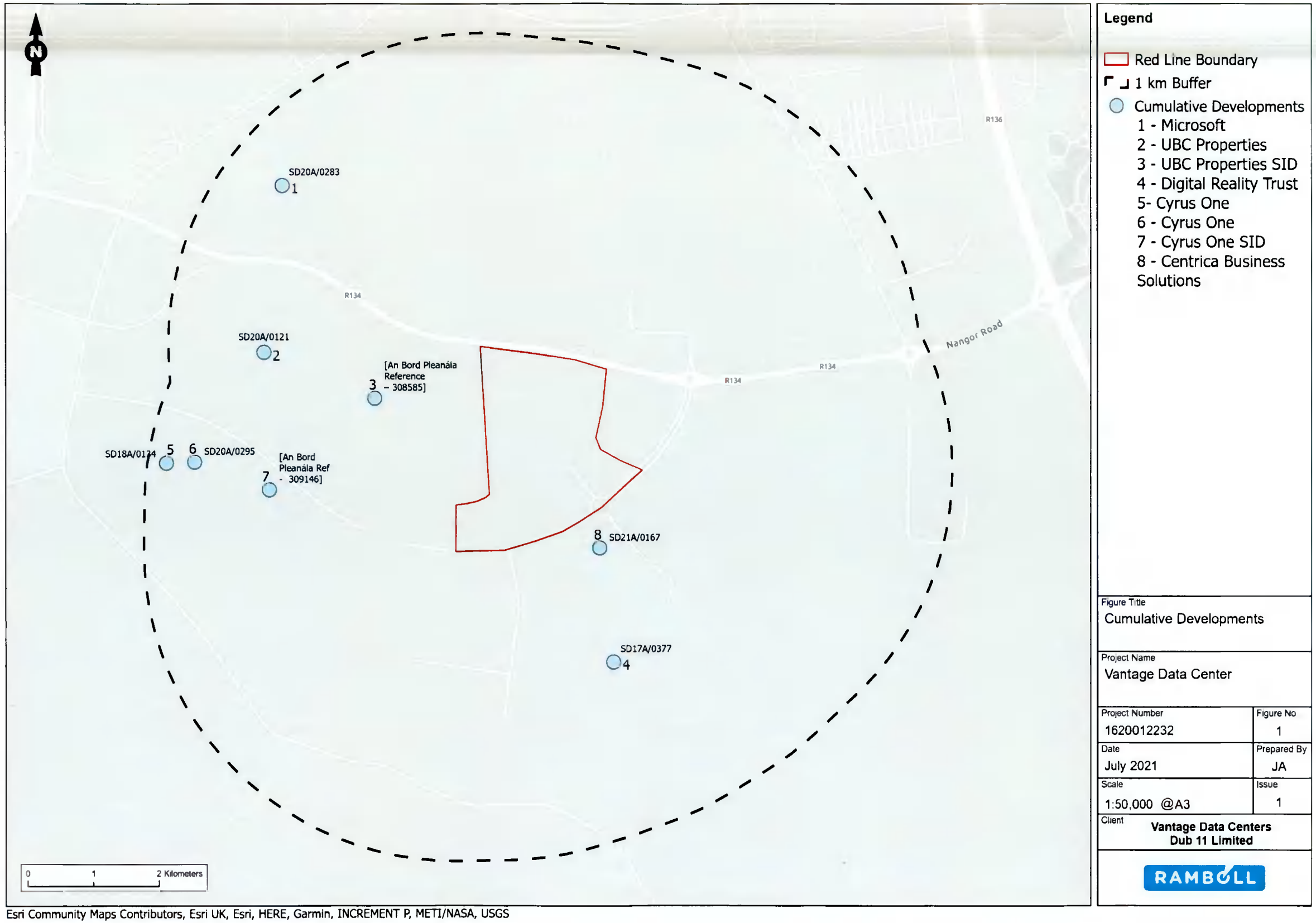

Figure 2.1: Cumulative Development Locations

Assumptions and Limitations

2.79 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 EIAR.

- 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 assessments contained within each of the technical assessments of this EIAR Volume and within EIAR 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 EIAR Volume 1 and within EIAR 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 EIAR Volume are implemented.
- The assessments contained within the Chapter 8: Air Quality and Chapter 9: Noise and Vibration of this EIAR 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 and construction works across the site would take place substantially in accordance with the phasing and programme of works described in Chapter 5: Demolition and Construction Description of this EIAR 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 EIAR preparation (mid-2021) unless otherwise stated in the technical assessment chapter. The majority of baseline survey work was undertaken during the COVID-19 pandemic; therefore, where relevant, pre-COVID-19 data has been used to compare and supplement collected data. In respect of transport, the data presented is the best information available, given traffic surveys were not possible because of the 2020/2021 COVID lockdown restrictions, derived by adopting the following approach:
  - Baseline Traffic Flows have been taken from surveys undertaken to inform the Traffic Impact Assessment for submitted Grange Castle Business Park South, Baldonnel, Dublin 22 (Ref SD20A/0121).
- While it is widely acknowledged the COVID-19 pandemic has seen an increased prevalence of home-working and reduced traffic, noise and emissions, this is expected to gradually reverse when lockdown is lifted. It is not possible to predict what may change in the future, so it is considered that assessments based on or supplemented by pre-COVID-19 baseline assessments are reasonable and representative. In actual fact, the main difference would be to traffic flows, where pre-COVID19 baselines are worse, and therefore the assessments are based on reasonable worst-case scenarios.
- The EIAR 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.

Technical Assessment Chapters

2.80 A consistent approach to the presentation of EIA findings in the EIAR 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 baseline conditions;
- description of mitigation that has been embedded into the proposed development's design;
- the identification and assessment of the potential impacts and likely effects arising during the demolition, construction and operation of the proposed development taking into account any embedded mitigation measures;
- description of additional opportunities for mitigation or enhancement to reduce the significance of any negative environmental effects, including the requirements for post-development monitoring; and
- assessment of the residual environmental effects and an evaluation of their significance against defined criteria.

2.81 Each environmental topic considered in the EIA has been assigned a separate chapter in EIAR Volume 1 (Chapter 6-15) with the exception of the landscape, visual and cultural heritage impact assessment which is presented separately in EIAR 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 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 EIAR Volume) and an assessment of inter-project cumulative effects; and
- Summary of Assessment– brief summary of the technical assessment.

3 ALTERNATIVES AND DESIGN EVOLUTION

Introduction

3.1 The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018[1,2] requires that information provided by the developer in an EIAR shall include a description of the reasonable alternatives studied by the developer[3]. 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.

3.2 This chapter of the EIAR 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.

3.3 The following three alternatives were considered:

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

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

Development Objectives

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

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

- Generation of employment;
- Provision of 12 data modules;
- Increase biodiversity; and
- Increase capacity and resilience of the local grid network.

Development Considerations

Policy Considerations

3.7 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) 2018-2027 (2018)[5];
- National Spatial Strategy (NSS) 2002-2020 (2002)[6];
- 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"*; and
- South Dublin County Council (SDCC) Development Plan 2016-2022[8] – in particular Objective EE: *"To provide for enterprise and employment related uses"*.

3.8 The proposed development has had consideration for the following emerging policy and guidance:

- SDCC South Dublin County Development Plan 2022-2028[9].

Site Considerations

3.9 The following site considerations informed the design process:

- Sensitive receptors adjacent to the site (in particular the residential property in the vicinity of the site);
- Site allocations under aforementioned planning policies;
- On-site environmental features, such as Baldonnel stream and existing trees.

Environmental Considerations

3.10 The design has given consideration to the following primary environmental constraints:

- Sensitive receptors adjacent to the site (in particular with adverse air quality and noise);
- Baldonnel Airfield Height Limit for the area;
- On-site trees;
- Flood risk at the site (primarily from the blocked downstream culvert) and infiltration associated with the Baldonnel stream;
- Biodiversity of the site and Baldonnel stream; and
- Water quality of the Baldonnel stream.

Consultation

3.11 As part of the design process, pre-application consultation was held with SDCC on 23 June 2021, in which a range of issues have been identified which have influenced the final layout of the proposed development. The pre-app comprised a presentation of the basis of design of a large data center appropriate to the lease of large modules of data space to major hyperscale customers.

3.12 Site constraints including flood risk, stormwater attenuation, nearby noise-sensitive receptors, preservation of major hedgerows, and the current warehouse consent were discussed during the pre-app.

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[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. 646/2018. 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://npf.ie/wp-content/uploads/Project-Ireland-2040-NPF.pdf [Accessed on 28/06/2021].
[5] Government of Ireland, 2020. National Development Plan 2018-2027 (last updated 26 November 2020) [online]. Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/37937/12baa8fe0dcb43a78122fb316dc51277.pdf#page=null [Accessed on 28/06/2021].
[6] Government of Ireland, 2002. National Spatial Strategy 2002-2020 [online]. Available at: https://www.gov.ie/en/publication/2e94f-national-spatial-strategy/ [Accessed on 28/06/2021].
[7] Eastern & Midland Regional Assembly 2019. Regional Spatial & Economic Strategy 2019-2031 [online]. Available at: https://emra.ie/dubh/wp-content/uploads/2020/05/EMRA_RSES_1.4.5web.pdf [Accessed on 20/07/2021]
[8] SDDC, 2016. South Dublin County Council Development Plan 2016-2022 [online]. Available at: https://www.sdcc.ie/en/services/planning/development-plan/plan-2016-2022/ [Accessed on 28/06/2021].
[9] South Dublin County Council, 2021. South Dublin County Development Plan 2022-2028 [online]. Available at: https://consult.sdublincoco.ie/en [Accessed 19/07/2021]

3.13 The alignment of the Baldonnel Stream and measures proposed to mitigate any negative impacts were discussed. The SDCC team focused on this as a significant obstacle to the scheme both from a policy and an environmental standpoint.

3.14 The design team were tasked to respond to the consultation and look in more detail at the issues related to the stream. A second pre-application meeting was held with SDCC on 19 July 2021 in which the stream diversion was discussed. The key elements of the meeting included:

- A summary of the ecology investigations since the last meeting and more detailed landscape and water management proposals;
- SDCC requested biodiversity management and landscaping proposals and an assessment of alternatives that could avoid the stream realignment.

3.15 The design process has therefore been an iterative one, as the design team has sought to respond to these issues. This has produced 'alternatives' or different ways in which the development objectives could be feasibly achieved on-site. The resulting proposed development is discussed in detail in Chapter 4: Description of Development.

3.16 Further consultation with the SDCC and the public would be undertaken post submission.

Alternatives

Do-Nothing Alternative

3.17 The 'Do Nothing' scenario is a hypothetical alternative conventionally considered, albeit briefly, in EIA as a basis for comparing the development proposal under consideration.

3.18 For the purposes of the EIAR, the 'Do Nothing' scenario is where no development occurs on the site and therefore remains vacant and unchanged.

3.19 When considering the 'Do-Nothing' alternative, the following is noted:

- The site consists of largely unused agricultural land and the site needs to be re-purposed.
- The site is located within Profile Park, on current agricultural land, which is designated in the SDCC Development Plan 2016-2022: 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 previous landowners secured planning consent in November 2020 for the development of a distribution warehouse (SDCC planning reference: SD20A/0124; refer to Table 1.1 in Chapter 1: Introduction of this EIAR Volume for further information).
- The proposed development, consisting of two data center buildings, would sit within a cluster of data centres within profile park.

