Environmental Impact Assessment Report

Development of 220kV GIS 'Mooretown' Substation and Ancillary Structures

on lands adjacent to Huntstown Power Station, Huntstown, North Road (R135), Finglas, Dublin 11.

Volume 2 – EIA Report

Prepared by: AWN Consulting, September 2021

Prepared for: Huntstown Power Company

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1.0 INTRODUCTION

1.1 PROPOSED DEVELOPMENT

This Environmental Impact Assessment Report (EIAR) has been prepared by AWN Consulting and specialist subconsultants on behalf of Huntstown Power Company Limited herein referred as 'the Applicant' to accompany this strategic infrastructure development to An Bord Pleanála (ABP). The proposal subject of this planning application forms part of a wider development site, which is under consideration of Fingal County Council for two concurrent applications including the undergrounding of overhead electricity lines (Reg. Ref.: FW21A/0144) and the development of a data centre consisting of two data halls and ancillary structures (Reg. Ref.: FW21A/0151) as described in Chapter 2, Section 2.4).

The proposed development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high palisade fence.

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

Figure 1.1 *Proposed Development Lands (Red boundary) (Source: Google Earth)*

The proposed development site is c. 4.33 hectares of partially developed and partially greenfield located to the north west of the M50 orbital ring in the townland of Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The surrounding area is characterised by a variety of energy, industrial, commercial, quarrying, agricultural and residential uses. The subject site is generally bounded to the northeast by the Dogs Trust (Dog Rescue and Rehoming Charity), the southern end of the site is traversed by a vehicular entrance leading to the Huntstown Quarry and bound to the south by an Anaerobic Digestion Plant. The site is bound to the west by the existing Huntstown Power Station.

The lands to the east are existing greenfield lands that are intended to serve data hall buildings proposed under concurrent application to FCC (Reg. Ref. FW21A/0151). A set of 110kv and 38kv overhead lines traverse the site and greenfield lands to the east in a north-west – south-east direction towards the Finglas 220 kV substation complex to the south east of the site. A concurrent proposal for undergrounding these lines is subject of a separate application to FCC by TLI Group (Reg. Ref. FW21A/0144).

A detailed description of the proposed development and associated and ancillary site development is presented in: Chapter 2 (Description of Development), Chapter 3 (Planning and Development Context), and the included planning documentation. This EIAR should be read in conjunction with all the particulars of the planning application.

While the applicant is Huntstown Power Company Limited, EirGrid will be the transmission system operator (TSO). ESB Networks will be the transmission asset owner (TAO).

Since 2006, Eirgrid has operated and developed the national high voltage electricity grid in Ireland. EirGrid is a state-owned company. EirGrid is independent from ESB. They operate the flow of power on the grid and plan for its future, while ESB Networks (the TAO) is responsible for carrying out maintenance, repairs and construction on the grid. The grid moves wholesale power around the country. EirGrid brings energy from generation stations to heavy industry and high-tech users. They also supply the distribution network operated by ESB Networks that powers every electricity customer in the country.

ESB Networks is a subsidiary within ESB Group. ESB Networks finances, builds, and maintains the transmission system through which electricity flows from generation stations to bulk supply points near Ireland's cities and towns. It does this under a TAO licence granted by the Commission for Regulation of Utilities (CRU). ESB Networks performs its transmission related functions under the direction of Eirgrid.

EirGrid operates the transmission system while ESB Networks carries out construction, maintenance, and repairs under the direction of EirGrid. For this development, EirGrid will operate the proposed 220kV Gas Insulated Switchgear (GIS) substation, remotely from their control centres. However, ESB Networks will carry out all local operations on EirGrid's behalf. EirGrid and ESB Networks are committed to running their businesses in the most environmentally friendly way possible.

1.1.1 Consultation and Scoping

In accordance with Section 182E of the Planning and Development Act 2000 (as amended), the applicant had two pre-planning consultation meetings with An Bord Pleanála (ABP) on 12 June 2020 and 30 November 2020. ABP Ref. 306723-20. ABP has determined that the proposed development would be strategic infrastructure within the meaning of section 182A of the Planning and Development Act, 2000, as amended.

The application reflects and responds to the points of discussion during the course of the pre-application consultations with ABP, and consultation is ongoing with EirGrid and ESB Networks to ensure the proposed development design meets the design requiments requirements.

The scope of the EIAR has been defined at an early stage of the planning process in order to identify and ensure that the environmental studies address all the relevant issues. This included a review of the context of the development site, locality, and previously permitted development, and of the development proposed to identify the matters to be covered within this environmental impact assessment.

1.2 RELEVANT LEGISLATIVE REQUIREMENTS

1.2.1 Environmental Impact Assessment

An Environmental Impact Assessment (EIA) is the process of examining the anticipated environmental effects of a proposed project. The Environmental Impact Assessment Report (EIAR) is prepared by the developer and is submitted to a Planning Authority as part of the Planning Permission process. This application is being made to ABP under the Planning and Development (Strategic Infrastructure) Act 2006, Section 182A to 182E.

The requirement for EIA for certain types and scales of development is listed in Annex I and Annex II of the EIA Directive (2011/92/EU and 2014/52/EU), and transposed into

Section 5 (Parts 1 and 2) of the *Planning and Development Regulations 2001 as amended*.

The EIA Directive lists projects for which an EIA is mandatory (Annex I) and those projects for which an EIA may be required (Annex II). The EU Member States can choose to apply thresholds for Annex II projects or use a case-by-case examination, or a combination of both, to assess where EIA is required. In Ireland, a combination of both has been applied. Annex I and Annex II of the EIA Directive has this has been Transposed to Schedule 5 of the *Planning and Development Regulations 2001 as amended*.

An EIA Report has been provided for the proposed development as this will provide the permanent power supply for the concurrent application for data hall buildings proposed under concurrent application Reg. Ref. FW21A/0151 with FCC that was accompanied by an EIA Report. The EIA Report that accompanied the application for the concurrent development included an assessment of the cumulative impact of the proposed development.

1.2.2 Habitats and Birds Directive

The Birds Directive (2009/147/EC) and the Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species.

Natura 2000 sites in Ireland are European sites, including Special Protection Areas (SPAs), and Special Areas of Conservation (SACs).

The Directives set out a key protection mechanism to consider the possible nature conservation implications of any plan or project on the Natura 2000 site network before any decision is made to allow that plan or project to proceed; the process known as Appropriate Assessment (AA).

An AA (Stage 1) Screening comprises an initial impact assessment of a project; examining the direct and indirect impacts that it might have on its own or in combination with other plans and projects, on one or more Natura 2000 sites in view of the sites' conservation objectives. An AA Screening has been undertaken for this the results of which are presented in the Appendix to Chapter 8 (Biodiversity).

1.2.3 Seveso Directive / COMAH Regulations

The Seveso Directive (Directive 82/501/EEC, Directive 96/82/EC, Directive 2012/18/EU) was developed by the EU after a series of catastrophic accidents involving major industrial sites and dangerous substances. Such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident. The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), implement the latest Seveso III Directive (2012/18/EU).

The purpose of the COMAH Regulations is to transpose the Seveso Directive into Irish law and lay down rules for the prevention of major accidents involving dangerous substances, and to seek to limit as far as possible the consequences for human health and the environment of such accidents, with the overall objective of providing a high level of protection in a consistent and effective manner.

The proposed development is located directly adjoining to the combined cycle gas turbine power plant owned by Huntstown Power Company, and operated by Gensys Power Ltd. The power station is a notified lower tier Seveso site, and the proposed development site is located within the consultation distance of this site.

The proposed development will not be a Seveso/COMAH facility or an extension of the existing facility. Under the COMAH Regulations a Land Use Planning assessment been produced and is included with the planning documentation.

1.3 FORMAT OF THIS ENVIRONMENTAL IMPACT ASSESSMENT REPORT

This EIA Report has been developed in accordance with the most relevant guidance, including:

- EIA Directive (2011/92/EU) as amended by EIA Directive (2014/52/EU)
- Planning and Development Act 2000 (as amended)
- Planning and Development Regulations 2001 (as amended)
- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of Housing, Planning and Local Government, 2018)
- *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2017)
- *Guidance on the preparation of the Environmental Impact Assessment Report* (European Union, 2017)
- *Draft Advice Notes for Preparing Environmental Impact Statements* (EPA, 2015)

This report has been laid out using the grouped format structure, the EIA Report examines each environmental aspect in a separate chapter. Each specialist chapter generally covers the following for the construction and operational phases:

- Assessment Methodology;
- Receiving Environment;
- Characteristics of the Proposed Development;
- Potential Impacts of the Proposed Development;
- Remedial and Mitigation Measures;
- Predicted Impacts of the Proposed Development
- Monitoring or Reinstatement; and

A Non-Technical Summary of the findings of the EIA Report is provided as a separate document. Chapter 16 considers the potential cumulative impact of the proposed development with the any future development (as far as practically possible) on the site and the cumulative impacts with developments in the locality (including planned and permitted developments). Chapter 17 of this report shows where Interactions have been identified and how they have been addressed.

1.3.1 Contributors to the Environmental Impact Assessment Report

The preparation and co-ordination of this EIAR has been completed by AWN Consulting in conjunction with specialist subconsultants.

The table below indicates outlines the chapters of this EIAR and the specialist input for each chapter.

Table 1.1 *Roles and Responsibilities in the EIA Report*

Role		Contributor
Architectural, Mechanical and Electrical Engineering and Civil Engineering		AECOM
Planning Consultant		Brock McClure Planning Consultants
Environmental Impact Assessment		AWN Consulting Limited
Chapter No.	**Chapter Title**	**Consultant**
	Non-Technical Summary	AWN – Input from each specialist
Chapter 1	Introduction	AWN – Jonathan Gauntlett
Chapter 2	Description of the Proposed Development	Brock McClure - Suzanne McClure
Chapter 3	Planning and Development Context	Brock McClure - Suzanne McClure
Chapter 4	Alternatives	Brock McClure - Suzanne McClure
Chapter 5	Population and Human Health	AWN – Jonathan Gauntlett
Chapter 6	Land, Soils, Geology and Hydrogeology	AWN – Marcelo Allende
Chapter 7	Hydrology	AWN – Marcelo Allende
Chapter 8	Biodiversity (including AA Screening Report)	Moore Group – Ger O'Donohoe
Chapter 9	Air Quality and Climate	AWN – Edward Porter
Chapter 10	Noise and Vibration	AWN – Damian Kelly
Chapter 11	Landscape and Visual	KLFA – Kevin Fitzpatrick
Chapter 12	Archaeological, Architectural and Cultural Heritage	CRDS Ltd. – Dr Stephen Mandal
Chapter 13	Traffic and Transportation	CST – Phillip Bayfield
Chapter 14	Waste Management	AWN – Jonathan Gauntlett
Chapter 15	Material Assets	AWN – Jonathan Gauntlett
Chapter 16	Cumulative Impacts	AWN – Input from each specialist
Chapter 17	Interactions	AWN – Input from each specialist

Project Director, Dr Fergal Callaghan, Fergal is the Director with responsibility for Licensing with AWN Consulting. He undertakes consultancy in all aspects of environmental licensing and water quality, wastewater and sludge treatment with respect to water quality input to EIA. Extensive experience of soils assessment and contaminated land assessment, including site investigation strategies and risk assessment. Extensive experience of the impact of the Seveso III directive on the planning process. B.Sc. (Industrial Biochemistry) and Ph.D. Chemical Engineering (Waste and Wastewater Treatment). A Chartered Waste Manager (MCIWM), Associate Member of The Institution of Chemical Engineers (AMIChemE), Member of the Environmental Protection Subject Group, IChemE, Graduate Member of The Chartered Institute of Water and Environmental Management, a Member of the IChemE Water Group, a Member of the International Water Association (IWA) and a Member of the European Water Association. 27 years engineering and consultancy experience in the Irish, UK and European environmental industry.

EIA Co-ordinator/Selected Chapters, Jonathan Gauntlett Jonathan is an Environmental Consultant in AWN Consulting with ongoing roles in impact assessment, licensing, environmental compliance and project management. Recent

projects include; SID and planning applications for ICT facilities; EPA Licence applications for biopharma and ICT facilities. Jonathan has over 9 years' experience in environmental compliance, planning and management of Environmental Impact Assessments, licensing, and urban planning. Jonathan has a BSocSc (Environmental Planning) and BBA (Economics) from the Waikato University in New Zealand and has experience working in the environmental consultancy, planning, and regulatory fields from Ireland, the UK and New Zealand.

Description of the Proposed Development, **Planning and Development Context**, **Alternatives**, **Suzanne McClure,** Suzanne is a founding partner of Brock McClure Consultants. With over 15 years planning experience in both the public and private sector, Suzanne has worked on a wide range of projects spanning across both statutory and strategic planning fields. Suzanne began her career in Local Government before moving to a Town Planning Consultancy in 2003. Suzanne's varied background allows her to bring commercial acumen and practical advice to all facets of the planning and development process. Suzanne has extensive experience in leading multi-disciplinary teams in the preparation of planning applications for large scale developments. She also has significant experience in the preparation of Environmental Impact Statements. Suzanne is a Corporate Member of the Irish Planning Institute and Royal Town Planning Institute.

Land, Soils, Geology, Hydrogeology and Hydrology, Marcelo Allende is an Environmental Consultant at AWN with over 15 years of experience in Environmental Consulting and water resources. Marcelo holds a degree in Water Resource Civil Engineering from the University of Chile. He has worked on a wide of range of projects including multi-aspect environmental investigations, groundwater resource management, hydrological and hydrogeological conceptual and numerical modelling, due diligence reporting, surface and groundwater monitoring and field sampling programmes on a variety of brownfield and greenfield sites throughout Ireland as well as overseas in Chile, Argentina, Peru and Panama.

Biodiversity/Appropriate Assessment, Ger O'Donohoe. Ger is a Consultant Ecologist with Moore Group. Ger graduated from GMIT in 1993 with a B.Sc. in Applied Freshwater and Marine Biology and completed an M.Sc. in Environmental Sciences, graduating from TCD in 1999. Ger has over 20 years of experience as an environmental consultant with experience in the planning and management of numerous complex Environmental Impact Assessments for large scale developments nationwide. He has wide ranging experience as an expert witness at public hearings.

Air Quality and Climate, Dr. Edward Porter is Director with responsibility for Air Quality with AWN Consulting. He holds a BSc from the University of Sussex (Chemistry), has completed a PhD in Environmental Chemistry (Air Quality) in UCD where he graduated in 1997 and is a Full Member of the Royal Society of Chemistry (MRSC CChem), the Institute of Environmental Sciences (MIEnvSc) and the Institute of Air Quality Management (MIAQM). He specialises in the fields of air quality, EIA and air dispersion modelling.

Noise and Vibration, Damian Kelly is a Director and Principal Acoustic Consultant holds a BSc from DCU and an MSc from Queens University Belfast. He has over fourteen years experience as an acoustic consultant. He is a member of the Institute of Acoustics. He has extensive knowledge in the field of noise modelling and prediction, having prepared the largest and most complex examples of road and industrial noise models currently in existence in Ireland. He was also co-author of the EPA document "Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation

to Scheduled Activities" (2012) and advised in relation to the noise limits applied to commercial developments by the various local authorities in the Dublin region.

Landscape and Visual Impact, Kevin Fitzpatrick, BA(Hons) Land Arch, MLA, MILI. Kevin is a corporate member of the Irish Landscape Institute. Kevin is the Principal of Kevin Fitzpatrick Landscape Architecture with over 15 years' experience in landscape and visual Impact assessment for inclusion in EIAR. He has provided visual assessment and specialist landscape analysis and design input to numerous EIA Reports.

Archaeological, Architectural and Cultural Heritage, Dr Stephen Mandal (MIAI PGeo EurGeol) is co-founder (in 1997) and managing director of CRDS Ltd. Stephen holds an honours science degree in Geology (1991) and a PhD in Geoarchaeology He is professional member of the Institute of Archaeologists of Ireland, the Institute of Geologists of Ireland, and the European Federation of Professional Geologists. CRDS is an award-winning leader in undertaking the cultural heritage components of large-scale impact assessments and has a diverse project portfolio. CRDS has undertaken a wide variety of archaeological, architectural and cultural heritage assessments for quarries including desk-based studies, archaeological impact assessments, pre-development testing, monitoring and excavation.

Traffic and Transportation, Phillip Bayfield (BE MSc CEng MIEI MICE). Phillip is a Chartered Engineer with over 30 years' experience in the industry. He has overseen civil and structural engineering design of variety of projects including several road and bridge schemes, commercial, educational, public and residential buildings as well as works in the public domain and has been responsible for project team management, resourcing, programming and account management. Projects include the Sutherland School of Law Enabling Works Contract on behalf of UCD, Thornton Hall Access Road and Thornton Hall Offsite Works projects on behalf of the Irish Prison Service, Scotch Hall Development, Kildare Civic Offices infrastructure and Beacon Gateway. Philip is also an experienced PSDP coordinator.

1.4 DESCRIPTION OF EFFECTS

The quality, magnitude and duration of potential impacts are defined in accordance with the criteria provided in the *Guidelines on Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2017) this criteria is duplicated in Table 1.2.

Table 1.2 *Schedule of Impacts following EPA Guidelines*

Characteristic	Term	Description
Quality of Effects	Positive	A change which improves the quality of the environment
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment
Describing the Significance of Effects	Imperceptible	An impact capable of measurement but without noticeable consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without noticeable consequences
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities

Characteristic	Term	Description
	Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment.
	Profound	An impact which obliterates sensitive characteristics
Describing the Extent and Context of Effects	Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Probability of Effects	Likely Effects	The effects that can reasonably be expected to occur as a result of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing the Duration and Frequency of Effects	Momentary Effects	Effects lasting from seconds to minutes
	Brief Effects	Effects lasting less than a day
	Temporary Effects	Effects lasting less than a year
	Short-term Effects	Effects lasting one to seven years.
	Medium-term Effects	Effects lasting seven to fifteen years
	Long-term Effects	Effects lasting fifteen to sixty years
	Permanent Effects	Effects lasting over sixty years
	Reversible Effects	Effects that can be undone, for example through remediation or restoration
	Frequency of Effects	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Type of Effects	Indirect Effects	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	'Do Nothing'	The environment as it would be in the future should no development of any kind be carried out
	`Worst case' Effects	The effects arising from a project in the case where mitigation measures substantially fail
	Indeterminable	When the full consequences of a change in the environment cannot be described
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect
	Synergistic	Where the resultant impact is of greater significance than the sum of its constituents

1.5 ADDITIONAL ASSESSMENTS REQUIRED

This section addresses the additional approvals and assessments and reports required under other EU Directives, legislation, and the Planning Authority.

- **Land Use Planning (LUP)** – under the COMAH directive a LUP assessment been developed and is included with the planning documentation and as Appendix 5.1 to Chapter 5 (Population and Human Health).
- **Flood Risk Assessment (FRA)** - A site specific FRA has been undertaken by AWN Consulting and is included with the planning documentation and as Appendix 7.2 to Chapter 7 (Hydrology).
- **Appropriate Assessment (AA) Screening Report** has been completed and is included as an Appendix 8.1 to Chapter 8 (Biodiversity)
- **Arboricultural Report** – a report in accordance with BS5837:2012 Trees in Relation to Design, Demolition and Construction -Recommendations is included with the planning documentation and as Appendix 11.2 to Chapter 11 (Landscape and Visual Impact).

2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

This chapter provides a description of the subject site, receiving environment and proposed development.

A systematic approach in accordance with the Draft Guidelines on the Information to be Contained in EIARs (2017), Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018), and other EIA guidance documents was used to ensure all relevant aspects of the development are accurately and fully described. The objective is to provide a description of the proposed development in sufficient detail, which when taken together with the description of the existing environment provided, will allow an independent reader without acquired technical environmental knowledge, to understand the significant impacts likely to arise from the proposed development.

The description of the proposed development is described in this chapter in terms of those environmental topics that will form the basis of the impact assessment process and the characteristics of the proposed development which could potentially affect human beings, soil, water, climate, air, flora, fauna, landscape, archaeology, and cultural heritage. Chapter 17 specifically addresses interactions between all environmental factors in this regard.

The EIA Directive also requires that the description of the site, design, size or scale of the development, considers all relevant phases of the existence of the project from its construction through to its existence and operation (and where applicable its restoration or decommissioning).

This EIAR document fully reflects the key environmental factors of the proposed development which were recognised from the scoping carried out by the design team and the level of detail required will vary considerably according to the sensitivity of the existing environment and the potential of the project for significant effects.

2.1 SUBJECT SITE CHARACTERISTICS

The subject site is located to the north west of the M50 orbital ring, on lands adjacent to Huntsown Power Station, North Road, Finglas, Dublin 11. The site subject to this application extends to c.4.33ha.

The site is bounded by the Huntstown Power Station to the west and the Roadstone Huntstown Quarry and Huntstown Power Station private access road to the south. The site is presently bounded by greenfield agricultural lands to the north and east, which are subject to a concurrent Planning Application for the development of a data centre facility.

A 110kV overhead line traverse the site in a north – south east direction connecting to the Finglas 220kV/110kV substation complex to the southeast of the site. It is proposed that the overhead line circuit will be undergrounded to facilitate the development of the 220kV substation on the site, subject to a separate planning application made to Fingal County Council (Planning Reg. Ref. FW21A/0144).

Existing ESB underground 220kV cables to Corduff and to Finglas substation which are presently located along the Roadstone Huntstown Quarry Road will be diverted from the existing ESB substation in Huntstown Power Plant into the proposed 220kV

Substation. This will have minimal impact and disturbance to existing proposed services and roads.

The greenfield site is free from development. The topography of the site falls slightly in an east west direction.

The surrounding area is characterised by a variety of energy, industrial, commercial, quarrying, agricultural and residential uses. The overall site is generally bounded to the north by Huntstown Power Station and the wider Data Centre development site, to the south by a vehicular entrance leading to the Huntstown Quarry and further south west by an Anaerobic Digestion Plant, to the east by the North Road (R135) and two residential properties fronting the R135 (demolition of both is included in the data centre application) and to the west by Huntstown Power Station.

A number of large logistics warehouse parks are located to the north east of the site including Dublin Airport Logistics Park and Vantage Business Park, Coldwinters, granted under Ref. F17A/0769 and further amended under Refs. FW19A/0053 and FW20A/0044. Several small scale commercial and service uses are scattered along the frontages of the R135 including: a garden centre; veterinary clinic and car repair facility.

The subject site is highly accessible to the national road network and is located less than 1km from the M50/N2 interchange and approximately 0.1km from the Coldwinters exit on the N2. The site is directly accessible from the R135 and via a service road to the south leading to Huntstown Quarry and Power Station.

The subject site is identified in Figure 2.1 below.

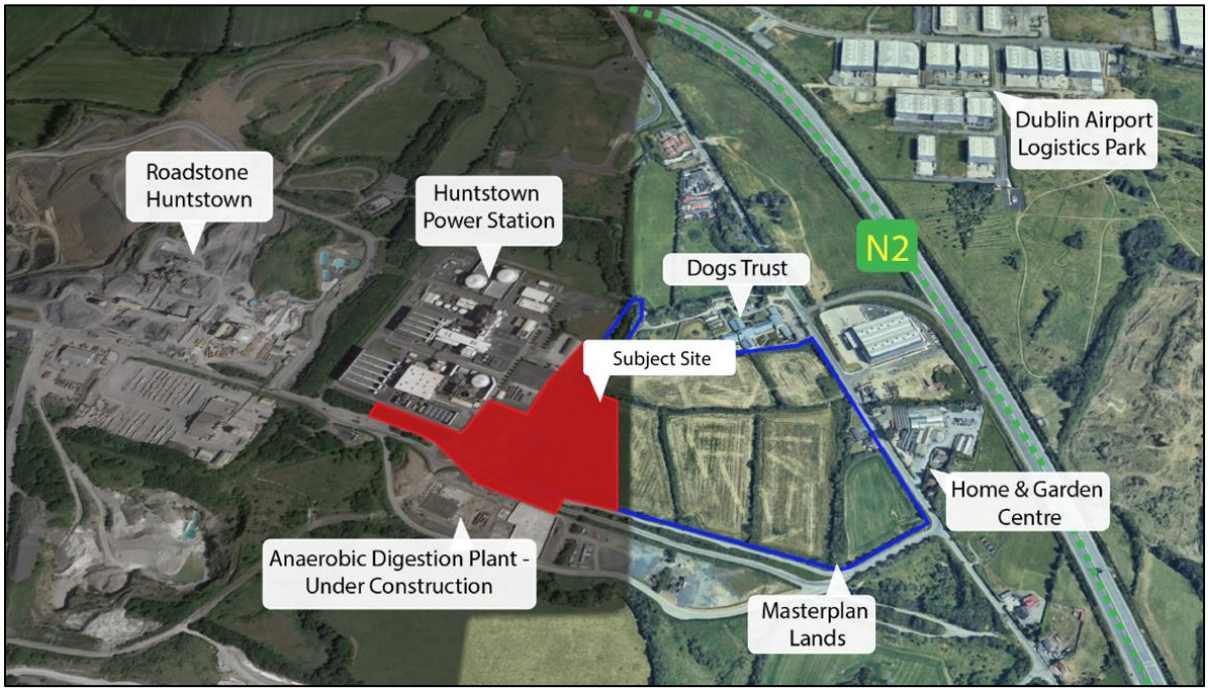

Figure 2.1 *Surrounding Site Context (subject site outlined in red)*

2.2 DESCRIPTION OF THE CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

Our client, Huntstown Power Company Limited, is seeking permission for the development of a two-storey 220kV gas insulated switchgear (GIS) building and associated external equipment located to the east of the site, oriented north-south with a gross floor area of 2,245.5 sq.m. The extent of the site layout is highlighted below.

