

**Planning & Development Act, 2000 - 2022,
European Communities (Environmental Impact Assessment) Regulations 1989 (as
amended), Planning & Development Regulations, 2001 (as amended)**

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

NON-TECHNICAL SUMMARY

Additional Information response (Planning Ref. SD22A/0333)

**EdgeConneX Ireland Ltd.
Data Centre (DUB06)
Ballymakaily**

May 2023

MARSTON

PLANNING CONSULTANCY

NON-TECHNICAL SUMMARY

1. This Non-Technical Summary of the Environmental Impact Assessment Report (EIA Report) has been prepared on behalf of Edgeconnex Ireland Ltd. to accompany a response to a request of Additional Information by South Dublin County Council (SDCC) under Planning Ref. SD22A/0333 following an application for permission for a new data centre facility that will form the third phase of the development of the wider site, and will be located on a site of 5.14 hectares that will be sited to the immediate west of the recently realigned R120, Lucan, Co. Dublin.
2. For detailed information and key mitigation and remedial measures please consult the full EIA Report document. Having regard to Article 3 of the 2014 EIA Directive, and the Circular Letter PL 1/2017 of the Department of Housing, Planning, Community and Local Government, this document has been titled an Environmental Impact Assessment Report (EIA Report).

Purpose of the EIA Report

3. The objective of this EIA Report is to identify and predict the likely environmental impacts of the Proposed Development; to describe the means and extent by which they can be reduced or ameliorated; to interpret and communicate information about the likely impacts; and to provide an input into the decision making and planning process. The EIA Report is the primary element of the Environmental Impact Assessment (EIA) process and is recognised as a key mechanism in promoting sustainable development, identifying environmental issues, and in ensuring that such issues are properly addressed within the capacity of the planning system.

The requirements for an EIA Report

4. Projects that require environmental impact assessment are listed in Schedule 5 of the Planning and Development Regulations 2001-2023. Schedule 5 (Part 2) of the Planning & Development Regulations 2001 (as amended) set mandatory thresholds for each project class. Sub-section 10(b) (iv) addresses 'Infrastructure Projects' and requires that the following class of project be subject to EIA where the area would exceed 10 hectares where the predominant land use is commercial within a built-up area. Whilst the application site is below the 10ha. the proposed development is located within a wider site in which two other data centres are permitted that is in excess of the 10ha. and for which EIA Reports were undertaken. It is therefore prudent and appropriate that an EIA Report is undertaken to accompany the application. The site is zoned for commercial purposes as the Planning Authority seek to develop the surrounding lands as part of the wider Grange Castle business park and surrounding employment lands.
5. The following components are addressed in the EIAR:
 - Introduction and Methodology
 - Project Description and Alternatives Examined
 - Population and Human Health
 - Biodiversity
 - Lands, Soils, Geology and Hydrogeology
 - Hydrology
 - Noise and vibration
 - Air quality
 - Climate
 - Landscape and visual impact assessment
 - Traffic and transportation
 - Cultural heritage
 - Waste management
 - Material assets
 - Cumulative impacts within each chapter
 - Interactions
6. It is necessary to examine each of these sections of the environment with respect to the impacts that the Proposed Development may have on them. In addition this planning application has examined flooding, and includes individual reports on Energy, Services, Mobility Management and

Construction Management that have helped inform the contents of this EIA Report, and which are included as standalone reports with the planning application.

7. The area is undergoing a land use transformation to a business campus in accordance with its zoning objective EE under the South Dublin County Development Plan 2022-2028. The aim of this zoning is to facilitate development such as the Proposed Development. Further land zoned for similar development is located to the south, west and east of the site. The closest occupied residential properties are located adjoining to the north-east and east boundary of the proposed development site.

Characteristics of the Proposed Development

8. The Proposed Development is to seek permission for a period of five years to complete a development with a gross floor area of 15,274sqm. at this site of 5.14hectares that is located within the townland of Ballymakaily to the west of the Newcastle Road (R120), Lucan, Co. Dublin. The development will consist of the construction of two no. adjoined single storey data centres with associated office and service areas with an overall gross floor area of 15,274sqm that will comprise of the following:
 - Construction of 2 no. adjoined single storey data centres with a gross floor area of 12,859sqm that will include a single storey goods receiving area / store and single storey office area (2,415sqm) with PV panels above, located to the east of the data centres as well as associated water tower, sprinkler tank, pump house and other services;
 - The data centres will also include plant at roof level; with 24 no. standby diesel generators with associated flues (each 25m high) that will be located within a generator yard to the west of the data centres;
 - New internal access road and security gates to serve the proposed development that will provide access to 36 no. new car parking spaces (including 4 no. electric and 2 no. disabled spaces) and sheltered bicycle parking to serve the new data centres;
 - New attenuation ponds to the north of the proposed data centres; and
 - Green walls are proposed to the south and east that will enclose the water tower and pump house compound.
9. The development will also include ancillary site works, connections to existing infrastructural services as well as fencing and signage. The development will include minor modifications to the permitted landscaping to the west of the site as granted under SDCC Planning Ref. SD19A/0042 / ABP Ref. PL06S.305948 and Ref. SD21A/0042. The site will remain enclosed by landscaping to all boundaries. The development will be accessed off the R120 via the permitted access granted under SDCC Planning Ref. SD19A/0042 / ABP Ref. PL06S.305948 and SD21A/0042.
10. As part of this AI Response the description of the Proposed Development has not been amended. However, in response to the AI Request a new native hedgerow is proposed to the west and south of the proposed development to address the concerns raised under Point 7 and others of the AI request. An open bio-swale has also been added to the development in response to Point 14 of the AI request.
11. A full description and details of the Proposed Development is provided in Chapter 2 (Description of the Proposed Development) of the EIA Report.
12. The Proposed Development is to be located on the same wider site as the permitted data centre development granted by An Bord Pleanála under SDCC Planning Ref. SD19A/0042 / ABP Ref. PL06S.305948 and that was granted by South Dublin County Council under SDCC Planning Ref. SD21A/0042 and which was recently amended under SDCC Planning Ref. SD22A/0105. The Permitted and Proposed Development (shaded cream) are identified in Figure 1 on the next page, which reflects the amended AI layout with new hedgerow and bio-swale indicated. This figure also outlines the RU zoning by way of a pink diagonal shading to the north of the site. Construction on phase 1 of the overall development of the site, has recently commenced.