3.20 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.

3.21 The Applicant has therefore not considered the 'Do Nothing' alternative further.

Alternative Sites

3.22 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 located within an area identified in SDCC's Development Plan 2016-2022 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[10] and fibre suppliers, that suit the needs of the site and is thus an ideal location for the proposed development to be situated;
- There is a long-standing agreement for a future EirGrid substation to be located to the immediate south of the site;
- There is no evidence of site contamination; and
- The level terrain is suitable for large floorplate buildings.

Alternative Land Uses

3.23 The proposed land uses have been informed by prevailing local and regional policy (as previously stated). Accordingly, no other land uses were considered outside of the proposed development.

3.24 The site has an extant permission for a distribution warehouse (SDCC planning reference: SD20A/0124); however, due to the site utilities connections and the surrounding uses the Applicant does not propose to build out the extant permission. Additionally, the viability of building the data center inside the envelope of the warehouse consent was investigated and rejected due to the limited developable floorspace, and therefore the insufficient number of data modules. In the instance that the client utilised the envelope of the warehouse consent it would only be possible to fit in 60% of the required data modules.

Alternative Layouts, Designs and Design Evolution

3.25 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. Commentary has been provided where changes have been informed by (e.g.) pre-application consultation and/or environmental considerations.

3.26 A series of concept options were explored throughout the design development process. These sought to define the most appropriate design response for the site.

Site Arrangement

3.27 As part of the initial design process, the design team carried out a 'test-fit' exercise to assess the capacity of the site based on maximum utilisation or the irregular shaped site, as shown below in Table 3.1: Test-fit exercise. The design presented in the pre-application submission was the outcome of this exercise.

[10] The off-site ESB sub-station to the south of the site was approved under separate Strategic Infrastructure Development (SID) application to serve the proposed development and has potential capacity to serve other sites/uses, as the current grid does not have enough capacity.

3.28 As displayed in Table 3.1, as part of the 'test-fit' exercise numerous alternative layouts were considered by the Applicant and were ranked on feasibility using a Pass/Fail system against a 'business case' which needed to be achieved. For the 'business case' to be achieved the viability of each site depends on achieving a specific number of modules. The 'business case' complexity is further compounded by the need to include an onsite power plant to meet EirGrid's requirements proposed under the DCC OPP. In the case of the proposed development the number of modules required is 12 to pass feasibility.

3.29 The addition of on-site power generation to support the national utility capacity both reduces the space available for data centers within the site and raises the viability threshold for the number of data modules.

3.30 The outcomes of each 'test-fit' exercise are also summarised.

Table 3.1: Test-fit exercise

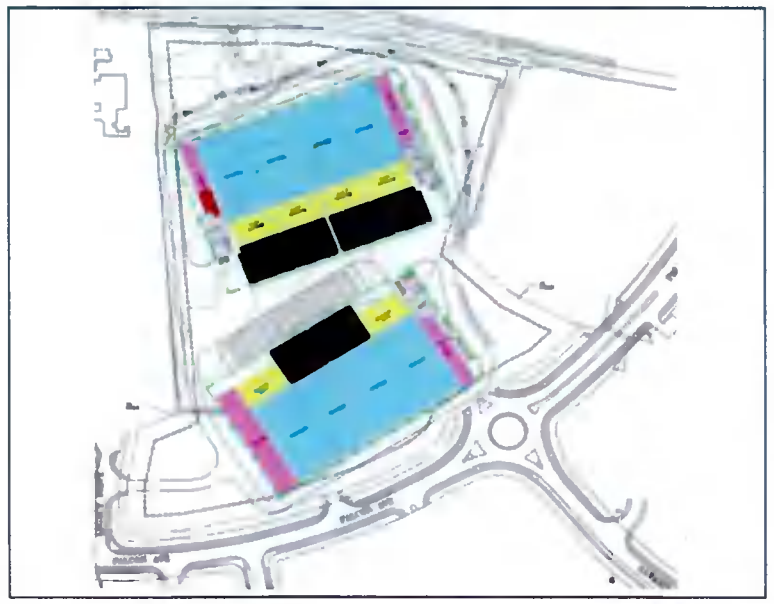
Step	Layout	Outcome	Result
1 – Test Consented Scheme		The standard design superimposed on the consented warehouse scheme yields an 8-hall data center.	**Fail –** Not enough data space to meet business case.
2 – Maximum Site Coverage		Spatial exercise to see how many halls can fit on the site by building over the stream and using standard design.	**Fail -** Achieves 16 modules but without space for parking and onsite power plant as required by EirGrid.

Table 3.1: Test-fit exercise

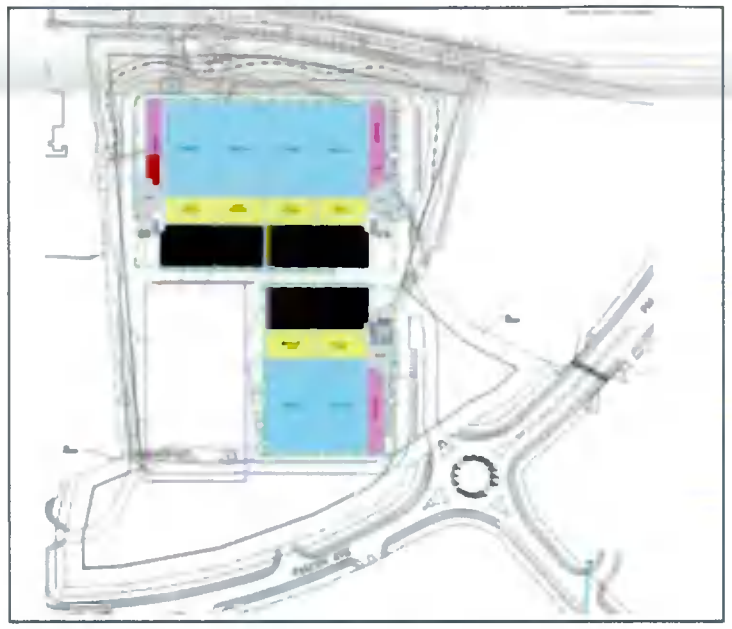
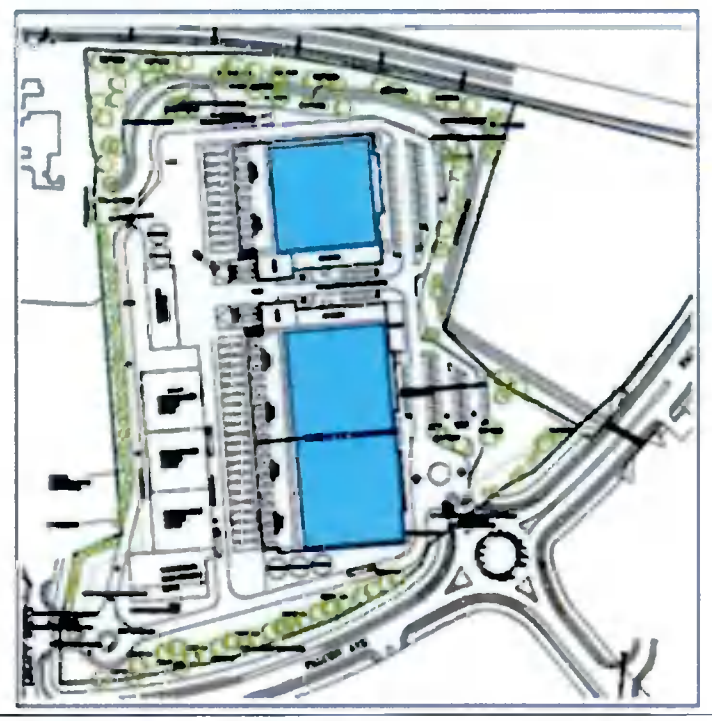
3 – Maximum Including Power Plant		Spatial exercise to see how many halls can fit on the site using standard design and with space for a power plant.	**Pass** – Achieves 12 data modules to meet the business case with space for a power plant
4 – Site Plan Development		Design Evolution using CAD and with power plant. Stream re-aligned. Plant placed away from sensitive receptors.	**Fail** – Meets the business case but concerns raised by SDCC in pre-app meeting, notably around watercourse and loss of biodiversity.
5 – Options to avoid stream diversion	Not feasible	Options tested to see if stream diversion can be avoided while still meeting the design brief.	**Fail -** None of the options evaluated for retaining the current position of the watercourse achieved the business case for the site. It should be noted that the capital cost of the power plant means a minimum of 12 modules are essential. The only way to reduce the footprint enough to free space for the stream is to increase the number of storeys which conflicts with the general 20 m height limit in the Local Plan and creates visual impact issues.

Table 3.1: Test-fit exercise

6 – Refinement of Design		Intensive design work on landscaping and ecology aspects of the scheme to create a new watercourse that is longer, wider and richer than the existing. Stormwater management to reduce below ground attenuation and lower flood risk.	**Pass** – Best outcome to balance business drivers with biodiversity gains, flood risk reduction and long-term site improvement.

3.31 The layout is further influenced by the addition of the Power Generation Plant to provide primary power to supplement the EirGrid utility supply and to strengthen the EirGrid capacity. Transforms are placed on the roof to reduce the footprint of the electrical plant.

Flood Risk and Rainfall

3.32 The site is at risk of flooding due to the location of the Baldonnel stream and the culvert. The design has sought to minimise flood risk by increasing infiltration rates with the re-aligned stream design.

3.33 The design of the proposed development would incorporate above ground attenuation ponds providing SuDs. The majority of the southern data hall rear roof area and generator yard areas would collect rainwater and discharge into a new on-site attenuation pond.

3.34 The realignment of the Baldonnel stream has been designed to improve surface water attenuation for northern section of the site. Expanding the capacity of the stream to avoid culverting any part of the stream onsite would enable increased attenuation with limited underground storage to limit flow discharge rates.

3.35 Furthermore, the northern section of the site would be used for flood water compensation to aid the downstream culvert. Additionally, below ground attenuation tanks would be implemented to the rear of the northern building, generator yard and service area to further attenuate storm water. The extant permission on site proposed to use a higher volume of below ground attenuation. The proposed development would utilise the stream realignment and northern section of the site to reduce the need for below ground attenuation.

3.36 Where hardstanding is required (such as car parking), it would be designed to reduce flood risk. Car parking areas have been designed to collect and attenuate rainwater from the front road areas of the data halls.

Landscaping

3.37 Tress located in the centre of the site would be removed as to not limit the layout of the site and building positions. Mature tress located near to the border of the site are being retained as part of the landscape masterplan. The loss of tress from the centre of the site would be mitigated for with a net gain of trees planted, hedgerow planting and maintenance. 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.

Site Access

3.38 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.

3.39 The site would be accessed via two entry points on Profile Park road. The south west corner entrance would be utilised by servicing vehicles and HGV deliveries. Cars would access the site from the south east corner.