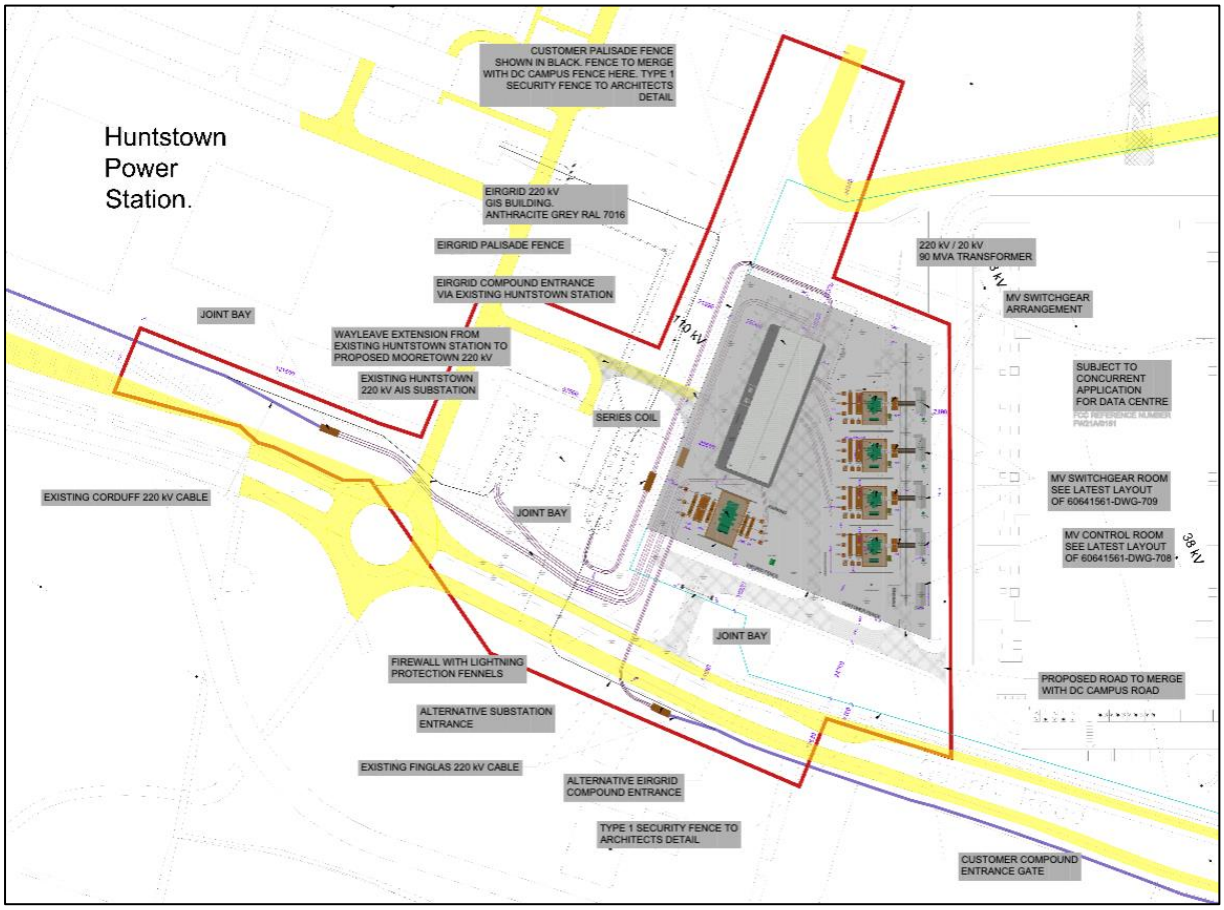

Figure 2.3 *Proposed Development Site Layout (AECOM Sheet: 60641561-DWG-701)*

The proposed development will consist of the following:

(1) Construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151;

(2) The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station;

(3) The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

2.2.1 Detailed Description

220kV GIS Substation

- 2 storey 220kV insulated switchgear building c. 2,068 sq.m Gross Internal Floor Area
- Overall height of c. 20 metres (Roof height of c.17m and lightning electrode of c. 3m).

Ancillary Structures

- 5 no. MV Switchgear/ Control buildings (c.35.5 sq.m each).
- 1 no. Series Coil.
- c. 20 metre high lightning monopole.

Landscaping

- The proposed landscape design aims to enhance the existing ecological and wildlife assets, to contribute to visual impact mitigation and to provide a visual amenity both to the public realm and to staff and visitors within the facility.
- The main landscaping features proposed are a visual screening belt consisting of a triple staggered line of native trees which will be 4.5 to 5 metres tall on day 1 of operations with potential to grow up to 16 metres.
- The existing hedgerows to the south of the development site are to be retained and enhanced to screen the development.

Lighting

- The internal access routes will be lined with street lighting. Bat-sensitive lighting techniques will be incorporated into the lighting plan, which will avoid or minimise any potential impacts of lighting on bats for the operational phase.

Access/Car Parking

- The main vehicular entrance to the substation campus will be via the Huntstown Power Plant.
- There will be a secondary entrance to the south of the site that will provide emergency access to the site via the Roadstone Huntstown Quarry Road. It will also be possible to access the substation site via the proposed Data Centres internal access road network.
- Car parking provision to cater for maintenance and operations staff will be 5 spaces for the EirGrid side of the substation compound and 4 spaces for the customer side of the substation compound. Disabled parking spaces and electric car charging ports are not proposed due to occupancy and usage of the substation.

2.3 DESCRIPTION OF DEVELOPMENT INPUTS

The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151. The overall development utilises the adjoining Huntstown Power Station together with existing EirGrid connections, to obtain firm grid power for the data centre development as required under EirGrid's Data Centre Connection Offer Process and Policy, 2020.

2.3.1 Electricity

The 220kV substation is designed to support power supply for the proposed data storage facility subject to a separate application. The short grid connection is extremely efficient and combining the connections to the Corduff and Finglas 220kV substations to the south west and west of the site, strengthens and increases resilience and redundancy of the existing electricity grid network in north Dublin.

2.3.2 Surface Water

The proposed development will be connected to a SUDS facility to provide attenuation in compliance with the requirements of the Greater Dublin Area Strategic Drainage Study (GDSDS).

2.3.2.1 EirGrid Compound

A surface water drainage network separate from the adjacent Customer Compound will be formed via. a solid walled pipe system connected to a Class 1 full retention interceptor prior to discharge to the attenuation basin which will provide the final treatment and attenuation from the compound.

It is proposed that the interceptor, installed downstream of the compound surface water network and upstream of the attenuation basin, will be a Class 1 full retention interceptor designed to accept and treat the full design flow delivered in the surface water drainage system.

A system of road gullies, and linear drainage channels will direct the surface water run-off from the impermeable areas into the surface water system with manholes and catch pits located on all drains to minimise silt transfer and intercept contamination.

During oiling of transformers, surface water drainage from the road area can be closed off after the interceptor to prevent a catastrophic large volume leak of oil reaching the SUDS treatment.

2.3.2.2 Customer Compound

The proposed surface water drainage will be similar to that proposed for the EirGrid compound above with a series of gullies and linear drainage channels collecting surface water run-off from the compound access road and yard connecting into a solid walled pipe system.

Drainage will discharge into a full retention Class 1 interceptor prior to discharge into the attenuation basin for final treatment and attenuation.

Transformer bases will provide for a leak retention of a minimum of 110% of the stored oil in the transformer. Surface water from each will be pumped from the sump via an Aquasentry pump and monitoring system which will shut down and alarm in the event of oil contamination. Surface water from the normal delivery of the pumps will discharge to the surface water pipes and Class1 interceptor system to prevent contamination

A surface water ditch diversion pipe is shown within the Customer Compound. This diversion will be constructed under the works proposed by the concurrent planning application for the Data Centre.

2.3.3 Water Supply

A water supply will be provided from the proposed Data Centre's private water supply. The applicant made a pre- connection enquiry to Irish Water regarding the viability of the overall development connecting to the Irish Water Network. Irish Water advised that subject to a valid connection agreement being put in place, the proposed connection to the Irish Water Network can be facilitated. Correspondence between Irish Water and the applicant took place via email under the connection reference no. CDS19008464.

Peak water demand of 400 litres per day during an 8-hour occupied shift has been allowed. Due to the gaps in use from the supply, potable water will be imported bottled water.

2.3.4 Foul Water

The pipe network is designed in accordance with the requirement of table 6.4 of the Greater Dublin Strategic Drainage Study.

The proposed foul water network collects foul water from the toilet, shower, and mess facilities within the GIS building. The substation building is an unmanned facility with visiting maintenance crews. This is generally a two-man crew visiting the site for 2 days per month.

As a result, this development is not covered by the types of activities listed in Appendix D of the Irish Water Code of Practice for Wastewater Infrastructure. Accordingly, proposed wastewater flows have been based on the assumed usage rates of the appliances in the building.

The proposed foul water flows from the development are estimated to be a maximum of 400 litres per day during occupation with a peak discharge of 1.6 litres per second during an 8 hour shift.

2.3.5 Off-Site Parking

The construction of the proposed development will occur concurrently with the development of the proposed data centre (Reg. Ref. FW21A/0151) Remote off site overflow parking will be provided and will operated as a park and ride system to accommodate the construction of the overall development. The Overflow Parking (up to 500 no. vehicles) will be provided at an existing permitted parking area (DAA surface carpark or similar such established facility) and operate as a park and ride facility for construction workers during peak construction periods. This additional parking facility will be provided during the construction phase to deal with the changing thresholds of on-site construction activity and extent of on-site construction operatives. A parking facility of this scale has been chosen to deal with traffic arising from the future construction of concurrent applications on the site.

2.3.6 Site Preparation Works and Establishment of Construction Services

Preparation of the site requires limited works with minimal site clearance, establishing entranceways and haul roads for vehicles, surveying and setting out, setting up the construction site with fencing, site compounds etc.

The site will provide office, portable sanitary facilities, equipment storage, parking etc. for contractors for the duration of the works. The construction compound will be fenced off for health and safety reasons so that access is restricted to authorized personnel only. All areas under construction will be fenced for security and safety purposes and temporary lighting supplied as necessary.

2.4 OTHER RELATED PROJECTS

2.4.1 Undergrounding of Overhead 110kV Lines

The overall development will be facilitated via a separate planning application (Reg. Ref: FW21A/0144) which proposes the removal of OETL and associated transmission masts which traverse the site to be replaced with underground cabling routed around the location of the proposed substation and the concurrent data centre proposal (Reg. Ref. FW21A/0151). This clears the central portion of the site to allow for development.

2.4.2 Data Centre Facility – FCC Reg Ref. FW21A/0151

A data centre facility consisting of 2 no. data hall buildings and ancillary structures located on the wider development site will be provided and is subject to a separate planning application to Fingal County Council.

2.4.3 10kV Overhead lines

A 10kV overhead line traverses the south/eastern section of the subject site. A small number of pole sets and associated cable will need to be moved. Future engagement with ESB will determine whether or not the cables will be undergrounded or remain overhead.

2.5 CONSTRUCTION/OPERATIONAL STAFF

The proposed development has potential for a positive impact with regards to increased job opportunities and improved accessibility to jobs during construction and operation in the Fingal and North Dublin area. During construction it is estimated that the overall development of the lands as a data centre facility will employ c. 1,050 no. construction workers.

The 220kV GIS substation will be an unmanned facility once operational, bar maintenance teams which are generally a 2 person crew visiting the site for 2 days a month.

The concurrent data centre development (Reg. Ref.FW21A/0151) is estimated to employ c. 1,050 no. construction workers at peak, with the average construction staff for one data hall building being 600 persons. It is estimated that up to 181 no. full time staff will be employed during the operational phase.

2.6 DEVELOPMENT OUTPUTS

Air

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 350m of a construction site, the majority of the deposition occurs within the first 50m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction.

The sensitivity of the area is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Chapter 9 (Air Quality and Climate), this results in an overall negligible risk of dust soiling impacts and human health impacts as a result of the proposed construction activities.

During operation, cables will be buried underground and therefore there will be no emissions to atmosphere. There is the potential for maintenance vehicles accessing the substation site to result in emissions of NO_2, PM_{10}/$PM_{2.5}$ and CO_2. However, due to the infrequent nature of maintenance activities and the low number of vehicles involved emissions are not predicted to be significant. A detailed air quality and climate assessment was scoped out for the operational stage of the development as per the UK DMRB screening criteria. Operational stage impacts to air quality and climate are predicted to be imperceptible, neutral and long-term.

Surface Water

The proposed development will be connected to a SUDS facility to provide attenuation in compliance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS). Section 2 of the Drainage and Water services report prepared by AECOM submitted as part of this application outlines the surface water drainage proposals for the development in each area in detail. All SuDS elements have been designed as per the recommendation of the SuDS Manual 2015. All surface works including

connections will be carried out in accordance with the Greater Dublin Regional Code of Practice for Drainage Works.

The sites for the EirGrid substation and Customer Compound will provide a first level of SuDs treatment described in section 2 of the Drainage and Water services report. A final treatment together with attenuation will be provided in the attenuation basin to the north of the site. This basin, which will be constructed as part of the concurrent planning application for the Data Centre development on the wider development site is designed to attenuate the substation, customer compound and will also form part of the attenuation system for the data centre.

Foul Water

The pipe network is designed in accordance with the requirement of Table 6.4 of the Greater Dublin Strategic Drainage Study.

The proposed foul network collects foul water flows from the toilet, shower and mess facilities within the GIS building.

As the substation is an unmanned facility the development is not covered by the types of activities listed in Appendix D of the Irish Water code of practice for Wastewater infrastructure. Accordingly, proposed wastewater flows have been based on the assumed usage rates of the appliances in the building. The proposed foul water flows from the development are estimated to be a maximum of 400l/day during occupation with a peak discharge of 1.6l/sec during an 8hr shift period.

Foul drainage from the GIS building will be gathered to a centrally located manhole where it will be pumped offsite to the adjacent Data Centres private sewer. Details of this can be found in section 2 of the Drainage and Water services report submitted as part of this application.

Waste Management

A detailed construction and demolition waste management plan accompanies this EIAR and ensures best practice is followed in the management of waste from the proposed development.

2.7 DESIGN/DEVELOPMENT RATIONALE

As outlined in Chapter 4 (Alternatives) the proposed GIS substation is designed based on requirements stipulated by EirGrid. The design of the substation is centred around the equipment requirements of EirGrid that are required to provide an efficient and safe service. From a “design and layout” point of view, therefore, the flexibility to select alternative designs and layouts was not available to the Applicant in this case.

The substation is essential facilitative infrastructure for the development of the data centre on the wider development site (Reg. Ref. FW21A/0151). As the design of the data centre development evolved and changed through consultation with environmental experts and the local authority it informed the location of the substation in relation to the overall development. It is considered that the proposed location of the substation development is optimum for its role as essential infrastructure for the Data Centre development, located between the adjacent existing Huntstown Power Station to the west and the proposed Data Centre facility to the east.

2.8 CHARACTERISTICS OF THE CONSTRUCTION AND OPERATION PHASES

Pursuant to Section 2(a)(i) of S.I No 600 of 2001, a description of the physical characteristics of the proposed development and land use requirements during the construction and operation phases is provided below.

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;
- Fuel and chemical handling, transport and storage; and
- Control of water during construction.

We refer to the Construction Environmental management Plan prepared by AECOM for more information.

Construction works will include the following activities:

- Site preparation.
- Site clearance.
- Excavations and levelling of the site to the necessary base level for construction including archaeological testing.
- Surveying and setting out for structures and any rerouting of services/connections to services.
- Construction compound and fencing.
- Foundations and structures.
- Levelling/Cut and fill.
- Building envelopes and finish.
- Roads, services and landscaping.

Site Preparation

It is proposed that the accesses and haul roads for vehicles, the contractors' compound and fencing will be established for the proposed development utilising the 'DC Secondary Entrance' located along the CRH heavy haul road as the main site entrance.

The construction compound will facilitate office, portable sanitary facilities, equipment storage, parking etc. for contractors. It will be used for the duration of the works.

The primary activities that will be required during the site preparation phase for the development will be site clearance, excavations and levelling of the site to the necessary base level for construction, surveying and setting out for structures and any rerouting of services/connections to services.

A combination of excavators, trucks and other soil shifting plant will commence the main site clearance and levelling aspects.

Site Phasing

It is envisaged that the overall development of the masterplan for the subject lands will be constructed on a phased basis. It is proposed that the 220kV substation

development will be constructed as part of phase 1 of the overall development of the site.

Construction Staff

As the proposal will be constructed in tandem with the overall data centre development, construction staff numbers have been based off the number present on the overall site.

It is estimated that the worst-case construction traffic impact for the proposed development would occur in Q4 2022, when Building B/A of the data centre development are at peak construction.

Construction traffic has been estimated using data obtained from a similar data storage facility development that used a similar construction methodology to the current development. The following construction data has been used to estimate peak daily construction traffic:

- Average construction staff for one data storage facility: 600;
- Peak construction staff for one data storage facility: 1,050;
- Average cars/ day for one data storage facility: 400 – with max 200 on site – shared with the proposed substation development to the south west of the site (subject of a separate application);
- Peak cars/day for one data storage facility: 700;
- Peak HGVs/day for one data storage facility: 110; and
- Peak LGVs/ day for one data storage facility: 30.

Construction Traffic and Site Access

The “DC Secondary Entrance” located along the CRH heavy haul road will be used exclusively by the 220kV Substation and Cables construction team as the main site entrance. This site entrance will be recessed off the CRH heavy haul road so vehicles can enter the site before being stopped by site security to present credentials. This will ensure that vehicles do not protrude onto the CRH heavy haul road causing potential traffic disruption. Temporary construction lighting will be erected to illuminate the site entrance area. The arrival of personnel to site on foot or bicycle is not planned for due to the absence of footpaths, bus routes and cycle lanes in the surrounding industrial area.

A wheelwash is not planned for use at the site due to its relatively compact size. A road sweeper will be available if any section of the CRH heavy haul road becomes soiled by construction vehicles associated with the Substation construction site.

Limited parking will be provided on site for vehicles associated with construction personnel and visitors. Parking space for up to 33 vehicles on temporary hardstanding will be provided. If additional parking is required, it will be provided off site with transport being required to ferry personnel from the remote parking location to the site.

Material deliveries for the project will be made through the 220kV Substation main construction site entrance located on the CRH heavy haul road.

Monitoring and control of construction traffic will be ongoing during construction works. Construction Traffic Management will minimize movements during peak hours.

Construction traffic will enter the site from 7:00am, with construction activity to take place between 08:00 and 19:00 (Monday-Friday) and 08:00 and 14:00 (Saturday). No

site construction activities will take place on Sundays or Bank holidays. The above will be subject to any planning conditions restrictions imposed as part of the grant of permission.

Construction Waste

A project specific outline 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).

The following mitigation measures will be implemented:

- Building materials will be chosen with an aim to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated:
- Concrete rubble (including ceramics, tiles and bricks);
- Plasterboard;
- Metals;
- Glass; and
- Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks/bricks) and any suitable construction materials shall be re-used on-site, where possible;
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

These mitigation measures will ensure that the waste arising from the construction phase of the development is dealt with to ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

The removal of materials (excavated soils) from the site will primarily be undertaken during early civil works and 220kV building substructure construction phase. It is at this stage that the highest periods of material movement off site are likely to occur. All trucks will be required to have tarpaulin to cover the transported material as it is being hauled off or brought to site.

Operational Waste

All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the proposed development are summarised below.

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
- Dry Mixed Recyclables;
- Organic food/green waste;
- Mixed Non-Recyclable Waste;
- Batteries (non-hazardous and hazardous);
- Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment; and
- Cleaning chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.).
- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly labelled with the approved waste type to ensure there is no cross contamination of waste materials;
- All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

These mitigation measures will ensure the waste arising from the development is dealt with to ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

Dust

The siting of construction activities and the limiting of stockpiling will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or using effective control measures quickly before the potential for nuisance occurs. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent will monitor the contractors' performance to ensure that the proposed mitigation measures are implemented, and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board will also include head/regional office contact details;

- Community engagement shall be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein; and
- The procedures put in place will be reviewed at regular intervals and monitoring conducted and recorded by the principal contractor. It is recommended that reviews are conducted on a monthly basis as a minimum.

2.9 DECOMMISSIONING

Given the nature of the development, it is not envisaged that the proposed 220kV Substation will require closure or decommissioning in the short to medium future.

Regular maintenance and minor upgrade works will maintain the functional operation of the development over the medium to long term.

2.10 MITIGATION MEASURES

The outline Construction and Environmental Management Plan prepared by AECOM provides a framework from which a final Construction Management Plan will be developed to avoid, minimise or mitigate any construction effects on the environment prior to commencement on site.

The CEMP summarises the possible impacts and measures to be implemented and to guide the Contractor who will be required to develop and implement the Construction Management Plan on site.

The appointed contractor will be required to prepare a Construction Management Plan in advance of works commencing on site. This will incorporate all mitigation measures proposed within this EIAR for the protection of the environment and human health. Relevant conditions of planning will also be included within the plan.

Monitoring will be undertaken during the demolition and construction phase in line with the recommendations of the EIAR.

2.11 SEVESO SITE

The proposed development is located directly adjoining to the Huntstown Power Station campus which is a notified lower tier Seveso site (HAS, 2021) and is subject to the provisions of the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (COMAH Regulations 2015). The proposed development site is located within the consultation distance of this site.

2.12 HEALTH AND SAFETY

The Proposed development has been designed in accordance with the Safety, Health and Welfare at Work Act 2005 (S.I. 10 of 2005) as amended, Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2020, the Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2020 and associated

regulations. The Proposed development has been designed by skilled personnel in accordance with internationally recognised standards, design codes, legislation, good practice and experience based on a number of similar developments.

2.13 NOISE

During the construction phase of the proposed development there will be some impact on nearby noise sensitive receptors due to noise emissions from site traffic and other activities. The application of noise limits and hours of operation along with the implementation of appropriate noise control measures, detailed in Chapter 10 (Noise and Vibration), will ensure that noise impact will be kept to a minimum. It is noted that all construction noise impacts will be slight, negative and short term in nature. As the development progresses past initial ground works it is noted that noise impact will reduce from slight to not significant.

Noise modelling during the operational phase has been presented considering the operation of a proposed data centre development to the east of the subject site.

A detailed analysis of Noise and Vibration is provided in Chapter 10.

2.14 SUSTAINABILITY

The 220kV GIS building will be designed and constructed to meet the requirements of the Irish Building Regulations and current Technical Guidance Documents (TGD'S).

Waste management for both construction and post occupation will actively control the generation recycling and disposal of waste material.

The proposed development will facilitate the development of a data centre (Reg. Ref. FW21A/0151) The applicant is committed to running its business in the most environmentally friendly way possible and has developed an approach which will allow for the overall development to: (i) use existing infrastructure; and (ii) provide a mechanism which will aim to secure additional renewable energy generation.

2.14.1 Use of Existing Infrastructure

The proposed development will facilitate the development of a data centre (Reg. Ref. FW21A/0151).

The overall development has been strategically located to adjoin the Huntstown Power Station. The co-location of power generation and electricity consumption on the same site is beneficial as it minimizes the need for national grid network improvements, including new high voltage wires and cables that would otherwise be the case to transfer additional electricity to a new location, the cost of which would be partly paid for by all electricity users and provides the most energy efficient location for the energy consumer that minimizes electrical losses that occur when transferring electricity longer distances.

The co-location approach will avoid the requirement to build new on-site dispatchable gas power generation, avoiding the potential introduction of additional new fossil fuel generations and associated greenhouse gas emissions.

2.14.2 Renewable Energy Generation

Working alongside the overall development the applicant will obligate the facility end user of the data centre to enter into agreements which are capable of underpinning new renewable energy generation calculated to offset the energy consumed by the proposed development from the electricity grid.

2.15 CUMULATIVE IMPACTS

The masterplan for the subject lands involves the construction of a future data centre facility (Reg Ref.FW21A/0151) and the undergrounding of overhead line (ref. FW21A/0144 refers). An EIAR has been prepared for each of the applications to cumulatively assess the overall development.