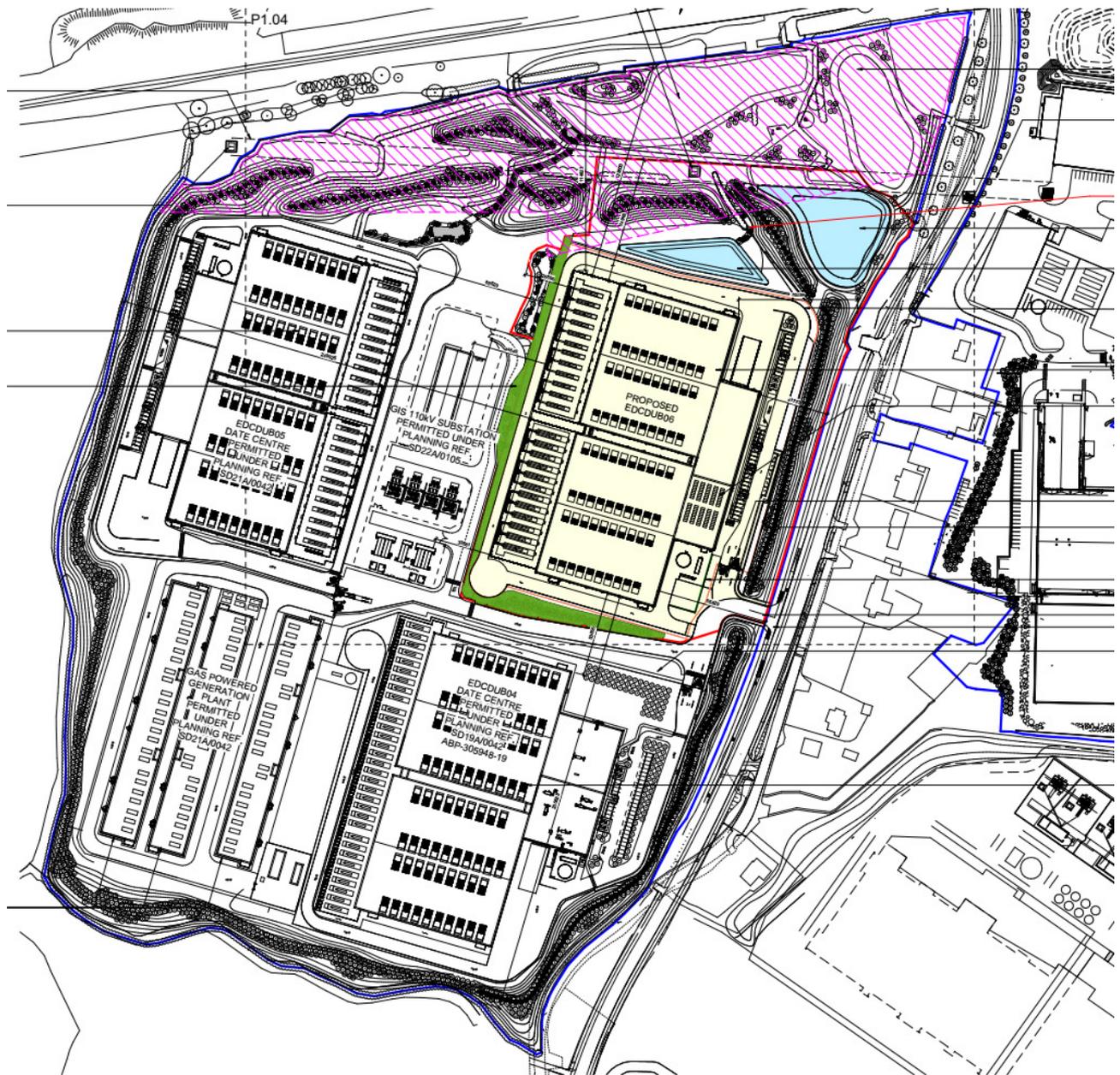


Figure 1 Proposed site layout plan

Alternatives considered

13. Chapter 4 of the EIA Report includes a summary of alternatives which were considered for the Proposed Development. This includes a detailed review of project design, technology, location, size and scale and mitigations. These options were considered as the scheme progressed and the key considerations and amendments to the design having regard to the key environmental issues pertaining to the lands are summarised in this chapter of the EIA Report. In response to the Additional Information request further consideration of alternatives was undertaken having regard to point 17(a) of the request having regard to new policy considerations particularly having regard to space extensive uses and green infrastructure policies.

Population and human health

14. Population (human beings) and Human Health is a broad ranging topic and addresses the existence, activities and well-being of people as groups or 'populations'. While most developments by people will affect other people, this EIA Report concentrates on those topics which are manifested in the environment, such as new land uses, more buildings or greater emissions.

Receiving environment

15. The Proposed Development will be located on the periphery of a largely built up urban area where industrial activities are the main land use. There is a low residential population within the immediate local area within 1km of the Proposed Development site. The nearest occupied residential properties are located immediately adjoining the north-east corner (1 property); a number to the immediate east on the eastern side of the R120; and a travellers site to the south-west of the site. There is an abandoned single storey residential property within the RU zoning along the northern boundary of the wider site with the Grand Canal. This abandoned house is permitted to be demolished as part of Phase 2 of the development of the site.
16. Grange Castle Business Park and its extension to Grange Castle South and West Business Park and surrounding lands is already home to several industrial facilities and comprises a number of different land uses and. Closer and to the east is the existing Edgeconnex campus that has been permitted under various permissions between 2016 and 2019. The site is not fully built out currently but construction on phase 1 of the overall development of the site, has recently commenced.
17. The Proposed Development is situated on suitable EE zoned lands in an industrial area in south-west Dublin. Furthermore, the location will minimise the potential environmental impacts through careful design, master planning and mitigation measures as described in various chapters of this EIA Report. The landscape master planning of the site has been permitted under previous phases of the development of the wider site.
18. There are a range of tourism amenities within the wider area although the only notable and most significant local amenity is the Grand Canal that bounds the site along its entire northern boundary that lies 60m from the northern boundary of the Proposed Development site; and 130m from the nearest proposed data centre facility.
19. A range of schools, healthcare and other services are located within the wider local area. Lucan Sarsfield GAA pitches lie to the north of the canal off the newly realigned R120; and the Lucan pitch and putt course is located to the north-east of the site. The Casement Air base and its associated buildings bound the Baldonnell Road some 2km to the south of the application site.
20. Local and regional bus services connect the local and wider area with Dublin city centre. The Dublin to Cork mainline railway passes to the north of the canal. A new station at Adamstown and at Fonthill provide a new commuter service into the city centre. Details on public transport provision is provided under Chapter 12 of the EIA Report.

Mitigation measures

21. The Proposed Development does not have the potential to result in any significant negative impacts on population and community during the course of construction. No remedial or reductive measures are therefore required beyond normal landscaping, noise and construction mitigation that are outlined elsewhere within the EIA Report and should form a condition of permission.
22. In accordance with the Safety, Health, and Welfare at Work (Construction) Regulations, a safety management system will be put in place on-site to minimise any risks to both construction personnel and site visitors. The site will not be accessible to the public and will have strict procedures in place for allowing entrance to visitors and contractors.
23. The mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Impacts on employment during the construction phase will be positive if only slight within the immediate local area. Therefore no remedial or reductive measures are considered necessary.
24. No remedial or mitigation measures are considered necessary during the operational phase, beyond the landscaping already permitted, and additional green infrastructure proposed, and detailed in chapter 12 of this EIA Report; as well as Traffic, Air Quality and Noise mitigation, as the Proposed Development will not give rise to any adverse impacts on population, and amenity nor human health during the operational phase of the Proposed Development. The development will result in the

creation of a significant number of new jobs especially in service activities and creation of some local jobs. This is considered a slight permanent positive impact of the Proposed Development. No remedial or reductive measures are therefore required.

Impacts

25. The nearest residences adjoining the Proposed Development site will have ongoing noise disturbance as a result of construction activity and traffic throughout the construction process. This has been mitigated by ensuring that all heavy construction traffic approaches the development site along the R120 and R134 (New Nangor Road).
26. The construction phase of the Proposed Development over 1.5 years will result in the creation of a large construction site that will have a **short term** and **slight** negative impact on the immediate local environment and the amenity of existing residents as a result of noise and disturbance during construction.
27. The Proposed Development will not result in any material change to the permanent population of the area during the construction phase. There will be an increase in the temporary population of the area as a result of the employment of workers from outside the wider Dublin area that may need to reside in the immediate local area during the construction process. This will amount to only a small percentage of the workforce employed during the construction phases of the scheme but will result in some additional trade for local accommodation and services.
28. The total on-site construction phase of the development will be approximately 3.5 years. During the phased development of the construction of each ICT facility, it is expected that an average of 150 construction workers will be on site during the main phase of construction. This is likely to benefit suitably qualified members of the local and wider supply community. The development will also support job creation in associated sectors such as building supply and local services.
29. Community facilities will be used more regularly as a result of the temporary working population resident in the local area. The construction phase therefore is predicted to have a **slight short term** positive impact on the economy and employment of the area but a **short-term slight** negative impact on the local community and amenity of the area.
30. The operation of the proposed facility will be carried out in strict accordance with all Irish and European Regulations governing safety in the work place with specific regard to the regulations implemented under the Safety, Health & Welfare at Work Act, 2005.
31. The Proposed Development will facilitate the creation of a more intensive use for the EE zoned lands. The Proposed Development will upon completion sustain in the region of c.100 workers. Based on the social class profile of the local community, a small number of the local population in the hinterland of the subject site are predicted to benefit from the new employment, which will be created. This is a **slight and long-term** positive impact. Some additional employment will also be created in support services including building maintenance, cleaning and catering services.

Biodiversity

Receiving environment

32. Desktop and field surveys were undertaken to establish the biodiversity baseline environment for the site. These are detailed in Chapter 6 of the EIA Report. The Proposed Development site is not designated as a SAC, SPA, or NHA, however, it does sit adjacent to the Grand Canal pNHA. It is located upstream of European designated sites in Dublin Bay. For this reason, European and nationally designated sites have been considered as Key Ecological Receptors for the Proposed Development. The National Biodiversity Data Centre (NBDC) database search returned no records of re-listed species or Flora Protection Order species within 2km of the survey area. However, the NPWS database holds records for a number of species within the local area protected under the Flora (Protection) Order, 2015. None were recorded on the Proposed Development site.