Residential Receptors

3.40 The site is adjacent to a residential property to the northeast, which has informed the position and orientation of the proposed development. Generators and other loud noise and exhaust emitting machinery has been moved to the west of the site, to minimise disturbance to residential properties.

3.41 Likewise, the flues associated with the proposed development are located to the west of the site, situated away from the residential property. Additionally, low-emission equipment with CFD modelling to validate the design will be used.

Policy Objective EE

3.42 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

Introduction

4.1 This chapter of the Environmental Impact Assessment Report (EIAR) 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 EIAR Volume 1 (Chapters 6-15) and EIAR Volume 2.

4.2 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.

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

4.4 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;
- Energy Statement;
- Site Lighting Plan; and
- Flood Risk Assessment.

Planning Application

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

"The development will consist of the demolition of the abandoned single storey dwelling and associated outbuilding (206sqm); and 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 40,589sqm that will consist of the following:

- *1 no. two storey data center (Building 11) that will be located to the south of the site and will have a gross floor area of 24,667sqm. It will include 22 no. emergency generators located at ground floor level within a compound to the western side of the data center with associated flues that will be 22.3m in height;*
- *1 no. two storey data center (Building 12) that will be located to the north of the site, and to the immediate north of Building 11 and will have a gross floor area of 12,915sqm. It will include 11 no. emergency generators located at ground floor level within a compound to the western side of the data center with associated flues that will be 22.3m in height;*
- *Each of the two data centers will includes 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 for each facility 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 overall height of each data center apart from the flues and plant at roof level is c. 14.23m above the finished floor level;*
- *Construction of internal road network and circulation areas, with main entrance off Falcon Avenue to the south, as well as a secondary vehicular access off Legacy Drive to the south-west, both from within Profile Park; footpaths, provision of 144 no. car parking spaces, and 66 no. cycle parking spaces;*
- *Single storey step-up substation (38sqm) as well as 2 no. single storey switch substations (121sqm);*
- *AGI Gas Regulator compound that include 3 no. single storey buildings (134sqm);*
- *Construction of a gas powered generation plant in the form of a 13m high single storey building with a gross floor area of 2,714sqm that will contain 10 gas generators with associated flues that will be 25m in height, and grouped in pairs and threes. The Gas Plant will be located to the west of Building 11;*
- *Ancillary site development works, that will include reorientation of the Baldonnel Stream, biodiversity management initiatives, attenuation ponds and 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, lighting, fencing, signage, services road, entrance gates, sprinkler tanks and pump room; and*
- *A temporary gas powered generation plant within a fenced yard containing 22 no. generator units in containers, each with associated flues (each 25m high), 12 transformers and 10 containers of controls to be located to the west of, and associated with the first phase of Building 11, and will be required for a period of up to 2 years if connection to the national grid is delayed. This temporary plant will not be built if the connection to the national grid is in place prior to the operation of Building 11"*

4.6 In summary, the proposed development would comprise the following:

- Demolition of the existing single-story dwelling and outbuilding, approximately 206 sqm;
- Erection of the two data centers along with associated emergency generators and flues with a gross floor area of approximately 40,589sqm
- Provision of 144 car parking spaces and 66 bicycle parking spaces provision;
- Construction of a gas-powered generation plant; and
- Realignment of the Baldonnel Stream.

4.7 The application redline boundary is shown in Figure 1.1 Chapter 1: Introduction and covers an area of approximately 8.7 ha.

4.8 The proposed development site is divided into two plots, which would deliver two data center buildings: the southern (Building DUB 11) and northern (Building DUB 12) data centers. The detailed layout, scale, appearance and landscaping of the proposed development are described within this chapter.

4.9 Accordingly, the figures that accompany the application are outlined in Table 4.1 and are presented in Figures 4.1 – 4.17.

Table 4.1: Schedule of Figures

Figure No.	Name	Description
4.1	Masterplan	Figure showing the layout of the Proposed Development
4.2	Material Palette Detailing	Figure showing the material palette detailing
4.3	DUB11 North	Figure showing the elevation, material palette and façade from the north
4.4	DUB 11 East	Figure showing the elevation, material palette and façade from the east
4.5	DUB11 South	Figure showing the elevation, material palette and façade from the south
4.6	DUB11 West	Figure showing the elevation, material palette and façade from the west
4.7	DUB12 North	Figure showing the elevation, material palette and façade from the north
4.8	DUB12 East	Figure showing the elevation, material palette and façade from the east
4.9	DUB12 South	Figure showing the elevation, material palette and façade from the south
4.10	DUB12 West	Figure showing the elevation, material palette and façade from the west
4.11	Phasing	Figure showing the phasing of the proposed development
4.12	Landscape Masterplan	Figure showing the landscaping proposals including the Baldonnel Stream realignment
4.13	Access Arrangements	Figure showing the vehicular, pedestrian and cycle access routes to the site

Proposed Development

Site Arrangement

4.10 The site masterplan, detailing the site layout, is presented in Figure 4.1, overleaf.

4.11 As illustrated in Figure 4.1, the two data centers would be constructed across the site, north to south to reduce the visual bulk of the data center facing New Nangor Road, it would be set back and screened by the extensive berms and planting along the new watercourse of the Baldonnel Stream.

4.12 The proposed data storage facilities are arranged into two data centers: The northern data center (DUB12) and the larger southern data center (DUB11). The southern data center would be built in two phases of equal capacity, referred to as DUB 11.1 and DUB 11.2, as illustrated in Figure 4.1.

4.13 Each of the data storage facilities would include:

- Data storage rooms;
- Associated electrical and mechanical plant rooms;
- Loading bays;
- Maintenance and storage space;
- Office administration areas;
- Plant at roof level;
- Standby generators with integral fuel tanks for emergency power to the data halls;
- A house generator with integral fuel tanks for each facility that would provide emergency power to the admin and ancillary spaces; and
- A fuelling area to serve the proposed emergency generators.

4.14 New pedestrian and vehicle routes would be provided within the site. The proposed development would involve the construction of an internal road network and circulation areas, dedicated pedestrian footpaths, provision of 144 car parking spaces (14 of which would be dedicated to electric vehicle (EV) charging and 10 for disabled parking) and 66 bicycle parking spaces in three blocks of double-stacked covered racks.

4.15 The two main entrances for the site would be from Falcon Avenue in Profile Park for staff, pedestrians and cycles and from Legacy Drive in Profile Park for HGVs, maintenance vehicles and construction access. The entry gates are separated to provide safe division from pedestrian, cycle and car access from large heavy duty vehicles (HGV) and construction traffic during the phased development and ongoing maintenance of the data centers.

Southern Data Center

4.16 The southern data center (DUB 11) would comprise of a two storey data center of 24,667 sqm. The southern data center would include 22 standby emergency generators with associated flues, each 22.3 m in height, located to the west of the building.

Northern Data Center

4.17 The northern data center (DUB 12) would comprise a two-storey data center of 12,915 sqm. The northern data center would include 11 standby emergency generators with associated flues, each 22.3 m in height, and would be located to the west of the building.

4.18 The Baldonnel Stream runs through the northern section of the site. To facilitate the proposed development the Baldonnel Stream would be realigned creating areas of flood compensation and increasing biodiverse habitat around the eastern and northern perimeter of the site.

Gas Generation Plant

4.19 To facilitate the proposed development a gas-powered generation plant, would be constructed to the west of the data centers. The gas-powered generation plant would consist of a 14 m high single storey building with a gross floor area of 2,714 sqm. Ten gas generators with associated flues, each 25 m in height, would accompany the gas generation plant, arranged in pairs and threes.

4.20 The main power generation supply would be located adjacent to the data center facility and generate power to offset the full electrical demand of the facility from EirGrid.

Single Storey Switch Room

4.21 Two single storey switch rooms of 60 sqm, would provide a medium voltage (MV) connection to the proposed development. The proposed switch rooms would include works to install new underground ducting and cables within a new trench that would extend approximately 450 m south from the proposed switch room to the proposed EirGrid ESB substation to the south of the application site.

4.22 In the event of a local grid network failure or demand spike, the gas-powered generation facility on-site would have the capacity to provide equal energy to the amount consumed on site and as such would support the local power infrastructure requirements.

Temporary Gas Generation Plant

4.23 Whilst the connection to the EirGrid is implemented the data center is proposed to be powered using temporary gas generators that would be located in the west of the site. These would be in operation for 24 hours a day for an anticipated time period of up to 2 years. The plant would comprise 21 gas generators with flue stacks up to 25m in height, three 1MW battery storage modules that would only be used for stabilising and providing a spinning reserve for the gas plant and two back up diesel generator for very limited usage in the event of a loss of power from the gas generators.

Power Generation Plant and Connection

Main Supply

4.24 The power solution would include two sets of five to six reciprocating engine generators and all supporting equipment. Natural gas is to be provided as the primary fuel source by way of underground utility. The ten to twelve engine generators would function to provide power supplies to the regional utility grid, EirGrid under the DCC OPP regulations

4.25 Equipment would be predominantly located indoors except for the lube oil tanks, lube oil pumps, air-cooled radiators, and exhaust fans. A control room would be in the new Facility and would include workstations for the (engine) generators and balance of plant equipment. A new plant control system would be provided to integrate the generators and balance of plant equipment.

4.26 The Plant's generator units would use medium voltage cabling in conduit/tray to make the connections. The Power Generation Facility service loads would derive from two single ended 400V switchgear lineups that would serve various panelboards and motor control centers throughout the plant. Two new 11 kV/400 V transformers, power by the new 12 kV switchgear line ups, would serve the 400 V gear and plant loads.

4.27 The Power Utility would provide two 110 kV lines to source the substation. Two 100 MVA 110/20 kV Transformers would be installed at the EirGrid substation across the road from the main site to provide two independent 20 kV feeds to two separate prefabricated switchgear buildings. Two 20kV sectionalizing breakers would be installed in each of the switchgear buildings to provide a means of load transfer in the event of a transformer outage. Each 20 kV switchgear building would provide eight underground feeds to the Data Center for complete redundancy which would run to the west of the buildings.

Back-Up Supply

4.28 In the event of a loss of power supply, diesel powered back-up generators would be provided to maintain power supply. The back-up generators are designed to automatically activate and provide power to the plant pending restoration of mains power. A total of 33 generators are provided which are fed by dedicated bunded diesel storage tanks within each building. Fuel is stored under each genset in a double-walled belly tank with a capacity of 18 cubic meters (cu.m.). The back-up generators would be subject to periodic testing to ensure they remain serviceable and are only anticipated to be required in an exceptional event e.g. grid blackout.

Land Use

Area Schedule

4.29 The summary floorspace schedule for the proposed development is presented in Table 4.2 including the quantum of each use to be delivered across the proposed development.

