



**MICROSOFT OPERATIONS IRELAND LTD
GRANGE CASTLE BUSINESS PARK**

**DUB14 & DUB15 DATA CENTRES
& CENTRAL ADMINISTRATION
BUILDING**

**ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
VOLUME III**

NON-TECHINICAL SUMMARY

NOVEMBER 2020



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INTRODUCTION

This Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) accompanies the planning application for a data centre and administrative building development within Microsoft Data Centre Campus, at Grange Castle Business Park, Nangor Road & Grange Castle Business Park Estate Road, Clondalkin, Dublin 22.

The purpose of the NTS is to summarise the likely and significant environmental affects arising from this project.

The EIAR has been prepared in accordance with the provisions of the Planning and Development Act (as amended) and the Planning & Development Regulations 2001(as amended), which give effect in national planning legislation to the EU Directives on EIA.

EIA requirements originate from Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 97/11/EC, 2003/35/EC and 2009/31/EC. The Directive and its amendments were subsequently codified and replaced by Directive 2011/92/EU, as amended in turn by Directive 2014/52/EU. This amending Directive was transposed into national planning consent procedures in September 2018 through the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

The objective of the EIA Directive is to ensure a high level of protection of the environment and human health, through the establishment of minimum requirements for environmental impact assessment prior to development consent being given, of public and private developments that are likely to have significant effects on the environment.

An EIA is mandatory for certain projects and for other projects that meet or exceed a stated threshold as set out in Annex I and Annex II of the Directive (and Part 1 and Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended). Projects that do not meet or exceed a stated threshold are subject to Screening for the requirement, or not, for 'sub-threshold' EIA.

The proposed development is an "*Industrial estate development*" on an area greater than 15 hectares and therefore under 10(a), Part 2 of Schedule 5 of the Planning & Development Regulations, 2001-2020 an EIAR is mandatory.

Each EIAR Chapter outlines the receiving environment; the potential impacts of the proposed development; the mitigation measures deemed necessary; and the predicted impacts once the mitigation measures are implemented. The purpose of the

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NTS is to summarise and explain in non-technical language, the likely and significant effects to the environments arising from this project.

SITE DESCRIPTION

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

There are two landholdings that comprise the application site in this instance:

- A. A site of c.13.07 ha located to the west of the existing MIOL Data Centre Campus within the Business Park. The
- B. A site of c.3.16 ha located in the north-eastern corner of the Business Park, north of the main entrance to the Park and south of the Grand Canal.



Site A is the main development site which will contain the data centres, central administrative building and associated works. Site B will provide a temporary car parking for workers during the construction period of the project.

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The western half of Site A borders the Griffeen River and is predominantly vacant land that also contains a hardstanding area and a temporary construction road associated with the construction of MIOL Data Centres DUB09, DUB10, DUB12 & DUB13 to the east and which is nearing completion.

The eastern half of Site A was the location of the former Ballybane Pitch & Putt course but which has accommodated the temporary construction car park associated with the construction of MIOL Data Centres DUB09, DUB10, DUB12 & DUB13.

South of the temporary road is the vacant dwelling and attendant areas which is to be removed. The southern boundary of Site A has also been redefined with the completion of the New Nagor Road realignment. A low wall and metal railing marks the boundary along the redesigned road. It is also noted that during the completion of the road works the local Baldonnell stream which previously ran to the east of the pitch and putt course was diverted to the west along the new road with a new connection to the Griffeen river to the southwest of Site A.

Site B is located c.1.2km to the northeast of Site A and north of the main entrance to the Business Park. This site is flat, grassed and currently vacant. It lies east of the Business Park Attenuation Lake. To the north is the Grand Canal and Greenway. A buffer of trees and planting c.45m deep separates the site from the greenway.

PROJECT DESCRIPTION

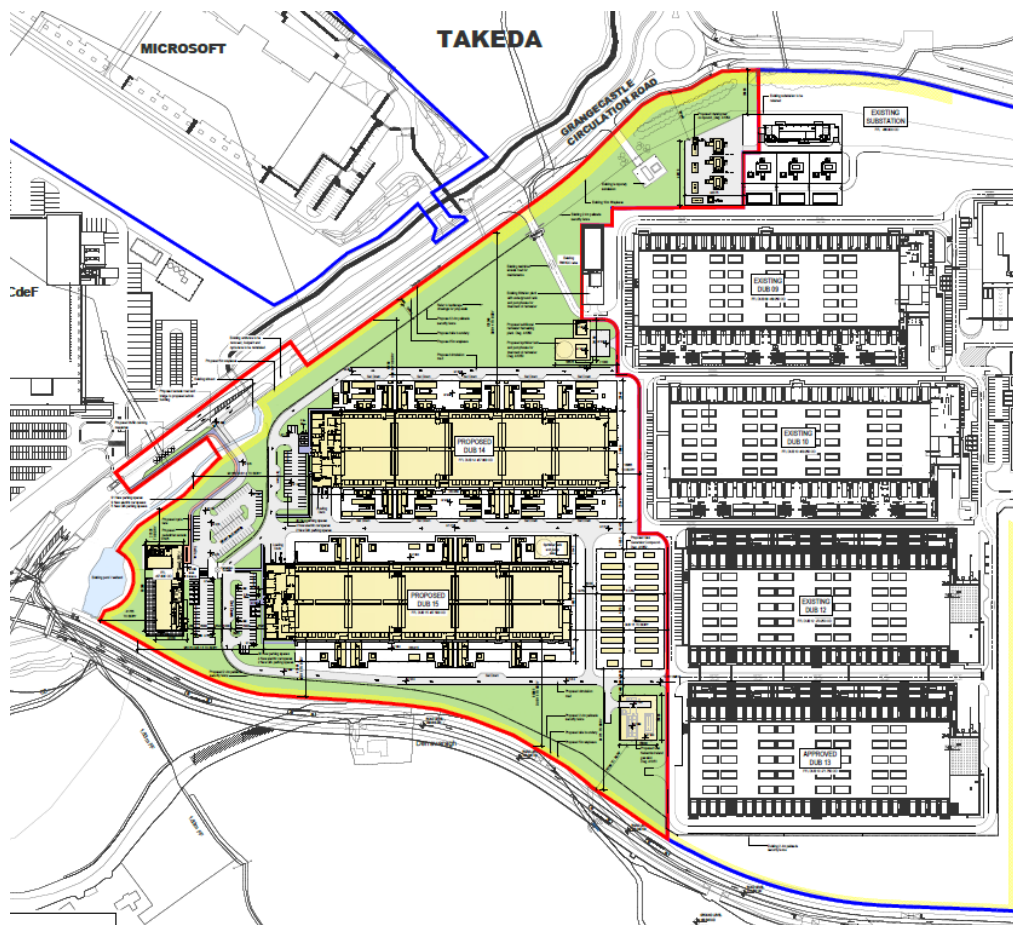
The development as described in the statutory planning notices is as follows:

- Demolition of existing single storey vacant house, garage, and outhouse (total gross floor area (GFA) c.291.2 sq.m) and removal of existing temporary construction car park.
- Construction of a single 1- 4 storey Central Administration Building and 2 no. 2-storey (with mezzanine) data centres (DUB14 & DUB15) all to be located west of data centres DUB9, DUB10, DUB12 & DUB13 within the MS Campus.
- The Central Administration Building (c.6.03m to c.19.85m high) will comprise central office administration, with staff cafeteria, staff gym, and reception (GFA c.3,520 sq. m), with provision of PV panels on the roof.
- Each data centre (c.15.6m high to parapet height and c.18.65m to top of roof plant) will include data halls, admin blocks (comprising offices, canteen, loading dock, storage, and ancillary areas) and a variety of mechanical and electrical plant areas/structures including Modular Electrical Rooms (MERs), battery rooms, and transformer areas. GFA of DUB 14 is c. 28,072sq.m. and GFA of DUB 15 is c.28,173 sq.m (c.56,246 sq.m in total).
- DUB14 will also include 21 no. diesel generators and associated sub-stations (E-houses) and 11 no. mechanical flues (each c.30.75m high).

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- Provision of a gas generator compound (to serve DUB15) containing 20 no. generators, 5 no. E-houses, and 5 no. flues (c.25m maximum height).
- Provision of a Gas Networks Ireland gas skid including 3 no. kiosk buildings.
- Expansion of existing electrical sub-station compound (originally granted under SD07A/0632) to provide 3 no. additional transformer bays. 3 no. E-Houses and 1 no. Control room, 2 no. Auxiliary transformers
- 2 no. sprinkler tank and pump house areas, 1 no. additional rainwater harvesting plant.
- Provision of 168 no. permanent car parking spaces and 40 no. cycle parking spaces.
- Provision of an additional western access to the MS Campus (to serve the Central Administration Building) from the business park estate road (including bridge over the Griffeen River) with existing temporary access to be extinguished.
- Physical integration with the remainder of the existing MS Campus (including internal access roads and landscaping) with associated modifications to the western boundary of the DUB09/DUB10/DUB12/DUB13 data centre development as permitted under SD16A/0088.
- Provision of a new temporary construction car park (with 802 no. car spaces, shuttle bus stop and shelter) on site north of the main entrance to the business park.
- The total gross floor area of the development will be c.59,766 sq.m
- All associated site development works, drainage and services provision, landscaping, boundary treatments (including security fencing), and associated works.

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DATA REQUIRED TO IDENTIFY AND ASSESS THE MAIN EFFECTS WHICH THE PROPOSED DEVELOPMENT IS LIKELY TO HAVE ON THE ENVIRONMENT

Data is required to identify and assess the main impacts which the proposed development is likely to have on the environment. The following is a synopsis of the data and information available and sourced for this Environmental Impact Assessment.

This is in line with the following regulations and guidelines which were considered:

- The EU Directives and Irish regulations regarding Environmental Impact Assessment;
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in the Environmental Impact Assessment Reports – Draft (Environmental Protection Agency, 2017)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018)

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Population and Human Health

The majority of data examined in this assessment is based on the Census 2016, 2011 and the 2006 Census of Population, which are the most recent sources of demographic and socio-economic information for the area issued by the Central Statistics Office (CSO).

In this section, recent demographic trends are examined at State, County and Electoral Division (ED) and Small Area Population (SAP) levels.

There are approximately 18,500 Small Areas across the country, each of which consists of a small pocket of the population (approximately 80-100 households on average) and so provides the most detailed layer of population data ever available for Ireland.

The subject site is located within SAP 267049001, which in turn is located within Clondalkin-Dunawley ED, which extends east towards Clondalkin village and includes residential estates north of the New Nangor Road.

In addition, a desktop examination of the area in the vicinity of the application site was also undertaken including maps, aerial photography.

Biodiversity

This chapter of the EIAR concentrates on ecological features within the development area of particular significance, primarily designated habitats and species. This includes habitats/species listed in Annex I, II and IV of the EU Habitats Directive, rare plants listed in the Flora Protection Order and other semi-natural habitats of conservation value.

The obligation to undertake appropriate assessment derives from Article 6(3) and 6(4) of the Habitats Directive. The first test is to establish whether, in relation to a particular plan or project, appropriate assessment is required. This is termed AA screening. Its purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a Natura 2000 site in view of the site's conservation objectives.

The Appropriate Assessment process was commenced by Moore Group for the proposed development and a Report for AA Screening prepared, which is presented as Appendix 5.1 in Vol II of the EIAR.

Policy & Guidance

EU Habitats Directive

The "Habitats Directive" (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation

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areas, considered to be important at a European as well as at a national level. A “Special Conservation Area” or SAC is a designation under the Habitats Directive. The Habitats Directive sets out the protocol for the protection and management of SACs.

The Directive sets out key elements of the system of protection including the requirement for “Appropriate Assessment” of plans and projects.

EU Birds Directive

The “Birds Directive” (Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This Birds Directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix I indicates Annex I bird species as listed on the Birds Directive. A “Special Protection Area” or SPA, is a designation under The Birds Directive.

Special Areas of Conservation and Special Protection Areas form a pan-European network of protected sites known as Natura 2000 sites and any plan or project that has the potential to impact upon a Natura 2000 site requires appropriate assessment.

Wildlife Acts (1976 - 2012)

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976. The aims of the wildlife act according to the National Parks and Wildlife Service are “... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims.” All bird species are protected under the Wildlife Act 1976. The Wildlife (Amendment) Act of 2000 amended the original Wildlife Act 1976 to improve the effectiveness of the Wildlife Act 1976 to achieve its aims.

Both the Habitats Directive and the Birds Directive have been transposed into Irish law by one set of regulations (i.e. The European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 as amended).

Habitat Survey

The habitat survey was carried out in three stages, firstly through desktop research to determine existing records in relation to habitats and species present in the study area as defined by the area of the proposed development, site boundaries and surrounding buffer zones up to 150 m away. This included research on the National Parks and Wildlife Service (NPWS) metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the proposed development area.

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Other environmental information for the area was reviewed, e.g. in relation to soils, geology, hydrogeology and hydrology. Interactions in terms of the Chapters on these topics presented in this EIAR were important in the determination of source vector pathways and links with potentially hydrologically connected areas outside the proposed development site.

The second phase of the survey involved site visits to establish the existing environment in the footprint of the proposed development area. Areas which were highlighted during desktop assessment were investigated in closer detail according to the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2011). Habitats in the proposed development area were classified according to the Heritage Council publication “A Guide to Habitats in Ireland” (Fossitt, 2000). This publication sets out a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. This form of classification uses codes to classify different habitats based on the plant species present. Species recorded in this report are given in both their Latin and English names. Latin names for plant species follow the nomenclature of “An Irish Flora” (Parnell & Curtis, 2012).

