Planning & Development Act, 2000 - 2020,
European Communities (Environmental Impact Assessment) Regulations 1989 (as amended), Planning & Development Regulations, 2001 (as amended)

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

NON-TECHNICAL SUMMARY

EdgeConneX Ireland Ltd.
Data Centre (DUB05)
Ballymakaily

February 2021

MARSTON
PLANNING CONSULTANCY

NON-TECHNICAL SUMMARY

1.1 This Non-Technical Summary of the Environmental Impact Assessment Report (EIA Report) has been prepared on behalf of Edgeconnex Ireland Ltd. to accompany an application to South Dublin County Council (SDCC) for permission for a new data centre facility on a site of 22.1 hectares that will be sited to the immediate west of the recently realigned R120, Lucan, Co. Dublin.

1.2 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

1.3 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

1.4 Projects that require environmental impact assessment are listed in Schedule 5 of the Planning and Development Regulations 2001-2020. 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. The site is zoned as such as the Planning Authority seek to develop the surrounding lands as such as part of the wider Grange Castle business park and surrounding employment lands.

1.5 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 and climate
- Landscape and visual impact assessment
- Traffic and transportation
- Cultural heritage
- Waste management
- Material assets
- Cumulative impacts within each chapter
- Interactions

1.6 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.

1.7 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 2016-2022. 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, east and south-west boundary of the proposed development site.

Characteristics of the Proposed Development

1.8 The Proposed Development is to seek permission for a period of five years to complete a development with a gross floor area of 24,624sqm. The development will consist of the construction of two no. single storey data centres with associated office and service areas; and three no. gas powered generation plant buildings with an overall gross floor area of 24,624sqm, that will comprise of the following:

- Demolition of abandoned single storey dwelling, remaining agricultural shed and derelict former farm building;
- Construction of 2 no. single storey data centres (12,797sqm), both with associated plant at roof level; with 24 no. standby diesel generators with associated flues (each 25m high) that will be attached to a single storey goods receiving area / store and single storey office area (2,404sqm) located to the west of the data centres as well as associated water tower and sprinkler tank and other services;
- amendments to the internal access road and omission of access to loading bay permitted under SDCC Planning Ref. SD19A/0042 / ABP Ref. PL06S.305948 that include the relocation of permitted, and new, internal security gates; and new internal access roads to serve the proposed development that will provide access to 39 no. new car parking spaces (including 4 no. electric and 2 no. disabled spaces) and sheltered bicycle parking to serve the new data centres;
- The development will also include the phased development of 3 no. two storey gas powered generation plants (9,286sqm) within three individual buildings and ancillary development to provide power to facilitate the development of the overall site to be located within the south-west part of the overall site. Gas Plant 1 (3,045sqm) will contain 20 no. generator units (18+2) with associated flues (each 25m high) will facilitate, once operational the decommissioning of the temporary Gas Powered Generation Plant within its open compound as granted under SDCC Planning Ref. SD19A/0042 / ABP Ref. PL06S.305948. Gas Plant 2 (3,045sqm) will contain 20 no. generator units (18+2) with associated flues (each 25m high); and Gas Plant 3 (3,196sqm) will contain 21 no. generator units (19+2) with associated flues (each 25m high). These Plants will be built to provide power to each data centre, if and, when required. The Gas Plants will be required as back-up power generation once the permanent power connection via the permitted substation is achieved;
- New attenuation pond to the north of the site;
- Green walls are proposed to the southern elevation of each Power plant, as well as to the northern elevation of the generator compound of the data centres, and enclosing the water tower/pump room compound; and a new hedgerow is proposed linking the east and west of the site; and
- Proposed Above Ground Gas Installation compound to contain single storey kiosk (93sqm) and boiler room (44sqm).

1.9 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. 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.

1.10 The Proposed Development is to be located on the same site as the permitted data centre development granted by An Bord Pleanála under SDCC Planning Ref. SD19A/0042 / ABP Ref. PL06S.305948. The Permitted and Proposed Development (shaded cream) are identified in Figure 1 on the next page.