Table 4.2: Floorspace Schedule

Use	Gross External Area (GEA) m²
North Data Center (including ancillary floorspace e.g. offices but excluding plant/substation) (DUB12)	12,915
South Data Center (including ancillary floorspace e.g. offices but excluding plant/substation) (DUB11)	24,667
Gas Powered Generation Plant	2,714
Switch Rooms	121
Step-up Substation	38
AGI Gas Regulator	134
Total	40,589

SITE CONTEXT

1. NEW ROUTED STREAM
2. RETENTION POND
3. SPRINKLER TANKS
4. SPRINKLER TANK PUMP ROOM
5. SWITCHROOMS
6. POWER GENERATOR
7. ANCILLARIES
8. AGI GAS REGULATOR
9. HGV/DELIVERY/CONSTRUCTION ACCESS
10. STEP-UP TRANSFORMER
11. MAIN GATE ENTRY
12. PEDESTRIAN ENTRY VESTIBULE
13. BICYCLE STORAGE (66)
14. PARKING SPACES (144)

Figure 4.1: Masterplan (Source Burns & McDonnell)

Built Form, Height and Massing

4.30 The scale and massing of the proposed development seeks to respond to its surrounding context, in particular existing surrounding data centers, agricultural land, the Baldonnel Stream, whilst maximising the sites potential for data center usage and employment generation.

4.31 The topography of the site ranges from approximately 71.47 m AOD in the north to approximately 76.11 m AOD in the south.

4.32 The maximum overall height of each data storage building, excluding the flues and plant at roof level is 14.23 m above finished floor level (FFL). Flues which are paired would be 22.3 m in height from ground level.

4.33 Table 4.3 summarises the maximum heights of proposed development components within the application site which are also shown overleaf in Figures 4.3 – 4.10.

Table 4.3: Maximum Plot Heights

Proposed Development Component	Height Above Ground Level (m)	Maximum Height (m AOD)
DUB11 Parapet/Stair Tower	14.23/21.56	95.81
DUB12 Parapet/Stair Tower	14.23/21.56	95.81
Genset Flues (within each data center building)	22.3	96.55
Gas Generator Plant	14	88.10
Gas Generator Flue Height	25	99.10
Temporary Gas Generation Plant	10	84.10
Temporary Gas Generation Plant Flue Height	25	99.10

Material Palette and Façade Detailing

4.34 For the proposed development, different options have been selected in respect of materiality, architectural style and detailing, to be implemented through design codes.

4.35 The northern and southern data centers would predominately comprise sandwich panels in white, light grey and dark grey, consistent with the surrounding data centers. The approach to materials is to use good quality materials in a restrained way with a limited palette of colours and finishes. The material palette detailing is displayed in Figure 4.2.

Figure 4.2: Material Palette Detailing

4.36 The material palette and façade detailing of DUB 11 and DUB 12 is presented overleaf in Figures 4.3 - 4.10 which show elevations of the data centers.

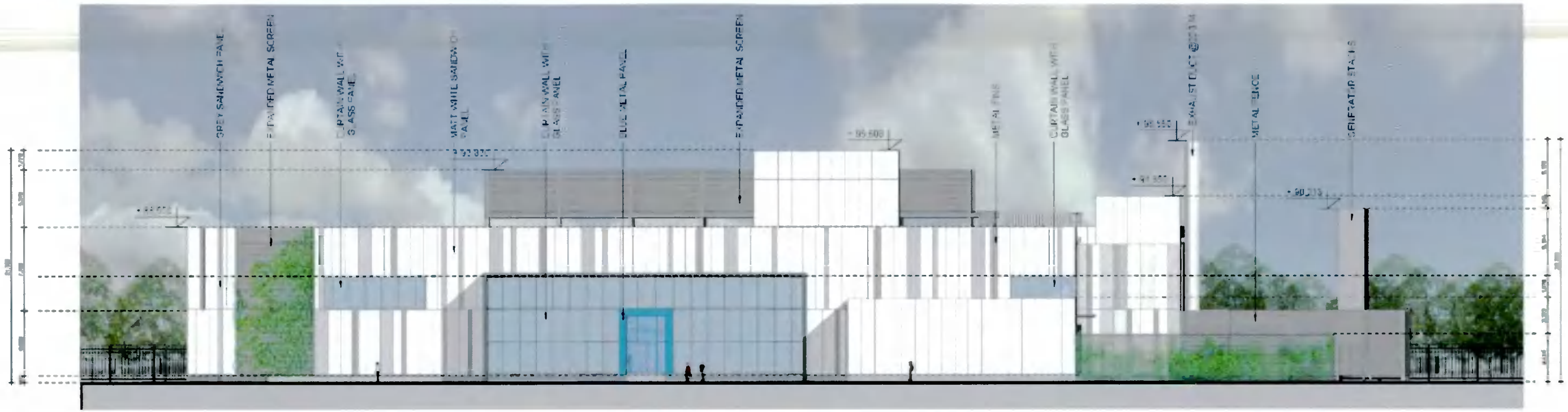


Figure 4.3: DUB11 North (Source Burns & McDonnell)

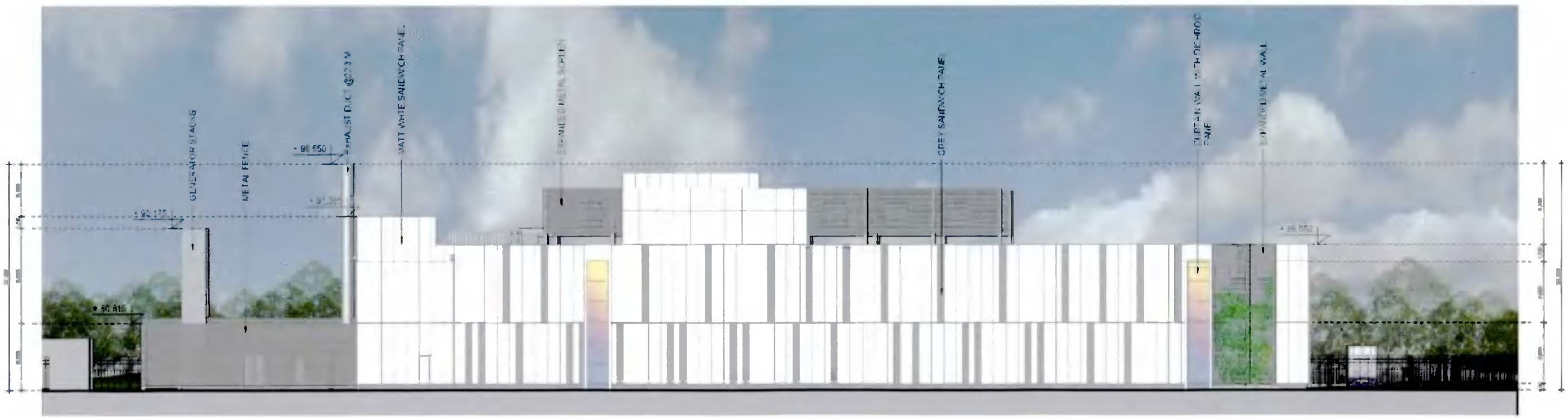


Figure 4.4: DUB11 South (Source Burns & McDonnell)

Figure 4.5: DUB11 East (Source Burns & McDonnell)

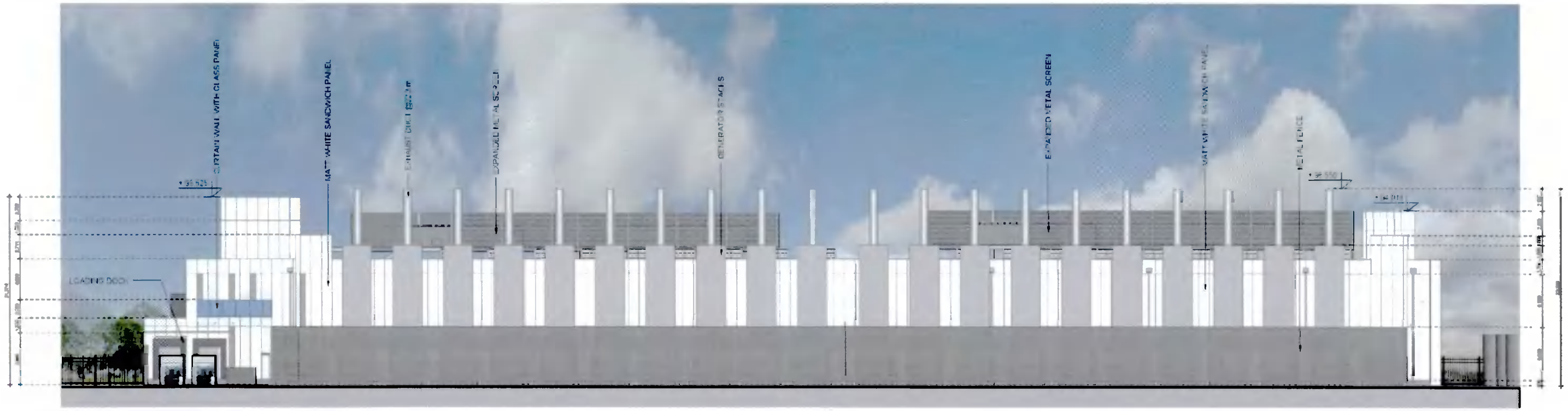


Figure 4.6: DUB11 West (Source Burns & McDonnell)

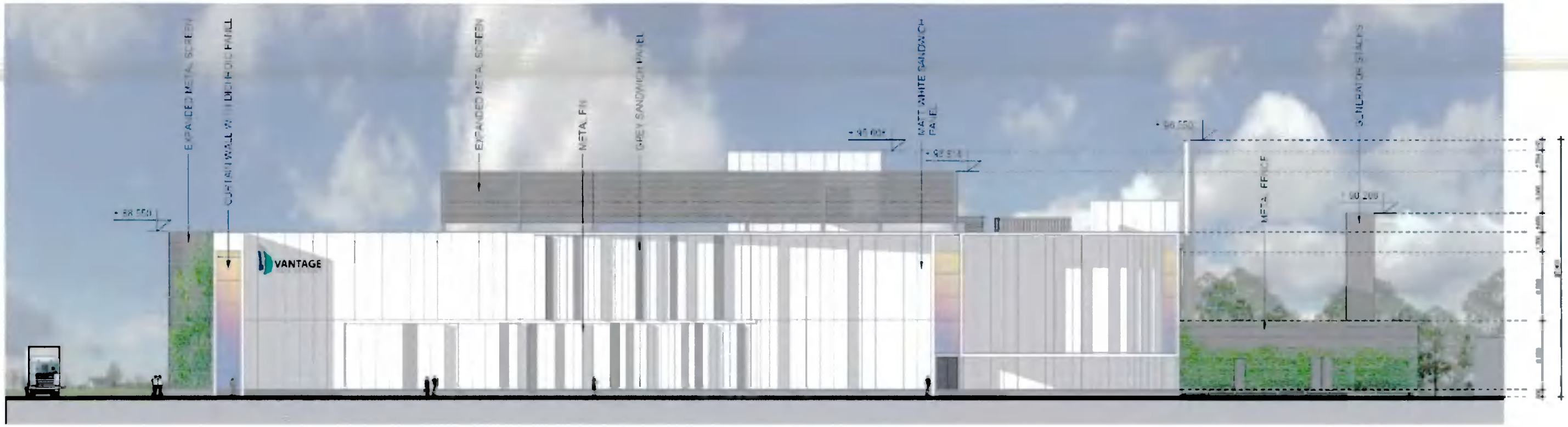


Figure 4.7: DUB12 North (Source Burns & McDonnell)