There are potential short-term nuisances such as dust, noise, as well as the potential for pollution of groundwater or the existing drainage ditches associated with the demolition, excavations and construction of this development. In advance of work starting on site, the works contractor will prepare a detailed Construction Environmental Management Plan (CEMP). The CEMP will set out the overarching vision of how the construction of the proposed development will be managed in a safe and organised manner by the Contractor.

Chapter 16 (Cumulative Impacts) of the subject EIAR considers the potential cumulative impact of the proposed development with the concurrent developments related to the application as identified in Section 2. and the potential cumulative impact with planned and permitted developments in the locality of the site.

3.0 PLANNING CONTEXT

The proposal will provide a new 220k V Substation and associated electrical infrastructure that will enable the wider site to be developed in the most efficient manner, and maximise the potential of the wider site for development as a data centre. The lands are subject to national, regional, sub-regional, county/local planning policy.

3.1 GOVERNMENT STATEMENT ON THE ROLE OF DATA CENTRES IN IRELAND'S ENTERPRISE STRATEGY (2018)

The Department of Business, Enterprise and Innovation released a statement on the Role of Data Centres in Ireland in 2018 in which it sets out the role and significance of data centres in Ireland's wider enterprise policy objectives.

The statement outlines the presence of data centres in Ireland has raised the country's visibility internationally as a technology-rich, innovative economy. The statement goes on to state that data centres directly contribute to job creation and generate significant added economic benefit by providing a range of services to other firms.

A significant proportion of existing, permitted and proposed data centres are located in the Dublin Region. The statement notes that *"The potential cost benefits which could be provided by data centres are dependent on location, existing network capacity and the infrastructure required to supply the site."*

The statement goes onto note *"A consistent and supportive whole of government approach will be brought to the realisation of the transmission and distribution assets required to support the level of data centre ambition that we adopt."*

The Covid-19 pandemic has highlighted the urgent need for improvements in ICT and the roll-out of high-speed broadband nationwide. Many bricks and mortar businesses are already trading and conducting business online to safeguard and continue daily operations. Across all sectors, work environments will be permanently altered with employees expected to continue working from home following the pandemic. The need for high quality data centres is therefore essential to the recovery of the Country and economy post-Covid-19. The subject proposal of a 220kV GIS substation will be facilitative infrastructure to power a future data centre development on the site.

3.2 PROJECT IRELAND - NATIONAL PLANNING FRAMEWORK (2040)

The National Planning Framework (NPF) is the Government's high-level strategic plan for shaping the future growth and development of our country out to the year 2040.

The NPF sets out that the Eastern and Midland part of Ireland will, by 2040, be a Region of around 2.85 million people, at least half a million more than today.

3.2.1 Compliance with Key National Policy Objectives

The proposed development will facilitate the development of a data centre (Planning Reg. Ref: FW21A/0151). The following National Policy Objectives are considered to apply to the site.

National Policy Objective 55-

"Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050."

National Policy Objective 64-

"Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green infrastructure planning and innovative design solutions."

Under the National Strategic Outcome 5 – A Strong Economy Supported by Enterprise, Innovation and Skills, Ireland is being prompted as a suitable international destination for ICT infrastructure.

"Ireland is very attractive in terms of international digital connectivity, climatic factors and current and future renewable energy sources for the development of international digital infrastructures, such as data centres. This sector underpins Ireland's international position as a location for ICT and creates added benefits in relation to establishing a threshold of demand for sustained development of renewable energy sources. There is also greater scope to recycle waste heat from data centres for productive use, which may be off-site."

It is our considered view that the current proposal complies with and exceeds the vision of the National Planning Framework on the following basis:

- The proposal utilises the existing infrastructure and site services provided by Huntstown Power Station and associated AIS, making it the most efficient use for the site. The compact layout of the substation, transformers, switchgear and electrical equipment, optimises the site's location between the power station and proposed data centre.
- The overall development is appropriately located in West Dublin with excellent connectivity to the N2, N3 and M50.
- The proposal will contribute to the emerging digital infrastructure in Fingal County Council that helps to support a strong Irish economy through its enterprise, skills and innovation sectors.
- The proposal will continue to maintain high quality international connectivity, that Ireland is quickly becoming renowned for.The overall development will provide a mechanism which will aim to secure additional renewable energy generation.

The NPF is clear that it is favourably disposed to the location of ICT infrastructure in Ireland. Having considered the above, it is submitted that the current proposal will deliver on key objectives contained within the NPF.

3.3 REGIONAL SPATIAL AND ECONOMIC STRATEGY (2019-2031)

The *Regional Spatial and Economic Strategy for Eastern and Midland Regional Assembly* (RSES) has recently been published and adopted.

The RSES provides a:

- Spatial Strategy - To manage future growth and ensure the creation of healthy and attractive places to live, work, study, visit and invest in.
- Economic Strategy - That builds on our strengths to sustain a strong economy and support the creation of quality jobs that ensure a good living standard for all.
- Metropolitan Strategy - To ensure a supply of strategic development areas for the sustainable growth and continued success and competitiveness of the Dublin Metropolitan Area.
- Investment Framework - To prioritise the delivery of key enabling infrastructure and services by government and state agencies.
- Climate Action Strategy - To accelerate climate action, ensure a clean and healthy environment and to promote sustainable transport and strategic green infrastructure.

Key RSES Provisions

Finglas/Fingal is identified as falling within the Dublin Region of the RSES.

The Growth Strategy for the Eastern and Midlands Region is to:

- Support the continued growth of Dublin as our national economic engine.
- Deliver sustainable growth to the Metropolitan area.
- Target growth to regional growth centres of Athlone, Drogheda and Dundalk
- Support vibrant rural areas with a network of towns and villages
- Facilitate the collaboration and growth of the Dublin – Belfast Economic Corridor
- Embed a network of Key Towns through the region to deliver sustainable regional development
- Support the transition to a low carbon, climate resilient and environmentally sustainable region.

The proposed development would contribute towards the achievement of Policy Objectives relating to the delivery of both electricity and ICT infrastructure.

Electricity Infrastructure

The proposed development has the potential to strengthen the electricity transmission in the area, and therefore it is considered that the below section of the RSES are of relevance: Section 5.5 ‘Enabling Infrastructure’ of the RSES states the following in relation to Energy:

“Development of the energy distribution and transmission network in the Region will enable distribution of more renewable sources of energy to facilitate future energy demand in strategic development areas along with the roll-out of the Smart Grids and Smart Cities Action Plan enabling new connections, grid balancing, energy management and micro grid development, see also Chapter 10 Infrastructure for more information on Infrastructure and Energy.”

Having regard to the nature of the proposed development, it is considered that the development would contribute to the achievement of the following Regional Policy Objectives:

- RPO 10.20: "Support and facilitate the development of enhanced electricity and gas supplies, and associated networks, to serve the existing and future needs of the Region and facilitate new transmission infrastructure projects that might be brought forward in the lifetime of this Strategy. This Includes the delivery of the necessary integration of transmission network requirements to facilitate linkages of renewable energy proposals to the electricity and gas transmission grid in a sustainable and timely manner subject to appropriate environmental assessment and the planning process."
- RPO 10.22: "Support the reinforcement and strengthening of the electricity transmission and distribution network to facilitate planned growth and transmission/ distribution of a renewable energy focused generation across the major demand centres to support an island population of 8 million people."
- RPO 10.23: "Support EirGrid's Implementation Plan 2017 – 2022 and Transmission Development Plan (TDP) 2016 and any subsequent plans prepared during the lifetime of the RSES that facilitate the timely delivery of major investment projects subject to appropriate environmental assessment and the outcome of the planning process, in particular: Support the installation of additional transformer capacity and increased circuit capacity to meet Dublin demand growth to strengthen the network for all electricity users and improve the security and quality of supply."

ICT Infrastructure

Given that the proposed development will also facilitate the development of a data centre (Reg. Ref:FW21A/0151), it is considered that the below sections of the RSES are of relevance.

One of the Guiding Principles for Investment Prioritisation in Placemaking for Enterprise Development is to *"Align to national strategy and approach for data centres – right location for use and energy demand."*

it is considered that the development would contribute to the achievement of the following Regional Policy Objectives relating to ICT development:

RPO 8.25 of the RSES states that Local authorities shall:

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

It is submitted that the current proposal and wider development site is supportive of the growth strategy and enables growth of the metropolitan region of the RSES. Specifically, the development has the potential to strengthen the electricity transmission in the area.

3.4 FINGAL COUNTY DEVELOPMENT 2017-2023

The Fingal County Development Plan 2017-2023 sets out the planning policy context for future development in the County. The Plan details the land use and development objectives, development control standards and policies and objectives for the protection of the built and natural environment of the County. It is the most relevant document pertaining to the future development of the subject lands.

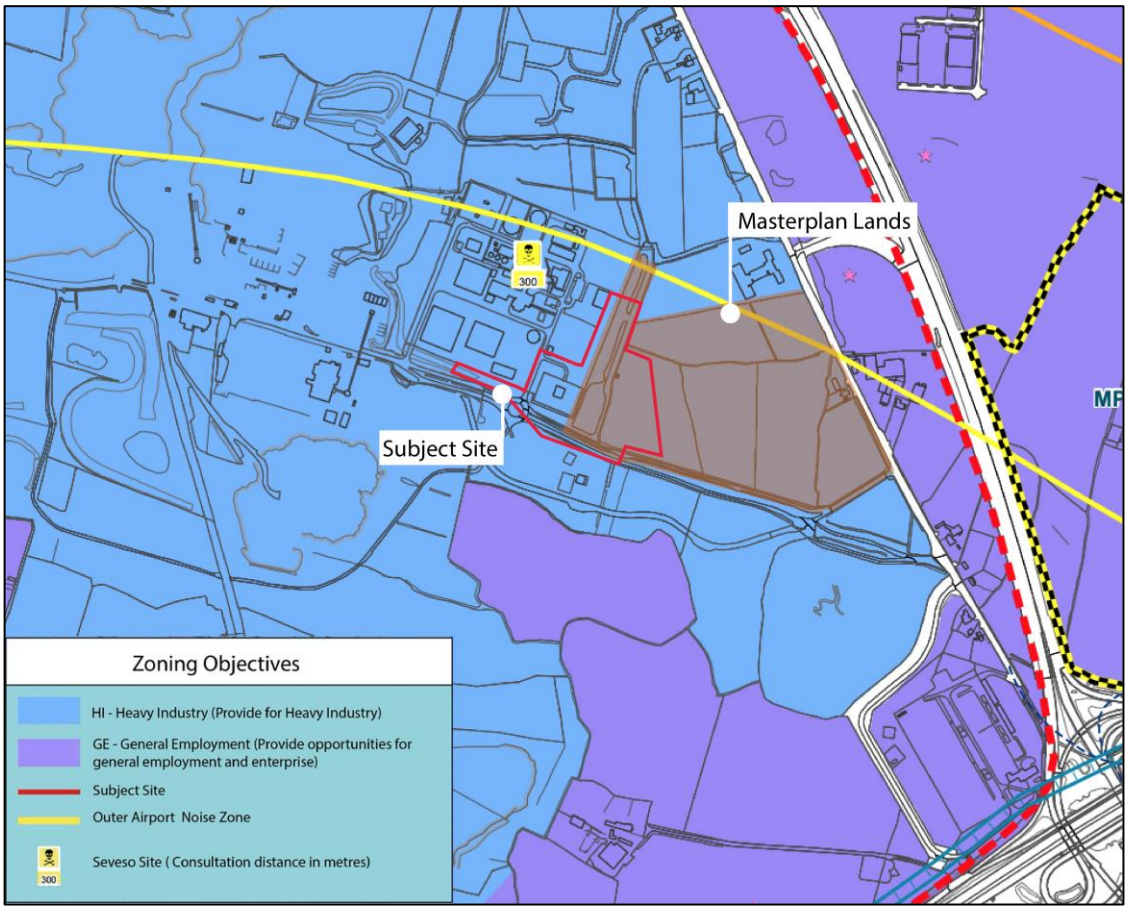

Figure 3.1 *Zoning Map*

The subject site and is zoned HI Heavy Industry under the current County Development Plan. The objective is "Provide for heavy industry".

The vision for Heavy Industry is as follows;

> *'Facilitate opportunities for industrial uses, activities and processes which may give rise to land use conflict if located within other zonings. Such uses, activities and processes would be likely to produce adverse impacts, for example by way of noise, dust or visual impacts. HI areas provide suitable and accessible locations specifically for heavy industry and shall be reserved solely for such uses.'*

The following uses are considered to be permitted in principle;

Permitted in Principle		
Abattoir	Concrete/Asphalt	Extractive Industry/Quarrying
Fuel Depot/Fuel Storage	Heavy Vehicle Park	Industry - High Impact
Office Ancillary to Permitted Use	Open Space	Plant Storage
Restaurant/Café[5]	Retail - Local < 150 sqm nfa[5]	Sustainable Energy Installation
Telecommunications Structures	Utility Installations	Waste Disposal and Recovery Facility (High Impact)

Figure 3.2 *Permissible Uses – HI Zoning*

The following uses are not permitted;

Not Permitted		
Aerodrome/Airfield	Agricultural Buildings	Agricultural Farm Supplies
Agricultural Machinery Sales and/or Maintenance	Agri-Tourism	Air Transport Infrastructure
Amusement Arcade	Bed and Breakfast	Betting Office
Boarding Kennels	Builders Provider/Yard	Burial Grounds
Car Hire Holding Area	Caravan Park – Holiday	Caravan Park – Residential
Cargo Yards	Carpark - Non-Ancillary	Casual Trading
Childcare Facilities	Civic Waste Facility	Community Facility
Conference Centre	Cultural Facility	Dancehall/Nightclub
Education	Enterprise Centre	Exhibition Centre
Fast Food Outlet/Take-Away	Farm Shop	Food, Drink and Flower Preparation/Processing
Funeral Home/Mortuary	Garden Centre	General Aviation
Golf Course	Guest House	Health Centre
Health Practitioner	High Technology Manufacturing	Holiday Home/Apartments
Home-Based Economic Activity	Hospital	Hotel
Industry – General	Industry – Light	Logistics
Office ≤100sqm	Office >100sqm and <1,000sqm	Office ≥1,000sqm
Park and Ride Facilities	Petrol Station	Place of Worship
Public House	Public Transport Station	Recreational Facility/Sports Club
Residential	Residential Care Home/ Retirement Home	Residential Institution
Retail - Convenience ≤ 500 sqm nfa	Retail - Comparison ≤ 500 sqm nfa	Retail - Comparison >500sqm nfa
Retail - Supermarket ≤ 2,500 sqm nfa	Retail - Superstore > 2,500 sqm nfa	Retail - Hypermarket > 5,000 sqm nfa
Retail - Factory Outlet Centre	Retail Warehouse	Retail - Warehouse Club
Retirement Village	Sheltered Accommodation	Taxi Office

Figure 3.3 *Non-Permissible Uses – HI Zoning*

3.4.1 Rationale for the Proposed Development and Zoning Compliance

3.4.1.1 Site Suitability

The subject site was identified as an optimum location for the substation which will be associated with, and will provide the permanent power supply for the proposed large scale data centre development (Planning Reg. Reg. FW21A/0151).

Locating the substation adjacent to the data centre will minimize electrical losses that occur when transferring electricity longer distances.

As well as the benefits deriving from its proximity to the data centre, the proposed development will also strengthen and increase resilience and redundancy of the EirGrid 220kV network in the north Dublin area.

The existing Huntstown AIS has two separate bays such that the Huntstown 1 generating station is connected to the Finglas 220kV Station via an underground cable and the Huntstown 2 generating station is connected to the Corduff 220kV Station via an underground cable. There is no facility at the existing Huntstown AIS to connect the Finglas and Corduff cables together or to connect the two Huntstown generators together or indeed to provide any further new connections.

The proposed Mooretown GIS would form a new node adjacent to the existing Huntstown AIS such that the existing Finglas and Corduff cables are connected directly into the new enhanced ring type node. New cables would then connect the new Mooretown Station to the existing Huntstown AIS Huntstown 1 and Huntstown 2 equipment and four new cables to the proposed data centre transformers.

With this new node the network is strengthened by having the ability to connect Finglas, Corduff, Huntstown 1, Huntstown 2 and the 4 data centre load transformers together at one node and resilience is increased by the flexibility of the dual connections to the wider network at Finglas and Corduff.

3.4.1.2 Compliance with Zoning Objective

Permitted in Principle - Utility Installations are listed as a 'Permitted in Principle' use under 'HI Zoning'.

Utility Installations are defined under the Fingal County Development Plan as *'**A structure composed of one or more pieces of equipment connected to or part of a structure and/ or a facility designed to provide a public utility service** such as the provision of heat, **electricity**, telecommunications, water or sewage disposal and/or treatment'.*

The proposed development of a 220 kV substation and switchgear will (a) facilitate the development of a data centre (Planning Reg. Ref. FW21A/0151); and (b) strengthen and increase resilience and redundancy of the EirGrid 220kV network in the north Dublin area. The proposed 220kV substation will be developed as per EirGrid's standard building design, and will have space for future (4 no.) 3rd party 220kV connections.

Having regard to the later (i.e. strengthening and increasing resiliency and redundancy of the network), it is considered that the development of a substation would fall under the definition of 'utility installation'.

Sui Generis

As noted above, the proposed development would also facilitate the data centre development (Planning Reg. Ref FW21A/0151). In this regard, the substation and data centre uses would be considered sui generis (or 'of its own kind') in that it does not readily fit into the defined land use categories specified in the County Development Plan. Moreover, the Development Plan does not specify a definition of 'heavy industry' in its glossary of terms.

The County Development Plan provides that uses which are neither 'Permitted in Principle' nor 'Not Permitted' will be assessed in terms of their contribution towards (i) the achievement of the Zoning Objective and Vision Statement and (ii) their compliance and consistency with the policies and objectives of the Development Plan.

(i) Zoning Objective and Vision Statement

Zoning Objective

Under the current County Development Plan, the zoning objective for the site is "Provide for heavy industry".

The Development Plan does not specify a definition of 'heavy industry' in its glossary of terms. However, it is noted that the Development Plan states that "The purpose of the Heavy Industry (HI) zoning is to facilitate opportunities for industrial uses, activities and processes that may cause or result in adverse conditions to appropriate locations.

Zoning Vision

The vision for the HI zoning is to: "**Facilitate opportunities for industrial uses, activities and processes which may give rise to land use conflict if located within other zonings**. Such uses, activities and processes would be likely to produce adverse impacts, for example by way of noise, dust or visual impacts. HI areas provide suitable and accessible locations specifically for heavy industry and shall be reserved solely for such uses."

Contribution Towards Achievement of zoning Objective and Vision

The proposed development will be required in order to power the data centre proposed under Planning Reg. Ref: FW21A/0151.

Given the nature of the overall proposal, including:

- Proposed Substation.
- Concurrent Data Centre: c.75,000sqm GFA on a site area of over 13ha; and
- The scale of the required on site dispatchable generation

and having regard to the point (a) and (b) below, it is considered that the overall proposed development would give rise to such land use conflicts if located in other areas such as 'GE' and 'HT' zones:

a) the scale and size of ancillary plant required for a development of this scale (including cooling towers/flues; fuel tanks, transformers etc.), substation and electrical equipment; and

b) Co-locating the proposed development adjacent to the Huntstown power plants fulfils the criteria of the current EirGrid connection policy for data centres which allows the proposed development access to the electrical power it needs to operate. Without this co-location the proposed development could not operate.

   If a similar development was located elsewhere (and not co-located with existing power generation), under the current EirGrid policy for data centres that facilitates access to the electrical power needed to operate, the proposed development would need to include new dispatchable thermal power generation of the scale equivalent to the data centre campus power requirements. This new dispatchable power generation would have to be

designed to run on a regular basis, run for long periods of time and would be in addition to any emergency back-up generation that may also be proposed.

Given the EirGrid policy, the development of a data centre of this scale with co-located dispatchable thermal power generation in other land use zonings such as General Employment or High Technology, would be inappropriate as the necessary co-located dispatchable power generation plant required would be substantial and create land use conflicts due to noise, vibrations, fumes, appearance, etc. in for instance business park settings.

(ii) Compliance and Consistency with the Policies and Objectives of the Development Plan

The Proposed Development is supported by and is consistent with a number of policies and objectives set out in the Fingal County Development Plan, including:

Objective EN02: *"Support and encourage pilot schemes which promote innovative ways to incorporate energy efficiency."*

Objective EN06: *"Encourage and facilitate the development of renewable energy sources, optimising opportunities for the incorporation of renewable energy in large scale commercial and residential development."*

Objective EN22: *"Facilitate energy infrastructure provision at suitable locations, so as to provide for the further physical and economic development of Fingal."*

Objective IT01: *"Promote and facilitate the sustainable delivery of a high quality ICT infrastructure network throughout the County taking account of the need to protect the countryside and the urban environment together with seeking to achieve balanced social and economic development."*

Objective IT02: *"Require appropriate modern information technology, including a carrier neutral, multiduct infrastructure servicing every unit, to be incorporated into the overall design and layout of all new developments in Fingal, where feasible."*

Objective ED27: *"Promote the continued growth of the ICT sector in Fingal by creating high quality built environments offering a range of building sizes, types and formats, supported by the targeted provision of necessary infrastructure."*

Objective ED28: *"Engage and collaborate with key stakeholders, relevant agencies, and sectoral representatives to develop the ICT sector in Fingal and to ensure that the economic potential of the sector is secured for the benefit of the local economy, and national economy."*

Objective ED109: *"Ensure that a range of industrial and/ or manufacturing units, in terms of size, scale, format and arrangements, is provided for to adequately respond to enterprise requirements in different economic sectors."*

Objective ED110: *"Proactively respond to the needs of enterprises undertaking pharmaceutical, data centre, food production and logistics activities that require bespoke building facilities to meet their specific manufacturing requirements."*

Objective ED111: *"Ensure that proposals for industrial and/ or manufacturing buildings demonstrate regard to the relevant development standards."*

Objective ED112: *"Encourage better integration of industrial areas into the urban fabric of the County, resolving tensions between uses and enhancing the security and permeability of industrial areas for pedestrians and cyclists as well as businesses."*

As the proposed substation development is facilitative infrastructure to support the future development of the wider site as a data centre, supporting policies covering the proposed substation development and the overall development of the site as a data centre have been included as planning context.

Although data centres and by associated substations are not defined in any of the zoning objectives identified in the Plan, general planning policy supports the development of data centres.

> *'A demand for industrial and/ or manufacturing units is required by a number of economic sectors including the manufacturing sector, including healthcare and pharmaceutical related activities. Depending on the size of the enterprise, industrial and manufacturing* ***accommodation in a range of formats, sizes, arrangements and locations can be required****. Indeed, over the current Development Plan period demand is likely to emanate from the* ***data centre****, biopharmaceutical, food production and logistics activities that require specific facilities to meet their exacting requirements*

The County Development Plan allows for a proactive approach to data centres and associated development as per the above objective. One of the bespoke building requirements for data centres is the need to have onsite dispatchable generation in order to ensure that they have access to the electrical power needed to operate.

Furthermore, developing a data centre and substation at this location would also derive the benefits and maximise upon existing infrastructure, which is supported by the County Development Plan.

The proposed substation can be viewed as less intrusive than other Heavy Industries listed in in the County Development Plan and is therefore an appropriate use for the subject site which is located adjacent to a charitable dog sheltering facility.

Chapter 6 of the Plan entitled "Industrial and/or Manufacturing Units" states that data centres among other uses including bio-pharmaceutical, food production and logistics activities require specific facilities to meet their exacting requirements. The Plan goes onto state: *"The economic sectors outlined above have varying building requirements that the Development Plan needs to be able to anticipate and respond to."*

The proposal which connects to the existing underground transmission lines serving Corduff and Finglas substations promotes the most efficient and sustainable use of the site and promoting the continued growth of the ICT sector in Fingal by creating high quality built environments offering a range of building sizes, types and formats, supported by the targeted provision of necessary infrastructure as per objective ED 27 of the County Development Plan.

The contemporary design of the substation is in keeping with the form and design of industrial and commercial development in the wider area. We reiterate that the proposal has been carefully designed with specialist input from EirGrid and ESB Networks from conception through to lodgement of this planning application.

In accordance with the **Development Management Standards** set out in Chapter 12 of the County Plan, we note the following:

- Access to the substation is facilitated from the existing Quarry Road. The overall site is subdivided into two compounds consisting EirGrid and Customer Compound.
- 9 no. vehicular spaces are provided on site with adequate turning areas to allow for the safe manoeuvre in and out of the site.
- It is envisaged that ESB Networks personnel will maintain the substation, as required. They will be responsible for the upkeep of the substation and removal of waste, as necessary.
- The proposal is set back from the internal estate road in excess of 7m, as set out in the County Plan. A landscaped buffer area comprising a green palisade fence, gravel strip, grass verge and shrub/tree planting is proposed and permitted around the public facing elevations of the substation. No signage is proposed as part of this development.
- The substation is contemporary in both form and design. The horizontally laid composite panel cladding will be finished in grey colour. This attractive and durable finish complements the light grey industrial buildings seen in the wider area.
- The orientation of the substation with the narrow southern elevation facing the Quarry Road reduces the perceived scale of development. The shrub/tree planning to the south will assist in visually ameliorating the development with the wider area.
- A high level of safety and security is achieved through the provision of a 2.4m high palisade fence fixed to a concrete plinth base.
- The substation is served by water supply, foul water drainage and surface water/storage drainage systems connecting to existing systems.
- Storm water will drain from the roof and paved areas to a petrol interceptor before being attenuated and discharged to the existing nearby ditch.