Figure 1 Proposed site layout plan

Alternatives considered

1.11 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.

Population and human health

1.12 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

1.13 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 properties); 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 site with the Grand Canal. This abandoned house is proposed to be demolished as part of the Proposed Development.

1.14 Grange Castle Business Park and its extension to Grange Castle South Business Park and surrounding lands is already home to several industrial facilities and comprises a number of different land uses and is located to the east and within 350m of the site. Closer and to the east is the existing Edgeconnex development that has been permitted under various permissions between 2016 and 2019. The site is not fully built out currently.

1.15 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.

1.16 There are a range of tourism amenities within the wider area although the only notable local amenity is the Grand Canal that bounds the site along its entire northern boundary that lies 5-10m from the northern boundary of the Proposed Development site; and 80m from the nearest proposed data centre facility.

1.17 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 within 40m of the northern Proposed Development boundary with their clubhouse 150m from this boundary; and the Lucan pitch and putt course is located 150m to the north-east of the site. The Casement Air base and its associated buildings bound the Baldonnel Road some 2km to the south of the application site.

1.18 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

1.19 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.

1.20 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.

1.21 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.

1.22 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

1.23 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).

1.24 The construction phase of the Proposed Development over 3.5 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.

1.25 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.

1.26 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 community. The development will also support job creation in associated sectors such as building supply and local services.

1.27 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.

1.28 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.

1.29 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 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

1.30 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 and overlaps for a small area with 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.

1.31 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);
- Improved agricultural grassland (GA1);
- Buildings and artificial surfaces (BL3);

- Hedgerows (WL1);
- Drainage ditches (FW4)
- Recolonising bare ground (ED3); and,
- Treelines (WL2).

1.32 The majority of the Proposed Development site is comprised of improved agricultural grassland (GA1) and 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 (higher / lower value). However, this habitat provides food and shelter to a range of fauna including birds and rabbits.

1.33 There is hedgerow habitat (1.39kms) 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.

1.34 There is a treeline primarily along the Grand Canal that are similar to those along the hedgerows within the site. The treelines form part of the wider linear network through the local landscape and is therefore considered to be of local importance (higher value).

1.35 Drainage ditches (FW4) occur adjacent to many of the hedgerows on site and are actively draining the surrounding agricultural grassland fields. This habitat is considered to be of local importance (lower value) due to its very low species diversity.

1.36 There is an area of recolonising bare ground within the northern and southern part of the Proposed Development site. This was caused primarily by the extent of archaeological investigations that were undertaken on site in 2019. The ecological value of this habitat type is considered to be of local importance (lower value).

1.37 There are some areas of buildings and artificial surfaces (BL3) habitat within the northern part of the Proposed Development site. Due to the absence of vegetation in this habitat type and absent botanical value, the ecological value of buildings and artificial surfaces is considered to be of negligence importance.

1.38 The non-native invasive *B. davidii* (currently not listed on the Third Schedule, however a highly invasive species nonetheless) was present in the site. Site clearance and excavation works have the potential, in the absence of mitigation, to result in the introduction and/or spread of non-native invasive species, such as *B. davidii*, either within the subject lands or off-site. The potential impacts in this instance could have local to national level impact depending on if the species were to expand to the Grand Canal pNHA and spread further on.

Mammals

1.39 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).

Birds

1.40 A wide range of bird species were recorded within the Proposed Development site. Within the Proposed Development site the surveys in 2018 and 2021 identified five amber-listed birds (skylark, linnet, snipe, robin and tree sparrow) and two (lapwing and meadow pipit) are red-listed species. 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).

Raptors

1.41 One raptor species was recorded within the Proposed Development site during the surveys, namely, buzzard *Buteo buteo*. Given the presence of this species and the suitable habitat within and directly adjacent to the Proposed Development site, the local raptor populations are considered to be of local importance (higher value).

Wintering birds

1.42 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 the passerine species redwing *Turdus iliacus*. This species is Green-listed (a species of Low Conservation Concern) by Colhoun & Cummins (2013).