33. The Proposed Development site is comprised primarily of agricultural land. The following habitat types, assigned using the Heritage Council classification system (Fossitt, 2000), were identified within the survey area and are:
- Dry meadows and grassy verges (GS2);
 - Hedgerows (WL1); and,
 - Recolonising bare ground (ED3).
34. The majority of the Proposed Development site is comprised of dry meadows and grassy verges (GS2). The ecological value of this habitat type within the Proposed Development site has been classified as being of local importance (lower value). However, this habitat provides food and shelter to a range of fauna including birds and rabbits.
35. There is an area of recolonising bare ground within the north-eastern part of the Proposed Development site. The ecological value of this habitat type is considered to be of local importance (lower value).
36. There is hedgerow habitat (730m length) within or on the boundary of the Proposed Development site. The hedgerows are comprised of a mix of native and shrub species. The ecological value of hedgerow habitat within the Proposed Development site has been classified as being of local importance (higher value) as they provide valuable ecological connectivity within the site and to the surrounding area. This habitat also provides a range of feeding and resting resources to birds and small mammals.
- Mammals*
37. No signs of badger or other protected mammals were noted in the Proposed Development site. It is possible, however that the hedgerows could host populations of hedgehog and pygmy shrew. Given the suitable habitat within the Proposed Development, small mammals have been valued as being of local importance (higher value). There is also potential for otters to use the northern part of the overall site
- Birds*
38. A wide range of bird species were recorded within the Proposed Development site. Within the Proposed Development site the surveys in May and June 2022. Many of these birds are considered common for the surrounding landscape. Of these species, nine (greenfinch, herring gull, house sparrow, lesser black-backed gull, linnet, skylark, starling, swallow and willow warbler) are Amber-listed and are therefore considered to be of Moderate Conservation Concern. Two of these species (kestrel and swift) are Red-listed and are considered to be of High Conservation Concern.
39. Due to the presence of suitable habitat within and directly adjacent to the Proposed Development site, the local breeding bird populations are considered to be of local importance (higher value).
- Wintering birds*
40. A flock of lapwing were recorded on the site in November 2018 although their habitat (arable field) is no longer available on the Proposed Development site. Other wintering bird species recorded included snipe. The habitats within and adjacent to the Proposed Development site are generally considered sub-optimal habitat for wintering SCI waterfowl and waders.
41. The wintering SCI bird populations are considered to be of local importance (higher value), however considering there is no suitable habitat for wintering SCI bird species, they are not considered to be a key ecological receptor. The habitats within the Proposed Development site offer suitable foraging habitat and shelter for smaller overwintering species such as passerines (e.g. redwing *Turdus iliacus*) and other wintering non-SCI bird species, and their wintering populations are assessed to be of local importance (higher value).

Bats

42. The hedgerows located along field boundaries form part of a wider ecological corridor network which connects the site to the surrounding area within the masterplan area and beyond. The lands within the Proposed Development are largely unlit with the exception of light spill originating from the adjacent main roads, and therefore are highly suitable for commuting and/or foraging bats.
43. During the bat activity surveys five bat species were recorded foraging and commuting within, or immediately adjacent to, the Proposed Development site: brown long-eared bat, common pipistrelle, Leisler's bat, *Myotis* species and soprano pipistrelle. The activity was mainly focused along the hedgerows and the Grand Canal although noticeably not along the western hedgerow referred to under the AI response. The local bat populations using the Proposed Development site and the surroundings as foraging and commuting habitat are valued as being of local importance (higher value).

Amphibians and reptiles

44. There are no areas of standing water suitable for breeding common frog within the Proposed Development site. Although no individuals were observed during the surveys, their presence on site cannot be ruled out based on availability of suitable foraging and commuting habitat (grassland) within the subject lands and their wide distribution across the country. Considering the presence of suitable foraging and commuting habitat for common frog in the Proposed Development site and its immediate vicinity and records of common frog in the area, the local common frog populations are valued to be of local importance (higher value).
45. There is no suitable habitat (e.g. ponds) for smooth newt within the Proposed Development. No individuals were observed at the time of the survey, and it is considered unlikely that smooth newts are present within the Proposed Development site due to lack of suitable habitat. Local smooth newt populations are of local importance (higher value), however, they are not considered to be a key ecological receptor due to lack of suitable habitat, provided that there will be no indirect off-site effects.
46. Although there are no suitable basking spots (e.g. rocks or logs) within the Proposed Development and no individuals were observed during the surveys, their presence on site cannot be ruled out based on availability of suitable foraging and commuting habitat within the subject lands and their wide distribution across the country. The local common lizard populations are considered to be of local importance (higher value).

Fish

47. Considering that the waterbodies hydrologically connected to the Proposed Development site contain protected and/or rare fish species (*i.e.* Atlantic salmon and European eel) these fish populations are considered to be of county importance, whereas fish populations of species of no conservation concern (*e.g.* stickleback and roach) are valued as local importance (lower value).

Freshwater white-clawed crayfish

48. The nearest record is from the Camac River that is located c.3.5km to the south-east. The most recent record is from 2013. South Dublin County Council carried out a white-clawed crayfish survey in the Camac River in 2018 and found that the river holds good populations of the species (Scott Cawley, 2020). As the Camac River is connected to the Griffeen River via the River Liffey and holds good populations of white-clawed crayfish, Inland Fisheries Ireland have recommended to assume that the species is present within the Griffeen River as well (Scott Cawley, 2020).
49. Freshwater white-clawed crayfish is found in rivers, streams and lakes, and considering that the Camac River supports their populations and that there is a hydrological link between the Camac River and the Griffeen River, it is possible that the species can be found in the Griffeen River also (into which the Proposed Development site drains). Due to the presence of suitable habitat, local freshwater white-clawed crayfish populations are considered to be of county importance.

Other protected and/or rare invertebrates

50. There is suitable habitat for a variety of invertebrate species within the Proposed Development, as well as in the downstream habitats in the Griffeen River and beyond. Considering this, the local invertebrate populations are valued to be of local importance (higher value).

Mitigation measures

51. A range of mitigation measures are proposed to ensure that the construction phase of development will not impact upon the water quality of downstream watercourses.
52. In order to avoid disturbance or harm to breeding birds, their nests, eggs and/or their unflown young, all works involving the removal of trees, hedgerows, grasslands or the demolition of the structure will be undertaken outside of the nesting season (i.e. 1 March to 31 August inclusive); or where this seasonal restriction cannot be observed then a breeding bird survey will be undertaken by a suitably experienced ecologist in order to assess whether birds are nesting within suitable habitat affected by or immediately adjacent to the proposed works. Should nesting birds be encountered during surveys, it may be necessary to delay the removal of trees or hedgerows or the demolition of the buildings until after the nesting season (i.e. 1 March to 31 August inclusive), or until the chicks have fully fledged.
53. Construction lighting will be designed so as to be sensitive to the potential presence of bats and will adhere to the Guidelines as set out under Chapter 6 of the EIA Report. Other bat mitigation measures include the supervision of tree removal; and lighting proposals to mitigate light overspill into potential bat foraging and nesting areas.
54. Full landscaping details are provided in the landscaping plan accompanying this planning application (Kevin Fitzpatrick Landscape Architecture, 2022). The landscape strategy will continue as per the permitted development to enhance the biodiversity value of the Proposed Development site and provide green infrastructure links to the surrounding area and across the site. This will be supplemented by the green walls proposed to the south-east of the data centre facility.
55. The landscape planting includes planting of treeline, hedgerow, pond and wildflower hay meadow grassland habitats, which will mitigate the loss of pre-existing habitats for breeding and wintering bird species. In addition, landscaping will also include extensive areas of wildflower hay meadow throughout the Proposed Development, which will especially benefit granivorous (e.g. finches) and wintering bird species (i.e. snipe).
56. The lighting plans take into consideration sensitive wildlife areas (e.g. Grand Canal and areas of high bat activity marked in Figure 6.16), and are down lighting, and time limited where possible. The Proposed Development includes mitigation measures in relation to the detailed operational lighting design, and have been reviewed by a suitably qualified and experienced ecologist.
57. The Proposed Development is not likely to have a significant effect on any European sites nor any Nationally Designated sites, either alone or in combination with other plans or projects, and therefore mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on designated sites were not required beyond the removal non-native invasive species prior to construction.