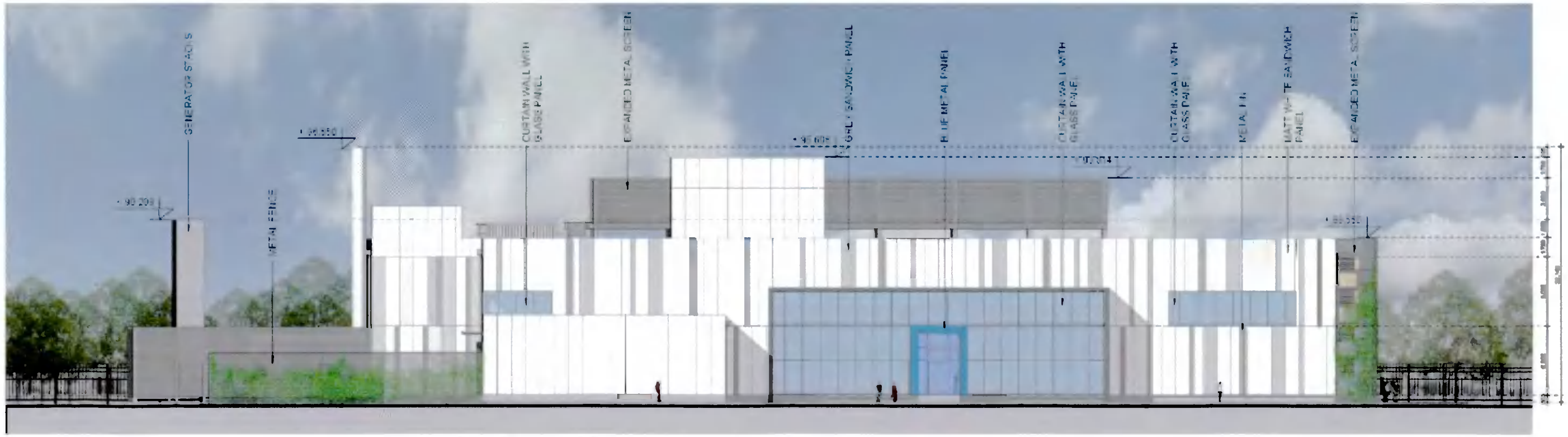


Figure 4.8: DUB12 South (Source Burns & McDonnell)

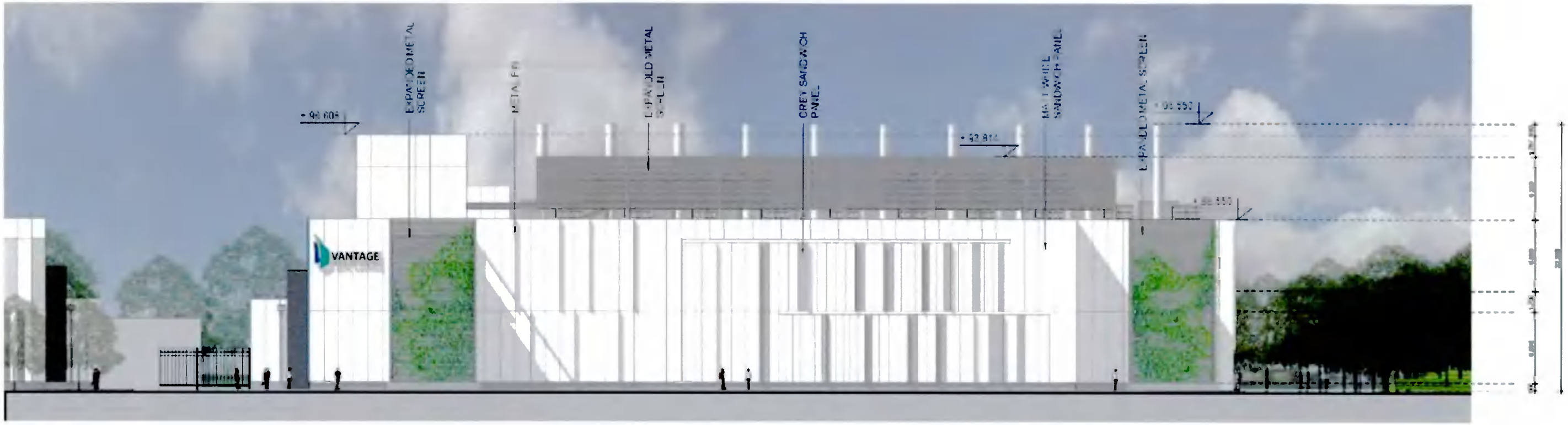


Figure 4.9: DUB12 East (Source Burns & McDonnell)

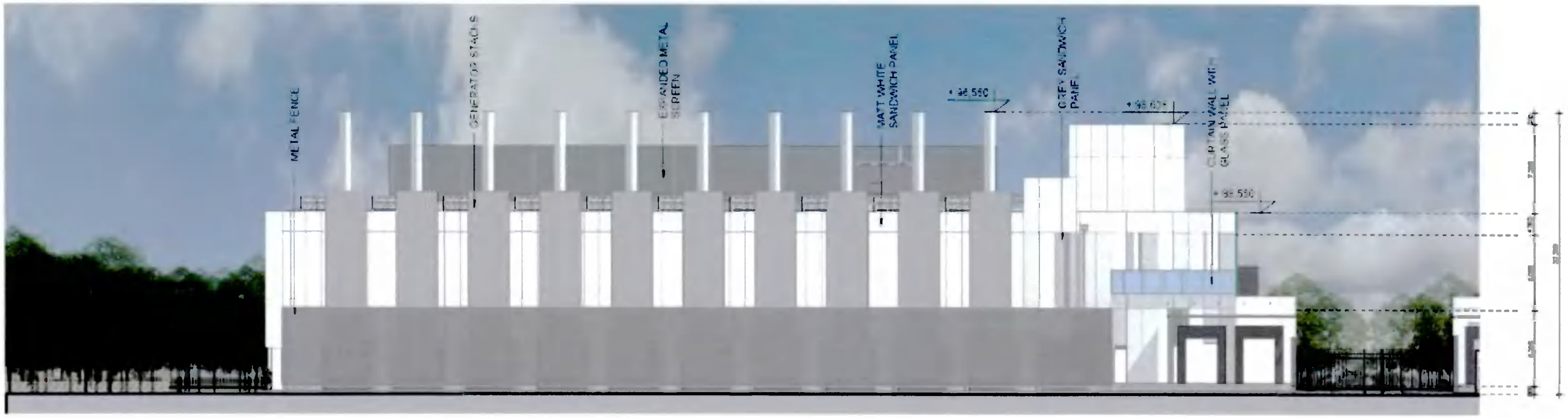


Figure 4.10: DUB12 West (Source Burns & McDonnell)

Phasing of Development

4.37 The proposed development phasing is outlined in Table 4.4 and Figure 4.11.

Table 4.4: Development Phasing

Phase	Detail	Indicative Construction Completion and Start of Operation
Phase 1A	• Stream realigned with associated landscaping • DUB 11.1 constructed and operational with 11 emergency generators • Temporary 24 MW gas powered power source • No permanent gas plant or other buildings • Construction of the 20kV switchrooms.	Q1 2023
Phase 1B	• Construction of half the permanent gas plant. • Removal of the temporary 24 MW gas powered power source • Connection to EirGrid made to the south of Falcon Avenue for main power supply	Q2 2023-Q4 2024
Phase 2A	• DUB11.1 and 11.2 constructed and operational with 22 total emergency generators • Main power supply from the EirGrid site to the south of Falcon avenue. • Permanent gas plant will be operational to half capacity	Q4 2024
Phase 2B	• DUB11.1 and 11.2 operational with 22 total emergency generators • DUB 12 constructed and operational with 11 emergency generators • Main power supply from the EirGrid site to the south of Falcon avenue. • Permanent gas plant will be operational to full capacity	Q4 2026

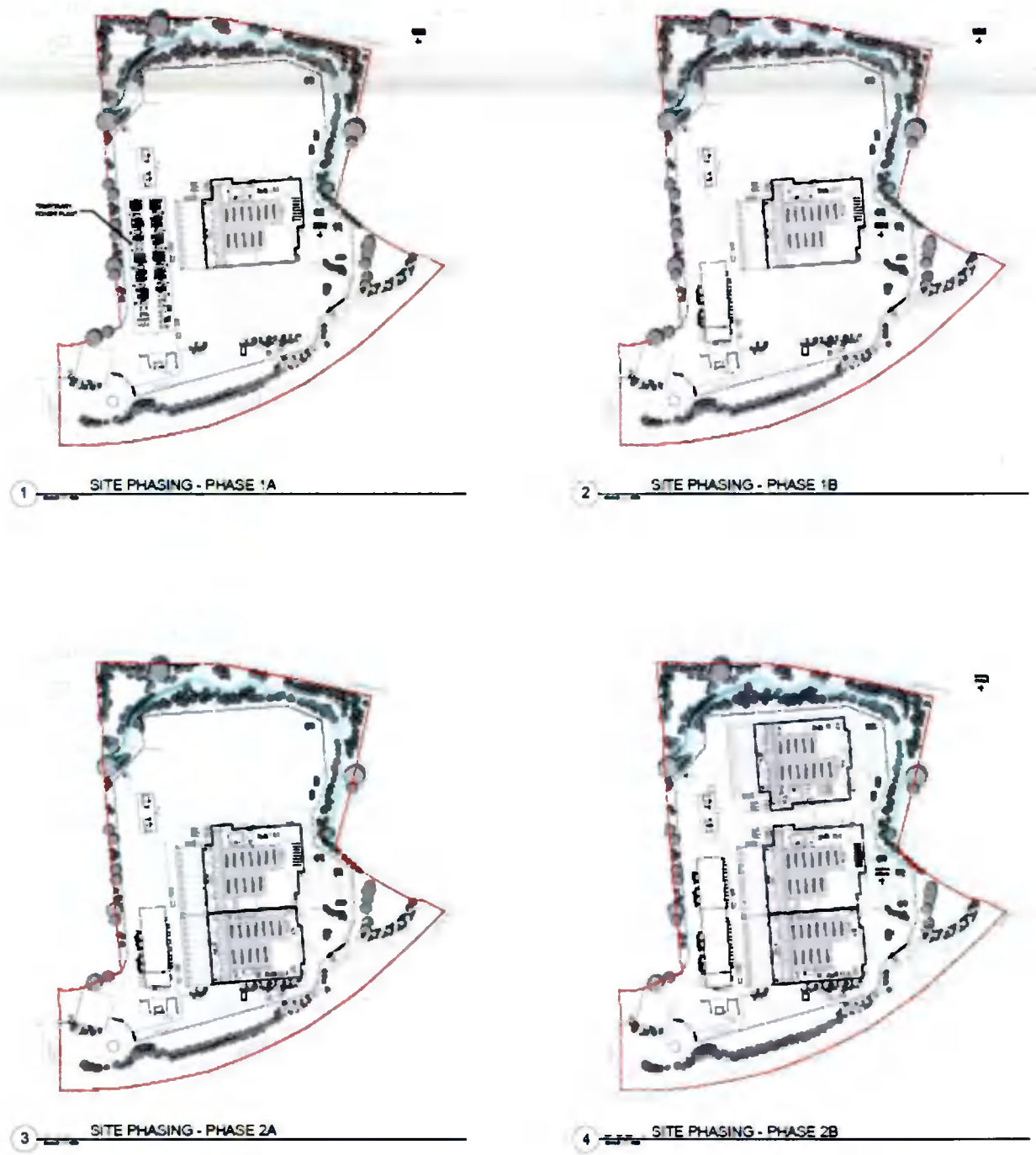


Figure 4.11: Development Phases (Source Burns & McDonnell)

Landscaping and Public Realm

Landscape Masterplan

4.38 The landscape masterplan is displayed in Figure 4.12.

4.39 The landscape strategy would ensure an enhanced, higher quality biodiverse environment is created, with particular regard to improving the biodiversity of the Baldonnel stream. As this site is not accessible to the public, landscaping would focus on creating areas for biodiversity to thrive and would not provide any public realm or open space.