Habitats were surveyed on the 12 June 2019, 9 June 2020 and 11 August 2020 by conducting study area walkovers covering the main ecological areas identified in the desktop assessment. Surveys were completed initially by the author Ger O’Donohoe M.Sc. of Moore Group and John Curtin B.Sc. of Éire Ecology during summer months. The summer survey dates are within the optimal survey periods for botanical species. A photographic record was made of features of interest.

A Bat Survey of the former residence to be demolished ‘Mountain View’ on the Nangor Road was undertaken by John Curtin of Éire Ecology and the results of the survey are presented as Appendix 5.2 to this chapter. The specific methodologies are presented in the report and not repeated here. The report presents the results a site visit by John Curtin on the 17 June 2020 during which all accessible areas of the buildings to be demolished were inspected for signs of bat use or presence.

Searches for Badgers in the proposed development areas and an Otter survey along the Griffeen River were completed by Ger O’Donohoe during summer surveys in 2020. The otter survey commenced upstream of the adjacent Nangor Road intersection to the west of Grange Castle and continued downstream on both side of the accessible bank as far as the Grifols Facility.

Birds were surveyed using standard transect methodology and signs were recorded where encountered during the field walkover surveys.

Following desktop assessment an evaluation of the development area and determination of the potential impacts on the flora and fauna of the area is based on the following guidelines and publications:

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- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports 2017;
- European Commission Guidance on the Preparation of the EIA Report (2017) as well as the European Commission Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013);
- Assessment of plans and projects significantly affecting Natura 2000 sites (EC, 2002);
- Managing Natura 2000 Sites (EC, 2000) Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2000);
- Managing Natura 2000 Sites (EC, 2018) Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2018);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, Rev. Feb. 2010); and
- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2019).

The following resources assisted in the production of this chapter of the report:

- Ordnance Survey Ireland maps;
- OSI, Google and Bing Aerial photography (1995 – 2020);
- NPWS Mapviewer: <http://www.npws.ie/en/MapsData/>;
- Designated sites (SACs, SPAs, NHAs);
- Records of protected species from 10km squares; and
- National Biodiversity Data Centre Records and Maps.

Other environmental information for the area was reviewed, e.g. in relation to soils, geology, hydrogeology and hydrology. Interactions in terms of the chapters on these topics presented in this EIA Report were important in the determination of source vector pathways and links with potentially hydrologically connected areas outside the proposed development site.

Site Evaluation and Impact Determination

The TII Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) outlines the methodology for evaluating ecological impacts of the project in the present report. According to the TII Guidelines, the Ecological Study should address:

- Designated conservation areas and sites proposed for designation within the zone(s) of influence of any of the route options,
- All the main inland surface waters (e.g. rivers, streams, canals, lakes and reservoirs) that are intersected by any of the route corridor options, including their fisheries value and any relevant designations,
- Aquifers and dependent systems and turloughs and their subterranean water systems,
- Any known or potentially important sites for rare or protected flora or fauna that occur along or within the zone(s) of influence of any of the route options,

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- Any other sites of ecological value, that are not designated, along or in close proximity to any of the route corridor options,
- Any other relevant conservation designations or programmes (e.g. catchment management schemes, habitat restoration or creation projects, community conservation projects, etc.),
- Any other features of particular ecological or conservation significance along any of the route options.

Further guidance is provided in the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2019).

Land, Soil and Geology

The principal attributes (and impacts) to be assessed include the following:

- geological heritage sites in the vicinity of the perimeter of the subject site;
- landfills, industrial sites in the vicinity of the site and the potential risk of encountering contaminated ground;
- the quality, drainage characteristics and range of agricultural uses of soil around the subject site;
- quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves;
- the extent of topsoil and subsoil cover and the potential use of this material on site as well or requirement to remove it off-site as waste for disposal or recovery;
- High yielding water supply springs/ wells in the vicinity of the site to within a 2Km radius and the potential for increased risk presented by the proposed development;
- Classification (regionally important, locally important) and extent of aquifers underlying the site perimeter area and increased risks presented to them by the proposed development associated with aspects such as for example removal of subsoil cover, removal of aquifer (in whole or part), drawdown in water levels, alteration in established flow regimes, change in groundwater quality;
- Natural hydrogeological/ karst features in the area and potential for increased risk presented by the activities at the site; and
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally.

Sources of Information

Desk-based geological information on the substrata (both Quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database,

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- Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and
- 1:100,000 mapping.
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information
- National Parks and Wildlife Services (NPWS) – Protected Site Register
- South Dublin County Council - Landfill information.

Relevant documentation consulted as part of this assessment included the following:

- Various Geophysical & Geotechnical Site Surveys completed at Grangecastle Business Park by Byrne Looby Geotechnical Consultants.

Hydrology and Water Services

The principal attributes (and impacts) to be assessed include the following:

- geological heritage sites in the vicinity of the perimeter of the subject site;
- landfills, industrial sites in the vicinity of the site and the potential risk of encountering contaminated ground;
- the quality, drainage characteristics and range of agricultural uses of soil around the subject site;
- quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves;
- the extent of topsoil and subsoil cover and the potential use of this material on site as well or requirement to remove it off-site as waste for disposal or recovery;
- High yielding water supply springs/ wells in the vicinity of the site to within a 2Km radius and the potential for increased risk presented by the proposed development;
- Classification (regionally important, locally important) and extent of aquifers underlying the site perimeter area and increased risks presented to them by the proposed development associated with aspects such as for example removal of subsoil cover, removal of aquifer (in whole or part), drawdown in water levels, alteration in established flow regimes, change in groundwater quality;
- Natural hydrogeological/ karst features in the area and potential for increased risk presented by the activities at the site; and
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally.

Sources of Information

- Latest EPA Envision water quality monitoring data for watercourses in the area³;
- ERBD Management Plan – Liffey Water Management Unit and Programme of Measures – ERBD⁴
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW))⁵
- Office of Public Works flood mapping data (www.floodmaps.ie)⁶;

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- Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites (Eastern Regional Fisheries Board (ERFB))⁷
- Dublin City Council (2005) Greater Dublin Strategic Drainage Study: Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council⁸
- Greater Dublin Regional Code of Practice for Drainage Works: Version Draft 6.0 (Wicklow County Council, SDCC, Meath County Council, Kildare County Council, FCC, Dún Laoghaire- Rathdown County Council and Dublin City Council)⁹
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001)¹⁰

A site due diligence was completed by Hanley Pepper between January and March 2019 and various walkover were completed in this period to assess the surface water environment at the proposed development location.