3.4.2 Outer Airport Noise Zone

The subject site is located along the boundary of the Outer Airport Noise Zone and objective DA07 states that:

> *"Strictly control inappropriate development and require noise insulation where appropriate within the Outer Noise Zone, and actively resist new provision for residential development and other noise sensitive uses within the Inner Noise Zone, as shown on the Development Plan maps, while recognising the housing needs of established families farming in the zone. To accept that time based operational restrictions on usage of second runway are not unreasonable to minimize the adverse impact of noise on existing housing within the inner and outer noise zone."*

The proposed use is wholly appropriate having regard to its location along the boundary of the Outer Airport Noise Zone. Mechanical plant is screened to attenuate noise a more sensitive locations to the east and north of the site.

3.4.3 Seveso Site

Directive 2012/18/EU (The Seveso III Directive) provides that appropriate consultation distances must be put in place to ensure that before decisions are taken, technical advice is available to Planning Authorities in respect of relevant establishments. The Health and Safety Authority provides such advice, where appropriate, in respect of planning applications within a certain distance of the perimeter of these sites.

The subject site is located directly adjacent to the Huntstown Power Station, Huntstown Quarry, Finglas, D11 Seveso site. This is a lower tier Seveso Site with a consultation distance of 300m.

The following Development Plan objectives relate to the development management of Seveso Sites;

Objective DMS180 *Have regard to the provision of the 'Major Accident Directive' (Seveso III) (European Council Directive 2012/18/EU) and impose restrictions in consultation with the HSA, on developments abutting or within proximity of a Seveso site. The extent of restrictions on development will be dependent on the type of risk present and the quantity and form of the dangerous substance present or likely to be present.*

Objective DMS183 *In areas where Seveso sites exist in appropriate locations with low population densities, ensure that proposed uses in adjacent sites do not compromise the potential for expansion of the existing Seveso use and in particular the exclusion of developments with the potential to attract large numbers of the public.*

A Land-Use Planning report has been prepared by AWN Consulting and accompanies this planning application. This report examines hazards associated with Fuel Oil, LPG, and Natural gas installations on site.

The cumulative individual risk contours for Huntstown Power Station corresponding to the boundary of the inner, middle and outer land use planning zones are illustrated as follows.

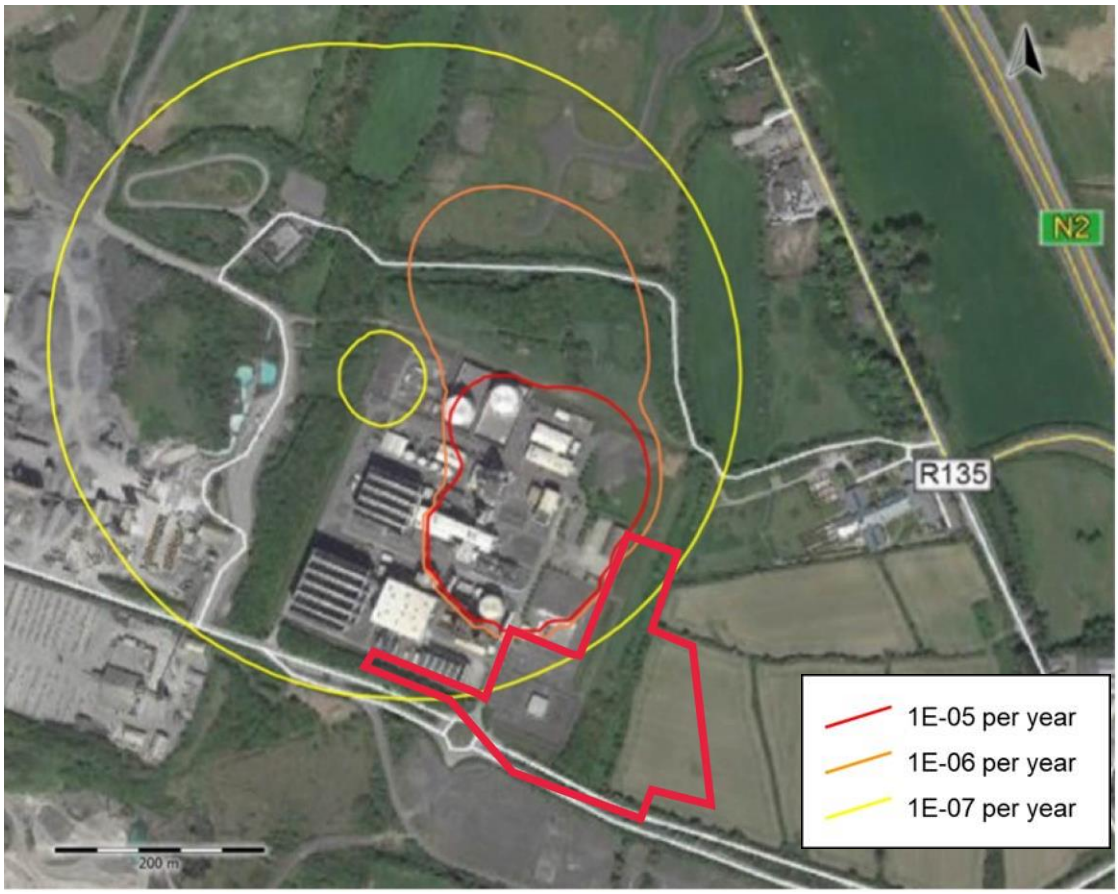

Figure 3.4 *Land-Use Planning Zones*

It is concluded that the proposed substation is appropriately located partially within the LUP Outer zone (1E-07) of Huntstown Power Station. This location is considered appropriate in this case due to the substation building being an unmanned facility with visiting maintenance crews (generally a 2 man crew visiting the site for 2 days per month); therefore, the level of individual risk at the proposed development is acceptable.

3.4.4 Design Guidelines for Business Parks and Industrial Areas

The proposed development and wider site development was designed with regard to the Design Guidelines for Business Parks and Industrial Areas.

Objective DMS103 states that it is a Council's objective to *"ensure that the design and siting of any new Business Parks and Industrial Areas conforms to the principles of Design Guidelines as outlined in Table 12.7."*

We refer the Planning Authority to the enclosed Design Statement prepared by AECOM for the full details of the design approach to this project. We also particularly note the following in compliance with DMS103:

Access & Parking

- The main vehicular entrance to the site will be via the Huntstown Power Plant.
- A secondary entrance at the south of the site will provide emergency access for the site via the Roadstone Huntstown Quarry Road. It will also be possible to access the substation site via the proposed Data Centre Facility internal access road network.
- The site layout has been developed to allow safe operational and fire tender access to all buildings.
- Car parking provision to cater for the maintenance and operations staff will be 5 spaces for the EirGrid side of the substation compound and 4 spaces for the Customer side of the substation compound. Disabled parking spaces and electric car charging ports are not proposed due to the occupancy and usage of the substation.

Pedestrian/Cycle Connection

- As the substation is an unmanned facility there are limited pedestrian connections proposed with footpaths provided solely as access routes for maintenance staff. No cycle infrastructure is proposed due to the nature of the development.

Permeability

- Internal permeability is promoted among on-site staff. Given the requirement for security of the wider proposed Data Centre facilities however, a permeable development with public interaction is not appropriate or encouraged in this instance.

Lighting

- Site lighting is provided along the internal access roads for safety and security purposes.

Setbacks

- The Southern customer and EirGrid fence enclosing the substation building is set back approximately 30 metres from the Roadstone Quarry access road to the south of the site.
- The substation building is set back approximately 21 metres from the site boundary at its closest point to the west, approximately 11 metres from the site boundary at its closest point to the north and approximately 7.5 metres from the site boundary at its closet point to the east.

The southern and western boundary of the site are considered the most sensitive boundaries having regard to the existing industrial uses, the proposed setbacks are considered appropriate to mitigate any adverse impacts associated with the development site or existing surrounding activities.

3.4.5 Ancillary Structures

Ancillary buildings containing the Medium Voltage Switchgear control equipment will be clad with materials to match the GIS building to ensure continuity of finishes throughout the facility.

Signage

- Signage is not proposed as part of this planning application.

Public Art

- Public Art is not proposed as part of this planning application.
- The site will not be accessible to members of the public for operational and security concerns. As such, the Applicant welcomes a development contribution in lieu of a piece of public art, by way of condition.
- The high quality architectural approach to key elevations makes a positive contribution to the visual amenity of the overall site.

Sustainability

- A detailed energy strategy has been prepared for the development.
- SUDS principles have been employed in the drainage design.

Building Orientation & Road Frontage

- The substation building is orientated from north east to south west. The southern gable of the substation is set back and separated from the Quarry Road by electrical equipment, firewalls and boundary treatments.
- The MV buildings are located to the east of the subject site.

Massing and Form

- The primary building on the substation site will be the 2 storey GIS building containing the 220kV gas insulated switchgear room.
- Due to the prominent nature of the development with a direct boundary with Huntstown Power Station to the West and Roadstone Quarry Access Road to the South the appearance of the proposed buildings and their elevational treatment is defined by high-quality design and finishes.

Appearance/Façade

- The primary building on the substation site will be the two storey GIS building containing the 220kV gas insulated switchgear room. The building will also contain critical support functions such as control room, battery room, emergency generator room, workshop as well as welfare facilities for maintenance and operations staff. The building size and layout is in accordance with EirGrid standard requirements.
- The GIS building construction technology will be a bespoke structural steel frame on reinforced concrete foundations with an insulated roof and proprietary insulated metal wall cladding. The main parapet will be at ca. 17.00m from floor ground level, which is a lower height than the proposed data centre buildings.
- The wall cladding exterior colour will match the darker colour of the lower façade of the proposed adjacent data centre facility.

Roofscape

- The design includes a roof installation of 3m high lightening protection finials at roof level.

Solar, Utility, Electrical & Mechanical Equipment

- Ancillary buildings adjacent to the substation building include MV switchgear/control rooms and will be clad with a prefabricated sheet steel finish. The selected colour will be decided during the detailed design stage to match the main 220kV substation building and ensure continuity of finishes throughout the facility.

Building Entrances

- The 220kV GIS Substation building features 8no. access/egress points at ground floor level with access points located along each side of the proposed structure. The proposal also features a hoist area to allow equipment to be loaded at ground floor level for transportation to the first floor.

Landscaping Boundary Treatment

- The main landscaping features proposed are visual screening belts consisting of a triple staggered line of native trees which will be 4.5 to 5 metres tall on day 1 of operations and grow up to 16 metres.
- Existing Hedgerows to the south of the development site are to be retained and enhanced to screen the development.

3.4.6 Parking

It is proposed that the quantum of car parking provision at 9 no. spaces will serve staff and visitors alike. Having regard to estimated employment figures on site, the number provided is sufficient to accommodate the peak parking demand.

The reduced car parking provision is in accordance with Policy DM113 of the Plan which states: *"Limit the number of car parking spaces at places of work and education so as to minimise car-borne commuting."*

See Chapter 13 (Traffic and Transportation) for further information.

3.4.7 Energy Strategy and Sustainability

The proposed development is associated with the development of a data centre (Reg. Ref: FW21A/0151). This overall development underlines a commitment by the Applicant to the long term occupancy of the site at Huntstown. The proposal to develop the site will enhance the zoning of the current Development Plan while contributing to the overall sustainability of the site.

As noted previously, the Applicant, in their day-to-day operations, has regard for Ireland's Climate targets of achieving 70% of electricity generated from renewable sources by 2030. The Applicant is also cognisant of the co-locational benefits with the two gas fired power plants adjoining the site.

The Applicant is committed to running its business in the most environmentally friendly way possible and has developed an approach which will (i) use existing infrastructure; (ii) provide a mechanism which will aim to secure additional renewable energy generation.

USE OF EXISTING INFRASTRUCTURE	The Proposed Development has been strategically located to adjoin the Huntstown Power Station which can be considered as 'on-site dispatchable generation' under the terms of the EirGrid Policy. Firstly, this 'co-location' approach will avoid the requirement to produce new on-site dispatchable power generation, thus avoiding the potential introduction of additional fossil fuels and associated GHG emissions. The utilisation of existing infrastructure negates the need for an additional 150MW on site, and the associated embodied carbon associated with the construction of new infrastructure. Secondly, its proximity to Huntstown Power Station and the future development of the associated 220kV GIS meshed substation (subject to a separate application to An Bord Pleanala under Section 182E) will result in a decrease in energy losses associated with the transmission of energy (i.e. every additional meter that electricity flows through a cable it loses power and therefore efficiency). The development is also adjacent to the Huntstown Bioenergy plant and feasibility studies will be undertaken to understand the suitability of any excess heat generated from the Data Centre being used in the Anaerobic Digestion process at the neighbouring site, hence making both developments more efficient.
RENEWABLE ENERGY CONTRIBUTION AND GENERATION	Working alongside the proposed development the Applicant will obligate the facility end user, to enter into arrangements which are capable of underpinning new renewable energy generation calculated to offset the energy consumed by the proposed development from the electricity grid. These arrangements will: Be in the form of Corporate Power Purchase Agreements between the Applicant's group and the facility end user; Provide for the establishment of new renewable energy generation projects by the applicant's group, that will not be supported by government or consumer subsidies – these new renewable energy projects will be: Located throughout Ireland; Phased over the expected ramp up of the energy demand of the proposed development; and In total, are calculated to exceed the expected annual volume of energy consumed on site by the proposed development; Through these obligations, it is the goal of the Applicant that for every unit of energy consumed by the data centre, a unit of new renewable energy generation would be despatched to the wider electricity system to off-set it, thus delivering the objective of operating the proposed development on a net zero carbon basis that would not impact Ireland's overall climate targets. Any

	associated additional renewable energy supply would also increase energy security through indigenous energy sources. The proposed development also includes 640sqm of roof mounted solar arrays that will assist with on-site power use within the office areas. In addition, low/zero carbon technologies such as low energy lighting, sensor lighting controls and variable speed pumps are proposed to be included in the detailed design and are set out in further detail in the Architectural Design Statement and Energy Statement.

Other considerations:

In addition to the above points relating to the overall development, the proposed development of the substation has incorporated highly efficient technologies and methodologies allowing for a high degree of sustainability. Such measures include:

- The protection and enhancement of landscape and ecology will be of continuing benefit to the area. Substantial perimeter landscaping and permeable boundary fencing will provide an effective corridor for wildlife around the site, whilst providing a green buffer to the development. The berming and planting will enhance the visual amenity of the site at its interface with the public road.
- Waste management during and post-construction will actively control the generation, recycling and disposal of waste material.
- Low/zero carbon technologies such as, low energy lighting, sensor lighting controls, variable speed pumps etc., are proposed to be included in the detailed design.
- Low loss 220kV/MV transformers situated as close as possible to the data centre load to maximise efficiency and minimise electrical losses.

Having regard to the above points, we submit that the proposal fully complies with the following objectives:

- **Objective EN03** - Consider the adaptability of buildings over time and seek to improve the efficiency of existing building stock and promote energy efficiency and conservation in the design and development of all new buildings in the County.
- **Objective EN04** - Encourage development proposals that are low carbon, well adapted to the impacts of Climate change and which include energy saving measures and which maximise energy efficiency through siting, layout and design.
- **Objective EN06** - Encourage and facilitate the development of renewable energy sources, optimising opportunities for the incorporation of renewable energy in large scale commercial and residential development.
- **Objective EN09** - Require details of the requirements for alternative renewable energy systems, for buildings greater than 1000sq m or residential schemes above 30 units, under SI 243 of 2012 European Communities (Energy Performance of Buildings) to be submitted at pre planning stage for consideration. These should take the form of an Energy Statement or Feasibility Study carried out by qualified and accredited experts.

4.0 ALTERNATIVES

4.1 INTRODUCTION

The requirement to consider alternatives within an EIAR is set out in Annex IV (2) of the EIA Directive (2014/52/EU) and in Schedule 6 of the Planning and Development Regulations, 2001, as amended ("the Regulations"), which state:

*"A description of the **reasonable alternatives** studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment."*

The Schedule 6(2)(b) of the Regulations implement this requirement by requiring the following information:

(b) "a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects;"

Reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics. The Regulations require that an indication of the main reasons for selecting the preferred option, including a comparison of the environmental effects to be presented in the EIAR.

The Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018) – states:

"The Directive requires that information provided by the developer in an EIAR shall include a description of the reasonable alternatives studied by the developer. These are reasonable alternatives which are relevant to the project and its specific characteristics. The developer must also indicate the main reasons for the option chosen taking into account the effects of the project on the environment."

"Reasonable alternatives may relate to matters such as project design, technology, location, size and scale. The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant. It is generally sufficient for the developer to provide a broad description of each main alternative studied and the key environmental issues associated with each. A 'mini- EIA' is not required for each alternative studied."

As such, the consideration and presentation of the reasonable alternatives studied by the project design team is an important requirement of the EIA process.

This chapter provides an outline of the main alternatives examined during the design phase. It sets out the main reasons for choosing the development as proposed, taking into account and providing a comparison on the environmental effects.

The main alternatives examined throughout the design process are set out as follows:

- Alternative Locations
- Alternative Processes
- Alternative Designs and Layouts
- Do Nothing Alternative

4.2 ALTERNATIVE LOCATIONS

As noted in Section 4.13 of the 2018 Guidelines “some projects may be site specific so the consideration of alternative sites may not be relevant.”

We refer to the Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2017), which states that in some instances alternative locations may not be applicable or available for a specific project which is identified for a specific location.

Having regard to these various environmental and development considerations the Huntstown site was chosen as it was considered the most appropriate location for a future data centre development. The subject proposal of a 220kV GIS substation is facilitative infrastructure to allow for the development of the site as a future data centre facility. The location for the data centre was chosen having regard to:

- The co-locational benefits beside the power station, in line with ‘EirGrid’s Data Centre Connection Offer Process and Policy, 2020’ (which necessitates the provision of on-site dispatchable generation for firm capacity for data centres within the Greater Dublin Area).
- the short grid connection to the adjacent existing 220kV electricity network, thus decreasing energy losses associated with the transmission of energy and increasing the overall energy efficiency of the Proposed Development;
- excellent transport connections to the M50 and N2; and
- largescale data centre requirements relating to site scale and size.

Having Regard to the nature and design, it is considered that a data centre development is an effective and appropriate use for the site.

The overall vision for the site as a data centre development contributes towards the achievement of the Zoning Objective and Vision Statement for HI zoning and is in accordance with other relevant policies and objectives of the Fingal County Development Plan 2017-2023.

We refer to the Planning Application Report, prepared by Brock McClure Planning and Development Consultants, enclosed herewith.

Having regard to the site specific nature of the development, further consideration of alternative site locations are not considered essential in respect of the EIAR legislation and guidance.

It is noted that extensive preliminary studies were carried out on site, prior to the development of the planning application as part of a due diligence process. These include the following assessments:

- Topographic Survey
- Ecological Assessment

- Soil Sampling
- Flood Risk Assessment
- Archaeological and Geophysical Surveys including test trenching
- Test Fit Studies

4.3 ALTERNATIVE DESIGNS AND LAYOUTS

The proposed GIS substation is designed based on requirements stipulated by EirGrid. The design of the substation units is centred around the equipment requirements of EirGrid that are required to provide an efficient and safe service. From a "design and layout" point of view, therefore, the flexibility to select alternative designs and layouts was not available to the Applicant in this case.

4.4 ALTERNATIVE PROCESSES

The Alternative Processes section typically examines the project processes in relation to likely emissions to air and water, likely generation of waste and likely impact on traffic to determine the process that is least likely to impact on these parameters.

The ESB underground 220kV cables which will be diverted from the existing substation at Huntstown Power Station into the proposed 220kV substation form an integral part of the national high voltage electricity grid which is currently operated by ESB networks. The diversion of the cables to the new substation must meet ESB Networks strict specifications to ensure that it will be seamlessly absorbed into the national grid infrastructure and can provide a reliable power supply. From a process design point of view, therefore, the flexibility to select alternative processes for integration into the national grid is not available to the applicant.

In terms of the proposed processes, the proposed GIS substation will employ the same electricity generation and transmission processes that are used by EirGrid at their other facilities in Ireland and represents the most up-to-date and state of the art processes currently available. As appropriate, alternative processes are considered on an ongoing basis by EirGrid as a part of each of their operations based on many factors including technical feasibility, environmental impact, efficiency, security, reliability, and cost. Therefore, from a "process design" point of view, the flexibility to select alternative processes for integration into the current national grid is not available to the Applicant.

4.5 DO-NOTHING ALTERNATIVE

As highlighted above the site is zoned for 'HI' with an objective to *"Provide for heavy industry".* Consideration of an alternative location would equate to a 'do-nothing' alternative for the subject site. The lands would remain greenfield and would not maximise upon the development potential of the site, which would be contrary to the policy objectives of the County Plan which states:

"A demand for industrial and/ or manufacturing units is required by a number of economic sectors including the manufacturing sector, including healthcare and pharmaceutical related activities. Depending on the size of the enterprise, industrial and manufacturing accommodation in a ***range of formats, sizes, arrangements and locations can be required. Indeed, over the current Development Plan period demand is likely to emanate from the data centre,*** *biopharmaceutical, food production and logistics activities* ***that require specific facilities to meet their exacting requirements."***

Objective ED110 – *"**Proactively respond to the needs of enterprises undertaking** pharmaceutical**, data centre,** food production and logistics activities **that require bespoke building facilities to meet their specific manufacturing requirements."***

The 220kV substation development at this location provides strengthening and increased resilience of the EirGrid / ESB 220kV network in the North Dublin area as well as facilitative infrastructure to support the development of the wider site as a data centre facility and potential future 3rd party 220kV connections. Developing a data centre at this location would also derive the benefits and maximise upon existing infrastructure, which is supported by the county development plan.

4.6 CONCLUSION

The proposed overall development of the site was carefully designed, taking into consideration the site context and existing neighbouring commercial and residential properties to the north and east on North Road, the existing heavy industry uses to the west and the local environmental conditions including air quality, noise and vibration, visual impact, and traffic considerations.

The substation development will facilitate the development of the overall site as a data centre facility and allows the overall development potential of the site to be maximized.

5.0 HUMAN HEALTH AND POPULATIONS

5.1 INTRODUCTION

This chapter has been prepared to assess the likely impacts associated with Human Health for the proposed development. In accordance with the *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2017), *Draft Advice Notes for Preparing Environmental Impact Statements* (EPA, 2015), and European Commission (EC)*, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report* (EU, 2017) this chapter has considered the *"existence, activities and health of people"* with respect to *"topics which are manifested in the environment such as employment and housing areas, amenities, extended infrastructure or resource utilisation and associated emissions"*.

- Population and Demographics;
- Socioeconomics;
- Population Health;
- Natural Resources;
- Tourism;
- Social Infrastructure;
- Health and Safety.

Impacts on humans from other issues such as natural hazards, soils, geology and hydrogeology, water, air quality, noise and vibration, traffic and landscape are discussed in their respective EIAR chapters:

- Chapter 6 – Soils, Geology and Hydrogeology;
- Chapter 7 – Hydrology;
- Chapter 9 – Air Quality and Climate;
- Chapter 10 – Noise and Vibration;
- Chapter 11 – Landscape and Visual Impact; and
- Chapter 13 – Traffic and Transportation.

Where these topics are dealt with in further detail elsewhere in this EIA Report, the relevant chapters have been cross referenced in this chapter.

5.2 METHODOLOGY

In accordance with the *EPA Guidelines* (EPA, 2017), this chapter has considered that:

> *"in an EIAR the assessment of impacts on population and human health should refer to the assessment of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under environmental factors of air, water soil etc".*

As per Article 3 of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU:

1) The environmental impact assessment shall identify, describe, and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

a) population and human health;
b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
c) land, soil, water, air and climate;
d) material assets, cultural heritage and the landscape;
e) the interaction between the factors referred to in points (a) to (d).

2) The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned."

The 2017 publication by the European Commission (EC), *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report*, considered that:

> *"Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."*

This chapter will follow these EC guidelines, and will examine the health effects relevant to the proposed development as they relate to a relevant, defined study area. The effects of the proposed development on the population and human health are analysed in compliance with the requirements of the EPA Guidelines.

5.2.1 Assessment of Significance & Sensitivity

The assessment of significance is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect.

Within any area, the sensitivity of individuals in a population will vary. As such, it would be neither representative of the population, nor a fair representation of the range of sensitivities in a population, were an overall sensitivity classification assigned to the population in question. As such, the precautionary principle has been adopted for this assessment, which assumes that the population within the study area is of a uniformly high sensitivity.

5.2.2 Magnitude of Impact

The magnitude of predicted impacts has been quantified in this assessment using the terms outlined in Table 5.1 below.