4.40 The key considerations of the landscape masterplan are as follows:

- Realignment of the Baldonnel Stream to improve on its current status of low ecological condition which would extend its length from the current on 306m within the site to 379m;
- The retention of existing perimeter landscaping and trees wherever possible;
- The integration of a Sustainable Drainage Systems (SuDS) strategy, to slow out fall rates and manage storm water at source; and
- Provision of ecological enhancement areas.

4.41 The landscaping masterplan would incorporate the following elements:

- Berm and woodland planting;
- Native hedgerow
- Meadow;
- Wetland meadow;
- Wildflower meadow;
- Riparian planting; and
- The stream improvements.

Landscape and Biodiversity Enhancement

4.42 Figure 4.15 Landscape masterplan and sections details the biodiversity enhancements that would be introduced through the landscaping masterplan.

4.43 The area designated for landscaping is approximately 3.1 ha of the 8.7 ha available.

4.44 Approximately 36 trees are to be retained along with the main boundary hedges as part of the proposed development which predominantly relate to those trees along the western and eastern perimeter of the site boundary. Approximately 43 existing trees, would be felled in order for the proposed development to be constructed. However, substantial new planting of berm and woodland would be provided in the landscaping scheme.

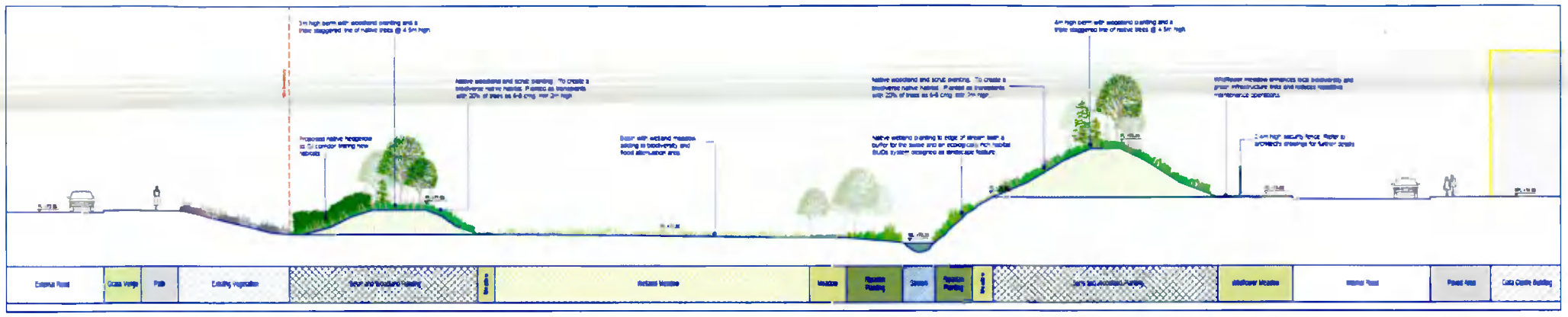
Baldonnel Stream Realignment

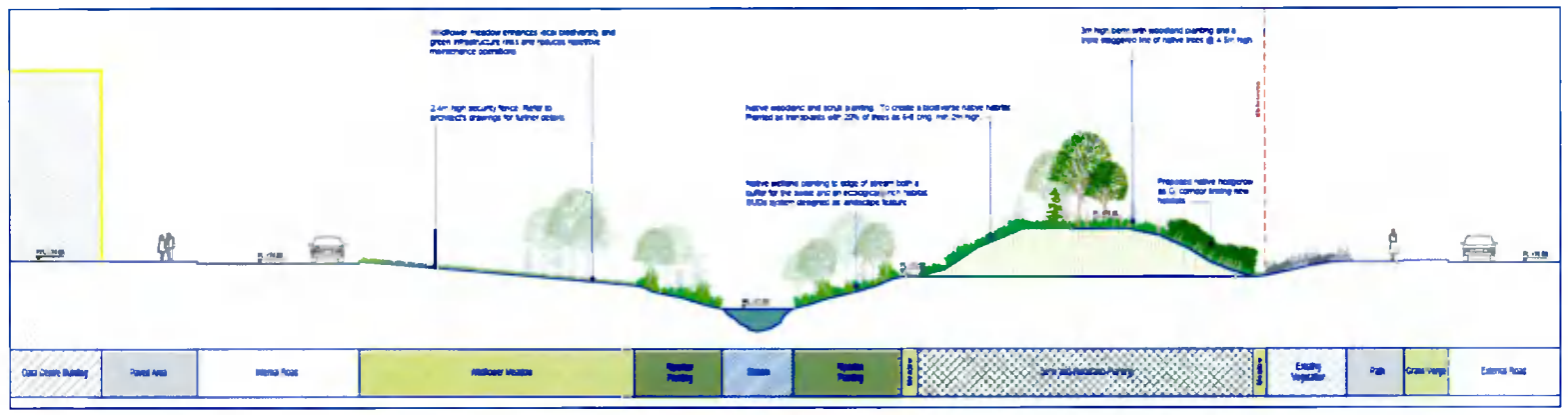
4.45 The proposed development would involve the realignment of the Baldonnel stream in the north of the site which has a low ecological value. The proposed realignment would improve site utilisation, open up the site for development in accordance with its EE zoning, provide suitable 100- and 1000-year flood mitigation and rainwater attenuation and increase biodiversity.

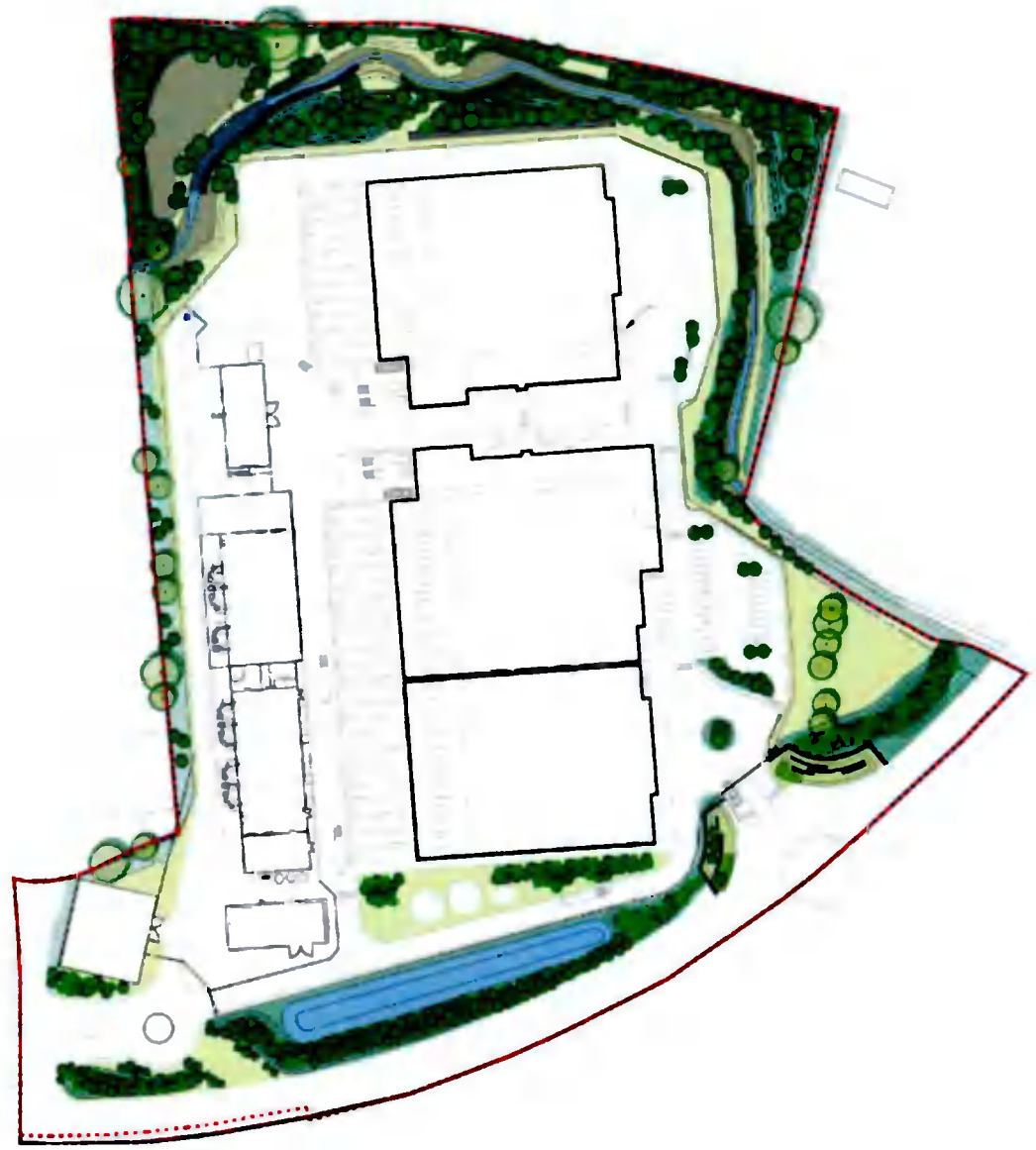
4.46 As part of the realignment the existing 306m length of the stream within the site boundary would be extended to 379m with the inclusion of gentle slopes and bends.

4.47 Riparian planting would occur either side of Baldonnel stream. Native wetland planting to the edge of the stream would act as a buffer for the swale and create an ecologically rich habitat. This would also incorporate the SuDS design.

4.48 The provision of wetland meadow as part of the landscaping strategy would add to the flood attenuation capacity of the site and increase biodiversity. The proposed native hedgerow and artificial hibernacula, bird and bat boxes and insect holes would act as an ecology corridor linking the new habitat with existing vegetation and riffles and pools would be created within the stream to encourage microhabitats.







Legend

Application Boundary

Existing Trees to be Retained.