1.43 The habitats offer suitable foraging habitat and shelter for smaller overwintering species such as the passerine species redwing, which was recorded during the field visit to the site in November 2018. Considering the above, the local populations of wintering birds, are considered to be of local importance (higher value).

Bats

1.44 External and internal inspections of all standing, unoccupied buildings (all located in the northern portion of the site) were carried out on 26th January 2021, where it was safe to do so. A derelict residential property was surveyed, along with a standing farm shed west of the property and old farm buildings just north of the property which were mostly roofless. No signs of bats were recorded in any of the buildings.

1.45 The habitat within the lands provides good commuting and foraging routes for bats using the wider environs, particularly near and along the Grand Canal, and its level of suitability is valued high. The treelines and hedgerows located along field boundaries and the boundary of the Proposed Development site create linear corridors together with the Grand Canal, which connects the site to the surrounding area. 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.

1.46 In total, six trees within the northern part of the Proposed Development site were identified with potential bat roost features during the ground-level assessment on 26th January 2021. All of the trees were categorized to have 'moderate' potential.

1.47 During the bat activity surveys three bat species were recorded foraging and commuting within the subject lands, *i.e.* common pipistrelle, Leisler's bat and soprano pipistrelle. The activity was mainly focused on woodland edge and hedgerow habitats in the unlit northern sections of the site. 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

1.48 There is suitable habitat for common frog in the Proposed Development site and its immediate vicinity and there are records of common frog in the area, therefore local common frog populations are valued to be of local importance (higher value).

1.49 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.

1.50 There are no records of common lizard located within c.2km of the Proposed Development site although suitable habitat occur within the Proposed Development site and surrounding environment. The local common lizard populations are considered to be of local importance (higher value).

Fish

1.51 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

1.52 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).

1.53 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.

Mitigation measures

1.54 It is recommended that *Buddleia davidii* is removed prior to construction works onsite. Only two plants of this species were located in the north of the site during the field surveys. 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.

1.55 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.

1.56 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.

1.57 Full landscaping details are provided in the landscaping plan accompanying this planning application (Kevin Fitzpatrick Landscape Architecture, 2021). 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 north of the data centre facility and to the south of the Power Plants and the new hedgerow that will centrally link the eastern and western boundaries of the site.

1.58 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).

1.59 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.

1.60 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

1.61 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 to protect trees and hedgerows to be retained, will minimise the temporary impact of those effects on habitats over the medium to long-term. Although there will be a temporary impact during the construction phase until the proposed planting becomes 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.

1.62 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.

1.63 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

1.64 The site is relatively flat, there is a fall of approximately 4.5-5.5m from the southwestern boundary of the site north-east towards the canal (from c. 69m AOD to c. 61m AOD). Figure 7.1 presents the topographic nature of the site and the surrounding area. 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.

1.65 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.

1.66 On the GSI soil classification maps, the soil type beneath the southern part of the site area predominantly comprises BminPD - Surface water Gleys / Ground water Gleys Basic. The northern portion of the overall site area is composed predominantly of BMinDW soils-Grey Brown Podzolics/Brown earths.

1.67 On the GSI regional mapping the site and overburden geology comprise Quaternary Glacial Till (TLs). The following ground conditions were encountered during the investigation process: 0-0.3 metres below ground level (mbgl) of topsoil is present. 0.3-3.8 mbgl is a variation of firm to stiff sandy gravelly CLAY (glacial till) overlying low permeability Calp limestone.

1.68 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.

1.69 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.

1.70 The depth to bedrock throughout the site was confirmed as 0.5-3mbgl. The site investigation also confirms identification of the bedrock as dark grey and black limestone. No bedrock outcrops were identified during the site investigations.

Mitigation measures

1.71 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.

1.72 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 c. 16,200m^3 of 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.

1.73 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.

1.74 A range of fuel and chemical handling mitigation measures will be implemented during construction and will be included within the CEMP.

1.75 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.

1.76 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

1.77 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.***

1.78 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

1.79 The Proposed Development is within the River Liffey catchment, which encompasses an area of approximately 1,370 km^2. 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 proposed 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.