Noise and Vibration

In order to provide a broader understanding of some of the technical discussion in this report, this section provides a brief overview of the fundamentals of acoustics and the basis for the preparation of this noise assessment.

A sound wave travelling through the air is a regular disturbance of the atmospheric pressure. These pressure fluctuations are detected by the human ear, producing the sensation of hearing. In order to take account of the vast range of pressure levels that can be detected by the ear, it is convenient to measure sound in terms of a logarithmic ratio of sound pressures. These values are expressed as Sound Pressure Levels (SPL) in decibels (dB).

The audible range of sounds expressed in terms of Sound Pressure Levels is 0 dB (for the threshold of hearing) to 120 dB (for the threshold of pain). In general, a subjective impression of doubling of loudness corresponds to a tenfold increase in sound energy which conveniently equates to a 10dB increase in SPL. It should be noted that a doubling in sound energy (such as may be caused by a doubling of traffic flows) increases the SPL by 3 dB.

The frequency of sound is the rate at which a sound wave oscillates per second, and is expressed in Hertz (Hz). The sensitivity of the human ear to different frequencies in the audible range is not uniform. For example, hearing sensitivity decreases markedly as frequency falls below 250 Hz. In order to rank the SPL of various noise sources, the measured level has to be adjusted to give comparatively more weight to the frequencies that are readily detected by the human ear. Several weighting mechanisms have been proposed but the ‘A-weighting’ system has been found to provide one of the best correlations with perceived loudness. SPL’s measured using ‘A-weighting’ are expressed in terms of dB(A).

The ‘A’ in ‘dB LpA’ or in ‘dB(A)’ denotes that the sound levels have been A-weighted. The established prediction and measurement techniques for this parameter are well

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developed and widely applied. For a more detailed introduction to the basic principles of acoustics, reference should be made to an appropriate standard text .

The noise data in terms of sound power levels (L_{wA} or SWL) from the current site is available as a 3D noise model in the noise calculation software '*iNoise*', the noise data for the proposal is added to the existing model. This software enables to calculate the resulting SPL of the industrial activities at any location in the vicinity, both for individual locations (e.g. residential noise sensitive locations) and for grids (contour plots).

A series of noise surveys have been undertaken as part of the planning application prepared for previous MI Dub projects project. This information has been used to inform this aspect of the presented assessment. Full details of the noise monitoring campaign are presented in Appendix 8.2 of the EIAR. Review of the data confirms that the noise criteria proposed in this assessment are appropriate considering the prevailing noise environment.

Location A Located on the north eastern boundary of the Balybane pitch and putt course.

Location B Located at a location south east of the proposed development along the R134. This location would be representative of the various noise sensitive locations located along the R134 to the south of the proposed development including Grange Castle golf course.

Location C Located in the vicinity of a number of private residences in the Grangecastle Green estate. The monitoring location was located on a common green area.

Location D Located at a position along Lynch Lane to the north of the site.

Location E Located to the south of the site in the vicinity of the nearest residential dwellings to the proposed new Dub 09/10/12/13 development along the New Nangor Road (R134). Noise monitoring was conducted at this location for an extended period in order to establish average noise levels over typical weekday and weekend day, evening and night-time periods.

Climate and Air Quality

Air dispersion modelling was carried out by AWN Consulting for and on behalf of MS using the United States Environmental Protection Agency's regulated model AERMOD (version 19191). The modelling of air emissions from the site was carried out to assess the concentrations of Nitrogen Dioxide (NO_2) and the consequent impact on human health. The assessment of the worst-case scenario was undertaken in order to quantify the cumulative impact of the proposed development and the existing facility on ambient air quality concentrations. To obtain all the meteorological information required for use in the model, data collected during 2015 - 2019 from Casement Aerodrome has been incorporated into the modelling.

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The air dispersion modelling input data consisted of information on the physical environment, design details for all emission points on-site and five full years of meteorological data. Using this input data, the model predicted ambient concentrations at various receptors for each hour of the meteorological year. This study adopted a worst-case approach which will lead to an over-estimation of the actual levels that will arise.

Emissions from the site have been modelled using the AERMOD dispersion model which has been developed by the U.S. Environmental Protection Agency (USEPA) and the American Meteorological Society (AMS). The model is recommended as an appropriate model for assessing the impact of air emissions from industrial facilities in the EPA Guidance document “Air Dispersion Modelling from Industrial Installations Guidance Note (AG4) (2020)” (EPA, 2020a).

The model is a “new-generation” steady-state Gaussian plume model used to assess pollutant concentrations associated with industrial sources. The model is an enhancement of the Industrial Source Complex-Short Term 3 (ISCST3) model which has been widely used for emissions from industrial sources. Fundamentally, the model has made significant advances in simulating the dispersion process in the boundary layer. This will lead to a more accurate reflection of real world processes and thus considerably enhance the reliability and accuracy of the model particularly under those scenarios which give rise to the highest ambient concentrations.

Due to the proximity to surrounding buildings, the PRIME Building Downwash Program (BPIP Prime) was used as a preprocessor to incorporate the influence of buildings in the model. The model then considers the influence (wake effects) of these buildings on dispersion in each wind direction considered.

The AERMOD model incorporated the following features:

- Discrete receptors were identified at which concentrations would be modelled. The impact of the gas generators was assessed at the following discrete receptor locations:
 - Nearby residential receptors
 - Boundary of the site;
- A receptor grid was identified at which concentrations would be modelled. The receptors were mapped with sufficient resolution to ensure all localised “hot-spots” were identified without adding unduly to processing time. Modelling was carried out covering an area of 8 km x 8 km with the site at the centre. An outer grid was mapped with 200 m resolution. The inner (fine) grid consisted of receptors every 100 m extended to 2.5 km from the site. The total calculation points for the gridded modelling including discrete receptors are 2,522.
- All on-site buildings and significant process structures were mapped into the computer to create a three dimensional visualisation of the site and its emission points. Buildings and process structures can influence the passage of airflow

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over the emission stacks and draw plumes down towards the ground (termed building downwash). The stacks themselves can influence airflow in the same way as buildings by causing low pressure regions behind them (termed stack tip downwash). Both building and stack tip downwash were incorporated into the modelling.

- Hourly-sequenced meteorological information has been used in the model covering the years 2015 – 2019 from Casement Aerodrome. AERMOD incorporates a meteorological pre-processor AERMET which allows AERMOD to account for changes in the plume behaviour with height using information on the surface characteristics of the site. AERMET calculates hourly boundary layer parameters for use by AERMOD, including friction velocity, Monin-Obukhov length, convective velocity scale, temperature scale, convective boundary layer (CBL) height, stable boundary layer (SBL) height, and surface heat flux.
- Terrain has been mapped out in the model using SRTM 30m resolution data although in general the area is one of gentle terrain.