Proposed Native Woodland .
To create a biodiverse native habitat around the perimeter and throughout the site. New planting designed to create a network of ecological corridors linking with existing vegetation to be retained. Planted as transplants with 10% of trees as 6-8 cmg, min 2m high. As the planting matures a visual screen will be created. Refer to planting schedule

Proposed Medium or Large Deciduous Tree Planting
To be planted at heights required to give an immediate impact and create a visual screen where required. Refer to planting schedule for specific specifications

Proposed Native Coniferous Tree Planting
To be planted at heights required to give an immediate impact and create a visual screen where required. To complement and strengthen the screening level provided by the large deciduous tree planting. Refer to planting schedule for specific specifications

Wildflower Meadow
Area to be managed as a wildflower meadow to improve the biodiversity of the local environment and reduce maintenance operations

Grass Seeding
Area to be managed as ornamental lawn/amenity grass.

Proposed Native Hedgerow Planting
Provides a visual screen and improved green infrastructure links.Refer to planting plan for further details and specification.

Existing Native Hedgerow
To be retained and enhanced with reference to arborists report.

Ornamental Shrub/Groundcover Planting
Refer to planting plan for further details and specification

Security Fence
2.4m high. to architects' detail and specification.

Figure 4.12: Landscape Masterplan and Sections (Source Kevin Fitzpatrick Landscape Architects)

Access Arrangements

Vehicular Access

4.49 The application site would be accessed via two entry points on Profile Park road, as displayed in Figure 4.13. Heavy duty vehicles (HGV), maintenance and construction vehicles would access the site via Profile Park Road from the west. Cars would access the site via Profile Park Road from the east, through the main gate. The main gate is located within the centre of the east access point, splitting the entrance and exit lanes and barriers are currently used to control entry to the application site.

4.50 Internal roads are proposed to be constructed to provide access to the data centers and to allow vehicles to access the proposed parking to the east of the buildings. These would be designed to accommodate the largest expected vehicle to access the application site.

Cycle and Pedestrian Access

4.51 As displayed in Figure 4.16, pedestrian and cycle access to the site would be via the controlled pedestrian and cyclist entry gate on Profile Park Road.

Emergency Access

4.52 The internal roads would provide emergency vehicle access around the Data Center building and provide service access to the service areas and gas generation plant.

Car and Cycle Parking

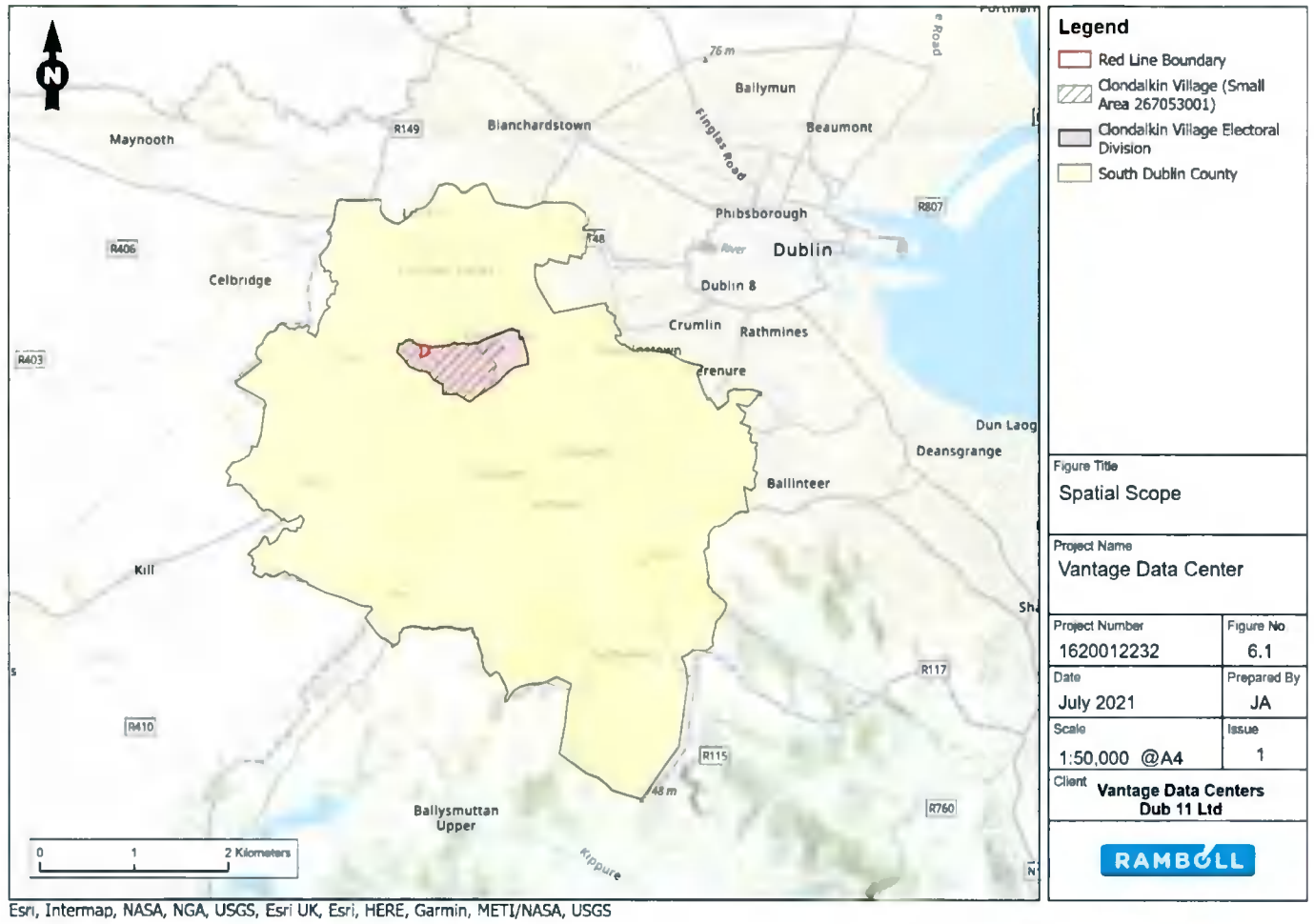
4.53 The Proposed Development would operate with approximately 135 Full Time Equivalent (FTE) members of staff across three shifts.

4.54 Car parking for the proposed development is provided by a total of 144 parking spaces which provides parking for site staff and visitors. Of these, 14 would be electric vehicle charging points, 6 would be disabled parking provision and 4 would be delivery vehicle spaces. There would be 66 double-stacked spaces for covered cycle storage.

4.55 Car and cycle parking would be provided along the eastern side of the data centers as shown in Figure 4.1. All employee spaces would be provided within a secure car park that would not be accessible to the general public. Visitor spaces would be located within this car park.

4.56 Whilst no defined parking for servicing and maintenance contractors is provided, there is space to the west of the data centers to park.

Figure 4.13 Proposed Site Access Arrangement (Source Burns and McDonnell)



Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, HERE, Garmin, METI/NASA, USGS

Figure 6.1: Spatial Designations in South Dublin County

Temporal Scope

6.13 In line with EPA guidance, as outline in EIAR Chapter 2: EIA Process and Methodology of this EIAR Volume, the duration of effects has been classified using the following: Momentary (seconds to minutes), Brief (<1 Day), Temporary (<1 Year), Short-term (1 to 7 years), Medium-term (7 to 15 years), Long-term (15 to 60 years), Permeant (>60 years). The assessment has considered impacts arising during the demolition and construction stage (Q4 2021 to Q4 2026) which would be expected to be temporary to short-term in nature and from the operation stage which would be expected to be long-term to permeant.

Baseline Characterisation Method

Desk Study

6.14 In order to establish baseline population and human health conditions in the study area, relevant data was reviewed and assessed. Data was obtained from a review of demographic characteristics of the area, ascertained from Census of Population data and other statistics released by the Central Statistics Office (CSO), comprising:

- Central Statistics Office, South Dublin County Council, 2016[8];
- Central Statistics Office, Clondalkin Village ED, 2016[9]; and
- Central Statistics Office, Clondalkin Village SA, 2016[10].

Field Study

6.15 A field study was not required as the data provided by other sources was deemed to be adequate and representative of the site conditions.

Assessment Method

Methodology

6.16 Health at the population level (all the persons inhabiting a defined location) is influenced by a number of determinants of health (non-medical factors that influence health outcomes). Many of these are socio-economic in nature. Those determinants of health commonly thought to be important are:

- employment;
- income;
- access to services;
- transport;
- housing;
- education;
- crime and fear of crime;
- social capital; and
- the physical environment.

6.17 To determine the potential population and human health impacts of the proposed development on nearby residents, the assessment needs to consider the pathways by which the proposed development might affect the determinants of health and by how much. For example, a development that creates new employment opportunities could contribute positively to health. However, if a development causes degradation in air quality, this could have a negative impact for health.

6.18 In terms of assessing the potential human health impacts associated with the proposed development, outputs of the landscape and visual, transport and accessibility, air quality, and noise and vibration chapters have been reviewed and any significant impacts identified in these chapters are considered in terms of their potential implications on population and human health.

6.19 The assessment methodology applied to the population and human health assessment is outlined below.

Assessment Criteria

6.20 The assessment of significance of effect with regards to population and human health is based on professional judgement of the sensitivity of the receptor and the magnitude of effect.

6.21 This is determined by consideration of the sensitivity of the receptor, magnitude of impact and scale of the effect. In considering the significance of an effect, consideration has been given to the duration of the effect, the geographical extent of the effect and the application of professional judgement.

Receptor Sensitivity/Value Criteria

6.22 There is no specific guidance in relation to sensitivity of receptors with regards to population and human health. The baseline below outlines the key population and health vulnerabilities in the study area;

[8] Central Statistics Office, 2016. South Dublin County Council [online]. Available at: https://census.cso.ie/sapmap2016/Results.aspx?Geog_Type=CTY31&Geog_Code=2AE1962914A113A3E055000000000001#SAPMAP_T13_1301 [Accessed 09/07/2021].

[9] Central Statistics Office, 2016. Census 2016 Sapmap Area: Electoral Division Clondalkin-Village ED [online]. Available at: https://census.cso.ie/sapmap2016/Results.aspx?Geog_Type=ED3409&Geog_Code=2AE196291D0213A3E055000000000001#SAPMAP_T14_1401 [Accessed 09/07/2021].

[10] Central Statistics Office, 2016. Census 2016 Sapmap Area: Small Area Sa2017_267053001 [online]. Available at: https://census.cso.ie/sapmap2016/Results.aspx?Geog_Type=SA2017&Geog_Code=4c07d11e-0d56-851d-e053-ca3ca8c0ca7f#SAPMAP_T14_1401 [Accessed 09/07/2021].

however, due to the baseline being desk-based and without in-depth stakeholder engagement at the community level, it is not possible to assign an overall sensitivity classification to the population in the study area. Therefore, the precautionary principle has been adopted for this assessment, which assumes that the population within the study area is of a medium to high sensitivity.

Impact Magnitude Criteria

6.23 The magnitude of impact has been classified as low, medium, or high, in accordance with the criteria set out in Table 6.1.

Table 6.1: Impact Magnitude Criteria

Magnitude of Impact	Criteria
Low	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a minor change to existing baseline conditions (negative or positive).
Medium	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a moderate change to existing baseline conditions (negative or positive).
High	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a major change to existing baseline conditions (negative or positive).

Scale of Effect Criteria

6.24 Impacts have been assessed on the basis of the value/sensitivity of receptors against the magnitude of impact to determine the scale of effect as presented in Table 6.2.