Impacts

58. There will be no likely significant effects of the Proposed Development on designated sites. There will be a loss of some hedgerow associated with the Proposed Development although the extensive landscaping design and the mitigation strategy, will minimise the temporary impact of those effects on habitats over the medium to long-term, as these are likely to be in place prior to the commencement of the construction of the Proposed Development. Although there will be a temporary impact during the construction phase until the proposed planting becomes fully established, following implementation of measures to protect vegetation to be retained from accidental damage, potential effects of habitat loss as a result of the Proposed Development are reduced to levels not deemed significant at any geographical scale.

59. The full and successful implementation of the mitigation measures, will result in no residual impacts on roosting/ foraging/ commuting bats, or other mammals at any geographical scale.
60. Residual impacts on breeding birds include temporary displacement from the Proposed Development site during the construction phase and vegetation clearance, albeit at a local scale. However, assuming the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on breeding birds at any geographical scale.

Land, soil, geology and hydrogeology

Receiving environment

61. The site is relatively flat, there is a fall of approximately 1.5-2m from the south-western boundary of the site north-east towards the canal (from c. 66m AOD to c. 64m AOD). The site is in the catchment of the Griffeen River and the existing drainage is discussed in Chapter 8 of this EIAR. There is no connectivity with the adjoining canal which is lined.
62. The land surrounding the site is a mixture of agricultural (currently used as pasture land predominantly for livestock grazing to the west of the R120 and to the north of the canal), residential and industrial. According to the EPA website, there are a number of licensed IPPC facilities in the locality (Takeda Pharma Ltd, Grange BackUp Power Ltd. and Pfizer Biotech) and there are no licensed waste facilities in the vicinity of the subject site. Consultation with South Dublin County Council confirmed that there are no known illegal/historic landfills within 500 metres of the site.
63. On the GSI soil classification maps, the soil type beneath the eastern part of the site area predominantly comprises BminPD - Surface water Gleys / Ground water Gleys Basic. The western portion of the overall site area is composed predominantly of BMinDW soils-Grey Brown Podzolics/Brown earths basics. On the GSI regional mapping the site and overburden geology comprise Quaternary Glacial Till (TLs). The Glacial Till is derived from limestone and is a common soil cover in this region.
64. The following ground conditions were encountered during the investigation process: 0-0.3 metres below ground level (mbgl) of clayey topsoil is present. Cohesive deposits underlie this top soil until bedrock was encountered (i.e., from 0.3 to 1.1-3.2 mbgl). These deposits comprise a variation of firm to stiff sandy gravelly CLAY (glacial till) and overlie low permeability Calp limestone.
65. Inspection of available GSI data shows that the bedrock geology underlying the site and surrounding area is dominated by rocks of Carboniferous Age. The site and local area is underlain by Dinantian (Upper Impure) Limestones or 'Calp' limestone that is dark grey to black limestone and shale of the Lucan Formation.
66. Site specific information has been derived from an extensive site investigation involving drilling and trial pitting undertaken at the site in March 2018. Fifteen boreholes were drilled, nineteen trial pits were excavated, 19 dynamic probes were conducted adjacent to the trial pits and indirect and CBR tests were undertaken at nineteen locations. Six boreholes were designed as monitoring wells. Of these 5 no. boreholes and 6 no. trial pits are located within the application site. No bedrock outcrops were identified during the site investigations.
67. As there was no evidence of residual soil contamination based on visual assessment and laboratory analysis it is not likely that there is any resultant groundwater contamination leaching from the soil on the subject site.

Mitigation measures

68. In order to reduce impacts on the soils and geology environment a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include:
- Control of soil excavation and export from site;
 - Sources of fill and aggregates for the Proposed Development;

- Fuel and chemical handling, transport and storage; and
 - Control of water during construction.
69. A project-specific Construction and Environmental Management Plan (CEMP) will be established and maintained by the contractors during the construction and operational phases. A Draft CEMP is submitted by Winthrop as part of the application package. The project engineers, Pinnacle, Consulting Engineers, have estimated that a large level of top soil and sub-spoil will be generated. This will be reused on site for the already permitted landscape berms with any additional requirement brought from off the site.
70. Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment is free of nuisance dust and dirt on roads.
71. A range of fuel and chemical handling mitigation measures will be implemented during construction and will be included within the CEMP.
72. During the operational phase of the Proposed Development there is limited potential for site activities to impact on the geological and hydrogeological environment of the area. There will be no emissions to ground or the underlying aquifer from operational activities. There will be no impact on local or regional groundwater resources (abstraction) as a result of the Proposed Development.
73. Prior to operation of the Proposed Development, a comprehensive set of operational procedures will be established (based on those used at other similar facilities) which will include site-specific mitigation measures and emergency response measures that address fuel storage; and the increase in hard standing area.

Impacts

74. The implementation of mitigation measures will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the construction phase and that the residual impact will be **short-term-imperceptible**. Following the NRA criteria for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.
75. The implementation of mitigation measures will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the operational phase and that the residual impact will be **long-term-imperceptible**. Following the NRA criteria for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

Hydrology

Receiving environment

76. The Proposed Development is within the River Liffey catchment, which encompasses an area of approximately 1,370 km². The Proposed Development site is within c. 330m of the Griffeen River (stream) to the east of the site. The Lucan Stream is located c. 310m to the west of the overall site and runs in a northerly direction where it enters the River Liffey north of Lucan Village and to the west of the Griffeen outfall.
77. The Grand Canal runs in an east to west direction along the northern boundary of the overall site and is classified as a proposed National Heritage Area (pNHA). The pNHA is an area considered important for the habitats present or which holds species of plants and animals whose habitat needs protection. There is no hydrologic connectivity between the site and Grand Canal.
78. Dublin Bay is located c. 16km to the east (i.e., downstream) of the site. The site would have an indirect hydrological connection, through the Lucan Stream, the Griffeen River and the River Liffey, with European Sites within Dublin Bay

79. The closest EPA surface water quality station to the site is the 'Griffeen in Lucan Village' which is located in the Griffeen River c. 3 Km to the north (i.e., downstream) of the subject site, just before its junction with the River Liffey. Its most recent data indicated its status as Moderate. This 'Moderate' status is related to its biological conditions (Phytobenthos Status or Potential) and its nitrate conditions. According to the monitoring rounds carried out by the EPA during 2019 at the 'Griffeen in Lucan Village Station', a quality rating of 'Q3' (i.e., 'Slightly Polluted') has been defined for this station. This rating is based on its recorded nitrogen and nitrate conditions.
80. The existing site is greenfield development where surface water flows via overland drainage ditches and a surface water drain into the Lucan Stream and Griffeen River.
81. There is a 900mm diameter road crossing, which was installed as part of the newly constructed R120 (Newcastle Road) upgrade, adjacent to the subject site that connects into a 900mm diameter pipe located along a section of road on the opposite side to the subject site. This gravity sewer then runs in a northerly direction, prior to connecting into a ditch/stream network, which discharges through 3 no. culverts of varying sizes and which are located beneath the Grand Canal to the east. This outfall is then drained via a tributary into the Griffeen River. The aforementioned culvert, has been identified as having capacity to accommodate the proposed discharge from the subject site.
82. According to the South Dublin County Council information, there are 2 no. 450mm diameter spur connections, located along the eastern boundary of the property, within the newly constructed R120 (Newcastle Road) upgrade, adjacent to the subject site. These spur connections were left out to facilitate development of these lands and for the lands further west, known as Grange Castle West. This 450mm diameter sewer then connects into the existing Grange Castle Business Park pumping station. The effluent from this pumping station is then pumped via 3 no. rising mains, i.e. 100mm, 200mm & 450mm diameter, into the local infrastructural network which ultimately discharges onto Ringsend Wastewater Treatment Plant (WWTP). The existing foul sewer reticulation network has adequate capacity to cater for the proposed effluent discharge from the subject site and there are no known issues noted with the sewer reticulation network.
83. There is a 400mm diameter main located along the eastern boundary of the property, within the newly constructed R120. There are 2 no. 300mm diameter capped connections with sluice valves, have been left off the aforementioned trunk water main, in order to facilitate development of these lands and for the lands further west, known as Grange Castle West. There is adequate capacity within the existing water main network to supply the proposed development.
84. The Flood Risk Assessment that accompanies this application and forms a stand-alone document by Pinnacle Consulting states that the Proposed Development site is located within Flood Zone C "Low Probability". Therefore, the development is classified as appropriate for this flood zonation.