1.80 The Grand Canal runs in an east to west direction along the northern boundary of the development 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.

1.81 The Dublin Bay is located c. 21km 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

1.82 The closest EPA surface water quality station to the site is the 'Griffeen in Lucan Village' (EPA Code RS09G010600) 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 (2019) show records which are consistently below the threshold values defined to achieve 'Good Status' (EU Environmental Objectives Regulations, SI 272/2009 and amendment SI 77/2019). However, a moderate status has been found for nitrogen and nitrate conditions.

1.83 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.

1.84 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.

1.85 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.

1.86 Service and infrastructure have already been installed within the Grange Castle Business Park for foul water and it is proposed to connect foul water services from the proposed development to this. 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.

1.87 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.

1.88 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

1.89 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.

1.90 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.

1.91 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.

1.92 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.

1.93 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.

1.94 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

1.95 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***.

1.96 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

1.97 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.

1.98 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

1.99 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.

1.100 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.

1.101 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.

1.102 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.

1.103 The noise impact assessment has demonstrated that mitigation measures are not required in relation to additional vehicular traffic on public roads.

1.104 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

1.105 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.***

1.106 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***.

1.107 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 and climate

Receiving environment

1.108 The modelling of air emissions from the site was carried out to assess the concentrations of nitrogen dioxide (NO_2), as well as particulate matter (PM_{10} and PM_{25}) 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

1.109 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.

1.110 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.

1.111 The stack heights of the back-up diesel generators for the Proposed Development and the flues for the Power Plant 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.

1.112 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 30% 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

1.113 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.

1.114 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.

1.115 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.

1.116 *Scenario 1* -During the operational phase, the assessment involved modelling the continuous operation of the 18 no. gas generators associated with Phase 1, the 18 no. gas generators associated with Phase 2; and the 19 no. gas generators associated with Phase 3 as well and also considering scheduled testing of the DUB05 diesel generators. The results indicate that the ambient ground level concentrations are below the relevant air quality standards for NO_2. For the worst-case year, emissions from the site lead to an ambient NO_2 concentration (including background) which is 83% of the maximum ambient 1-hour limit value (measured as a 99.8th percentile) and 89% of the annual limit value at the worst-case off-site receptor.

1.117 *Scenario 2* - The cumulative assessment involved modelling the continuous operation of the 18 no. gas generators associated with Phase 1, the Phase 2 18 no. gas generators and the Phase 3 19 no. gas generators and also considering scheduled testing of the DUB 5 diesel generators. In addition, emissions from the IED Licensed sites Takeda, Grange Back-Up Power and Pfizer were also included in the model as well as the emissions associated with Phases 1, 2, 3 and 4 of the neighbouring EdgeConneX site.

1.118 The results indicate that the ambient ground level concentrations are below the relevant air quality standards for NO_2. For the worst-case year, emissions from the site lead to an ambient NO_2 concentration (including background) which is 85% of the maximum ambient 1-hour limit value (measured as a 99.8th percentile) and 94% of the annual limit value at the worst-case off-site receptor.

1.119 *Scenario 3* - The methodology, based on considering the statistical likelihood of an exceedance of the NO_2 hourly limit value assuming a hypergeometric distribution, has been undertaken at the worst-case residential receptor for DUB05 diesel generators and assuming continuous operation of the gas generators.

1.120 The results have been compared to the 98th percentile confidence level to indicate if an exceedance is likely at various operational hours for the standby diesel generators and assuming continuous operation of the gas generators. The results indicate that in the worst-case year, both the 24 no. standby DUB05 diesel generators and Phase 1, 2 & 3 Gas Generators can operate for up to 4,720 hours before there is a likelihood of an exceedance of the ambient air quality standard (at a 98th percentile confidence level).

Landscape and visual impact

Receiving environment

1.121 The proposed built development is located 100m south of the Grand Canal tow path at its closest point. The site is situated to the west of the Grange Castle Business Park, separated by the R120 road. It is an irregular shaped area measuring 670m on its longest north-south axis and 465m on its longest east west axis. The total land area of the site measures 22.1ha..