Table 5.1 *Description of magnitude of predicted impacts*

Magnitude	Description of Magnitude
High	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a major change to existing baseline conditions (adverse or beneficial)

Magnitude	Description of Magnitude
Medium	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a moderate change to existing baseline conditions (adverse or beneficial)
Low	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a minor change to existing baseline conditions (adverse or beneficial)
Negligible	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would not result in change to existing baseline conditions at a population level, but may still result in an individual impact (adverse or beneficial)
No change	No change would occur as a result of the proposed development which would alter the exiting baseline conditions (adverse or beneficial)

5.2.3 Significance of Effects

The assessment of significant effects in this assessment is a professional appraisal and has been based on the relationship between the magnitude of effects (Section 5.2.2) and the sensitivity of the receptor. Table 5.2 below provides a matrix on the measure of the significance of effects as determined by the relationship between the magnitude of impact and the sensitivity of receptors.

Table 5.2 *Significance of effects and the sensitivity of the receptor*

		Magnitude of Impact			
		Negligible	Low	Medium	High
Sensitivity of Receptor	Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
	Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
	Medium	Negligible or minor	Minor	Moderate	Moderate or major
	High	Minor	Minor or moderate	Moderate or major	Major

5.2.4 Study Area

The proposed development site is located in County Dublin, and in the Electoral Division (ED) of The Ward (ED 4041). The area selected for the assessment of the impact on human health has been defined as the surrounding ED's of The Ward (ED 4041), Dubber (ED 4020), Finglas North A (ED 2051), Finglas North B (ED 2052), Finglas North C (ED 2053), Ballymun A (ED 2015) and Blanchardstown-Abbotstown (ED 4008).

The site is located within the Dublin region, as defined by the Nomenclature of Territorial Units for Statistics developed by Eurostat. The Dublin region comprises of the county of Dublin.

5.3 EXISTING BASELINE CONDITIONS

5.3.1 Development Site Context

The proposed development site is c. 4.33 hectares of predominantly greenfield located to the north west of the M50 orbital ring in the townland of Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The surrounding area is characterised by a variety of energy, industrial, commercial, quarrying, agricultural and residential uses. The subject site is generally bounded to the northeast by the Dogs Trust (Dog Rescue and Rehoming Charity), the southern end of the site is traversed by a vehicular entrance leading to the Huntstown Quarry and bound to the south by an Anaerobic Digestion Plant. The site is bound to the west by the existing Huntstown Power Station.

The subject lands are zoned *'HI – Heavy Industry'* with the objective to *'Provide for heavy industry'*. A detailed description of the development site planning context is presented in Chapter 3 (Planning and Development Context).

5.3.2 Population and Demographics

5.3.2.1 Population

The most recent census of population was carried out by the CSO on the 24th April 2016, and the previous census was undertaken on the 10th of April 2011. The census compiles data for the whole state as well as smaller individual areas including counties, cities, towns, and electoral divisions. Taking into consideration the location of the proposed development, the census information on population, age profile, employment, and social class, has been analysed in relation to the development site.

Table 5.3 denotes the population change for the State, and Electoral Districts for the census years 2011 and 2016. The latest census data shows that the population surrounding the development site grew by 16.5% between the years 2011 and 2016 compared with only 3.8% nationally. The average rate of population growth across the study area was 14.4%.

Table 5.3 *Population change 2011 – 2016 (Source: www.cso.ie)*

Area	2011	2016	% Change 2011-2016
State	4,588,252	4,761,865	3.8%
The Ward	8,241	9,602	16.5%
Dubber	6,359	7,372	15.9%
Finglas North A	3,227	3,319	2.9%
Finglas North B	2,809	2,874	2.3%
Finglas North C	3,247	3,464	6.7%
Ballymun A	3,678	4,765	29.6%
Blanchardstown-Abbotstown	4,870	6,195	27.2%

5.3.2.2 Age Profile

The age profile of the population in the area is an important parameter as it provides a good insight into the potential labour force, the demand for schools, amenities, other facilities, and the future housing demand. Table 5.4 shows the age profiles at State, and Electoral Districts for the census year 2016.

Table 5.4 *Age profile 2016 (Source: www.cso.ie)*

Age	0-12	13-18	19-24	25-44	45-64	65+	Total Persons
State	18.48%	7.80%	6.96%	29.53%	23.84%	13.39%	4,761,865
The Ward	29.9%	7.4%	4.6%	43.0%	13.2%	2.0%	9,602
Dubber	24.7%	5.8%	5.6%	47.8%	12.9%	3.2%	7,372
Finglas North A	17.1%	8.9%	9.9%	26.5%	25.4%	12.1%	3,319
Finglas North B	15.7%	8.8%	8.9%	23.9%	27.5%	15.2%	2,874
Finglas North C	16.9%	5.6%	6.8%	29.7%	25.9%	15.1%	3,464
Ballymun A	21.4%	8.2%	7.4%	41.2%	16.2%	5.6%	4,765
Blanchardstown-Abbotstown	21.6%	5.9%	5.0%	44.7%	13.6%	9.3%	6,195

This table shows that both nationally and in the study area, the dominant age grouping is 25-44 at 29.53% of the total state population and an average of 44.7% of the study area, respectively. This also reflects that the overall labour force population (12-64 age group) in the study area is reflective of the national level. This is in keeping with census data from 2011 and 2006.

5.3.3 Socio-economics

5.3.3.1 Employment

Table 5.5 presents the employment statistics nationally and at the area surrounding the development site in 2016 compared with 2011. The data shows that unemployment decreased significantly in the study area, as well as nationally, reflecting the economic recovery in recent years.

Table 5.5 *Employment statistics 2011 and 2016 (Source: www.cso.ie)*

	At Work	Looking for first regular job	Unemployed having lost or given up previous job	Total in labour force	% Unemploy-ment
2011 Labour Force					
State	1,807,360	34,166	390,677	2,232,203	19.03%
The Ward	3,781	76	675	4,532	16.57%
Dubber	3,207	40	581	3,828	16.22%
Finglas North A	942	39	483	1,464	35.66%
Finglas North B	839	30	343	1,212	30.78%
Finglas North C	1,318	24	282	1,624	18.84%
Ballymun A	1,493	47	489	2,029	26.42%
Blanchardstown -Abbotstown	2,225	62	417	2,704	17.71%
2016 Labour Force					
State	2,006,641	31,434	265,962	2,304,037	12.91%
The Ward	4,418	70	508	4,996	11.57%
Dubber	3,755	40	484	4,279	12.25%
Finglas North A	1,168	36	439	1,643	28.91%

Finglas North B	1,024	34	271	1,329	22.95%
Finglas North C	1,539	18	205	1,762	12.66%
Ballymun A	2,059	53	449	2,561	19.60%
Blanchardstown -Abbotstown	2,956	51	381	3,388	12.75%

The 2016 census data shows that the percentage of unemployed has decreased for the state and the area surrounding the development site since the 2011 census.

5.3.3.2 Education

Census data presenting the highest level of education completed for key educational levels by people living in the Fingal area and the area surrounding the development site is presented in Table 5.6. The table presents key milestone education and ignores people undertaking studies or where information was not stated.

Table 5.6 *Highest level of education in 2011 and 2016 (Source: www.cso.ie)*

Area	No formal education	Primary education	Secondary[1]	Higher Education[2]	Under-graduate Degree[3]	Post-graduate Degree[4]	Total Persons
Highest level of education in 2011							
Fingal	1,697	13,548	59,450	34,426	34,625	17,504	161,250
The Ward	28	174	1,315	1,050	1,018	440	4,025
Dubber	25	233	1,197	998	770	341	3,564
Finglas North A	64	609	893	229	68	22	1,885
Finglas North B	49	536	775	205	89	24	1,678
Finglas North C	33	467	880	437	252	97	2,166
Ballymun A	47	388	889	344	321	100	2,089
Blanchardstown -Abbotstown	63	239	728	501	780	367	2,678
Highest level of education in 2016							
Fingal	1,996	11,961	56,037	36,890	39,094	22,024	168,002
The Ward	42	157	1,243	1,043	1,050	483	4,018
Dubber	28	201	1,097	958	771	324	3,379
Finglas North A	69	549	901	330	102	38	1,989
Finglas North B	58	422	799	299	112	33	1,723
Finglas North C	40	381	867	480	340	141	2,249
Ballymun A	60	338	910	466	349	161	2,284
Blanchardstown -Abbotstown	79	282	774	581	899	558	3,173

[1] Lower secondary and Upper secondary
[2] Higher Certificate, Advanced certificate/completed apprenticeship or Technical/vocational training
[3] Ordinary bachelor degree, Honours bachelor degree/professional qualification
[4] Postgraduate degree or Ph.D

5.3.3.3 Labour Force Survey

The Labour Force Survey (LFS) is a large-scale, nationwide survey of households in Ireland carried out every three months. It generates labour force estimates which include the official measure of employment and unemployment for the state. The CSO is obliged to follow standard definitions and methodology when calculating the official estimates from the LFS. However, in response to the COVID-19 pandemic, the CSO implemented adjusted measures in order to take into account the economic impact of the COVID-19 pandemic in Ireland. Results for both sets of estimates are provided below.

The LFS results nationally for Q1 2021 showed that there were 2,230,600 people employed in the state with 170,500 registered as unemployed. At the end of March 2021, the COVID-19 Adjusted Measure of Employment, or lower bound of the number of persons aged 15 years and over in employment, is estimated to have been 1,785,923 with an associated COVID-19 Adjusted Employment Rate of 52.0% for those aged 15-64 years (www.cso.ie, 2021).

5.3.3.4 Income

The below data in Table 5.7 is obtained from CSO Statbank (CIA02), this demonstrates the levels of total income per person in the Dublin area are 12-20% higher over the study years than the State in 2017. A similar pattern of income distribution is observed in data on disposable income per person.

Table 5.7 *Income per Person (Source: CSO Statbank CIA02)*

Area	Income	2015	2016	2017
State	Total Income per Person (€)	26,857	27,753	29,239
	Disposable Income per Person (€)	18,854	19,660	20,714
Dublin	Total Income per Person (€)	32,750	34,099	35,197
	Disposable Income per Person (€)	21,832	23,005	23,864

5.3.3.5 Deprivation

Deprivation in small areas is mapped using the Pobal HP Deprivation Index. This Index draws on data from censuses and combines three dimensions of relative affluence and deprivation: Demographic Profile, Social Class Composition and Labour Market Situation. Figure 5.1 below shows graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population. In this EIA Report, the Relative Index Score is considered as the measure for deprivation, as these Relative Index Scores are rescaled such that the mean is 0 and standard deviation is 10 at each census wave. This allows for the provision of descriptive labels with the scores, which are grouped by standard deviation as seen in Table 5.8 below.

Graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population.

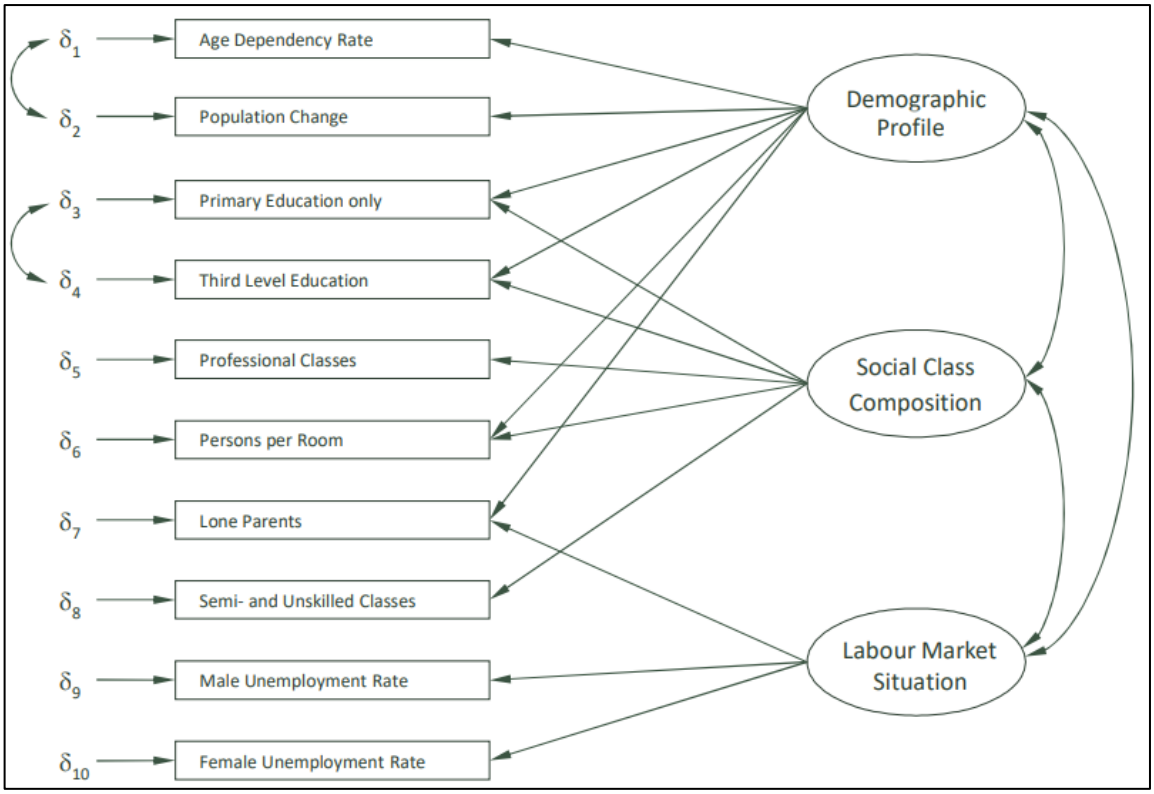

Figure 5.1 *Basic Model of the Pobal HP Deprivation Index*

Table 5.8 *Pobal HP Index Relevant Index Score labels (Source: Pobal HP Deprivation Index)*

Relative Index Score	Standard Deviation	Label
> 30	> 3	Extremely affluent
20 – 30	2 – 3	Very affluent
10 – 20	1 – 2	Affluent
0 – 10	0 – 1	Marginally above average
0 – -10	0 – -1	Marginally below average
-10 – -20	-1 – -2	Disadvantaged
-20 – -30	-2 – -3	Very disadvantaged
< -30	< -3	Extremely disadvantaged

The data in Table 5.9 shows the Pobal HP Index Relevant Index Score Figures at a local and County level (*Source: Pobal HP Deprivation Index).* The area can be generally classified as 'Marginally below average'. However, there is a large gap in relative affluence in nearby electoral divisions, as The Ward is classified as "Marginally above average" while Finglas North A and B classified as "Disadvantaged". The county of Dublin is classified as 'Marginally above average' for the year 2016.

Table 5.9 *Pobal HP Index Relevant Index (Source: Pobal HP Deprivation Index)*

Area	Relative Index Score	Pobal HP Description 2016
Dublin	4.12	Marginally above average
The Ward	5.85	Marginally above average
Dubber	5.11	Marginally above average

Area	Relative Index Score	Pobal HP Description 2016
Finglas North A	-16.64	Disadvantaged
Finglas North B	-14.40	Disadvantaged
Finglas North C	-2.48	Marginally below average
Ballymun A	-2.49	Marginally below average
Blanchardstown-Abbotstown	7.25	Marginally above average

5.3.4 Health

5.3.4.1 Physical Health

Life expectancy in Ireland by sex is a key metric for assessing population health; data for the study area is shown in Table 5.10. Dublin data shows that life expectancy for both males and females has increased consistently, with female life expectancy consistently higher than male.

Table 5.10 *Period Life Expectancy (Source: CSO Statbank VSA30 & VSA31)*

Period Life Expectancy in Ireland by sex				
Area	Sex	2006	2011	2016
Dublin	Male	76.7	78.3	80.1
	Female	81.2	82.7	83.4

Table 5.11 *shows* Circulatory Diseases Admission Rate per 100,000 Population at a National and County level *(Source: Public Health Well Community Profiles).* The rate of hospital admissions in Dublin tends to fall consistently below that of the State.

Table 5.11 *Circulatory Diseases (Source: Public Health Well Community Profiles)*

Circulatory Diseases Admission Rate per 100,000 Population					
Area	2010	2011	2013	2014	2015
State	4,308.6	4,026.8	4,495.6	4,644.6	3,794.9
Dublin	3,805.56	3,498.7	3,950.4	4,176.7	3,425.8

Respiratory Diseases Admission Rate per 100,000 Population at a National and County level are shown in Table 5.14. The rate of hospital admissions in county Dublin tends to fall broadly in line of that of the State.

Table 5.12 *Respiratory Diseases (Source: Public Health Well Community Profiles)*

Respiratory Diseases Admission Rate per 100,000 Population					
Area	2010	2011	2013	2014	2015
State	2,402.6	2,361.0	2,633.6	2,691.0	2,712.5
Dublin	2,483.76	2,349.73	2,585.7	2,693.7	2,597.9

5.3.4.2 Mental Health

The rates of death by suicide and intentional self-harm rate per 100,000 population is shown in Table 5.13 below. The rate in Dublin is much lower in 2017 compared with those in the State. The rate of death by suicide and intentional self-harm are generally decreasing year-on-year, this is generally in line with the pattern seen in the State.

Table 5.13 *Death by Suicide and Intentional Self Harm (Source: CSO Statbank DHA12)*

Death by Suicide and Intentional Self Harm Rate per 100,000 Population				
Area	2014	2015	2016	2017
State	10.46	9.07	9.22	8.18
Dublin	6.22	3.88	3.97	3.48

The number of admissions to hospital for anxiety or depression per 1,000 people (Table 5.14) in Dublin have followed the same pattern of the State, with the exception of 2015 where a large spike of admissions was seen in the Dublin (Table 5.14).

Table 5.14 *Number of admissions to hospital for anxiety or depression (Source: Public Health Well Community Profiles)*

Number of admissions to hospital for anxiety or depression per 1,000 people			
Area	2013	2014	2015
State	2	1.8	1.8
Dublin	2	1.4	24.9

5.3.4.3 Lifestyle

In terms of lifestyle, the population in the Dublin is broadly similar to those in the State, with regards to rates of smoking, consumption of alcohol and prevalence of eating 5 portions or more fruit or vegetables daily for persons aged 15 and over (Table 5.17).

Table 5.15 *Prevalence of smoking, drinking alcohol and consumption of fruit and vegetables of persons aged 15 and over (Source: CSO Statbank IH079)*

Area	Smoking daily	Smoking occasionally	Prevalence of drinking alcohol	Prevalence of eating 5 portions or more fruit or vegetables daily
State	15%	7%	81%	42%
Dublin	14%	8%	86%	42%

Activity levels in Dublin are slightly higher to those in the State, with the prevalence of individuals walking and cycling as a form of transport and levels of participation in sports, fitness or recreational physical activities being 28.6% and 10.2% higher than the State average, respectively (Table 5.18).

Table 5.16 *All persons aged 15 and over by Region, Year and Physical Activity Undertaken (Source: CSO Statbank IH072)*

Area	Walk to get to and from places	Cycle to get to and from places	Sports, fitness or recreational physical activities	Muscle strengthening activities
State	86	14	49	34
Dublin	90	18	54	37

5.3.5 Natural Resources

Natural resources and land use in the hinterland of the proposed development have also been considered as they may have implications for the development of the lands.

In terms of extractive industries, there is one active quarry, the Roadstone Huntstown Quarry, located to the west of the proposed development site. The processing which happens at the quarry includes excavator, blasting, crushing, grading, fixed plant and mobile plant.

5.3.6 Tourism

Tourism continues to play a hugely influential role in Irelands economic success, however, the impact of the COVID-19 pandemic has greatly diminished the tourist industry in Ireland.

The development site is located in Fingal, close to Dublin City. It is close to several residential areas, retail centres and service industries. The *Fingal Development Plan 2017 – 2023* outlines the opportunities for tourism in the area:

> *Fingal is excellently placed to contribute to the achievement of national [tourism] targets due to the location of Dublin Airport in the County, the close proximity of Fingal to Dublin City, the primary driver of the country's tourism industry, and the wealth of Fingal's natural, cultural and built heritage offer.*

The development site is located next to an existing power station and is not located near any areas of significance or local tourism. The DIAS Dunsink Observatory is located to the south-west is the closest source of local tourism in the surrounding area. Tourism is not a major industry in the immediate environs of the site.

5.3.7 Major Accidents/Hazards

The Seveso Directive (Directive 82/501/EEC, Directive 96/82/EC, Directive 2012/18/EU) was developed by the EU after a series of catastrophic accidents involving major industrial sites and dangerous substances. Such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident.

The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), implement the latest Seveso III Directive (2012/18/EU).

The purpose of the COMAH Regulations is to transpose the Seveso Directive into Irish law and lay down rules for the prevention of major accidents involving dangerous substances, and to seek to limit as far as possible the consequences for human health and the environment of such accidents, with the overall objective of providing a high level of protection in a consistent and effective manner.

The proposed development is located directly adjoining to the Huntstown Power Station campus, which is a notified lower tier Seveso site (HSA, 2021) and is subject to the provisions of the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2015 (COMAH Regulations 2015). The proposed development site is located within the consultation distance of this site. The proposed development will not be a Seveso/COMAH facility or an extension of the existing facility.

According to the EPA (2021) there are two licensed activities currently active within the Huntstown Power Station campus these are; Viridian Power Limited (P077-02) Licence issued in 2006, and Huntstown Power Company (P0483-04) Licence issued in 2006.

There are also a number of IEL and IPPC facilities located in the wider study area. These are referred to as follows:

- Huntstown Quarry is a licensed inert waste recovery facility operating under license number W0277-03 issued in 2015
- Patrick Kelly Timber Limited, Kilshane Cross, North Road, Finglas, Dublin 11. (PO474-01) Located circa 1.4 km to the north,
- Starrus Eco holdings Limited, Millennium Business Park, Grange, Ballycoolin, Dublin 11 (W0183-01). Located circa. 940 m to the southwest,
- Lagan Material Limited, Rosemount Business Park, Ballycoolin Road, Blanchardstown, Dublin 11 (P0081-2). Located circa 1.5 km southwest of the site, and;
- Starrus Eco Holdings Limited, Cappagh Road, Finglas, Dublin 11. (W0261-02). Located circa 1.4 km to the southwest.

5.3.8 Social Infrastructure

Social infrastructure covers a range of services and facilities that meet local and strategic needs and contribute towards a good quality of life. In this context it includes local business, residential areas, education, health facilities, emergency services, places of worship, and green infrastructure.

5.3.8.1 Businesses

As noted above, the surrounding area is characterised by a variety of energy, industrial, commercial, quarrying, agricultural and residential uses. The subject site is generally bounded to the northeast by the Dogs Trust (Dog Rescue and Rehoming Charity), the southern end of the site is traversed by a vehicular entrance leading to the Huntstown Quarry and bound to the south by an Anaerobic Digestion Plant. The site is bound to the west by the existing Huntstown Power Station.

The Dogs Trust rehoming charity is located directly to the north of the subject site. The centre which opened its doors in 2009 is Irelands largest dog welfare charity and employs upward of 83 staff members and volunteers.

Beech Vista M50 Garden and Paving Centre, MCD Home and Garden, Gardenrooms.ie, Woodkraft and NPP Group are located to the east of the site.

5.3.8.2 Residential Dwellings

The nearest noise sensitive locations are located to the east of the site in the form of a number of private residences along the R135 and the Dogs Trust buildings located to the northeast. The immediate eastern boundary of the site is shared with adjacent development lands with the immediate western boundary shared with the existing Huntstown power station. The nearest residential dwellings are illustrated in Figure 5.3 below.

Figure 5.2 *Nearest residential dwellings to the proposed development*

5.3.8.3 *Education*

There are a number of schools within 2km of the proposed development including:

- St. Kevin's Boys National School – c. 1.8km southwest
- PALS Preschool – c. 1.6km west
- Little Mariners After School – c. 1.7km southwest
- Mater Christi/New Cross Secondary School – c. 2 km south
- The Coach House After School & Development Centre – c. 1.8km west

5.3.8.4 *Health*

The nearest hospital to the site is the National Orthopaedic hospital Cappagh c. 1.9km south of the site. Connolly Hospital Blanchardstown is located c. 3.5km southwest.

5.3.8.5 *Emergency Services*

The Finglas Garda Station and Finglas Fire Station each located c. 2.8 km southwest of the site.

5.3.8.6 Places of worship

The closest place of worship to the proposed development is Bethlehem Christian Fellowship, which is located 2 km southeast of the proposed development site.

5.3.8.7 Green Infrastructure

In terms of landscape amenity, there are no listed or scenic views, no landscape or amenity designations or protected trees pertaining to the site, and no protected structures or National Monuments on the site.

There are no areas designated as amenity space by the Fingal Council in the immediate vicinity of the site.

The site is zoned as *HI – Heavy Industry*. The site is not considered to be significant or sensitive from a landscape and visual aspect.