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or “Air Quality Standards” are health- or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2011 incorporating European Commission Directive 2008/50/EC, which has set limit values for nitrogen dioxide (NO₂).

Landscape and Visual

A survey of the potential visibility of the proposed development was carried out in 2020, with visits to the site and its surrounds in June and September 2020. Analysis was carried out to identify locations from which views of the proposed development may be likely, or sensitive.

Analysis identified five (5) representative locations where there was a potential for the proposed development to be visible. Photomontages showing the ‘as existing’ view and the ‘as proposed’ view of the proposed development have been prepared for each location. Where the proposed development is not visible in the view, its location is indicated in red outline for reference purposes.

The assessment of landscape visual impacts has regard to the Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports prepared by the Environmental Protection Agency (EPA, 2017) and to the EIA Directive 2011/92/EU (as amended by Directive 2014/52/EU) on the assessment of the effects of certain public and private projects on the environment.

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Assessment of potential effects involves:

- Classifying the sensitivity of the receiving environment; and
- Describing and classifying the magnitude of change in the environment resulting from the Proposed Project.

These factors are combined to provide a classification of significance of effects for the impact assessment.

The sensitivity of the landscape and visual environment is a function of its existing land use, existing and emerging patterns and scale, enclosure, visual characteristics and values. The nature and scale of the Proposed Project is taken into account, as are trends of change and relevant policy framework.

Traffic and Transportation

The methodology used within this Traffic Impact Assessment (TIA) complies with best practise for Traffic Impact Assessments indicated within key publications, which include:

- 'Traffic and Transport Assessment Guidelines' National Roads Authority (May 2014)
- 'Guidelines for Traffic Impact Assessments' The Institution of Highways and Transportation.
- The Design Manual for Urban Roads and Streets.

Material Assets

A desktop study was conducted in relation to the material assets associated with the proposed development and their capacities. Projections of the resources were made for the construction and operational phase of the development. The Guidelines on information to be contained in an Environment Impact Statement (EPA 2002), the advice notes on current practice and Draft EPA guidelines published in 2017 requires assessment of 'economic assets of human origin' to be included in the impact study as a desktop study of material assets associated with the development.

The impacts are assessed in terms of their scale, duration and significance to the site context.

Waste Management

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

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

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- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
 - Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) as amended
 - Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
 - Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
 - Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
 - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
 - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
 - European Union (Batteries and Accumulators) Regulations 2014(S.I. No. 283 of 2014) as amended
 - Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), as amended
 - European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 191 of 2015)
 - Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
 - Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007) as amended
 - Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
 - European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
 - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
- Environmental Protection Act 1992 (No. 7 of 1992) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.

This Chapter is based on the proposed development and considers the following aspects:

- Legislative context;
- Demolition phase;
- Construction phase (including site preparation, excavation and levelling); and,
- Operational phase.

A desk study was carried out which included the following:

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- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the demolition, construction and operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the demolition, construction and operational phases of the proposed development have been calculated. The waste types and estimated quantities are based on published data by the EPA in *National Waste Reports*, data recorded from similar previous developments, Irish and US EPA waste generation research, other available research sources and waste collection data from the current facilities on site.

Cultural Heritage – Archaeology

The extensive documentary research carried out for previous environmental statements and various archaeological monitoring, excavations, and geophysical investigations 2014-2018 was consulted. This includes include information drawn from:

- a. Record of Monuments & Places (national Monuments Service), including documentary material and photographs.
- b. Topographical Files in the National Museum, including information of any finds and artefacts found in the vicinity.
- c. Secondary sources include published material on finds, artefacts, and monuments associated with the site, or its vicinity.
- d. Cartographic Sources, including TCD Map Library, Ordnance Survey, and the National Archives.
- e. Excavations Bulletin, including information on archaeological excavations carried out in the vicinity.
- f. Preliminary reports of archaeological excavations and summary of findings DUB 06, 07, 08, 09, 10, 12 & 13: 2014-2016 Neil O’Flanagan et al, Licence No: 13E0471
- g. Final report of excavations at DSF by Neil O’Flanagan & Liam Coen, Licence No:14E0453
- h. Report of monitoring Ballybane Pitch & Putt course 2019 Licence 13E0471.
- i. Report of geophysical survey, Joanna Leigh, Licence No: 19R0113 2019.

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PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

Population and Human Health

Construction Phase

The construction phase will create a large construction site with short to medium term and slight negative impact on the immediate local environment and the amenity of existing residents as a result of noise and disturbance from construction and construction traffic.

Operational Phase

It is expected the proposed development will have a positive long term impact on the immediate hinterland and the Dublin Region through continued expanding employment and the associated economic and social benefits. No material change in terms of local population is expected given that the vast majority of workers will travel from existing places of residence.

Health and Safety issues which may cause risks and hazards during the construction and operational phase of the development will be given due consideration. All necessary mitigation measures will be put in place to ensure the health and safety of all site personnel. All other environmental aspects relating to the human environment which could have an adverse impact on the local population such as noise, air & water and visual impacts have been addressed in the relevant chapters of this EIAR.

Biodiversity

Habitats

The development is located in an area of low to moderate ecological value and as such predicted to have a neutral imperceptible effect on biodiversity. Specific local mitigation measures include the avoidance of cutting of vegetation during the bird nesting season with regard to the construction phase.

With the employment of appropriate mitigation measures with regard to water quality and the protection of the Griffeen River during all aspect of construction and operation, the Proposed Development will have a neutral imperceptible and long-term effect on the Griffeen River.

With the employment of appropriate mitigation measures with regard to local biodiversity, the Proposed Development will have a neutral imperceptible and long-term effect on biodiversity.

Bat

There is no evidence of a current or past bat roost on site, therefore no significant negative effects on these animals are expected to result from the proposed redevelopment.

Badgers

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There will be no significant impact on badger populations and the predicted impact will be neutral and imperceptible.

Birds

Potential impacts on nesting birds can be avoided by timing the cutting of vegetation as required by the Wildlife Acts with a neutral imperceptible impact.

Land, Soil and Geology

In terms of predicted specific impacts the following points are of note:

- There is no likely impact on the geological heritage in the vicinity of the proposed development site.
- The removal of the 'protective' topsoil and subsoil cover across the development area of the site may locally expose bedrock and therefore leave the underlying bedrock more vulnerable to potential onsite contamination if not mitigated. This vulnerability category for the site (classed as "Medium to High" by the GSI) will remain due to thin cover on site.
- Capping of significant areas of the site by hardstand/building following construction and installation of drainage will minimise the potential for contamination of the underlying locally important aquifer.
- There will be a loss of topsoil soil due to redevelopment. However, the area of redevelopment is small in the context of the overall region.
- In summary, there are no likely significant impacts on the geological or hydrogeological environment associated with the proposed development of the site. It is not anticipated that any impacts will arise following the implementation of the mitigation measures.