Mitigation measures

85. The design of the Proposed Development has taken account of the potential impacts of the development and the risks to the water environment specific to the areas where construction is taking place.
86. A detailed CEMP has been prepared by Winthrop Engineering and Contracting Limited and will be maintained by the appointed contractors during the construction phase of the proposed project. The CEMP will cover all potentially polluting activities and include an emergency response procedure.
87. Silt reduction measures on site to control surface water runoff will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds). The temporary storage of soil will be carefully managed and stored away from existing drainage features to remove any potential impact.
88. Mitigation measures will be taken during the construction stage in order to prevent any spillages of fuels and prevent any resulting impacts to surface water systems.

89. Prior to operation of the Proposed Development, a set of operational procedures will be established (based on those used at other similar facilities) which will include site-specific mitigation measures and emergency response measures.
90. The proposed drainage system design will incorporate SuDS features throughout. The proposed surface water attenuation system will be released from the attenuation ponds via a hydrobrake to the public surface water network.

Impacts

91. The implementation of mitigation measures will ensure that the potential impacts on the surface water environment do not occur during the construction phase and that the predicted impact will be ***short-term, imperceptible and neutral.***
92. The implementation of mitigation measures will ensure that the potential impacts on the surface water environment do not occur during the operational phase and that the predicted impact will be ***long-term-imperceptible- neutral.***

Noise and vibration

93. A series of noise surveys have been undertaken as part of the EIA Report preparation for the Proposed Development. Full details of the noise monitoring are presented in Chapter 9 of this EIA Report. Road traffic noise and plant noise from nearby facilities, were noted as the most significant source of noise and typically dictated ambient noise levels at the nearest noise sensitive locations to the site during daytime and night-time periods. Plant noise from nearby facilities was the dominant noise source at night.
94. These typical noise levels have been considered when discussing appropriate noise criteria in relation to the development. Plant noise, and traffic noise from the local road network and other roads in the study area dictated noise levels at all locations during the survey periods in question. It is considered that these conservative assumptions will ensure that appropriate noise criteria are applied to the Proposed Development.

Mitigation measures

95. In order to sufficiently ameliorate the likely noise impact, a schedule of noise control measures has been formulated for both construction and operational phases associated with the Proposed Development.
96. Various mitigation measures will be considered and applied during the construction of the Proposed Development in accordance with best practice and standards. These will include a variety of practicable noise and vibration control measures, that will include:
- limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
 - establishing channels of communication between the contractor/developer, Local Authority and residents;
 - appointing a site representative responsible for matters relating to noise and vibration;
 - monitoring levels of noise and/or vibration during critical periods and at sensitive locations; and
 - all site access roads will be kept even so as to mitigate the potential for vibration from lorries.
97. Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These may include:
- selection of plant with low inherent potential for generation of noise and/or vibration;
 - erection of barriers as necessary around items such as generators or high-duty compressors;
 - locate any noisy plant as far away from sensitive properties as permitted by site constraints and the use of vibration-isolated support structures where necessary.

98. During the operational phase, noise from external plant will be minimised by a number of measures. Noise from external plant will be minimised by purchasing low noise generating equipment and incorporating appropriately specified in line attenuators for stacks and exhausts where necessary. With due consideration as part of the detailed design process, this approach will result in the site operating well within the constraints of the best practice guidance noise limits that have been adopted as part of this detailed assessment.
99. The noise impact assessment has demonstrated that mitigation measures are not required in relation to additional vehicular traffic on public roads.
100. Noise criteria are provided by relevant bodies with consideration of the likely impact of noise on human health. The construction phase is short-term and therefore any elevated levels of noise will be of limited duration and, as a result, are not expected to pose any risk to human health. In terms of the noise exposure of construction workers and potential hearing damage that may be caused due to exposure to high levels of noise, the Safety, Health and Welfare at Work (General Application) Regulations 2007 (Statutory Instrument No. 299 of 2007) provides guidance in terms of allowable workplace noise exposure levels for employees. The Regulations specify two noise Action Levels at which the employer is legally obliged to reduce the risk of exposure to noise. The appointed contractor will be required to comply with the Regulations and provide appropriate noise exposure mitigation measures where necessary. No significant noise impacts are expected from the operational phase of the proposed development. As such, there is no anticipated risk of long-term exposure to noise on human health resulting from the proposed development.

Impacts

101. During the construction phase of the Proposed Development there will be some impact on nearby noise sensitive properties due to noise emissions from construction site works. The application of noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum. Also, it is reiterated that any construction noise impacts will be ***moderate, negative*** and ***short-term*** in nature. Also, it is considered that as the Proposed Development progresses from initial ground works that construction noise impacts will reduce from slight to ***not significant***.
102. Proprietary noise and vibration control measures will be employed in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at the façade of any nearby noise sensitive locations. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements. The resultant noise impact is ***negative, slight*** and ***long-term***.
103. Any change in noise levels associated with vehicles at road junctions in the vicinity of the Proposed Development is expected to be ***imperceptible***.

Air quality

Receiving environment

104. The modelling of air emissions from the site was carried out to assess the concentrations of nitrogen dioxide (NO₂), as well as particulate matter (PM₁₀ and PM₂₅) beyond the site boundary and the consequent impact on human health and the environment. The assessment was undertaken in order to quantify the impact of the Proposed Development on ambient air quality concentrations. The study adopted a conservative approach which will lead to an over-estimation of the actual levels that will arise.

Mitigation measures

105. The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies. For example, locating construction compounds and storage piles downwind or not in a location proximate of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

106. Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. These are set out in detail within Chapter 10 of the EIAR and address haulage roads; land clearing / earth moving; storage piles; and site traffic on public roads. The key features with respect to control of dust will be:
- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
 - The development of a documented system for managing site practices with regard to dust control;
 - The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed; and
 - The specification of effective measures to deal with any complaints received.
107. The stack heights of the back-up diesel generators for the Proposed Development have been designed at a height of 25m to ensure that an adequate height was selected to aid dispersion of the emissions and achieve compliance with the EU ambient air quality standards beyond the site boundary (including background concentrations). No additional mitigation measures are proposed for the operational phase of the Proposed Development.
108. On-site emissions of greenhouse gases will mainly derive from the gas generators with infrequent standby emissions due to the diesel generators. However, the emissions from the gas generators will form part of the EU-wide Emission Trading Scheme (ETS) and thus greenhouse gas emission from onsite electricity generation are not included when determining compliance with the targeted 42% reduction in the non-ETS sector. In addition, gas generators have the lowest greenhouse gas emission rate of any fossil fuel. Thus, no mitigation measures for the gas generators will be required.

Impacts

109. When the dust mitigation measures detailed in the mitigation section of Chapter 10 of the EIA Report are implemented, fugitive emissions of dust and particulate matter from the site will be **short-term** and **not significant** in nature, posing no nuisance at nearby receptors.
110. Based on the scale and temporary nature of the construction works and the intermittent use of equipment, the potential impact on climate change and transboundary pollution from the proposed development is deemed to be **short-term** and **not significant** in relation to Ireland's obligations under the EU 2030 target.
111. Best practice mitigation measures are proposed for the construction phase of the Proposed Development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the Proposed Development is likely to be **short-term** and **imperceptible** with respect to human health.
112. A number of different air quality scenarios were assessed. The results of the modelling assessment based on the proposed development have found that ambient concentrations of NO₂, due to emissions from the gas generators, scheduled testing of diesel generators on site and standby operation of the diesel generators, are below the air quality limit values. Thus, it is predicted that the impact of the proposed development on air quality will be **long-term, negative** and **not significant**.
113. The cumulative assessment results are also within the relevant air quality limit values for NO₂ and as such the impact to air quality as result of emissions from both the proposed development and Phases 1, 2, 3, 4 and 5 of the neighbouring EdgeConneX site and Licenced IED sites at Grange Back-Up Power, Takeda and Pfizer is predicted to be **long-term, negative** and **insignificant**.
114. Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. As a result of this there is the potential for flooding related impacts on site in future

years. A detailed flood risk assessment has been undertaken as part of this planning application and adequate attenuation and drainage have been provided for to account for increased rainfall in future years. Therefore, the impact will be **imperceptible**.