1.122 The ground levels within the site area are generally flat with a slow and gradual fall from the western edge of the site towards the north eastern corner. From the lowest level in the north east (63.40, near the residence at the 12th lock) the lands rise by 6m towards the north-west of the site (69.43m). There is a localised high ridge line on a berm created by spoil in the north of the site. The berm is approximately 80m long on the east west axis and stands at between 2-3m higher than the surrounding ground levels.

1.123 The land use of the subject lands 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 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.

1.124 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.

1.125 According to the Tree Survey and Report, by the Tree File Ltd. (refer to Appendix 11.3) 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 site is described as supporting 'little material of Arboricultural interest' and having very few trees that would be considered valuable.

1.126 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 boundary roadside hedgerows have been removed 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 very 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 planted, 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.

1.127 The 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.

1.128 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

1.129 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 (refer to Landscape Mitigation Drawing). 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; and
- the creation of a large wetland and woodland habitat in a buffer zone between the canal and the built development
- the colour palette chosen for the building aims to further reduce any visual impact of the building.

Impacts

1.130 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 Proposed Development site from an agricultural field landscape type to a building site, to build the data centre facility 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.

1.131 The construction compounds, temporary car parking and storage facilities etc. will be located sensitively to avoid any local visual sensitivities. The activities that will cause the most significant visual impact are confined to the south western section of the lands, furthest from the sensitive views along the canal and north-west, set back some 100m from the canal. Furthermore, as the site is located 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.

1.132 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.

1.133 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 scheme will significantly improve the quality of the landscape character in this area. The significant amount of native woodland, scrub, wetland and grassland habitats to be created, including the creation of a new wildlife habitat that extends from east to west across the site, would have a very positive impact on the landscape character of this area and the wider environment of the canal and canal walks. 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.

1.134 The site is specifically zoned for this type of development and 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.

1.135 The overall impact on the landscape character would therefore be considered positive due to the level of landscape and ecological enhancement proposed and restricting the built development to an area set back a distance from the canal and its immediate environs.

View 1 – From the bridge at the 12th Lock, Grand Canal and the R120 public road

1.136 This view location is located at the north-east corner of the site on the canal bridge. Views of value in this vicinity are the long vista offered along the canal towards the west within the visual frame created by the vegetation on each side. A view is also offered to the south towards the Wicklow Mountains however, there are many visual elements intruding into this view. In this view the subject lands are partially visible in the centre of the view, however, the house and vegetation in the foreground do provide some screening. The buildings under construction on the opposite side of the R120 are also visible on the left side of the view.

1.137 The proposed development will not result in any significant impact on this view during construction. The construction process, machinery, storage of materials and built structures will be visible in the distance until the earthworks are created. Some of the visual elements associated with the building process will result in some minor visual intrusion into this view. However, the distance from the viewpoint will limit the level of visual impact. No sensitive aspects of the view would be obstructed and the level of impact reduced due to the distance and small scale of the visual intrusion in the context of a wide expansive view. The impact of the proposals during construction on the view from this location would be considered negative but of ***not significant*** magnitude, and ***temporary*** in duration.

1.138 The nature of the proposed development will result in a minor alteration to the existing view that would be considered positive in nature. The proposed buildings are screened from view by the proposed earth berms and tree planting proposed as part of the scheme. The visual screening provided by the permitted and proposed trees and berms will screen the buildings from view. The residence in the foreground of the view will also screen the proposed development from view. The introduction of woodlands, meadow and wetlands into this view would be considered a positive impact. The level of this positive visual impact will increase as the trees mature and form a larger

section of the view. The magnitude of the positive visual impact on this view would be considered ***moderate*** and ***long-term*** in duration.