5.3.9 Summary of Baseline Conditions

The sensitivity of the surrounding area has been considered based on the details of the published data. The local area has seen a population growth between the 2011 and 2016 census, there is a large proportion of the population within working age (24 – 44 years old) reflective of the national level. The area surrounding the site is divided between electoral divisions, such as The Ward with relatively low unemployment (11.57%), and a high proportion of residents with a university education (36.2%), and electoral divisions, such as Finglas North A with higher unemployment rate (28.71%) and a low percentage with university education (4.8%). The disposable income in the Dublin region is higher than average, relative to the national level. The Pobal HP Deprivation Index shows a disparity between adjacent electoral divisions with three ranking "marginally above average", two ranking "marginally below average" and two ranking "disadvantaged". The general health of the population is on trend with the state averages.

The initial analysis indicates the site has good access to social infrastructure and emergency services within 5 km of the site and in general a lack of vulnerable persons within the immediate vicinity (schools or public amenity). There are few residential receptors within close proximity to the site, as well as the Dogs Trust facility.

It is important to note that the analysis and data used to inform this study has not fully reflected the impacts of COVID-19 this is primarily due to the time in which this data was collected. It is difficult to determine the long-term impacts of the COVID-19 pandemic will have on population, socio-economics and health. This study has assumed that when the business closures and associated restrictions once ended will see a return to the pre-restriction state.

5.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development site is located on a 4.33 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The proposed development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151 as well as any future development on the wider landholding (as described in Chapter 2, Section 2.3).

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road

connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station;

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development).

5.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

The main potential impacts on population and human health from the proposed development are likely to comprise the potential for spills/leaks, air emissions, noise, visual, and traffic impacts. These aspects have been assessed in terms of the appropriate relevant standards within the corresponding specialist chapters; Chapter 6 (Soils, Geology and Hydrogeology); Chapter 7 (Hydrology); Chapter 9 (Air Quality and Climate), Chapter 10 (Noise and Vibration); Chapter 11 (Landscape and Visual); and Chapter 13 (Traffic and Transportation).

A summary of the potential impacts of construction, commissioning, operation and decommissioning of the proposed development are considered below.

5.5.1 Potential Impacts on Businesses and Residences

There will be a temporary, imperceptible, positive effect on local business with the limited presence of a small number of construction workers using local facilities during the construction phase. The main potential impacts on local businesses and residences associated with the proposed development will be in relation to air quality and noise, visual impact and traffic. The potential impacts are assessed within the corresponding chapters of this EIA Report and are summarised below.

5.5.2 Potential Impacts on Amenity and Tourism

The location of the proposed development within lands zoned for heavy industry, in the vicinity of a national motorway the proposed development will have a minimal impact on the local landscape amenity. There will be no impact on the local parks.

The proposed development will not create any wastewater discharge which could have a potential impact on local amenities or the local population.

Should any discharge of construction water (collected stormwater) be required during the construction phase, discharge will be to the storm water/foul sewer drainage system or collected and removed, following appropriate treatment for sediment removal. Further details of water management relating to the construction phase will be outlined in the Construction Environmental Management Plan (CEMP) prepared by the Contractor of Works.

The in the long term the operational phase of the proposed development will not give rise to any noticeable changes in the landscape character. The proposed cabling will run underground and will therefore cause no impact on visual character. Further discussion is presented in Chapter 11 Landscape and Visual.

5.5.3 Potential Impacts on Natural Resources and Material Assets

Natural resources and land uses in the hinterland of the proposed development have also been considered as they may have implications for the development of the lands. The routes of the cable installations are on private land and through the existing private roads.

Historical Ordnance Survey (OS) maps indicate that much of the surrounding land has been in industrial/commercial use for 20-30 years. As such, much of the agricultural resource in the surrounding area has already been lost over recent decades.

Chapter 6 (Land, Soils, Geology and Hydrogeology) discusses the potential impact on quarries in the vicinity of the site. There will be no impact to mineral resources in the area as a result of the proposed development.

There are no groundwater source protection zones in the immediate vicinity of the site, and the GSI Well Card Index does not show any wells drilled or springs at the site. Regardless, in order to reduce impacts on the soils and geology environment a number of mitigation measures will be adopted to prevent the contamination of groundwater during the construction and operational phase; as described in Chapter 6 (Land, Soils, Geology & Hydrogeology).

No significant impact to Natural Resources or Material Assets is predicted.

5.5.4 Potential Impacts on Human Health from Air Quality and Climate

The key elements of construction and operation of the proposed development with potential impacts on human health from air quality and climate impacts are:

- Potential fugitive dust emissions from general site preparation and construction activities;
- Potential fugitive dust emissions from vehicles associated with construction;
- Engine emissions from construction vehicles and machinery;
- A change in traffic flows on road associated with the proposed development.
- Air emissions associated with the operation of the on-site emergency generators.

The construction phase impacts will be negative, short-term and imperceptible, the potential impacts during the operational phase of the proposed development are deemed, localised, negative, slight and long-term.

5.5.5 Potential Impacts on Human Health from Noise and Vibration

Exposure to excessive noise is becoming recognised as a large environmental health concern. According to the 2015 European Commission report 'Noise Impacts on Health', (European Commission, 2015), the most common effects of noise on the vulnerable include;

- Annoyance
- Sleep Disturbance
- Heart and circulation problems
- Quality of Life
- Cognitive Process
- Hearing

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. Noise and vibration impacts associated with the development have been fully considered within Chapter 10 of the EIA Report.

5.5.6 Potential Impacts on Human Health from Traffic and Transportation

An assessment of the additional traffic movements and temporary diversions associated with the proposed development during the construction phase is presented in Chapter 13 Traffic and Transportation.

The predicted impact of the development on human beings and in particular road users will be short term, neutral and not significant for the construction phase and long-term, neutral and imperceptible for the operational phase. Any significant construction works will take place outside of main commuter hours and at worst case a single lane carriageway will remain operational. There is no impact during operation.

5.5.7 Potential Impacts on Health and Safety

The proposed development will be implemented in accordance with the Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005) as amended and the Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. 299 of 2007) as amended and associated regulations.

The proposed development has the potential for an impact on the health and safety of workers employed on the site, particularly during the construction phase. The activities of contractors during the construction phase will be carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) as amended to minimise the likelihood of any impacts on worker's health and safety. The health and safety planning for the construction phase of the proposed development will take into account any measure specifically in regards to Covid-19.

The 2014 EIA Directive and associated EPA Draft EIA Report Guidelines (2017) require that the vulnerability of the project to major accidents and/or natural disasters (such as earthquakes, landslides, flooding, sea level rise etc.) is considered in the EIA Report.

The site has been assessed in relation to the following external natural disasters; landslides, seismic activity, volcanic activity and sea level rise/flooding as outlined below. The potential for major accidents to occur at the development has also been

considered with reference to Seveso/Control of Major Accident Hazards (COMAH) Regulations.

Due to the proximity to the Huntstown Power Station that is notified to the Health and Safety Authority (HSA) as a Lower Tier COMAH site. A Land Use Planning (LUP) Assessment under the COMAH directive has been prepared by AWN Consulting and is included as Appendix 5.1. The LUP risk contours (Outer zone and Middle zone) of Huntstown Power Station extends to the proposed development site. The individual risk contours corresponding to the Inner LUP zone (1E-5) does not extend to the proposed development; therefore, the level of individual risk at the proposed development site is acceptable in accordance with land use planning guidance. The proposed development is located sufficiently far away from the lower tier Seveso site to have no domino effects with regard to initiating major accidents.

There is a negligible risk of landslides occurring along the routes and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the routes. There are no active volcanoes in Ireland so there is no risk of volcanic activity.

The potential risk of flooding on the site was also assessed. A Stage 1 Flood Risk Assessment was carried out and it was concluded that the development is not at risk of flooding. Furthermore, the proposed development design has no potential impact on flood risk for other neighbouring properties. This Stage 1 Flood Risk Assessment is included in this EIA Report as Appendix 6.2 to Chapter 6 (Hydrology).

There is limited potential for effects on the receiving environment as a result of minor accidents/leaks of fuel/oils during the construction phase as no bulk fuel storage required. However, the implementation of mitigation measures for management of localised construction equipment leaks set out in Chapters 5 and 6 of this EIA Report will ensure the risk of an accident is low and that the residual effect on the environment is imperceptible.

Once operational, the proposed development will form part of ESB Networks' infrastructure. ESB Networks are the licensed operators of the electricity distribution system in the Republic of Ireland. ESB Networks is responsible for building, operating, maintaining and developing the electricity network and serving all electricity customers across the country. EirGrid is a state-owned body responsible for operating the flow of power on the transmission grid. Both bodies are experienced in the management and operation of the national electricity grid, with appropriate environmental, health and safety management systems in place.

Potential impacts associated with electromagnetic fields (EMF) for electronic and magnetic fields are assessed by EirGrid and ESB in their policy documents; Electric and Magnetic fields in the Environment (ESB, 1999), Information on Electric and Magnetic Fields (Eirgrid, 2007). No marked ill-effects on very high levels of exposure have been observed. There are no significant impacts due to EMP anticipated.

5.6 REMEDIAL AND MITIGATION MEASURES

5.6.1 Construction Phase

Any perceived nuisance impacts on the immediate local population will be short-term and temporary in nature due to the length of the construction process for the proposed development. No remedial or reductive measures are therefore required beyond

normal landscaping, noise and construction mitigation that are outlined elsewhere within this EIA Report, and will be included in the Construction Environmental Management Plan (CEMP) which will be prepared by the works contractor in advance of works starting on site.

Mitigation measures proposed to minimise the potential effects on human health in terms of air quality and climate and noise and vibration during construction are discussed in the relevant sections of Chapters 9 and 10, respectively.

Chapter 13 Traffic and Transportation addresses mitigation measures proposed to reduce the effect of traffic management during construction.

5.6.2 Operational Phase

Due to the underground nature of the cable installation, no additional remedial or mitigation measures are considered necessary for the operational phase.

5.7 RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

5.7.1 Impacts on Businesses and Residences

There will be a temporary, imperceptible, positive effect on local business with the limited presence of a very small number of construction workers using local facilities during the construction phase of the proposed development. However, the main potential impacts on human beings associated with the proposed development will be in relation to air quality, noise and visual effects during the construction stage. The potential impacts are assessed within the corresponding chapters of this EIA Report and are summarised below. These are temporary impacts.

5.7.2 Impacts on Amenity and Tourism

The in the long term the operational phase of the proposed development will not give rise to any noticeable changes in the landscape character. The proposed cabling will run underground and will therefore cause no impact on visual character. Further discussion is presented in Chapter 11 Landscape and Visual.

The location of the proposed development within lands zoned for heavy industry, adjacent to a national motorway the proposed development will have a minimal impact on the local landscape amenity. There will be no impact on the local parks.

The predicted impact on local amenities and tourism with respect to human health will be ***neutral, imperceptible, and long-term.***

5.7.3 Impacts on Human Health from Air Quality and Climate

As outlined in Chapter 8 Air Quality and Climate, 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 the protection of human 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 (see Chapter 8, Table 8.1). The standards for human health have designed to avoid harmful effects to health.

5.7.3.1 Construction Phase

As detailed in Chapter 8 (Air Quality and Climate), 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 proposed 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 temporary and imperceptible with respect to human health.

5.7.3.2 Operational Phase

Operational phase impacts associated with the proposed development are predicted to be long-term and imperceptible as the cables will be buried underground once constructed and there will be minimal emissions associated with maintenance vehicles accessing the substation site.

5.7.4 Impacts on Human Health from Noise and Vibration

Noise and Vibration impacts associated with the development have been fully considered within Chapter 9 of the EIAR. Commentary on the impact assessment and related noise levels are summarised below with respect to potential environmental health impacts.

5.7.4.1 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 (i.e. as per Table 10.5, 10.6 and Section 10.2.4 of Chapter 10 (Noise & Vibration)), along with implementation of appropriate noise and vibration control measures (as summarised in Section 10.6.1 of Chapter 10 (Noise & Vibration)), will ensure that noise and vibration impact is kept to a minimum. Also, it is reiterated that any construction noise impacts will be ***not significant, negative*** and ***temporary*** in nature.

Vibration associated with construction activities will be limited to the values set out in Table 10.8 of Chapter 10 (Noise & Vibration). It should be noted that these limits are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage.

5.7.4.2 Operational Phase

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***, ***imperceptible*** and ***long-term***.

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.***

5.7.5 Impacts on Human Health from Traffic and Transportation

An assessment of the additional traffic movements and temporary diversions associated with the proposed development during the construction phase is presented in Chapter 13 Traffic and Transportation.

The predicted impact of the development on human beings and in particular road users will be ***short term, not significant and neutral*** for the construction phase and will be ***long term*** in duration of ***imperceptible neutral*** effect for the operational phase.

5.8 MONITORING/ REINSTATEMENT

Not applicable. No monitoring for human health, or reinstatement measures are proposed or required during the construction and operational phase of development.

5.9 REFERENCES

Central Statistics Office. Statbank Databases (Accessed March 2021, https://www.cso.ie/en/databases/)

Central Statistics Office. Census of Population, 2011 and 2016. (Accessed March 2021, https://www.cso.ie/en/census/)

Central Statistics Office. Labour Force Survey, 2020 (Accessed March 2021, www.cso.ie/en/statistics/labourmarket/labourforcesurveylfs)

Environmental Protection Agency (2021) Licenced Sites Accessed March 2021, http://www.epa.ie/licensing/)

Environmental Protection Agency (EPA). Draft Advice Notes for Preparing Environmental Impact Statements (EPA, 2015)

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European Commission (EC). Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EU, 2017)

Fingal County Council. Fingal County Council Development Plan 2017-2023.

Pobal HP Deprivation Index (Accessed March 2021,https://data.gov.ie/dataset/pobal-hp-deprivation-index)

Seveso Directive (Directive 82/501/EEC, Directive 96/82/EC, Directive 2012/18/EU)

6.0 LAND, SOILS, GEOLOGY AND HYDROGEOLOGY

6.1 INTRODUCTION

This chapter assesses and evaluates the potential impacts of the development on the land, soil, geological and hydrogeological aspects of the site and surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

6.2 METHODOLOGY

6.2.1 Criteria for rating of effects

This chapter evaluates the effects, if any, which the development has had or will have on Land, Soils, Geology and Hydrogeology as defined in the Environmental Protection Agency (EPA) 'Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2017). The Draft EPA document entitled 'Advice Notes for Preparing Environmental Impact Statements' (EPA, 2015) is also followed in this geological and hydrogeological assessment and classification of environmental effects. Due consideration is also given to the guidelines provided by the Institute of Geologists of Ireland (IGI) in the document entitled Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements' (IGI 2013). In addition, the document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009) is referenced where the methodology for assessment of impact is appropriate.

The rating of potential environmental effects on the land, soil, geological and hydrogeological environment is based on the standard EIAR impact predictions table included in Chapter 1 which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the Draft EPA Guidelines (2017) publication).

The duration of each effect is considered to be either momentary, brief, temporary, short-term, medium term, long-term, or permanent. Momentary effects are considered to be those that last from seconds to minutes. Brief effects are those that last less than a day. Temporary effects are considered to be those which are construction related and last less than one year. Short term effects are seen as effects lasting one to seven years; medium-term effects lasting seven to fifteen years; long-term effects lasting fifteen to sixty years; and permanent effects lasting over sixty years.

The TII criteria for rating the magnitude and significance of impacts on the geological related attributes and the importance of hydrogeological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Tables 1-5 in Appendix 6.1.

The principal attributes (and effects) 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 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 etc.) 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.

6.2.2 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, 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; and
- Fingal County Council - illegal landfill information.

Site specific data was derived from the following sources:

- Environmental Due Diligence (Phase 1). Huntstown, Dublin 11. AWN Consulting (April 2020);
- Environmental Due Diligence (Phase 2). Huntstown, Dublin 11. AWN Consulting (July 2020);
- Ground Investigation Report, Lands East of Huntstown Power Station North Co. Dublin. IGSL (July 2020);
- Construction and Engineering Management Programme. AECOM (2021);
- Drainage and Water Services Report. AECOM (2021)
- Various design site plans and drawings; and
- Consultation with site engineers.

6.2.2.1 Site Investigation Works

Site investigations were by AWN during May-June 2020 on the greenfield lands adjacent to the proposed development site. These investigations included the following:

- Excavation of ten (10) no. trial pits across the large site area to examine soil conditions and if any infill or foreign material is present across the land (TP; depths up to 3 mbgl);
- The drilling of three (5) no. bedrock boreholes; (RC/BH; 80 mm diameter, depths up to 21.7 mbgl);
- Drilling of five (5) no. Cable Percussion Boreholes (CP; 200 mm diameter, depths up to 4.2 mbgl).
- Logging of the arisings from each trial pit in accordance with BS5930:2015, noting any field evidence of potential impact by hazardous substances;
- Collection of one (1) no. composite samples from each of the trial pit arisings with all being sent for laboratory analysis focusing on potential contamination and the classification of the materials for waste disposal purposes and asbestos fibre survey;
- Collection of three (3) groundwater samples for laboratory analysis,
- Ground gas measurement from gas wells installed at the cable percussion locations (CP);

Trial pit and borehole logs are included in Appendix 6.2, which include a description of the lithologies observed in each excavation, depth to bedrock, type of bedrock and any water strikes encountered during the excavations.

Samples were collected from the arisings from all of the trial pits, which were considered representative of the material observed at the selected sampling location and were transferred directly into laboratory-supplied containers. The containers were then clearly labelled to identify the sample location and depth. Standard sampling techniques were used to collect the samples, which are designed to reduce the risk of cross contamination between sampling events. Appendix 6.3 presents tables with the soil and groundwater analytical test results. The full analytical laboratory reports are presented in Appendix 6.4.

The locations of trial pits and boreholes from which representative samples were collected are presented Figure 6.1 below.

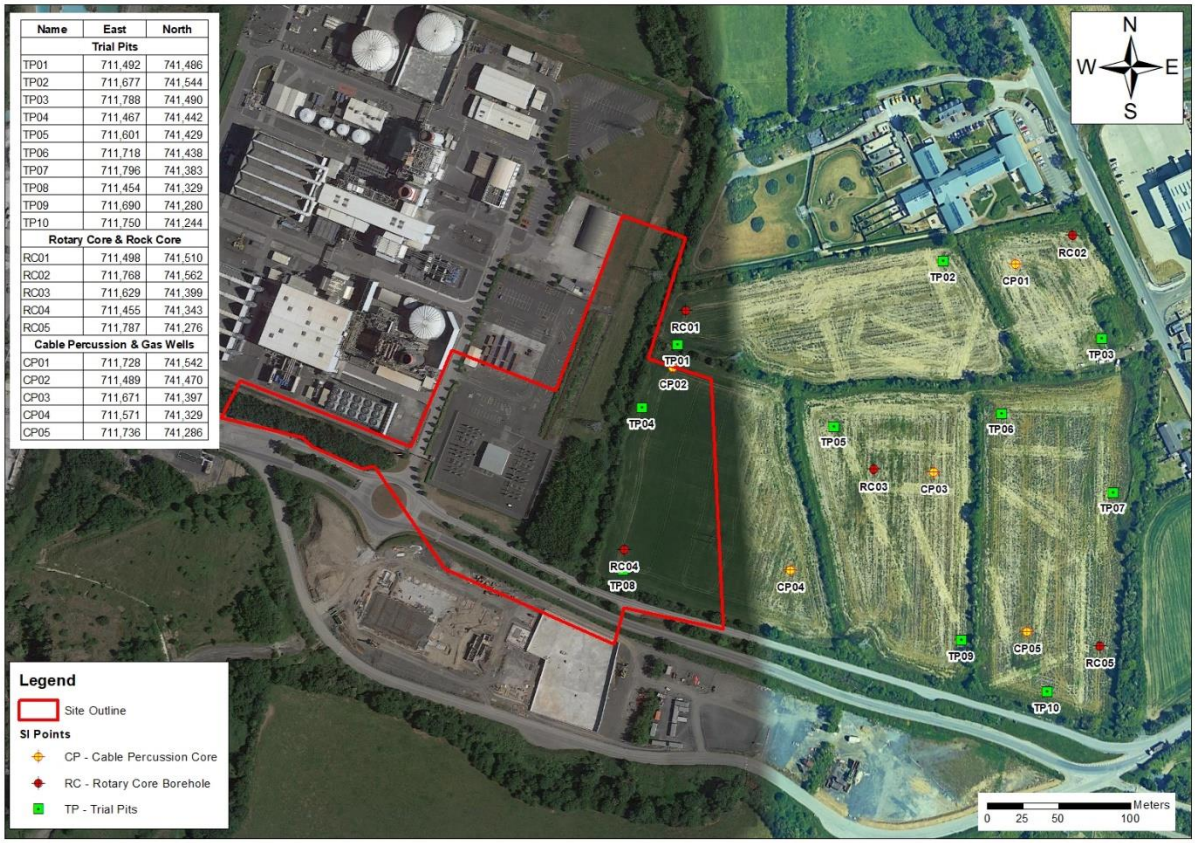

Figure 6.1 *Site Investigation Points (AWN, 2020)*

6.3 RECEIVING ENVIRONMENT

The receiving environment is discussed in terms of land geology, soils, hydrogeology and site history including potential for existing and historical contamination.

6.3.1 General Description of the Site

The proposed development site is c. 4.33 hectares of partly developed and partly greenfield land located to the north west of the M50 orbital ring in the townland of Johnstown and Coldwinters, North Road, Finglas, Dublin 11 (Refer to Figure 6.2 below).

The site is mostly flat and slightly slopes from north-west to south-east. There is no stormwater drainage infrastructure currently within the development footprint. The surface water drainage on the greenfield portions of the site comprises a series of interconnected ditches. The developed areas, the existing ESB Huntstown 110kV Substation drains to the Huntstown Power Station, and the Quarry road network drains to roadside ditches. This local drainage ultimately flows in a northerly direction towards the Huntstown Stream (located c. 850 m to the north of the site). The Huntstown Stream joins the Ward River c. 5 km to the northeast of the site (at Saint Margaret Golf and Country Club). The Ward River flows towards Malahide Estuary, a Natura Site (SPA/SAC/pNHA) located c. 10 km to the northeast of the site after joining the Broadmeadow River.

Figure 6.2 *Site Location and Surrounding Activities (AWN, 2021)*

6.3.2 Land Use

The majority of the site is currently in use for arable agricultural activities, with the exception the quarry road traversing the south of the site and the existing ESB Huntstown 110kV Substation associated with the adjacent Huntstown Power Station. Immediately to the west of the site is the Huntstown Power Station. Directly to the east of the site is the projected Huntstown data centre site which is subject to a separate Planning Application. The south of the site is bounded by Huntstown quarry access road. Further south are more greenfield lands and the M50. Dublin Airport is 2.9 km to the north east.

According to the EPA (2020) there are two licensed activities currently active within the Huntstown Power Station campus these are;

- Viridian Power Limited (P077-02) Licensed issued in 2006, and;
- Huntstown Power Company (P0483-04) Licensed issued in 2006

Directly to the south is Huntstown Bioenergy Limited (P0993-01). License issued in 2015 with the facility commencing activity in 2019. Huntstown quarry is a licensed inert waste recovery facility operating under license number W0277-03 issued in 2015. From a review of the Annual Environmental Reports and Licensee Reports related to the activities at the Huntstown Power Station and Huntstown Quarry on the EPA website a number of noncompliance issue were noted. However, there is no indication that these would result in adverse environmental impact on the subject site as it is located downgradient and therefore there would no effects on soils or groundwater underlying the subject site due to its operation (refer to Section 6.3.8 below).

There are also a number of IEL and IPPC facilities located in the wider study area (2kn from the site). These are referred to as follows:

- Patrick Kelly Timber Limited, Kishane Cross, North Road, Finglas, Dublin 11. (PO474-01) Located circa 1.5 km to the north,
- Starrus Eco holdings Limited, Millennium Business Park, Grange, Ballycoolin, Dublin 11 (W0183-01). Located circa. 1.3 km to the southwest,
- Lagan Material Limited, Rosemount Business Park, Ballycoolin Road, Blanchardstown, Dublin 11 (P0081-2). Located circa 1.8 km southwest of the site, and;
- Starrus Eco Holdings Limited, Cappagh Road, Finglas, Dublin 11. (W0261-02). Located circa 1.75 km to the southwest.

Consultation with Fingal County Council have confirmed that there are no known illegal/historic landfills within 500 metres of the site.

Historical Ordnance Survey maps were examined for the purpose of this environmental due diligence. O.S. maps were available from 1830 (the historic 6" maps) and 1900 from the historic 25" maps. The historic maps indicate that the subject site was greenfield up to the present. No evidence was noted to indicate industrial processes have been undertaken on the subject site. The subject site appears to be used for agricultural purposes possibly grazing, cropping storing cattle. This purpose has not changed from 1830 to present.

6.3.3 Soils

The GSI/ Tegasc mapping shows that the soil type beneath the local area is composed of BminPD, mainly basic poorly drained soils and BMinDW mainly basic deep well-drained soils as presented in Figure 6.3 below.