115. Given that the use of natural gas or electricity to power the facility will achieve net zero by 2050 and the commitment to offset all interim fossil fuel derived GHG emissions by the purchase of 24/7 Green Energy Renewable Matching the predicted impact to climate is deemed to be a **long-term, negligible impact**.
116. As demonstrated by the dispersion modelling results, emissions from the site assuming scheduled testing as well as emergency operation of the standby generators are compliant with all National and EU ambient air quality limit values and, therefore, will not result in a significant impact on human health.

Climate

Receiving environment

117. Climate change is a natural phenomenon but in the industrial age human activities, through the release of GHGs, have impacted on the climate (EPA, 2017). The release of anthropogenic GHGs is altering the Earth's atmosphere resulting in a 'Greenhouse Effect'. This effect is causing an increase in the atmosphere's heat trapping abilities resulting in increased average global temperatures over the past number of decades. The release of CO₂ as a result of burning fossil fuels, has been one of the leading factors in the increase of the 'Greenhouse Effect'. The most significant GHGs are CO₂, methane (CH₄) and nitrous oxide (N₂O).
118. The EPA 2022 GHG Emissions Projections Report for 2021 – 2040 (EPA, 2022b) notes that there is a long-term projected decrease in greenhouse gas emissions as a result of inclusion of new climate mitigation policies and measures that formed part of the National Development Plan (NDP) which was published in 2018 and the 2021 Climate Action Plan published in 2021. Implementation of these are classed as a "*With Additional Measures*" scenario for future scenarios. A change from generating electricity using coal and peat to wind power and diesel vehicle engines to electric vehicle engines are envisaged under this scenario. While emissions are projected to decrease in these areas, emissions from agriculture are projected to grow steadily due to an increase in animal numbers. However, over the period 2021 to 2030 Ireland is projected to cumulatively exceed its compliance obligations with the EU's Effort Sharing Regulations (Regulation (EU) 2018/842) 2030 targets by approximately 52.3MtCO_{2eq} under the "*With Existing Measures*" scenario. However, the projections indicate that Ireland can meet its non-ETS EU targets over the period 2021 – 2030 assuming full implementation of the Climate Action Plan and the use of the flexibilities available (EPA, 2022b).

Mitigation measures

119. The objective of the mitigation measures in terms of Climate is to ensure that GHG emissions are minimized wherever possible during the construction phase of the proposed development. These are all aimed at reducing the embodied emissions associated with transport.
120. The gas engines and diesel generators will be regularly serviced to ensure that they operate to their maximum efficiency. In addition, Solar PV panels will be installed at roof level above the office. Additionally, waste heat associated with the facility will have the capacity to connect with a future district heating scheme developed by others. In addition to the above factors, the following measures will be employed by the facility.
- The facility will purchase GO RECS to offset the carbon footprint at 100% carbon free for 2021 and onwards,
 - 24/7 Green Energy Renewable Matching will be committed to as part of the development.
121. The Applicant will enter into binding agreements that will obligate the end user, to enter into arrangements which are capable of underpinning new renewable energy generation calculated to offset the energy consumed by the proposed development from the electricity grid or onsite gas generators.

122. Through these obligations, it is the goal of the Applicant that for every unit of energy consumed by the data centre, a unit of new renewable energy generation would be despatched to the wider electricity system to off-set it, thus delivering the objective of operating the proposed development on a net zero carbon basis that would not impact Ireland's overall climate targets.

Impacts

123. Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. As a result of this there is the potential for flooding related impacts on site in future years. A detailed flood risk assessment has been undertaken as part of this planning application and adequate attenuation and drainage have been provided for, to account for increased rainfall in future years. Therefore, the impact of climate change on the Proposed Development will be ***imperceptible***.
124. Under the Proposed Development Scenario, the main GHG emissions will be the use of the gas engines to provide power to the data centre and infrequent operation of the backup generators. The direct (due to natural gas and diesel usage) CO₂ emissions to operate the Proposed Development has been assessed below in the context of Ireland's national annual CO₂ emissions.
125. For the Proposed Development, the facility will use natural gas/biomethane the mix of which will change with year as the biomethane fraction increases. Thus, based on natural gas from the gas engines for 8,688 hours per year and diesel generators usage for 72 hours per year, will consume 45.1MW of power this equates to 393.6 GWh annually. This translates to approximately 163,610 tonnes of CO₂eq per year (including generator testing) based on the likely 2025 natural gas / biomethane mix and approximately 145,940 tonnes of CO₂eq per year (including generator testing) based on the likely 2030 natural gas / biomethane mix (ESB, 2022).
126. For the Proposed Scenario, the gas engines will fully operate under the ETS which will gradually increase the carbon price in future years in order to ensure all EU-wide GHG emission targets are met under the scheme.

Landscape and visual impact

Receiving environment

127. The proposed built development is located 135m south of the Grand Canal tow path at its closest point. The application site is situated to the west of the Grange Castle Business Park, separated by the R120 road. It is an irregular shaped area measuring 5.14ha. in area.
128. The ground levels within the overall site area are generally flat with a slow and gradual fall from the western edge of the overall site towards the north eastern corner. From the lowest level in the north east (63.40m, near the residence at the 12th lock) the lands rise by 6m towards the south-west of the site (69.43m). However, the change in ground levels are more subtle within the application site and fall from south-west to north-east by c. 1m.
129. The land use of the application site and the overall site is primarily arable agricultural fields with traditional hedgerow field boundaries. The hedgerows are low and sparsely vegetated in sections. The land in the most northern section of the overall site contains several buildings, primarily agricultural barns and sheds but also a number of residences. The field pattern is also smaller in the northern section of the lands. Two large electricity pylons are situated in the northern section of the lands with the power cables running across the site on an east west axis.
130. The overall lands are bounded on the north by the Grand Canal public amenity and proposed Natural Heritage Area. The site is separated from the canal and towpath by a local access road and trees and vegetation along the edge of the canal.
131. In the wider landscape the site is in a generally flat landscape on the edge of two landscape types. The landscape to the east and south east is characterised by large built developments and new tree lined roads. Between these built developments are large flat green areas that were used for agriculture and the landscape is still of a traditional field and hedgerow boundary typology. To the

west and south the landscape is that of a traditional agricultural landscape with medium to large field patterns. The landscape to the north beyond the canal is that of the urban fringe characterised by the transition from rural landscape to a built urban environment.

132. According to the Tree Survey and Report, by the Tree File Ltd. (refer to Appendix 12.2, updated as part of the AI response) the historic tree cover on the site is primarily contained within the agricultural hedgerows on the northern boundary of the site. Throughout the rest of the site there are no trees worthy of including in the report. The arrangement of the trees and hedgerows are remnants of the agricultural stock proof field boundaries. The report finds that due to the lack of management and subsequent deterioration the original Hawthorn is now overrun by Bramble, Blackthorn and Ivy in several places. The overall site is described as supporting 'little material of Arboricultural interest' and having very few trees that would be considered valuable. Throughout the application site area there are no trees worthy of including in the report.
133. Within the application lands there is an extant permission for a Data Centre facility (SDCC Planning Ref. SD19A/0042 / ABP Ref. PL06S.305948) on lands to the south; and for a pair of data centres and a Gas Power Plant on lands to the west and south-west as permitted under SDCC Planning Ref. SD21A/0042. The permitted developments are very similar to the nature and extent of the Proposed Development. This development is the third and final phase of the overall site, however the permitted development will be subject to some minor amendments as a result of this application.
134. The location from which the site is most visually prominent is from the R120 to the east of the lands. Due to the recent road works the roadside hedgerows have been removed from the majority of this boundary and the site is open to views from the east. From this section of the R120 the site forms part of the foreground of the view. The site is visually prominent due to the sites proximity to the viewpoint, the local topography and the recent removal of the boundary hedgerow vegetation to facilitate the R120 upgrade works. The views from the R120 are expansive including a wide sweep of the local landscape in which the pylons on the site are prominent features. Due to the flat nature of the topography the subject lands form a small section of the wider view. However, the expansive nature of this view is temporary as the tree planting associated with the R120 upgrade, once established, will start to form a visual screen. The Dublin Mountains are partially visible from this location and form part of the ridgeline of the views to the south.
135. The overall site is also visible from the Green Route of the Grand Canal Way at the lock gate and the towpath directly to the north of the lands on both sides of the canal. The hedgerows, trees and buildings on the most northern section of the lands form part of this view. In parts where the hedgerow vegetation is thinner, partial glimpsed views further into the site are possible.
136. The subject lands and vegetation are visible from the residential properties along the R120 on the eastern side of the road. Due to the recent removal of the roadside vegetation the view from these properties is quite extensive over the site and landscape. However, this is a temporary view as the tree planting associated with the R120 works, once established will start to form a visual screen.
137. The site is not visible from locations in the wider landscape due to the flat nature of the topography, the scale of the local built development and the significant number of trees in the area.