Table 6.2: Scale of Effect Criteria

Magnitude	Sensitivity of Receptors		
	Low	Medium	High
Low	None	Imperceptible	Not Significant - Slight
Medium	None - Imperceptible	Not Significant - Slight	Moderate - Significant
High	Not Significant - Slight	Moderate - Significant	Very Significant - Profound

6.25 Based on Environmental Protection Agency's (EPA) Draft Guidelines on the information to be contained in Environment Impact Assessment Reports[11] (2017), as described in Chapter 2: EIA Process and Methodology, effects ranging from 'moderate' to 'profound' are considered 'significant' in EIA terms.

Nature of Effect Criteria

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

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

Assumptions and Limitations

6.27 The assessment has relied on baseline data from the Central Statistics Office which is now five years old but still the most reliable source.

[11] Environmental Protection Agency, 2017. Draft Guidelines on the information to be contained in Environmental Impact Assessment Report (EIAR)

Baseline Conditions

Existing Baseline

Land Use

6.28 The surrounding context of the site is largely industrial and agricultural. The site is surrounded by numerous residential properties. A large proportion of these are no longer in residential use due to the extension of Grange Castle Business Park (located approximately 500m west) and road improvement in recent years. The closest residential receptor is at the sites north eastern boundary.

6.29 The site is located in Profile Park industrial estate and within the functional area of South Dublin County. Under the South Dublin County Council's (SDCC) Development Plan 2016-2022[12], the site is allocated under Objective EE: Employment and Enterprise. The stated aim is to provide for enterprise and employment related uses. The proposed land use of a data center 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.

6.30 The current land use on the site is agricultural. There is an extant permission on-site for a distribution warehouse (SDCC planning reference: SD20A/0124), as detailed in EIAR Volume 1, Chapter 2: EIA Process and Methodology; however, it is understood that the Applicant will not be implementing the permission.

Population

6.31 At the time of the 2016 Census[12], the total resident population of South Dublin County was 278,767.

6.32 Table 6.3 presents the 2016 Census population data for the study area in 2016. The data shows population at county, electoral region, and Small Area level. The Small Area, where the site is located, represents the local area Clondalkin Village SA, which had a decline in population by 13 people between 2011 to 2016.

Table 6.3: Study Area Population (2016)

Area	Total Population
Clondalkin Village SA	257
Clondalkin Village ED	9,152
South Dublin County	278,767

6.33 The population age ranges at study area are presented in Table 6.4. The data shows that Clondalkin Village SA has a lower-than-average younger population (0-19 years old) compared to the electoral region and county average and a significantly higher elderly population (65-84 years old). The overall averages for Clondalkin Village ED align with the South Dublin County average.

[12] SDDC, 2016. South Dublin County Council Development Plan 2016-2022 [online]. Available at: https://www.sdcc.ie/en/services/planning/development-plan/plan-2016-2022/ [Accessed on 28/06/2021].

Servicing and Deliveries

4.57 The site layout is designed to support the delivery and replacement of equipment and primary plant and to enable access for appliances in the event of fire.

4.58 Deliveries would come to a two-bay truck loading dock during the initial deployment of IT and mechanical equipment and would be issued for periodic replacement of equipment.

Waste Management

4.59 Deliveries of equipment to site may generate limited quantities of rubbish, which for the most part would be packaging material. This rubbish would be managed on site.

4.60 The buildings primary waste stream would come from the toilets, which is calculated at 45 staff per building phase, which equates to a total of 135 permanent staff once completed.

4.61 Refer to EIAR Volume 1, Chapter 15: Waste, for further information regarding waste generation volumes.

Plant and Ventilation

Heating

4.62 Heating to the office areas would be provided by heat pumps that would recover heat from the data module cooling system. This would allow the heat pump system to operate at higher efficiencies compared to air cooled systems operating at standard ambient conditions.

Cooling

4.63 The data storage rooms would be cooled with air handling units that are provided with chilled water via roof mounted free cooling magnetic bearing chillers.

4.64 Chilled water would be pumped around the building using variable volume pumps, chilled water flow is limited by 2 port control valves to match the demand.

4.65 The cooling systems utilises variable volume EC fans to match cooling capacity to load requirements from the data storage rooms.

4.66 Hot Aisle containment is used to separate supply and return air paths and maximize system efficiency by allowing elevated supply air temperatures.

4.67 Further information of heating, cooling and ventilation, including mechanical systems information is provided within the Energy Statement which accompanies this planning application.

4.68 Cooling to the office and ancillary areas would be provided by roof mounted air-cooled free cooling chillers. The free cooling chillers would utilize compressor free cooling when the ambient conditions are satisfactory, thus maximizing system efficiency.

Ventilation

4.69 Dedicated outside air-handling units (DOAS) would provide outside air into each data module MMR, main point of entry (MPOE) and intermediate distribution frame (IDF) rooms.

4.70 The fresh air ventilation system for the office area would be served using energy efficient Heat Recovery Units (HRU) which would recover waste heat from the office spaces and re-use to pre-heat the air with the HRU. This would reduce the overall energy consumption for this system.

Utilities

Electricity

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

4.72 The power requirements for the proposed development would be provided via a connection to a 110 kV EirGrid ESB substation and would be subject to a separate strategic infrastructure development application to An Bord Pleanála (ABP). The substation would then provide a 20 kV electrical power distribution at medium voltage throughout the site. The site distribution system supplies all electrical rooms where stepdown transformers are deployed to provide 400/230 V electricity to all loads.

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

4.74 To reduce electrical losses between HV/MV/LV conversions, the Applicant would install low loss transformers which comply with the Ecodesign directive 2009/125/EC[1] as a minimum.

4.75 Whilst the connection to the EirGrid is implemented DUB 11.1 is proposed to be powered using temporary gas generators that would be located in the west of the site. These would be in operation for 24 hours a day for an anticipated time period of up to 2 years. The plant would comprise 21 gas generators with flue stacks up to 25m in height, three 1MW battery storage modules that would only be used for stabilising and providing a spinning reserve for the gas plant and two back up diesel generator for very limited usage in the event of a loss of power from the gas generators.

4.76 Photovoltaic panels would be installed on the roof of the buildings to comply with Part L of the building regulations, with an approximate ratio of 1 m^2 per 20 m^2 of office space.

Gas

4.77 The Business Park is served by the Gas Networks Ireland network, which is a natural gas network.

Water

4.78 Detailed information regarding water can be found within the engineering report, which accompanies the planning application submission.

4.79 Hydrants would be installed in accordance with the requirements of the building regulations and in accordance with the recommendations contained in the Technical Guidance Documents, Section B – Fire Safety[2].

Potable Water

4.80 It is intended to serve the proposed development via a connection on Falcon Avenue.

[1] European Environment Agency, 2021. Policy Document: 2009/125/EC - Ecodesign Directive. Online. Available at: 2009/125/EC - Ecodesign Directive — European Environment Agency (europa.eu) [accessed 13/07/2021]

[2] Government of Ireland. 2020. Technical Guidance Documents. Online. Available at: gov.ie - Technical Guidance Documents (www.gov.ie) [accessed 02/08/2021]

4.81 Water demand for the development has been based of Irish Water Criteria, calculated based on 144 PE at 0.250 liters per second.

4.82 A pre-connection enquiry application has been submitted to Irish Water in respect of the water supply. The Applicant is currently awaiting a response.

Foul Water

4.83 It is proposed to discharge foul water from the proposed development via a gravity foul sewer outfall and discharge into a spur connection across Falcon Avenue, which is connected to the existing foul sewer network, laid along the western edge of Falcon Avenue.

Surface Water Management

4.84 The total attenuation volume required for the site is approximately 1,204 m^3.

4.85 The sustainable urban drainage systems (SuDS) measures to be adopted for the proposed development would comprise:

- 1,600 m^3 stormwater storage pond;
- Permeable paving; and
- 500 m^3 below ground storage tank.

4.86 The storm water drainage within the entire development has been designed to accommodate a 1:2 year storm frequency. The pond, attenuation tank and permeable paving areas have been designed to accommodate a 1:100-year storm event + 20% climate change.

4.87 Surface water drainage from the proposed development has been designed in accordance with Greater Dublin Strategic Drainage Strategy (GDSDS)[3] and ensures that best management practice has been incorporated into the design.

4.88 The attenuation system proposed is in keeping with other developments within Grange Castle Business Park.

4.89 The results of the flood risk assessment (FRA) conclude that the proposed development of the site by the Applicant, for use as a Data Center development, is considered a suitable use of the site. Local infrastructure has the capacity to serve the proposed development.

Telecommunications

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

Resources, Emissions and Residues

Resource Use

Energy

4.91 An Energy Statement would be submitted accompanying the application, demonstrating how the proposed development would reduce the energy consumption and operation cost of the proposed development

4.92 The proposed development would provide provision for an array of photovoltaic (PV) panels that would generate on site renewable energy up to a peak of 73.15 kW per building, to comply with Nearly Zero Energy Building (nZEB) requirements[4]. The on-site renewable electricity generation would be backfed to the electrical general supply for the building, serving lighting, office area general services and office IT equipment. The total amount of panels would cover 150 sqm per building and shall be located at the plant roof area. It is expected that the PV panels would generate 15,000 kwh/yr.

Emissions

To Air

4.93 Please refer to EIAR Volume 1, Chapter 8: Air Quality for more detail.

4.94 The potential exists for dust deposition and increased particulate matter concentrations to occur during the demolition and construction stage, as well as increased air emissions resulting from the operational phases of the proposed development. The main air pollutants of concern are dust and particulate matter with an aerodynamic diameter of less than 10 µm (PM_{10}), typically generated during demolition and construction activities, and nitrogen dioxide (NO_2) typically generated by combustion engine emissions and road traffic.

To Water

4.95 A new surface water drainage network is to be designed and installed to serve the proposed development as detailed below and would be presented within a separate Drainage Strategy Report. Therefore, surface water runoff within the proposed development would be managed such that internal or vulnerable areas of the site are at low risk of flooding from pluvial sources.

4.96 Due to a variety of measures such as the design of the car park with hydrocarbon interceptors, permeable paving drainage and attenuation, speed restrictions, and the fact that no refuelling would be carried out on site aside from on rare occasions to generators, the likelihood of any emissions into the water environment from vehicles on site would be unlikely.

4.97 Additionally, please refer to surface water management above for detail on SuDS infrastructure.

To Sewers

4.98 It is proposed to discharge foul water from the proposed development via a gravity foul sewer outfall and discharge into a spur connection across Falcon Avenue, which is connected to the existing foul sewer network, laid along the western edge of Falcon Avenue. Foul drainage is ultimately treated at the Dublin City Wastewater Treatment plant at Ringsend.

[3] Government of Ireland, 2005. Greater Dublin Strategic Drainage Strategy. Online. Available at: Greater Dublin Strategic Drainage Strategy | Greater Dublin Drainage [accessed 02/08/2021]

[4] Irish Green Building Council, Nearly Zero Energy Building Standard. On/line. Available at: Nearly Zero Energy Building standard - Irish Green Building Council (igbc.ie) [accessed 13/07/2021]