The residual impact is considered to be neutral in terms of quality and of an imperceptible significance (short term and long term) as a result of this proposed development on the surrounding soils, geology and hydrogeological environment. 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 and Water Services

In terms of predicted specific impacts the following points are of note:

- There is no likely impact on the geological heritage, sensitive groundwater receptors or groundwater supplies in the vicinity of the proposed development site.
- The removal of the 'protective' topsoil and subsoil cover across the development area at the site will leave the underlying bedrock more vulnerable to potential onsite contamination if not mitigated. This vulnerability category for the site (classed as "High to Extreme" by the GSI) will remain due to thin cover on site.

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- Capping of significant areas of the site by hardstand/building following construction and installation of drainage will minimise the potential for contamination of the underlying locally important aquifer.
- There will be a loss of topsoil soil due to redevelopment. However, the area of redevelopment is small in the context of the overall region.

In summary, there are no likely significant impacts on the geological or hydrogeological environment associated with the proposed development of the site. It is not anticipated that any impacts will arise following the implementation of the mitigation measures.

The residual impact is considered to be neutral in terms of quality and of an imperceptible significance (short term and long term) as a result of this proposed development on the surrounding soils, geology and hydrogeological environment. 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.

Noise and Vibration

Construction Phase

During the construction phase of the proposed development there will be some impact on nearby noise sensitive properties due to noise emissions from site traffic and other activities. 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 slight, 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.

Operational Phase

Building services noise / emergency site operation

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, not significant and long-term.

Additional vehicular traffic on public roads

Any change in noise levels associated with vehicles at road junctions in the vicinity of the proposed development is expected to be imperceptible. The resultant noise impact is neutral, imperceptible and long-term.

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Climate and Air Quality

Construction Phase

When the dust minimisation measures detailed in the mitigation section of this chapter are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors.

Due to the size and nature of the construction activities, CO₂ and N₂O emissions during construction will have a negligible impact on climate

Operational Phase

The main study conclusions are presented below for each scenario:

Gas Generators

Emissions from the gas generator development will lead to an ambient NO₂ concentration (including background) which is 35% of the maximum ambient 1-hour limit value (measured as a 99.8thile) and 45% of the annual limit value at the worst-case boundary receptor.

Emergency Operations

Emergency operations were assessed based on the operation of all standby diesel generators for up to 200 hour per year using the USEPA methodology (USEPA, 2011). Emissions from the site under the emergency scenario with concurrent operation of the gas generators and the nearby Pfizer and Takeda facilities will lead to an ambient NO₂ concentration (including background) which is 70% of the maximum ambient 1-hour limit value (measured as a 99.8thile) and 73% of the annual limit value at the worst-case boundary receptor. Results at the nearest residential receptors will lead to an ambient NO₂ concentration (including background) which is 70% of the maximum ambient 1-hour limit value (measured as a 99.8thile) and 65% of the annual limit value.

The emergency generators were also assessed using the UK EA methodology (EA, 2016) with the impacts assessed at the nearest residential receptors. The results were compared to the 98thile confidence level to indicate if an exceedance was likely at various operational hours. The results indicated that in the worst-case year, the emergency generators can operate for up to 64 hours per year before there is a likelihood of an exceedance of the ambient air quality standard (at a 98thile confidence level). However, the UK guidance recommends that there should be no running time restrictions on these generators when providing power on site during an emergency.

Conclusion

Operations from the Grange Castle Server Centre including the proposed gas generator compound development will not result in any off-site exceedance of the applicable ambient air quality standards.

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On-site climatic emissions associated with this facility are not expected to be significant.

This study has incorporated conservative assumptions designed to overestimate the predicted concentrations at sensitive receptors. In relation to the spatial extent of emissions from the site, ambient concentrations, decrease significantly away from the immediate area of the site.

Landscape and Visual

Construction Phase

Some existing mature trees and sections of mature hedgerow will be removed from the main Site area. However, significant planting and hedgerows along the Griffeen River and Business Park road will be retained, protected by appropriate fencing.

Site construction works will give rise to visual impact from provision of fencing, hoarding, compounds, removal of soils, earthworks, grading of the Site, provision of roads and services, etc. Likewise general construction works will give rise to visual impact from scaffolding, working at height, use of machinery and cranes, and from gradual emergence of structures and buildings, with associated activity and site lighting – increasingly at greater height.

A temporary construction car park is to be located at the northeast corner of the Business Park. The location is well-screened – especially from the Grand Canal corridor, however, it will be partly visible from nearby Business Park road. Tree and hedgerow planting is included with the provision of the temporary carpark and these will help integrate the facility.

At the end of construction all construction aspects will be decommissioned and remaining construction areas, including the temporary construction carpark, will be reinstated with topsoil and landscaped.

For the most part construction activity associated with the Proposed Project will be similar in character and landscape and visual effects to other on-going construction works located both within Grangecastle Business Park and in the area south of the Business Park.

The existing landscape environment is of Low Sensitivity and the effects of the construction stage are assessed as being of Low Magnitude. Therefore, the Proposed Project will only have a Slight Negative Impact in terms of change of character and impact on landscape.

The existing visual environment is of Low Sensitivity and the effects of the construction stage are assessed as being of Medium Magnitude. Therefore, the Proposed Project

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will only have a Slight to Moderate Negative Impact in terms of visual impact – and these are limited to roads within the Business Park and TO a short section of the R134 Nangor Road south of the Site.

Operation Phase

The proposed development will primarily impact on views from R134 Nangor Road to the south (which itself has been upgraded and widened in recent years) and in views from the Business Park Road within Grangecastle Business Park. Permission has been recently granted for a similar Data-centre project on lands south of the R134 Nangor Road and as such, no impacts arise from south of R134. It is recognised that the wider area around Nangor Road is continuing to experience notable change in character as development expands on zoned lands.

The Proposed Project includes two key elements. First are two additional Data halls (DUB-14 & DUB-15), which are located alongside, and in-keeping with the nature and scale of similar development on the existing Microsoft Ireland lands to the immediate east. Second the Proposed Project includes a Central Administration / Gateway Building prominently located to front the western entrance off the R134 Nangor to the Business Park. This office building presents a high-quality architectural response that in visual terms, positively defines and frames the entrance to the Business Park. The location of the Central Administration / Gateway Building also helps in integrating the Data-halls within the overall Microsoft development and in screening the halls from the R134 junction with the Business Park Road.

Retention of existing Vegetation along the Site boundary with the Griffeen River and the Business Park road has a significant effect in reducing impact of the Proposed Project on views from within the Park and in ensuring that the development is in keeping with the nature of development in the Business Park as a whole.