View 2 – From the proximity of the protected structure at the 12th Lock to the south-west

1.139 The northern edge of the subject lands is 41m from this view location and the closest point of the proposed buildings is 338m from this view location adjacent to the Mill buildings that are a protected structure. Views of value in this vicinity are the long vistas offered along the canal towards the west and east, within the visual frame created by the vegetation on each side. A view is also offered to the south towards the Wicklow Mountains, however, there are many visual elements intruding into this view. The northern edge of the subject lands are visible in the foreground of the view most notable the buildings and associated garden trees and hedgerows. The large electricity pylon and lines are also prominent in this view.

1.140 The proposed development will result in a visual impact on this view during construction. The construction process, machinery, storage of materials and built structures will be visible in the background of the view. Some of the visual elements associated with the building process will result in a visual intrusion into this view. The level of this impact will also be limited due to the construction works being located close to recently constructed large buildings and the recent road upgrade where similar construction activities were recently part of the visual landscape. No sensitive aspects of the view would be obstructed, and the level of impact reduced due to the distance and small scale of the visual intrusion in the context of a wide expansive view. The impact of the proposals during construction on the view from this location would be considered ***negative, slight*** in magnitude, and ***temporary*** in duration.

1.141 The nature of the proposed development will result in a slight alteration to the existing view. The proposed data hall building is screened from view by the earth berms and tree planting within the site, as permitted in the previous application and as proposed in this application. Any views of the building would be of the flues in the northern section of the development. The flues from this distance only register as exceedingly small visual elements protruding over the tree line. The visual impact would reduce over time as the trees mature. With this considered the impact of the proposals on the view from this location would be considered negative, not significant and long-term in duration.

View 3 – From the Grand Canal Way, Green Route to the south

1.142 The north eastern edge of the subject lands is 98m from this view location and the closest point of the proposed buildings is 170m from this view location. Views of value in this vicinity are the long vista offered along the canal towards the east and west within the visual frame created by the vegetation. In this view the electricity pylon and the top of the western boundary hedgerow are the only parts of the of the subject lands that are visible. The canal the vegetation along the banks are the prominent visual elements in this view.

1.143 The proposed development will not result in a noticeable visual impact on this view during construction. The construction process, machinery, storage of materials, built structures will be screened from view by the existing vegetation, and local topography.

1.144 The buildings proposed in this development will have no impact on the view from this location. The top of the woodland belt is the only element that will be visible, and it will be mostly indistinguishable from the existing vegetation until the woodland matures. When the above in considered the overall visual impact on views form this location would be considered ***positive*** in nature and ***imperceptible*** in magnitude.

View 4 – From the Grand Canal Way, Green Route to the south east

1.145 The north eastern edge of the subject lands is 380m from this view location and the closest point of the proposed buildings is 420m from this view location. Views of value in this vicinity are the long vista offered along the canal towards the east and west within the visual frame created by the vegetation. Some restricted views to the south towards the mountains are possible between the

blocks of vegetation. In this view the electricity pylon and the top of the western boundary hedgerow are the only parts of the of the subject lands that are visible. The canal the vegetation along the banks are the prominent visual elements in this view.

1.146 The proposed development will result in a visual impact on this view during construction. The construction process, machinery, storage of materials will be visible from this location. Some of the visual elements associated with the building process will result in a visual intrusion into this view and will alter the visual ridgeline. However, the magnitude of this impact will be greatly reduced due to the significant screening provided by existing and proposed earthworks and vegetation. The impact will be further mitigated by the distance to the contraction activities from this location. The impact of the proposals during construction on the view from this location would be considered ***negative***, however ***not significant*** in magnitude, and ***temporary*** in duration.

1.147 The nature of the proposed development will result in a slight alteration to the existing view. The proposed data hall building is screened from view by the earth berms and tree planting within the site, as permitted under the previous application and maintained to be implemented under this application. The impact will be further mitigated by the distance to the development from this location. Any views of the building would be of the flues and upper section of the building in the southern section of the development. The flues from this distance only register as exceedingly small visual elements protruding over the tree line. This visual impact would reduce over time as the trees on the berms mature. With this considered the impact of the proposals on the view from this location would be considered ***negative, not significant*** and ***long-term*** in duration.