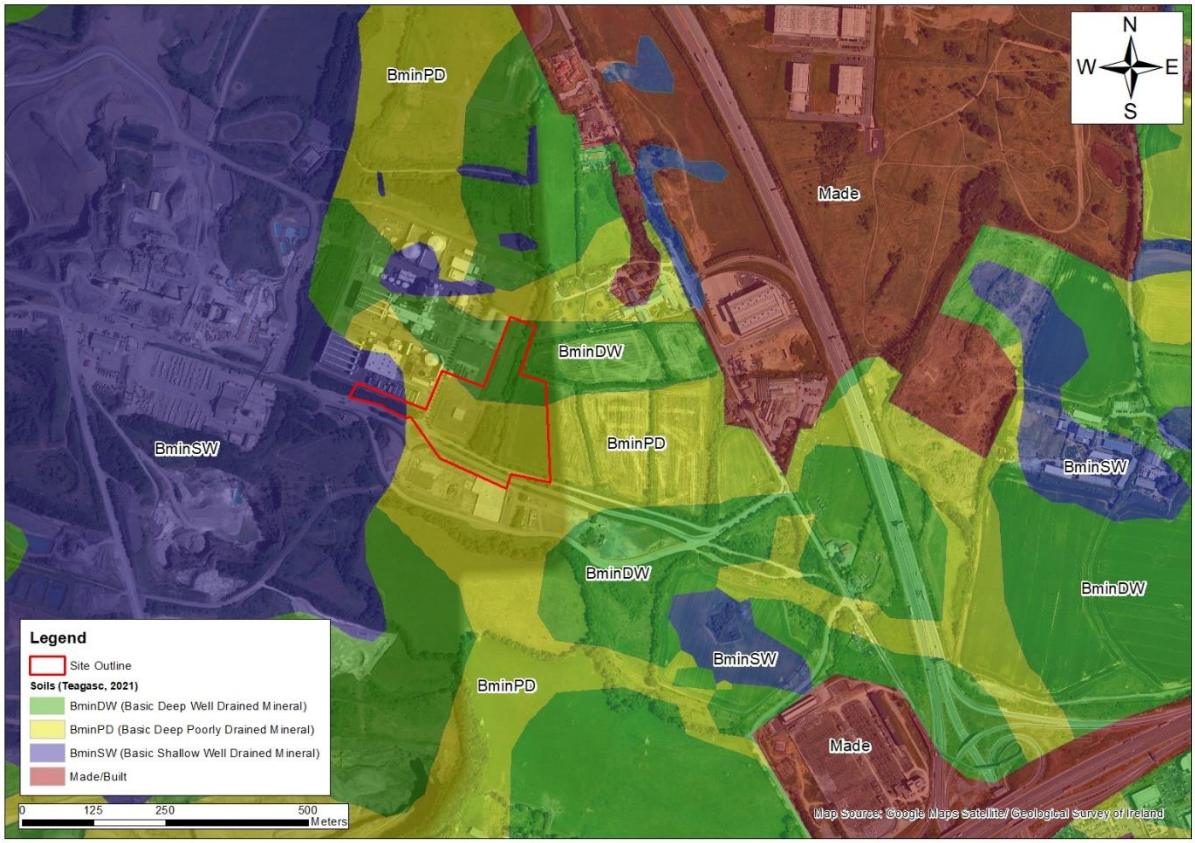

Figure 6.3 *Soils Map (Source: Teagasc, 2021)*

6.3.4 Subsoils

The Quaternary geological period extends from about 1.5 million years ago to the present day and can be sub-divided into the Pleistocene Epoch, which covers the Ice Age period, and which extended up to 10,000 years ago and the Holocene Epoch, which extends from that time to the present day.

The GSI/ Teagasc mapping database of the subsoils in the area of the subject site indicates one principal soil type, as shown in Figure 6.4 below. The subsoil type present across the site is:

- LIMESTONE till Carboniferous (TLs). The whole subject site is composed of limestone TILL. This till is made up of glacial CLAYs which are less permeable than alluvium subsoils.

Bedrock outcrops would be located to the west of the site, according to GSI mapping.

The EPA soil mapping indicates that the soils comprise primarily of fine loamy drift with limestones (BminPD). The EPA have classed this area as agricultural land used for complex cultivation patterns.

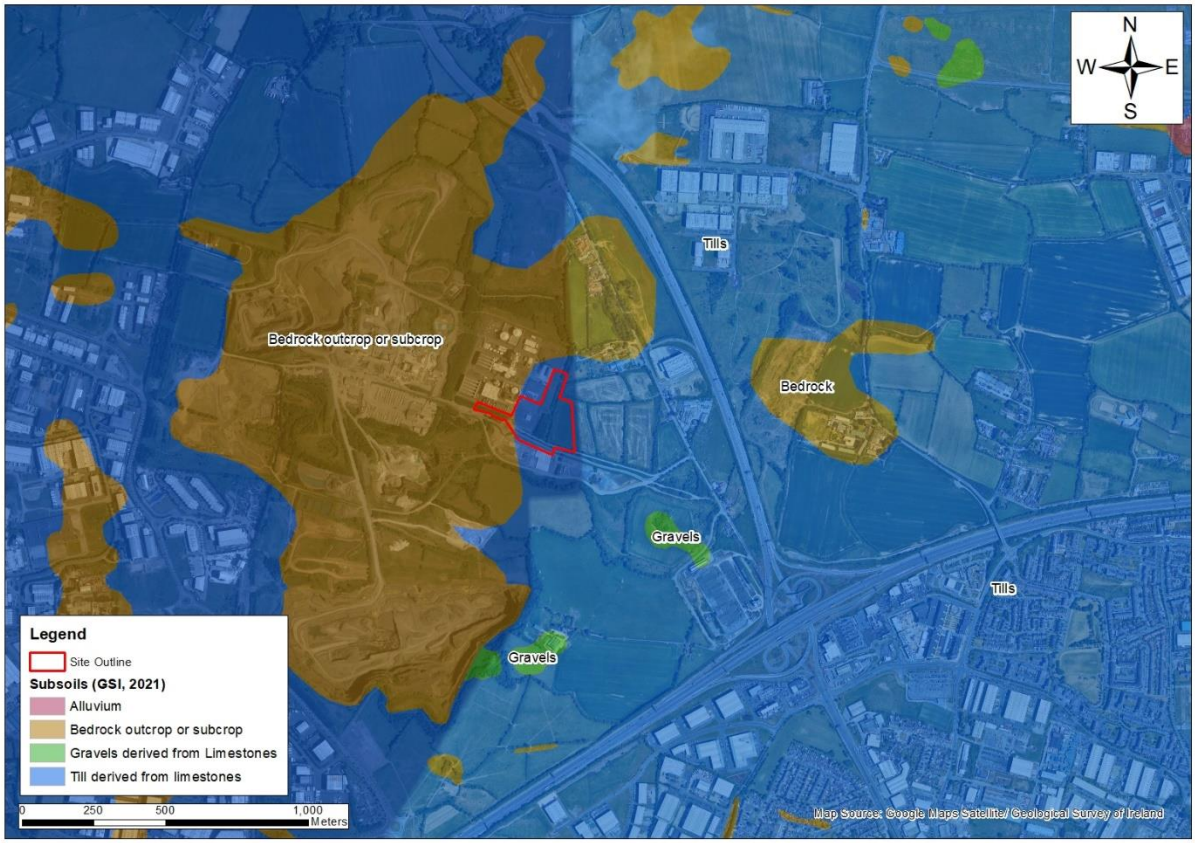

Figure 6.4 *Subsoils Map (Source: GSI, 2021)*

Although there had been no intrusive investigation undertaken at the subject site, historical investigations undertaken at the wider agricultural lands generally show bedrock depth decreasing from northeast (Huntstown Quarry) to southwest. The depth of overburden varies to match this with stiff sandy gravelly CLAYS to a depth of 5.3 metres below ground level (mbgl) noted to the north east of the site, with the same stiff CLAY material noted to 2.00 mbgl to the south west of the site (Causeway, 2018).

AWN undertook an environmental site investigation on adjacent lands to establish the shallow soil and water conditions. The ten (10) no. trial pits (referenced as TP01 to TP10) were excavated using a 15-ton tracked excavator. The five (5) boreholes (referenced RC01 to RC05) were drilled using a rotary rig to a depth between 20.0 mbgl and 21.7 mbgl. Water strikes are detailed in the trial pit and borehole logs. The soil profile encountered can be summarised as follows (based on location RC03):

- Topsoil 0.0 m - > 0.3 mbgl.
- Subsoil 0.3 m - > 13.5 mbgl.
- Weathered Limestone Bedrock/ Bedrock 13.5 m - > 20.0 mbgl.

This profile encountered at the site adjacent to the data centre is considered to be representative for characterising the site in question. Refer to Figure 6.1 above for locations of trial pits and boreholes. Trial pit and borehole logs from AWN (2020) investigations can be viewed in Appendix 6.2.

6.3.5 Bedrock Geology

Inspection of the available GSI (2020) records (Data Sheet 16 and on-line mapping database) shows that the bedrock geology of the site and the surrounding area is

dominated by rocks from the Chadian and Tournaisian age. The site is located over dark-grey, calcareous, commonly bioturbated mudstones and subordinate thin micritic limestones referred to as the Tober Colleen Formation (Rock Unit code: CDTOBE) and over pale-grey, crudely bedded or massive limestone associated to the Waulsortian Limestones Formation (CDWAUL) to the west (Refer to Figure 6.5 below).

The regional area is highly geologically variable. GSI maps do show the site as overlying the Tober Colleen formation which is bordered to the south west by Waulsortian Limestones (which have been noted to underly the Tober Colleen), further to the south by the Boston Hill Formation, to the south east by the Lucan Formation and to the north by the Malahide Formation. Due to this variability the GSI (2020) bedrock geology map (100K structural database) indicates a number of faults in the study area with one bounding the sites to the south west.

Figure 6.5 *Bedrock Geology Map (Source: GSI, 2021)*

Site investigations indicate bedrock depth at the subject site was recorded at 7.2 mbgl at RC01 and 6.0 mbgl at RC04 to the east of the site.

6.3.6 Regional Hydrogeology

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km^2), well yield (m^3/d), specific capacity ($m^3/d/m$) and groundwater transmissivity (mm^3/d). There are three main classifications: regionally important, locally important and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-

divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local zones (Ll). Similarly, poor aquifers are classed as either generally unproductive except for local zones (Pl) or generally unproductive (Pu).

The bedrock aquifers underlying the subject site according to the GSI National Draft Bedrock Aquifer Map are classified dark-grey, calcareous, commonly bioturbated mudstones and subordinate thin micritic limestones. GSI mapping has shown the site overlies a Locally Important Aquifer (Ll) which is moderately productive only in Local Zones (refer to Figure 6.6 below).

Figure 6.6 *Aquifer Classification Map (Source: GSI, 2021)*

6.3.7 Aquifer Vulnerability

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures, the main feature that protects groundwater from contamination, and therefore the most important feature in protection of groundwater, is the subsoil (which can consist solely or of mixtures of peat, sand, gravel, glacial till, clays or silts).

The GSI currently classifies the aquifer vulnerability in the region as Extreme (E) to the western boundary and High (H) throughout the rest of the site. As can be seen from Table 6.1 below an Extreme vulnerability with clayey subsoil denotes a depth to bedrock of 0-3 mbgl with High vulnerability categorised as 3-5 mbgl.

The aquifer vulnerability class in the region of the site is presented below as Figure 6.7.

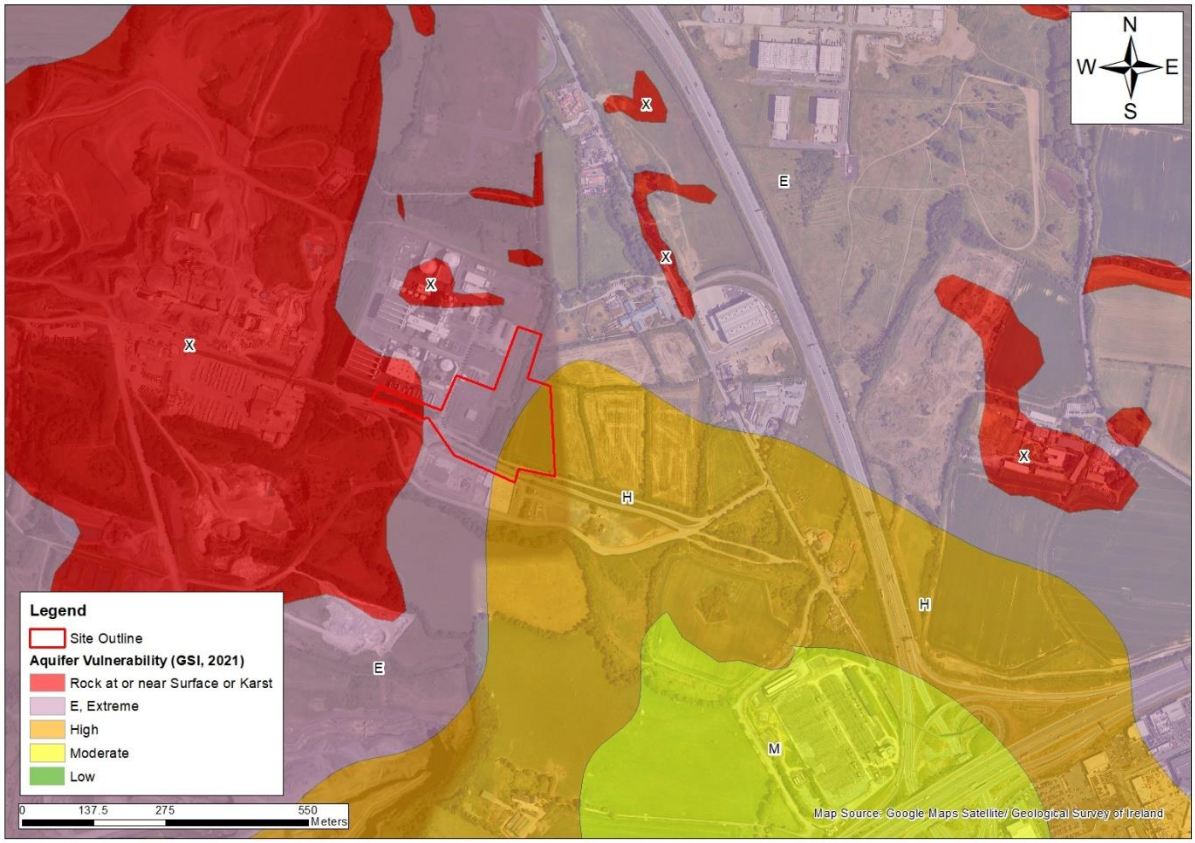

Figure 6.7 *Aquifer Vulnerability Map (Source: GSI, 2021)*

Table 6.1 *Vulnerability Mapping Guidelines (Source: GSI, 2021)*

Vulnerability Rating	Hydrogeological Condition				
	Subsoil Permeability (type) and Thickness			Unsaturated Zone	Karst Features
	High Permeability (sand/gravel)	Moderate Permeability (e.g. sandy subsoil)	Low Permeability (e.g. clayey subsoil, clay, peat)	(Sand/ gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3 m	0 - 3 m	0 - 3 m	0 - 3 m	-
High (H)	> 3 m	3 - 10 m	3 - 5 m	> 3 m	n/a
Moderate (M)	n/a	> 10 m	5 - 10 m	n/a	n/a
Low (L)	n/a	n/a	> 10 m	n/a	n/a

Notes: (1) n/a: Not applicable

(2) Precise permeability values cannot be given at present

(3) Release point of contaminants is assumed to be 1-2 below ground surface

The site investigations carried out by AWN (2020) confirmed that the depth to bedrock to the east of the site is >5.0 (7.2 mbgl at RC01 and 6.0 mbgl at RC04), overlaid with low permeability clays; therefore, the site-specific vulnerability can be more accurately described as 'Moderate' at the eastern section of the subject site.

6.3.8 Groundwater Wells and Flow Direction

The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of all wells is not currently a requirement in the Republic of Ireland. This current index does not show any wells drilled or springs at the site or surrounding area with the nearest recorded wells located 0.5 km to the east of the site (associated with the Balseskin Reception Centre). None of the wells listed are categorised as domestic use. The area is serviced by Local Authority mains therefore it is unlikely that any wells are used for potable supply. The site is not located near any public groundwater supplies or group schemes. There are no groundwater source protection zones in the immediate vicinity of the site. The closest is 10 km to the west (Dunboyne PWS) and the proposed site is outside of the zone of contribution of this supply.

Figure 6.8 below presents the GSI well search for the area surrounding the site (note this source does not include all wells) and Table 6.2 below summarises the details of recorded wells present within this search area.

Regional groundwater flow would most likely be to the south – southeast towards the River Tolka and Dublin Bay. However, it is understood that dewatering activates are taking place at Huntstown quarry and these will likely have a local influence on the groundwater flow at the subject site. In particular they will control any potential migration pathway from the quarry towards the subject site.

Local groundwater flow has been interpreted as flowing south-southeast (i.e. towards the Huntstown Quarry) by measuring the SWL at the boreholes RC01 (within the subject site), RC02 & RC05 (refer to Figure 6.1 above). Table 6.3 below shows the water level in metres above ordinance datum (mAOD) recorded in 2020.

Figure 6.8 *GSI Well Search Map (Source: GSI, 2021)*

Table 6.2 *Standing Water Levels (SWL) measured in June 2020 for onsite wells*

Well ID	SWL (mbgl)	SWL (m AOD)
RC01	4.07	73.43
RC02	1.85	77.20
RC05	8.30	70.50

Table 6.3 *GSI Well Card Index (Source: GSI, 2021)*

GSI Name	Depth (m)	Depth to Bedrock (m)	Townland	County	Use	Yield Class	Yield m^3/day
2923NEW025	0.6	0.6	BALSESKIN	Dublin			
2923NEW026	0.4	0.4	BALSESKIN	Dublin	Other		
2923NEW027	0.4	0.4	BALSESKIN	Dublin	Other		
2923NEW028	0.2	0.2	BALSESKIN	Dublin	Other		
2923NEW029	0.8	0.8	BALSESKIN	Dublin	Other		
2923NEW030	1.4	1.4	BALSESKIN	Dublin	Other		
2923NEW031	42.7	0.5	BALSESKIN	Dublin	Other	Moderate	83.8
2923NEW040			WARD LOWER	Dublin			
2923NEW041			TYRRELSTOWN	Dublin			
2923NEW043			KILSHANE	Dublin			
2923NEW047	22.5	2.3	TYRRELSTOWN	Dublin			
2923NEW048	12	2	TYRRELSTOWN	Dublin			
2923NEW049	22.2	2	TYRRELSTOWN	Dublin			
2923NEW050	23	2.8	TYRRELSTOWN	Dublin			
2923NEW051	23	2.9	TYRRELSTOWN	Dublin			
2923NEW052	24	4	KILMARTIN	Dublin			
2923NEW053	24.5	5.9	KILMARTIN	Dublin			
2923NEW054	23	3	HOLLYWOODRATH	Dublin			
2923NEW055	23.5	3.5	HOLLYWOODRATH	Dublin			
2923NEW056	23.5	7.5	POWERSTOWN	Dublin			
2923NEW057	23.6	6.2	POWERSTOWN	Dublin			
2923NEW059	6.8	6.8	TYRRELSTOWN	Dublin			
2923NEW060	3	3	HOLLYWOODRATH	Dublin			
2923NEW061	15.5	5.5	CHARLESTOWN	Dublin			
2923NEW062	9.5	4	CHARLESTOWN	Dublin			
2923NEW063	3.5	3.3	CHARLESTOWN	Dublin			
2923NEW064	2.8	2.6	CHARLESTOWN	Dublin			
2923SEW042			CARDIFFCASTLE	Dublin			
2923SEW047	3.8		CAPPOGE	Dublin			
2923SEW048	3.2		CAPPOGE	Dublin			
2923SEW049	3.6		CAPPOGE	Dublin			
2923NEW023			ST MARGARETS	Dublin	Unknown	Low Spring	
2923NEW024			ST MARGARETS	Dublin	Unknown	Low Spring	
2923NEW061	91.4	20	BALLYMUN	Dublin	Industrial use	Moderate	87
2923NEW062	122	23	BALLYMUN	Dublin	Industrial use	Good	200
2923SEW004	76.2		CAPPOGE	Dublin	Agri & domestic use	Good	109.1
2923NEW015	48.8		SANTRY	Dublin	Industrial use	Good	130
2923NEW017	9.1	4	ST MARGARETS	Dublin		Good	164
2923NEW033	150	12	TYRRELSTOWN	Dublin	Industrial use	Good	115
2923NEW035	60	13.5	DUBBER	Dublin	Unknown	Moderate	48.5
2923NEW036	91.4	20	BALLYMUN	Dublin	Industrial use	Moderate	87
2923NEW037	122	22	BALLYMUN	Dublin	Industrial use		
2923SEW003	24.4		FINGLAS EAST	Dublin	Agri & domestic use	Good	110
2923SEWO21	61		FINGLAS	Dublin	Industrial use	Good	174.6

6.3.9 Soil Quality

There are no legislated threshold values for soils in Ireland. As such soil samples were compared to a Generic Assessment Criteria (GAC) derived to be protective of human health, water bodies (including groundwater) and also ecology for a resident and commercial/industrial end use.

GAC in the UK has been derived using the Contaminated Land Exposure Assessment (CLEA) model to be protective of human health for a number of different land uses. LQM (Land Quality Management) and the CIEH (Chartered Institute of Environmental Health) developed a document in July 2009 detailing their own research and derivation of their own 'LQM GACs'. A total of 82 substances including many organic substances had LQM GACs derived, for the standard land uses of residential, commercial/industrial and allotments. This was updated in 2015 following further research and the derived results are now called LQM/CIEH Suitable 4 Use Level (S4UL). The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and as transparently derived and cautious "trigger values" above which further assessment of the risks or remedial action may be needed. For each contaminant S4ULs have been derived for six land use scenarios based on assessing exposure pathways in each planning scenario. In this instance the commercial scenario has been considered. Soil type and soil organic matter (SOM) has an influence on the behaviour of contaminants. S4ULs have been derived for three SOM contents (1%, 2.5% and 6%) to cover the likely range in soils. A prudent approach has been taken by considering the lower 1% SOM content.

The UK values do not have any legal standing within the Republic of Ireland and no statutory guidance for assessing the significance of soil contamination currently exists. However, the values do provide a means of placing the data within context when considering magnitude of risk and have been used in that capacity for this assessment.

In total, ten (10) soil samples were collected throughout the trial pitting exercise at the data centre site and sent to Element Environmental Laboratory in the UK for analysis of a range of parameters to examine the soil quality and to investigate any present and/or past contamination occurred across the site. Full laboratory result tables for the soil and groundwater samples are presented in Appendix 6.3.

The soil samples were analysed by Element Environmental in Deeside, UK for the following parameters:

- Metals (As, Cd, Cr, Pb, Se, Cu, Ni, and Zn);
- Polychlorinated Biphenyls (PCB);
- Total Petroleum Hydrocarbons Criteria Working Group (TPH CWG);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Waste Acceptance Criteria (WAC) for inert waste landfills in accordance with the 2002 European Landfill Directive (2002/33/EC). This suite of parameters includes the following (carried out on 5 samples including 2 from onsite stockpiles);
- Mineral oil;
- Polycyclic aromatic hydrocarbons (PAHs);
- Polychlorinated biphenyls (PCBs);
- BTEX compounds (benzene, toluene, ethylbenzene and xylenes) and methyl tert-butyl ether (MTBE);
- Total organic carbon (TOC); and
- Leachable component of a range of organic and inorganic parameters.

The full analytical laboratory report is presented in Appendix 6.4. For this due diligence, the soil results were compared to the GAC concentrations. GACs are soil concentrations that have been derived for a defined set of generic assumptions and are used as trigger values in determining whether further risk management action is required in cases where detailed quantitative risk assessment is not being undertaken.

Soil sample analysis are summarised below. Detailed tables are presented in Appendix 6.3. These tables exhibit the soil quality across the site from the ten representative samples taken across the data centre site.

Metals

All metal parameter concentrations recorded values below the most conservative threshold value for the LQM/CIEH for HHRA (Human Health Risk Assessment) Residential Threshold at 1% SOM. See Table 1 in Appendix 6.3.

Total Petroleum Hydrocarbon Criteria Working Group (TPH CWG)

All parameters recorded below the laboratory's limit of detection (LOD) for all soil samples collected across the site. Therefore, there are no exceedances recorded when these concentrations were compared to the most conservative threshold i.e. LQM/CIEH for HHRA Residential Threshold at 1% SOM.

PCBs

All parameters recorded below the laboratory's LOD for all samples collected across the site.

PAHs

All parameters recorded below the laboratory's LOD for all samples collected across the site. Therefore, there are no exceedances recorded when these concentrations were compared to the most conservative threshold i.e. LQM/CIEH for HHRA Residential Threshold at 1% SOM.