The Proposed Project will also be visible travelling west along the R134 Nangor Road. Therefore, it is proposed to provide an approximately 3m high berm along the Site boundary, which will be planted with mixed native species. This is in-keeping with the approach taken elsewhere on the existing Microsoft Ireland lands, including along the adjoining section of boundary with DUB-13.

In overall terms, aspects of the Proposed Project will be prominently visible and these have been designed as high-quality architectural elements defining the entrance to the Business Park. Elsewhere vegetation has been retained, augmented and / or proposed to provide for appropriate visual buffer and screening and for provision of an enhanced green infrastructure network.

The overall visual impact within the Business Park and surrounding area is considered to be consistent with the nature and scale of similar impacts as could be expected from any general site development within the Park. The landscape scheme is also consistent with and appropriate to the landscape of the Business Park.

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The existing landscape environment is of Low Sensitivity and the effects of the operation stage are assessed as being of Medium Magnitude. The Proposed Project will have a Slight to Moderate impact in terms of change of character and impact on landscape. However, given the architectural quality of the proposed central Administration / Gateway Building, the residual nature of the impact on the visual environment is assessed as being Positive in the receiving environment.

The existing visual environment is of Low Sensitivity and the effects of the operation stage are assessed as being of Medium Magnitude. Therefore, the Proposed Project will have Moderate visual impact, which again given the architectural quality of the proposed central Administration / Gateway Building, is assessed as being Positive in the receiving environment.

Landscape and Visual Planning Effects

It is considered that the Proposed Project does not impact negatively on the landscape-related green infrastructure and heritage objectives of the County Development Plan.

The most significant trees, hedgerows and plantings – most notably those along the Griffeen River and retained, protected and augmented. Notwithstanding the land use zoning applying to the Site, significant areas are given over the landscape and habitat creation, with retention of existing key vegetation, proposed berming and screening planting on the southern boundary, provision of large areas of new meadow – some open and encouraging wet habitat areas – others dry meadow with native tree planting, and augmentation of retained hedgerows.

In this manner the Proposed Project protects and enhances green infrastructure on and surrounding the Site.

Traffic and Transportation

The existing roads and traffic situation on the surrounding road network have been identified. The level of impact the proposed development is likely to have on the adjacent road network has also been assessed and it has been identified how the traffic associated with the proposed development can be accommodated within this road network.

Capacity assessments have been carried out on which indicate that under the forecast traffic conditions, assuming that the proposed development would be completed at 2022 there will be sufficient practical reserve capacity at these junctions to accommodate the traffic associated with this development proposal.

From the above it is conclusive that the proposed and existing junction arrangements to access the application site can operate satisfactorily in accommodating the levels and types of traffic likely to be generated by the development in terms of traffic capacity.

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Material Assets

Construction Phase

Temporary power and telecommunications will be made available for the construction period. Similar will be put in place for water supply and foul drainage. Surface water will be controlled in accordance with best practice as elaborated in Chapter 7.

The overall impact for power, telecommunications and water supply from the construction phase will be Neutral and Imperceptible.

Operational Phase

Water Services

In terms of predicted specific impacts the following points are of note:

- There is no likely impact on the geological heritage, sensitive groundwater receptors or groundwater supplies in the vicinity of the proposed development site.
- The removal of the 'protective' topsoil and subsoil cover across the development area at the site will leave the underlying bedrock more vulnerable to potential onsite contamination if not mitigated. This vulnerability category for the site (classified as "High to Extreme" by the GSI) will remain due to thin cover on site.
- Capping of significant areas of the site by hardstand/building following construction and installation of drainage will minimise the potential for contamination of the underlying locally important aquifer.
- There will be a loss of topsoil soil due to redevelopment. However, the area of redevelopment is small in the context of the overall region.

In summary, there are no likely significant impacts on the geological or hydrogeological environment associated with the proposed development of the site. It is not anticipated that any impacts will arise following the implementation of the mitigation measures discussed above.

The residual impact is considered to be neutral in terms of quality and of an imperceptible significance (short term and long term) as a result of this proposed development on the surrounding soils, geology and hydrogeological environment. 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.

Telecommunications

No predicted impacts associated with telecommunications for the Proposed Development for the operational phase.

Power

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The proposed development will be powered by a combination of electricity directly from the Grid (via the MS Campus substation which is to be extended as part of this application) and by electricity generated by a new gas generator compound (with gas skid) to be delivered as part of the development (with connection to the Gas Networks Ireland network within the Business Park).

It has been confirmed in discussions with Eirgrid and Gas Networks Ireland that there is sufficient capacity in both networks to facilitate the proposed development.

As per the Energy Statement a number of sustainability measures have been incorporated into the design of the Proposed Development including the installation of an array of photovoltaic panels on the roof. These will feed back into the electrical supply for the building, serving lighting, office area general services and office IT equipment.

The overall impact will be Neutral-Moderate and Long Term.

Waste Management

Construction Phase

There will be a short-term impact associated with the construction phase of the development. Due to the high level of recycling that will be achieved during the construction phase through the implementation of the Construction & Demolition Waste Management Plan, the impact will be short term and imperceptible.

Operational Phase

The mitigation measures, i.e. the implementation of the OWMP for the development will ensure the waste arising from the development is dealt with in compliance with the provisions the prevailing legislation and best practice and achieve optimum levels of waste reduction, re-use and recycling. The predicted impact of the operational phase will be long term and imperceptible.

Cultural Heritage – Archaeology

Construction Phase.

Any archaeological features that emerge during monitoring will be excavated following appropriate consultation with National Monuments Service.

Operational Phase

There will be no impact on archaeological remains

INTERACTIONS

As a requirement of the Planning and Development Regulations 2001, as amended, and the draft EPA guidelines (2017)., not only are the individual significant impacts required to be considered when assessing the impact of a development on the

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environment, but so must the interrelationships between these factors be identified and assessed.

Under the Regulations interactions between the various environmental factors, are to be assessed as well as the vulnerability of the proposed development to the risk of natural disaster.

Where an interaction is considered to be both likely and significant, it is given a reference number in the matrix and detail of the interaction is recorded below. The interactions are listed in numerical sequence, purely for referencing purposes.

	<i>P & HH</i>	<i>Biodiversity</i>	<i>Soils/ Geology</i>	<i>Water</i>	<i>Noise</i>	<i>Air</i>	<i>Landscape</i>	<i>Traffic</i>	<i>Cultural Heritage</i>	<i>Waste</i>
<i>P & HH</i>	*	1	2	*	3	4	5	6	*	*
<i>Biodiversity</i>	1	*	7	*	8	9	10	*	*	*
<i>Soils</i>	2	7	*	11	*	12	13*	*	15	16
<i>Water</i>	*	*	11	*	*	*	*	*	*	*
<i>Noise</i>	3	8	*	*	*	*	*	14	*	*
<i>Air</i>	4	9	12	*	*	*	*	*	*	*
<i>Landscape</i>	5	10	13	*	*	*	*	*	*	*
<i>Traffic</i>	6	*	*	*	14	*	*	*	*	*
<i>Cultural H.</i>	*	*	15*	*	*	*	*	*	*	*
<i>Waste</i>	*	*	16	*	*	*	*	*	*	*

1. Population & Human Health / Biodiversity

Increased Human Activity at the application site (including the temporary construction car park) at construction stage will disturb and remove some existing flora and fauna although it is noted that the majority of the site is of low ecological value and has already been subject to temporary works as part of the DUB09/DUB10/DUB12/DUB13 development.