View 5 – From the R120 public road in the proximity of a cluster of residences to the north-west

1.148 The eastern edge of the subject lands is 17m from this view location and the closest point of the proposed buildings is 245m from this view location. This view is an expansive view over the mainly flat agricultural landscape to the east of the R120. There are no prominent features other than the small hedgerows and trees crisscrossing the landscape. The expansive nature of this view is temporary, and the roadside vegetation has been cleared as part of the R120 upgrade works. This will be re-established over the next few seasons.

1.149 The proposed development will result in a visual impact on this view during construction. The construction process, machinery, storage of materials will be visible from this location. Some of the visual elements associated with the building process will result in a visual intrusion into this view and will alter the visual ridgeline. However, the magnitude of this impact will also be mitigated due to the construction works being located close to recently constructed large buildings and public road works where similar construction activities were recently part of the visual landscape. The construction process will be mostly screened from view by the earth berms and woodland tree planting installed as part of the permitted development on these lands. The impact of the proposals during construction on the view from this location would be considered ***negative***, ***slight*** in magnitude, and ***temporary*** in duration.

1.150 The proposed development will not result in any visual impact on this view during its operational phase. The building and associated development will be completely screened from view by the permitted development and vegetation, and proposed earth berms and woodland planting.

View 6 – From the R120 to the north across fields adjoining the southern boundary of the application site.

1.151 The southern edge of the subject lands is 482m from this view location and the closest point of the proposed buildings is 555m from this view location. There are no views of value in this vicinity. The recently upgraded R120, boundary walls and large buildings in the Grange Castle Business Park are prominent features of the view. The subject lands are not visible form this location.

1.152 The proposed development will result in a visual impact on this view during construction. The construction process, machinery, storage of materials will be visible from this location. Some of the visual elements associated with the building process will result in a visual intrusion into this view and will alter the visual ridgeline. However, the magnitude of this impact will be greatly reduced due to

the significant screening provided by existing and proposed earthworks and vegetation. The impact will be further mitigated by the distance to the contraction activities from this location. The impact of the proposals during construction on the view from this location would be considered negative, however not significant in magnitude, and temporary in duration.

1.153 The nature of the proposed development will result in a slight alteration to the existing view. The photomontage (View 6 Proposed in the Photomontage document by Digital Dimension Ltd. in Appendix 11.2) demonstrates accurately the extent of the alteration of the view on day 1 of operations. The proposed buildings are screened from view by the earth berms and tree planting within the site, as permitted in the previous application and as proposed in this application. The impact will be further mitigated by the distance to the development from this location. Any views of the building would be of the flues in the southern section of the development. The flues from this distance only register as exceedingly small visual elements protruding over the tree line. This visual impact would reduce over time as the trees on the berms mature. With this considered the impact of the proposals on the view from this location would be considered negative, not significant and long-term in duration.

View 7 – From the R120 public road towards the west

1.154 The eastern edge of the subject lands is 10m from this view location and the closest point of the proposed buildings is 270m from this view location. This view is an expansive view over the mainly flat agricultural landscape to the east of the R120. There are no prominent features other than a group of hedgerow trees in the foreground. The expansive nature of this view is temporary, and the roadside vegetation has been cleared as part of the R120 upgrade works. This will be re-established over the next few seasons.

1.155 The proposed development will not result in a noticeable visual impact on this view during construction. The construction process, machinery, storage of materials, built structures will be screened from view by the previously permitted development and associated earth berms and trees.

1.156 The nature of the proposed development will not result in a noticeable visual impact on this view during the operational phase. The development will be screened from view by the previously permitted development and associated earth berms and trees.

Traffic and transportation

Receiving environment

1.157 The application site is located within 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 and to the west of 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.

1.158 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.

1.159 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.

1.160 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 recently 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 (Ref.SD188/0011).

1.161 The application site is not currently well served by buses. 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.

1.162 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

1.163 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 constructions 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.

1.164 The lead contractor appointed for the construction of the development shall be required to prepare a Construction 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. Approved routes for construction vehicle traffic shall be agreed with South Dublin County Council.