Mitigation measures

138. The mitigation of potential negative landscape and visual impacts has influenced the design and layout of the scheme from the beginning of the design process. As a result, the following landscape design mitigation measures have been made:
- earth modelling and large tree planting reinforced with woodland whip planting in belts is proposed to provide a high level of visual screening of the most sensitive views of the development;
 - the creation of a wetland and woodland habitat in a buffer zone between the canal and the built development and provision of public access to some of these habitats;
 - the colour palette chosen for the building aims to further reduce any visual impact of the building; and

- Green walls are proposed to the south and east that will enclose the water tower and pump house compound.

Impacts

139. The initial construction operations created by the clearance of the site and the construction of the buildings and plant will give rise to temporary or short term impacts on the landscape character, through the introduction of new structures, machinery etc. and the removal of vegetation. The conversion of part of the site from an agricultural field landscape type to a building site, to build the data centres and associated development, is likely to be perceived in the **short-term** as a **negative** 'loss' of landscape character, particularly by sections of the local community closest to it.
140. The construction compounds, temporary car parking and storage facilities etc. will be located sensitively to avoid any visually sensitive areas. The activities that will cause the most significant visual impact are not close to the most sensitive views along the canal. Furthermore, as the site is located within an overall site with an extant permission for a similar type and scale of development. The lands are also adjacent to an existing business park with recent built developments and developments currently under construction, and the recent R120 upgrade works on the east perimeter of the lands, the visual elements associated with construction would be considered part of the existing urban landscape.
141. With the above considered the negative visual impact on the landscape character during construction would be considered **moderate** in magnitude and **short-term** in its duration.
142. The initial removal of a section of the agricultural field landscape to be replaced with built development would be considered a negative impact on the landscape character. However, the landscape measures proposed with this development and the previously permitted schemes on the overall site, will significantly improve the quality of the landscape character in this area. The native woodland, scrub, wetland and grassland habitats to be created would have a very positive impact on the landscape character of this area and the wider environment of the canal and canal walks. Part of the wetland and woodland areas that are already permitted will be publicly accessible expanding the public amenity of the area. The initial impact of the built development on the landscape character could be perceived as negative in the short-term due to the change in type from a field to a built structure. In the long-term as the habitats establish, and the impact of the change in the landscape is reduced, the impact on the landscape character of this area would be considered positive in nature.
143. There have been recent built developments of a larger scale in the local vicinity. Many of these built developments are dominant in views from the site. In this context the proposed development would be considered a continuation of existing trends in the local area.
144. The overall impact on the landscape character would therefore be considered **positive** due to the level of landscape and ecological enhancement proposed as part of the development of the overall site, and restricting the built development, as already permitted phases of the development of the site, to an area set-back a distance from the canal and its immediate environs.
145. A visual impact assessment of ten verified views from specific locations was undertaken that describe the existing view and the proposed and permitted development on day one of operations. Where the proposed built elements are not visible a red line indicates the outline of the proposed development. The permitted built elements are indicated with a red line. The set of photomontages are viewable within Chapter 12 of the EIA report, and in an A3 booklet prepared by Digital Dimensions for clarity purposes.

Traffic and transportation

Receiving environment

146. The application site of 5.14ha. is located within the administrative area of South Dublin County Council approximately 13km west of Dublin City Centre, and around 4km west of Clondalkin Village, immediately south of the Grand Canal. The site is adjacent to the Grange Castle Business Park and

is bounded to the north by planting and the Grand Canal; the R120 to the east; agricultural land to the south and west.

147. The application site is accessed via the recently realigned R120 to the west of the Grange Castle Business Park. The R120 links with Adamstown to the north; and with the internal Grange Castle road network, and Newcastle, to the south. The realigned R120 contains a shared 3m wide footpath and cycle path on either side of the single lane carriageway. There are two closed off agricultural entrances from the R120 into the site. A local access also serves the dwelling outside and to the north-east of the site adjacent to the canal.
148. The Adamstown Road (R120) and Nangor Road (R134) Improvement Scheme is complete. The Adamstown Road (R120) and Nangor Road (R134) Improvement was designed to take into account the predicted level of traffic based on local land use zoning. It is, therefore, reasonable to conclude that the proposed development, as permitted under the site-specific zoning, would be accommodated on the Adamstown Road (R120) and Nangor Road (R134) with acceptable levels of delay and congestion. Covid 19 restrictions have affected local traffic flows as school and non-essential business are shut and people work from home. Therefore, no new traffic surveys have been carried out as part of this assessment.
149. The realignment of the R120 created cycle paths on either side of the road that will connect into other cycle paths along the realigned R134. A planning application was approved in 2019 to the north of the canal to the immediate north of the site by South Dublin County Council that will enable the extension of the greenway to the west of the lock and bridge to Hazelhatch.
150. The nearest stop along the New Nangor Road (R134) are on route no. 68 that connects Newcastle with the city centre. These stops are some 700m to the south of the application site. The nearest stations are Adamstown, approximately 2.4km to the north-west of the site and Clondalkin-Fonthill approximately 6km to the north-east of the site. These stations are served by around 20 suburban commuter trains in each direction during weekdays.

Mitigation measures

151. During the construction phase of the Proposed Development, the following measures will be put in place to reduce the impact on the surrounding environment:
 - During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
 - All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
 - A dedicated 'construction' site access / egress junction will be provided during all construction phases. This will coincide with the overall site access/
 - Provision of sufficient on-site parking and compounding to ensure no potential overflow of construction generated traffic onto the local network.
 - Site offices and compound will be located within the site boundary. The site will be able to accommodate employee and visitor parking throughout the construction period through the construction of temporary hardstanding areas.
 - A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities.
 - A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.
 - Dedicated construction haul routes will be identified and agreed with the local authority prior to the commencement of construction activities on-site.
 - Truck wheel washes will be installed at construction entrances if deemed necessary and any specific recommendations with regard to construction traffic management made by the Local Authority will be adhered to.
 - On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated in full on completion of the works.
152. The lead contractor appointed for the construction of the development shall be required to prepare a Construction and Environmental Management Plan, including a plan for the scheduling and management of construction traffic that details the measures to be taken to mitigate the risk of such

events. The lead contractor is also responsible for ensuring that all other subcontractors comply with the plan. It is anticipated that the generation of HGV's during the construction period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods.

153. It is proposed to provide car parking that will meet the expected-on site demand. The marketing of new pedestrian & cyclists routes along with public transport information will further reinforce the efforts been made towards a modal shift away from car-based trips.
154. Staff will be encouraged to avail of these facilities for travel to and from work. Provision of this information would be made upon opening of the proposed development, as this represents the best opportunity to secure travel behaviour change. It is anticipated that this measure may help to reduce the level of traffic at the proposed development, thus providing mitigation against the already minimal traffic and transport effects of the development.

Impacts

155. All construction activities will be governed by the Construction Traffic Management Plan (CTMP), and an outline CTMP is included with this application and the details of which will be agreed with the local authority prior to commencement of construction on site. The CTMP shall be termed a 'Live Document', such that any changes to construction programme or operations can be incorporated into the CTMP.
156. Whilst it is not possible at this stage to accurately identify the day to day traffic movements associated with the construction activities, based on experience of similar sites it is considered that the number of construction related heavy goods vehicle movements to and from the application site will be approximately 15 arrivals and departures during the first 3-4 months of works and decreasing to 3 to 5 thereafter.
157. Similarly, the general workforce is unlikely to exceed approximately 250 (150 on average) in number, which with an allowance for shared journeys could equate to a maximum of around 120-150 arrivals and departures per day. A construction car park for workers immediately adjacent to the new access from Grange Castle Business Park will be created on the start of works by the laying of a temporary surface for vehicles. This number of construction vehicle movements is considered to be relatively low compared to the wider road network. It should be noted that the majority of such vehicle movements would be undertaken outside of the traditional peak hours, and it is not considered this level of traffic would result in any operational problems.