Construction works in the main will be located away from the Griffeen River along the western boundary of the main site with the exception of the construction of the new span bridge to provide access to the Central Administrative building. Careful construction management practices will be employed to prevent siltation of the river during installation of the bridge.

The construction of the temporary construction car park will be set back from the Grand Canal corridor and the existing green buffer will be maintained.

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At operational stage, following completion of the development, the proposed scheme will not have any significant impact to any retained/proposed flora (and associated fauna). The Griffeen ecological corridor will be further enhanced with additional planting which will in the long term ameliorate any initial negative impact in the short term. The temporary car park will be returned to a vacant state following completion of construction.

2. Population & Human Health / Soils and Geology

When the dust minimisation measures detailed in the mitigation section of Chapter 9 are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors.

Due to the short term nature of the construction car park, the existing low background pollution levels, and the distance to residential receptors, the air quality and climatic impact of the temporary car parks will not be significant.

3. Population & Human Health / Noise

Increased noise levels during the construction phase will be temporary and are not expected to have a long-term significant adverse effect upon Population & Human Health in the general area, again given the distance to residential areas and the nature of commercial businesses in the area.

Construction traffic will be temporary and not considered significant given the baseline levels on the public network and the nature and intensity of business activity and traffic already in the area. Overall, construction noise will be audible at a low level in the ambient noise and impact is predicted to be minor.

4. Population & Human Health / Air Quality

During construction, there may be potential for slight dust nuisance in the immediate vicinity of the site, which could affect the very nearest businesses. However, dust control measures, such as wheel washes, covering of fine material will minimise the impacts on air quality.

The completed development will generate emissions to the atmosphere due to plant within the campus development and will not result in any off-site exceedance of the applicable ambient air quality standards. On-site climatic emissions associated with this facility are not expected to be significant. This study has incorporated conservative assumptions designed to overestimate the predicted concentrations at sensitive receptors. In relation to the spatial extent of emissions from the site, ambient concentrations, decrease significantly away from the immediate area of the site.

5. Population & Human Health / Landscape

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Employees and visitors to the Grange Castle Business Park will become aware of the physical change at the subject site to the west of the existing MS data centre campus and north of the New Nangor Road as it is transformed from vacant land to an extended data centre campus development with associated parking and landscaped areas.

While the site specific impact is significant, the impact must be assessed within the physical context of the business park setting which already comprises large-scale buildings within a parkland setting.

The proposed development is of a similar scale and visual impact to the existing built environment. The building and associated landscaping will integrate with the rest of the Park and will not negatively impact the amenity of those who work in or visit the Business Park. No significant negative long distance impact on views from outside the Business Park will result.

6. Population & Human Health / Traffic

The existing roads and traffic situation on the surrounding road network have been identified. The level of impact the proposed development is likely to have on the adjacent road network has also been assessed and it has been identified how the traffic associated with the proposed development can be accommodated within this road network.

Capacity assessments have been carried out on which indicate that under the forecast traffic conditions, assuming that the proposed development would be completed at 2022 there will be sufficient practical reserve capacity at these junctions to accommodate the traffic associated with this development proposal.

In relation to construction traffic the impacts will be significant during the peak construction period but short term. To further mitigate against potential traffic impacts a detailed Construction Stage Traffic Management Plan will be developed and agreed with South Dublin Council prior to undertaking any construction works.

7. Soils, Geology / Biodiversity

Stripping of vegetation cover during the construction phase of the proposed scheme will result in loss of shelter to some fauna, which may forage and use the site, although it is noted again that the site outside the riparian corridor of the river is considered on low ecological value. Any semi-natural vegetation will be removed in accordance with the Wildlife Act (1976).

8. Biodiversity / Noise

Construction activities on site will generate noise which may impact on local wildlife outside the site. However, the impacts arising from such noise are not expected to be significant given the context and nature of activity in the area and will be short term in duration.

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9. Biodiversity / Air

Exposed soil during the construction phase of the proposed scheme may give rise to fugitive dust emissions during dry spells. However, these negative impacts will be localised, of limited duration, and can be mitigated through adherence to controls. There is not expected to be any significant impact on Biodiversity as a result.

10. Landscape/ Biodiversity

The design of the development will require the removal of some hedgerow, trees and planted berm, generally of low and of local importance, therefore the impact would be minor - negative. The significant replanting proposal including the protection and enhancement of the Griffeen River corridor is noted.

Overall, the landscape character will be permanently converted from vacant to medium rise built environment. However, within the wider context the change is not adverse given the business park setting, and the extent and scale of built development already established.

11. Soils & Geology / Water

During the construction phase the use of appropriate secondary containment for the storage of fuels, and other potentially hazardous materials on the site will minimise the risk of accidental release of these compounds to the soil and water.

When soil is exposed after vegetative clearance there will be increased run-off and evaporation. Mitigation measures will be implemented during construction to prevent this run-off water from discharging directly to watercourses in the wider vicinity.

12. Soils & Geology /Air

Exposed soil during the construction phase of the proposed scheme may give rise to increased dust emissions. Dust management and dust control measures will be implemented during the construction phase of the proposed development as required to safeguard against the generation of dust.

13. Soils/Landscape

The profile of the site will be altered with the removal of localised overburden material. Infilling and landscaping will also be undertaken. Residual soils arising as a result of excavation at the development site will be used in landscaping works as much as possible.

14. Noise/Traffic

During the construction phase there will be some impact on nearby noise sensitive properties due to noise emissions from site traffic. The application of noise limits and hours of operation, along with implementation of appropriate noise control measures, will ensure that noise is kept to a minimum.

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Operational traffic noise for cars and service vehicles are not expected to create any significant negative impact for sensitive receptors having regard to distance and typical operational daytime hours.

15. Cultural Heritage / Soils Geology

While significant portions of the site have been archaeologically assessed under previous permissions, the potential for additional subsurface sites of archaeological potential remains. It is recommended that archaeological monitoring, by a suitably qualified archaeologist, be carried for all further ground disturbance works associated within the proposed development to ensure no important features are adversely affected, in which case the impact may be negative.

16. Waste / Soils & Geology

It is proposed to reuse as much as possible of the soil generated from excavations in the landscaping of the area. Cut and Fill process will also be used during the construction phase.