1.165 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.

1.166 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

1.167 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.

1.168 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 2-3 months of works and decreasing to 3 to 5 thereafter.

1.169 Similarly, the general workforce is unlikely to exceed approximately 200 (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

1.170 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.

1.171 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

1.172 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

1.173 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.

1.174 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.

1.175 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.

1.176 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.

1.177 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 in Area 3 probably relates to post-medieval agriculture.

Mitigation measures

1.178 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.

1.179 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.

1.180 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.

1.181 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.

1.182 As there are no predicted impacts on the architectural resource, no mitigation is deemed necessary in relation to architecture.

1.183 As there are no predicted impacts on the cultural heritage resource, no mitigation is deemed necessary.

1.184 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

1.185 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.

1.186 There are no predicted impacts for the operational phase of the Proposed Development upon the archaeological, architectural and cultural heritage resource.

Waste management

1.187 This chapter evaluates the impacts, if any, which the Proposed Development may have on waste during construction. A site-specific Construction & Demolition Waste Management Plan (C&D WMP) has been prepared to deal with waste generation during the construction phase of the Proposed

Development and is included as Appendix 14.1 of the Appendix document. The assessment of the demolition and construction phase impacts of the Proposed Development arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

Receiving environment

1.188 The receiving environment in terms of waste management is largely defined by SDCC as the local authority responsible for setting and administering waste management activities in the area.

Mitigation measures

1.189 A project specific C&D WMP has been prepared in line with the requirements of the *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* guidance document issued by the Department of Environment, Heritage and Local Government (DoEHLG). Adherence to the high-level strategy presented in the C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the construction phase of the Proposed Development. Prior to commencement of construction, the contractor(s) will be required to refine/update this document to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.

1.190 The project engineers, Pinnacle Consulting Engineers, have estimated that c. 5,875m^3 of soil/stones and up to c. 16,117m^3 of topsoil will be generated from the excavations required to facilitate construction. The main contractor will endeavour to ensure that surplus material is reused on site, and it is not anticipated that there will be surplus material that will require removal from site. In the unlikely event that there is surplus material that is not required for reuse onsite, it will be reused or recovered off-site insofar as is reasonably practicable. Where there is no suitable reuse or recovery option available, it will be disposed of at an authorised facility.

1.191 Based on geotechnical and environmental site investigations were carried out by Ground Investigation Ireland in October to November 2020 it is unlikely that contaminated soil will be encountered, allowing the vast majority of excavated soil to be reused on site.

1.192 All waste materials arising during the operational phase will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible area on the site. Mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997* and the *EMR Waste Management Plan (2015 - 2021)*. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

Impacts

1.193 A carefully planned approach to waste management and adherence to the outline C&D WMP during the construction and demolition phase and provided the mitigation measures are implemented will ensure that the impact on the environment during the construction phase will be ***short-term, neutral*** and ***imperceptible***.

1.194 During the operational phase, a structured approach to waste management will promote resource efficiency and waste minimisation. Provided a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be ***long-term, neutral*** and ***imperceptible***.

Material assets

1.195 Material Assets considers physical resources in the environment which may be of human or natural origin. 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.

1.196 In accordance with the 2017 Draft 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.

1.197 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.

1.198 The Material Assets chapter describes existing services to the application site and describes the predicted impacts which the development may have on these services and recommends mitigation measures. The Proposed Development will have a ***short / medium-term***, ***neutral*** and ***imperceptible*** impact on the power and electricity supply; telecommunications; surface water infrastructure; foul drainage infrastructure; and water resources during the construction phase.

1.199 The Proposed Development will have a ***long-term***, ***neutral*** and ***moderate*** for the operational phase on the material assets apart from telecommunications that is predicted to have no impact.

Cumulative effects

1.200 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

1.201 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 2001-2020. The detail in relation to interactions between environmental factors is covered in each chapter of the EIAR.

Summary of EIA Mitigation and Monitoring Measures

1.202 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 Appendices to the EIA Report.