Cultural heritage

Receiving environment

158. The study area, which comprises a buffer of approximately 1km from the proposed development, is characterised by upstanding archaeological monuments dating to the medieval period. Archaeological excavations in the area have also uncovered a number of prehistoric sites. All recorded archaeological monuments and features noted below are located outside the site boundary.
159. The site assessments involved the examination of recorded archaeological, architectural and cultural heritage constraints and the identification of previously unrecorded features of archaeological, architectural and cultural heritage interest within the site.

Geophysical survey

160. A geophysical survey was conducted in 2018 as part of the assessment. The aim of the geophysical survey was to locate and identify any responses of potential archaeological interest within the Proposed Development site. The geophysical survey comprised a detailed gradiometer survey throughout.

Results of Archaeological Testing and Excavation

161. Archaeological testing was undertaken at the site under Licence No. 19E0038 (also Detection License No. 19R0086) by AMS Ltd, issued by the Department of Culture, Heritage and the Gaeltacht. The aim of the testing was to assess the potential features identified in geophysical

survey and sample the remaining areas. Archaeological excavation of the identified features was also undertaken under the same license following consultation with the Department.

162. This work revealed the buried remains of a significant archaeological complex that was thought at the time to comprise a long-running ditch, suggested to form part of an ancient field system; a small spread of burnt stones of potential prehistoric date; and a large, circular enclosure, seemingly defined by two, widely-spaced concentric ditches.
163. Archaeological excavations were undertaken by AMS Ltd over a 16-week period, from May to September 2019. It includes the completed specialist reports relating to the artefactual, environmental and faunal evidence recovered from the site, as well as the results of 16 radiocarbon dates.
164. Full excavation of these areas revealed an impressive array of features associated with multi-phase settlement and agricultural activity possibly extending from early prehistoric to modern times. The principal remains were identified in the south-west of the site and comprise two successive phases of enclosure. The earliest phase comprised a large, circular enclosure defined by two, widely spaced concentric ditches and associated with several possible radial ditches. This was followed by the construction at the same location of a large, sub-circular ditched enclosure. Both enclosures produced evidence for internal occupation, while their enclosing ditches were likely originally accompanied by internal earthen banks.
165. The enclosures, which represent impressive examples of the widespread ringfort (or ráth) monument type, appear to have enjoyed a measure of long-term continuity of use from the sixth- to eleventh-centuries AD. They likely functioned as enclosed settlements or farmsteads of the upper echelons of early Irish society. The investigations also produced limited evidence for pre-enclosure, prehistoric, activity, mostly in the form of pits filled with burnt material. A number of prehistoric artefacts, most notably a polished stone axehead and a leaf-shaped flint arrowhead, may also be indicative of early prehistoric activity in the locality, though the possibility that these are curated objects cannot be dismissed. Evidence for medieval and post-medieval agricultural activities is also represented by a network of linear and curvilinear ditches and drains; the long-running linear ditch identified probably relates to post-medieval agriculture.

Mitigation measures

166. A programme of licensed archaeological monitoring will be agreed with the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht, for areas not previously subjected to archaeological testing.
167. A report outlining the results of the programme of archaeological monitoring will be prepared and will include a detailed method statement for any archaeological excavation of features identified, agreed in advance with the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht. The report will include a schedule of works detailing timeframes, personnel and logistical requirements.
168. Any areas that require archaeological excavation will be cordoned off to facilitate the archaeological team to carry out the excavations. A buffer zone will be agreed with National Monuments Service and no construction works will be undertaken in these areas until archaeological excavations have been completed.
169. Provision has been made for all costs associated with archaeological testing, any required excavations and reporting of the results to the standards required by the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht.
170. As there are no predicted impacts on the architectural resource, no mitigation is deemed necessary in relation to architecture.
171. As there are no predicted impacts on the cultural heritage resource, no mitigation is deemed necessary.
172. There are no mitigation measures required for the operational phase of the Proposed Development in relation to the archaeological, architectural and cultural heritage resource.

Impacts

173. The construction phase of the proposed development will not impact directly on any sites included in the Record of Monuments and Places. Geophysical survey and testing identified a number of archaeological features which were subsequently excavated. Should any further sub-surface archaeological features survive in areas not already subjected to testing, the ground disturbance phase of the proposed development would impact negatively on them.
174. There are no predicted impacts for the operational phase of the Proposed Development upon the archaeological, architectural and cultural heritage resource.

Waste management

175. An assessment of the potential impacts associated with waste management during the construction and operational phases of the proposed development was undertaken. The receiving environment is largely defined by South Dublin County Council as the local authority responsible for setting and administering waste management activities in the area through regional and development zone specific policies and regulations.

Mitigation measures

176. During the construction phase, typical C&D waste materials will be generated which will be source segregated on-site into appropriate skips/containers, where practical and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Site levelling, foundation construction, service trenches and access routes will require the excavation of material, which will be able to be reused onsite for berms and other landscaping purposes.

Impacts

177. A carefully planned approach to waste management and adherence to the site-specific Resource & Waste Management Plan (Appendix 14.1) during the construction phase will ensure that the effect on the environment will be **short-term, neutral and imperceptible**.
178. All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas on the site. Waste will be collected from the waste storage areas by permitted waste contractors and removed off-site for re-use, recycling, recovery or disposal.
179. A carefully planned approach to waste management and adherence to the mitigation measures outlined in Chapter 14 are implemented then a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term, neutral and imperceptible**.

Material assets

180. Material Assets considers physical resources in the environment which may be of human or natural origin. This chapter of the EIAR has been fully reviewed having regard to the Additional Information and point 17(c) of the request of the Planning Authority. This has included a wider consideration of the proposed development by itself and in combination with other data centres that address both intra-project effects as well as inter-project effects.
181. The objective of the assessment is to ensure that these assets are used in a sustainable manner, so that they will be available for future generations, after the delivery of the Proposed Development.
182. In accordance with the 2022 EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, "*Material assets can now be taken to mean built services and infrastructure*". Material assets of a natural origin are dealt with comprehensively within the other chapters of the Environmental Impact Assessment Report.
183. This chapter considers the key aspects relating to material assets of a human origin of the Proposed Development site and the surrounding area, namely power and electricity supply; telecommunications; surface water infrastructure; foul drainage infrastructure; and water resources.

184. The residual construction effects on Material Assets are:
- **short to medium term, neutral** and **imperceptible** effects on power and electrical supply;
 - **temporary, imperceptible and neutral effects** on gas supply; and
 - **short to medium term, neutral** and **imperceptible** effects on surface water infrastructure, foul drainage infrastructure, water supply and telecommunications.
185. These are not significant in terms of EIA.
186. The residual operational phase effects remain as reported in the assessment of effects section, as being:
- **long-term, neutral, moderate** effect on power and electrical supply;
 - no effect on gas supply;
 - **long term, neutral and imperceptible** effects on surface water infrastructure, foul drainage infrastructure, water supply and telecommunications.
187. These are not significant in terms of EIA.

Cumulative effects

188. The potential cumulative effects on the environment of the Proposed Development with other developments on the site (i.e. the permitted development) and the cumulative effects with developments in the locality (including planned and permitted developments) are addressed within each individual chapter of the EIA Report.

Interactions between environmental factors

189. The purpose of this chapter of the EIA Report is to draw attention to significant interaction and interdependencies in the existing environment. Marston Planning Consultancy in preparing and co-ordinating this EIA Report ensured that each of the specialist consultants liaised with each other and dealt with the likely interactions between effects predicted as a result of the Proposed Development during the preparation of the proposals for the Proposed Development site and this ensures that mitigation measures are incorporated into the design process. This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000, as amended, and Part 10, and schedules 5, 6 and 7 of the Planning and Development Regulations 2001-2022. The detail in relation to interactions between environmental factors is covered in each chapter of the EIAR.

Summary of EIA Mitigation and Monitoring Measures

190. A summary of all the mitigation and monitoring measures proposed throughout the EIA Report document for ease of reference for the consent authority and all other interested parties is provided in Appendix 2.2 of the Appendix document to the EIA Report.