Waste Acceptance Criteria (WAC) Analysis

All ten (10) samples were analysed and compared against Waste Acceptance Criteria (WAC) set out by the adopted EU Council Decision 2003/33/EC which established criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). There was no fill material noted during trial pit excavations with all samples being recorded as original clay subsoil.

The WAC analysis identifies that the representative sample is suitable for classification as Category A – Inert. Based on the laboratory results and parametric concentrations obtained from the site investigation, material from the sample locations would be acceptable at inert waste facilities (Category A). It should be noted that waste facilities develop facility specific criteria also and this should be considered should any soil/ material to be removed from site in the future. The comparison tables for the analysed samples against current WAC criteria can be seen in Table 2 in Appendix 6.3.

Asbestos

There were no asbestos containing materials (ACM) identified in any of the trial pit or stockpile samples taken.

Ground Gas Analysis

Gas wells and sample valves were installed at all of the cable percussion locations. These were measured using a Geotech Gas Analyser for a number of gases which can be generated on landfill sites. The results show little to no build-up of gas over a 3-month period in gas wells installed onsite. These results are presented in Table 3 in Appendix 6.3.

6.3.10 Groundwater Quality

6.3.10.1 Regional Scale

The Water Framework Directive (WFD) Directive 2000/60/EC, was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present. 'Good Status' was to be achieved in all waters by 2015, as well as maintaining 'high status' where the status already exists. The EPA co-ordinates the activities of the River Basin Districts, local authorities and state agencies in implementing the directive, and operates a groundwater quality monitoring programme undertaking surveys and studies across the Republic of Ireland.

Presently, the groundwater body in the region of the site (Dublin GWB) is classified under the WFD Risk Score system (EPA, 2020) as '2a – Not at Risk" meaning the GWB has achieved its objectives and has either no significant trends or improving trends. The Dublin GWB was given a classification of "Good" for the last WFD cycle (2013-2018).

6.3.10.2 Local Scale

During the site investigation 5 no. groundwater wells constructed across the agricultural lands (AWN, 2020) with 3 no. utilized for groundwater quality monitoring. 1 no. upgradient groundwater well (RC02) and 2 no. downgradient groundwater wells (RC01 & RC05). The groundwater flow is considered to be in a south - southwesterly direction towards the Huntstown Quarry. The groundwater wells are screened in the underlying limestone rock to a depth of c. 20 mbgl for RC01 & RC02 and 21.70 mbgl for RC05. Refer to Figure 6.1 above for borehole locations. Borehole logs and well installation details are presented in Appendix 6.2 at the end of this report.

Three (3) no. groundwater samples were collected across the agricultural lands; one groundwater sample from each bedrock borehole. These groundwater samples were analysed for a range of parameters to examine the groundwater quality and to investigate any present and/or past contamination occurred across the site. Appendix 6.3 presents tables with the soil and groundwater analytical test results. Full laboratory result tables for soil and groundwater are presented in Appendix 6.4.

The groundwater samples were analysed for the following parameters;

- TPH CWG,
- Phenols
- Metals (As, Cd, Cr, Pb, Se, Cu, Ni, and Zn,),
- Polychlorinated Biphenyls (PCB),
- Volatile Organic Compounds (VOC),
- Semi Volatile Organic Compounds (SVOC), and

- Chloride, Orthophosphate, Ammoniacal Nitrogen, Total Nitrogen

Groundwater samples were collected using best practice (BS1995:5930) guidelines for water sampling including sufficient well volume purging (i.e. achieved as a result of the combined pumping tests) prior to sample collection and following adequate aquifer formation recharge to each test well sampled.

Groundwater results were compared with Groundwater Threshold Value (Groundwater Directive S.I. No. 9 of 2010 and amendment; S.I. No. 366 of 2016) and EPA Interim Guidelines for groundwater where available..

The analytical testing was undertaken by Element Environmental (UK) Forensics Limited, a United Kingdom Accreditation Service (UKAS) accredited laboratory located in Deeside, England. The laboratory is accredited under UKAS 4225 as well as to ISO/IEC 17025:2005.

The reported analytical results for the groundwater samples are presented in Appendix 6.3 and compared primarily with the relevant Groundwater Regulations S.I. No. 9 of 2010, SI No. 366 of 2016 and EPA Interim Guideline Values (IGVs), 2003. A brief summary of principal results is presented below.

Metals

Table 4 in Appendix 6.3 summarises the metal parameter concentrations recorded at each of the three (3) no. wells during the groundwater sampling round. These measurements are assessed against the available Groundwater Regulations SI No. 9, 2010 (& 366 of 2016) as well as the EPA's Interim Guideline Values (IGVs) as available.

The majority of the metal analysis suite recorded a concentration below the laboratory's LOD. There were no exceedances above Groundwater Regulations SI No. 9, 2010 (& 366 of 2016) or EPA's IGVs other than a slight exceedance of arsenic at RC01 (which is within the proposed development site) and RC05. Arsenic is naturally occurring in soils and the slightly elevated values recorded are most like not an indication of local contamination.

Hydrocarbons

Table 5 in Appendix 6.3 summaries the results of Hydrocarbon testing. In summary, there were no exceedances across the hydrocarbon suite of parameters in any of the three (3) no. groundwater samples.

General Suite

Table 6 in Appendix 6.3 summarises the general suite of parameters analysed at Element Environmental (UK) Limited. The table also included the results for polychlorinated biphenyls (PCBs). There was no exceedance of current regulatory thresholds. Slightly elevated levels were recorded for one analyte in wells RC02 (upgradient) and RC05 (downgradient):

- Chloride – a concentration of 40.1 & 41.8 mg/l was recorded in RC01 (which is within the subject site) & RC05 respectively which slightly exceeds both the EPA Interim Guideline Values (IGVs), 2003 of 30 mg/l but does not exceed the groundwater regulations GTV upper limit of 187.5 mg/l.

There were no other exceedances recorded across the three (3) no. boreholes at the data centre site. In addition, there were no exceedances recorded of available threshold values for field measurements in any of the groundwater samples collected (refer to Table 7 in Appendix 6.3)

VOCs & SVOCs

Tables 8 and 9 in Appendix 6.3 present the results of VOC & SVOC testing. In summary, there were no incidences reported for VOCs and SVOCs in any of the groundwater samples collected at the site apart from a single reading of 29 ug/l for chloroform (trichloromethane) at RC02 (upgradient well at the data centre site) this exceeded the IGV of 1 ug/l, there is no current groundwater regulation threshold level for this compound. The lack of other recorded VOCs in the samples may indicate that this result is laboratory anomaly.

6.3.11 Economic Geology

The GSI (2020) mineral database was consulted to determine whether there were any mineral sites close to the study area. As stated, the Huntstown Quarry is c. 0.3 km to the west of the site and is an active limestone quarry.

6.3.12 Geological Heritage

The Geological Survey of Ireland (GSI) Public Viewer (www.gsi.ie/mapping) was reviewed to identify sites of geological heritage for the site and surrounding area. The Huntstown Quarry (Site Code DF022) to the west is the closest audited site. The Phoenix Park and Glasnevin Cemetery are located over 5.0 km and 4.8 km to the east and south of the site respectively.

6.3.13 Radon

According to the EPA (now incorporating the Radiological Protection Institute of Ireland) the site location in Cruiserath is a Low Radon Area where is it estimated that less than 1% of dwellings will exceed the Reference Level of 200 Bq/m^3. This is the lowest of the five radon categories which are assessed by the EPA

6.3.14 Geohazards

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result. In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff and leads to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The GSI landslide database was consulted and the nearest landslide to the proposed development was 2.5 km to the south west of the site, referred to as the M3 J4 Clonee 2014 which occurred on 3rd February 2014. There have been no recorded landslide events at the site. Due to the local topography and the underlying strata there is a negligible risk of a landslide event occurring at the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics at the Dublin Institute for

Advanced Studies (DIAS) has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. Currently there are five permanent broadband seismic recording stations in Ireland and operated by DIAS. The seismic data from the stations comes into DIAS in real-time and are studied for local and regional events. Records since 1980 show that the nearest seismic activity to the proposed location was in the Irish sea (1.0 – 2.0 Ml magnitude) and ~55 km to the south in the Wicklow Mountains. There is a very low risk of seismic activity to the proposed development site.

There are no active volcanoes in Ireland so there is no risk from volcanic activity.

6.3.15 Areas of Conservation

According to the NPWS (2021) on-line database there are no special protected area on or in the vicinity of the subject site. The closest European listed sites are as follows;

- The Royal Canal (002103) pNHA - circa. 4.2 km to the north of the site.
- The Santry Demesne (00178) pNHA – circa 4.4 km to the east of the site

The site would have an indirect hydrological connection with the Malahide Estuary SPA/SAC/pNHA through the local drainage network, the Huntstown Stream and the Ward River. Figure 6.9 below presents the location of these protected areas in the context of the Huntstown site.

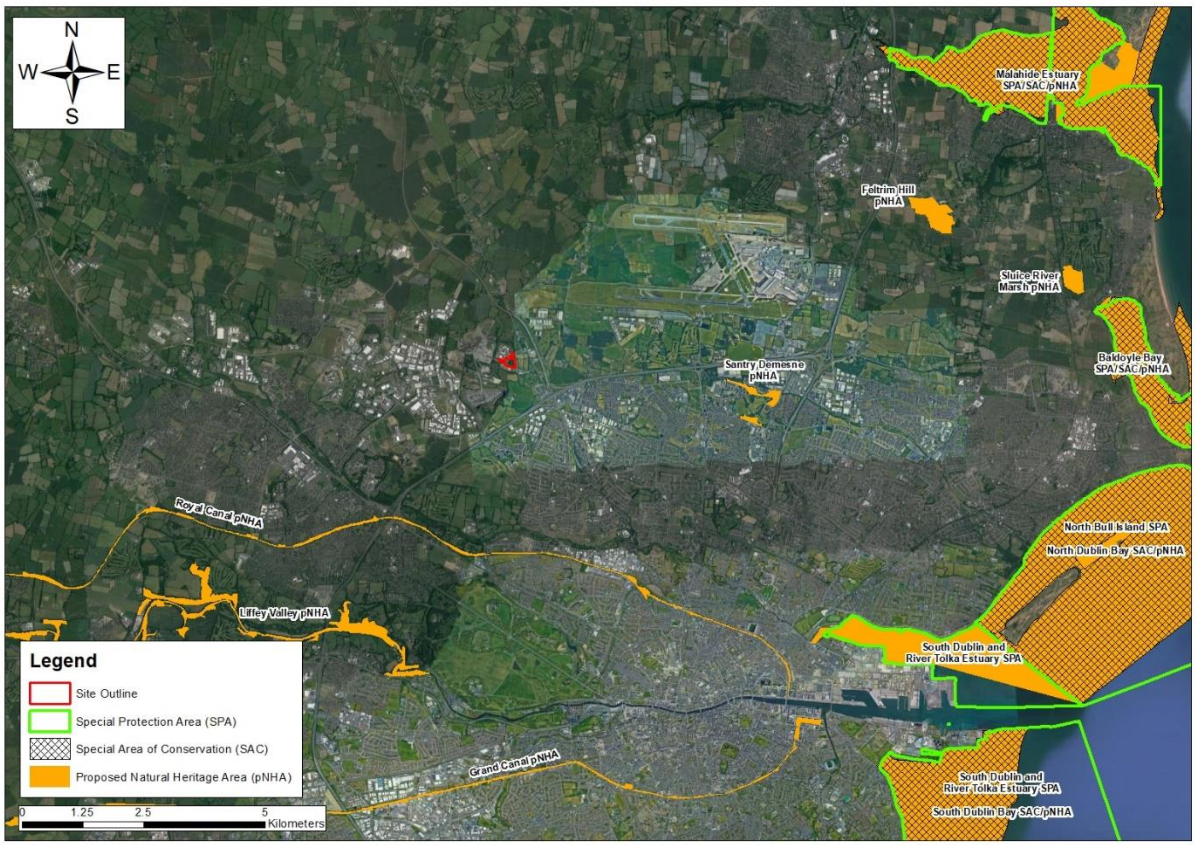

Figure 6.9 *Natura Sites in the Context of the Subject Site (Source: NPWS, 2021)*

6.3.16 Conceptual Site Model

The subsoil underlying the site is classified as Tills (generally low permeable) by the GSI and the underlying limestone aquifer (Locally Important aquifer to Poor aquifer) has a 'High' vulnerability at the north eastern section and 'Moderate' to 'Low' vulnerability throughout the rest of the site based on onsite investigations.

The soil profile encountered can be summarised as follows (based on location RC04):

- Topsoil 0.0 m - > 0.3 mbgl.
- Subsoil 0.3 m - > 6.0 mbgl.
- Weathered Limestone Bedrock/ Bedrock 6.0 m - > 20.0 mbgl.

Bedrock varied between c. 6.0-7.2 mbgl to the eastern boundary of the site. Groundwater levels were recorded at a depth of 4.0 mbgl to the east of the site (RC01).

Review of the hydrogeology and geology in the surrounding region indicates that there are no sensitive receptors such as groundwater-fed wetlands, Council Water Supplies/ Group Water Schemes or geological heritage sites which could be impacted by this development. No evidence of disposal of waste material was identified the location area proposed for excavation. Collection and analysis of representative soil and groundwater samples for a wide range of parameters shows no evidence of contamination. The review of the groundwater quality data collected on site found that the groundwater beneath the site is of good quality.

A regional cross sections can be seen in Figure 6.10.

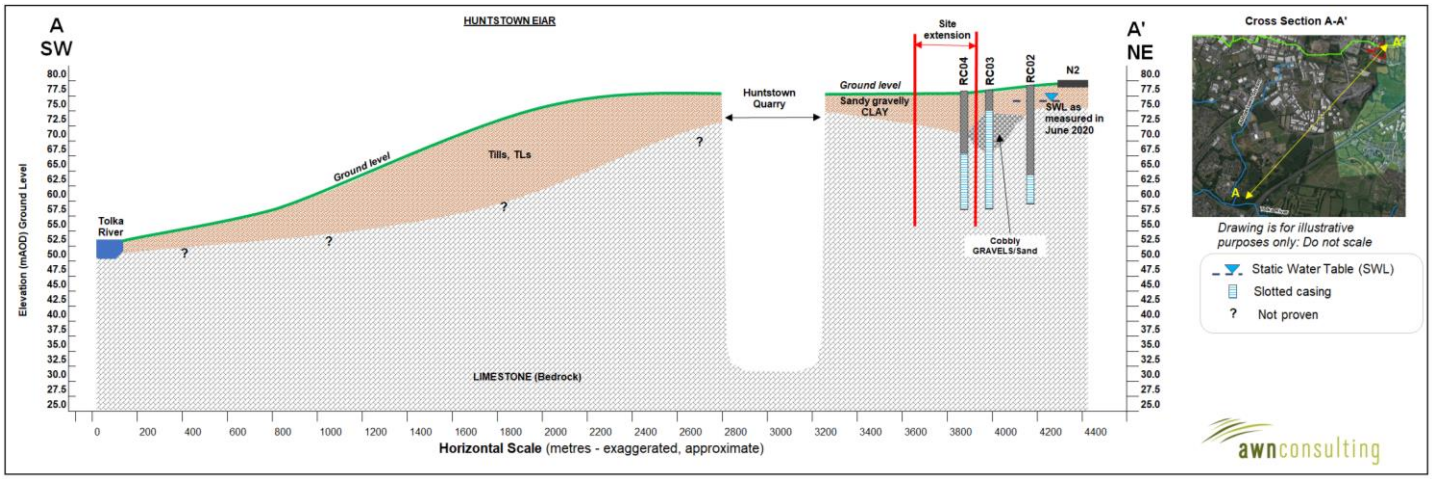

Figure 6.10 *Regional Cross Section*

6.3.17 Rating of Importance of Geological and Hydrogeological Attributes

Based on the TII methodology (2009) (See Appendix 6.1), criteria for rating site importance of geological features, the importance of the bedrock and soil features at this site is rated as '*High importance*' with high significance or value on a local scale. This is due to the existence of an existing quarry in the vicinity of the subject site (Huntstown quarry) which is located c. 280 m to the west of the site.

Based on the TII methodology (2009) (See Appendix 6.1) the importance of the hydrogeological features at this site is rated as '*Low importance*' based on the assessment that the attribute has a medium quality significance or value on a local

scale. The aquifer is a Locally Important to Poor Aquifer but is not widely used for public water supply or generally for potable use. In addition, there would not be direct or indirect hydrogeological connection between the site and any protected sites (SAC, SPA, NHA).

6.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development site is located on a 4.3 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The proposed development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151 as well as any future development on the wider landholding (as described in Chapter 2, Section 2.3).

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station;

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development). The details of the construction and operation of the development in terms of Land, Soils Geology and Hydrogeology is detailed in the Table 6.4 below.

Table 6.4 Summary of site activities

Phase	Activity	Description
Construction	Discharge to Ground	Run-off percolating to ground at the construction site.
	Earthworks: Excavation of Superficial Deposits	Ground works will be required to clear the site and levelling. All structures will require foundations to the structural engineers' specifications. The removal of localised overburden material will be required during preparation of the foundations and platform for the proposed structures. The planned foundation works foresee the excavations of up to depths of c. 3.5 mbgl, with cable routes installed in a trench approximately 2.5m wide by 1.2m deep, the depth my increase at road-crossing works up to depths of 4.0 mbgl. No excavations into the bedrock is expected as it was encountered at c. 6.0-7.2 mbgl. It is predicted that the majority of the spoil generated during site preparation/levelling will be removed from site with some top soil and spoil used in landscaped and bermed areas.
	Storage of soils/aggregates	Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination. Temporary storage of spoil will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment and solid matter. Materials will be sent off site for recycling where possible and, if not suitable for recycling, materials will be disposed of to an appropriate permitted/licensed waste disposal facility.
	Storage of hazardous Material	Temporary storage of fuel required for on site for construction traffic. Liquid materials i.e. fuel storage will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage.
	Import/Export of Materials	It has been estimated that 12,045m^3 of excavated soil will be generated and it is currently anticipated that the majority of this will be removed from site. Where possible soil will be reused for site levelling, roads, car parking areas, berms and other landscaping purposes. Excess soil/subsoil or rock not required for re-use on site will be transferred off site for re-use or disposal. Material removed from site may be re-used offsite for beneficial use on other sites with appropriate planning/waste permissions/derogations (e.g., in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011) as amended or will be reused, recovered and/or disposed off-site at appropriately authorised waste facilities. The removal of waste from the site will be carried out in accordance with Waste Regulations, Regional Waste Plan (Eastern Midland Region) and Waste Hierarchy/Circular Economy Principals. Refer to Chapter 14 Waste Management for further detail. The importation of fill will be required to establish the foundation level for the construction of the proposed roads, carparks and buildings.
	Dewatering	The deepest excavation is c. 4.0 mbgl. According to site investigations, levels of groundwater from the aquifer beneath the site would be c. 4.0 mbgl (east of the site). Therefore, localised dewatering can be expected during the excavation works, mainly related with perched groundwater within the subsoil which will require to be drained.
Operation	Increase in hard standing area	The proposed surface water networks for the development collect runoff from roofs, roads and other hard standing areas through a filter drainage system and gullies. The proposed development represents an overall increase in hardstanding surfaces of c. 2,245m^2. Surface water drainage will be collected into two separate catchment areas, discharging to the existing ditches to the north east and south east of the site. Surface water from buildings and associated hard standings is proposed to be connected to the Data Centre drainage system. Final treatment and attenuation of flows will be in the pond to the north of the site. The attenuated flow ultimately discharges into the Huntstown Stream c. 800 m to the north of the site.

Phase	Activity	Description
	Storage of hazardous Material	During operation measures there is no requirement for bulk fuels or chemical storage, no requirement for discharge to ground and no requirement for abstraction of groundwater. There is a requirement for oil storage filled transformers ; the transformers are located within the customer compound on the eastern side of the site. The transformers are on continuous hard standing, there are full retention hydrocarbon separators on the storm water outflow that will contain any leaks or spills. The risk to the aquifer is considered low due to the mitigation in place for containment, delivery and distribution and use of oil interceptors on the stormwater system downgradient of the offloading area and prior to discharge from the site.

As outlined in Table 6.2 the activities required for the construction phase of the proposed development represents the greatest risk of potential impact on the geological and hydrogeological environment. These activities primarily pertain to the site preparation, excavation, levelling and infilling activities required to facilitate construction of the proposed development.

6.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

An analysis of the potential impacts of the proposed development on the land, soils, geology and hydrogeological environment during the construction and operation is outlined below. Due to the inter-relationship between soils, geology and hydrogeology and surface water (hydrology) the following impacts discussed will be considered applicable to both Chapter 6 and 7 of the EIAR. Remediation and mitigation measures included in the design of this project to address these potential impacts are presented in Section 6.6 below.

6.5.1 Construction Phase

6.5.1.1 Excavation and Infilling

Due to the lack of previous development at the site and the historical residential and agricultural use at the site, the risk of contaminated soils being present onsite is low and this was confirmed by onsite soil sampling and analysis. Nonetheless material, which is exported from site, if not correctly managed or handled, could impact negatively on human beings (onsite and offsite) as well as water and soil environments.

The levelling of the ground and excavation for cable routes and foundations will require the excavation of topsoil and subsoil. Bedrock is not expected to be exposed as its depth of bedrock ranges 6.0-7.2 mbgl (to the east of the site). The maximum excavation level would be c. 4.0 mbgl.

It has been estimated that 12,045m^3 of excavated soil will be generated, this excavated material will be reused on site for infilling and landscaping works where possible. An import of c. 5,000 m^3 of clean engineering fill will be required.

Site investigation and laboratory analysis has not identified any existing contamination. However, if contaminated soil/water is encountered, it will be required to be removed by a licensed waste contractor. The excess of topsoil cut will be used for landscaping berms.

As it was described in Section 6.4, it is noted that the deepest excavation is c. 4.0mbgl. According to site investigations, levels of groundwater from the aquifer beneath the site would be c. 4.0 mbgl (east of the site). Therefore, groundwater ingress can be expected where excavations below 4.0 mbgl are required. However, this groundwater volume would be minor given the ground condition of relatively impermeable clay overlying rock. As inflow rates are expected to be low, there will be a localised zone of contribution which will not likely extend beyond the site boundary.

It is expected during the excavation works that localised dewatering of the subsoils will be required to address perched groundwater. It can be expected minor ingress of rainfall in the excavation during construction phase.

6.5.1.2 Accidental Spills and Leaks

As with all construction projects there is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water which arises from construction sites can pose a significant short-term risk to groundwater quality for the duration of the construction if contaminated water is allowed percolate to the aquifer. The potential main contaminants include:

During construction of the development, there is a risk of accidental pollution incidences from the following sources:

- Suspended solids (muddy water with increase turbidity) – arising from excavation and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons (ecotoxic) – accidental spillages from construction plant or onsite storage;
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

Accidental spillages which are not mitigated may result in localised contamination of soils and groundwater underlying the site, should contaminants migrate through the subsoil's and impact the underlying groundwater. Groundwater vulnerability at the site is currently classified as 'Moderate' to. Any soil stripping will also further reduce the thickness of subsoil and the natural protection they provide to the underlying aquifer.

6.5.1.3 Loss of agricultural land

There will be local loss of agricultural soil however, the area of development is small in the context of the overall agricultural land available in the region. The majority of the land is zoned for development. Within the overall context of Ireland's available farmland, the loss is negligible. There will be no impact to mineral resources in the area as a result of the Proposed Development.

6.5.2 Operational Phase

During operation measures there is no requirement for bulk fuels or chemical storage, no requirement for discharge to ground and no requirement for abstraction of groundwater.

Any accidental spills of chemicals during storage, transfer, or delivery or leakage in the car parks could cause localised contamination if the emissions enter the soil and groundwater environment without adequate mitigation. However, it is noted that any

accidental discharge will more likely impact stormwater drainage due to the hardstand and drainage infrastructure proposed and any releases to drainage will be mitigated through petrol interceptors (full retention separators) prior to connection to the onsite drainage networks.

There will be an increase in hardstand as a result of the development of the facilities of c. 2,245m^2. Incorporation of hard stand area on previous greenfield area and the use of SUDs techniques will have a minor effect on local recharge to ground; however, the impact on the overall groundwater regime will be insignificant considering the proportion of the site area in relation to the total aquifer.

6.6 REMEDIAL AND MITIGATION MEASURES

The design has taken account of the potential impacts of the development on the soils, geology and hydrogeology environment local to the area where construction is taking place and containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the surrounding soils, geology and hydrogeology.

Due to the inter-relationship between soils, geology, hydrogeology and hydrology, the following mitigation measures discussed will be considered applicable to all. Waste Management is also considered an interaction in some sections.

6.6.1 Construction Phase

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;
- Fuel and chemical handling, transport and storage; and
- Control of water during construction.

6.6.1.1 Construction Environment Management Plan

An Outline Construction Environmental Management Plan (CEMP) has been prepared by AECOM for the proposed development and is included as Appendix 6.5. In advance of work starting on site, the works Contractor will prepare a detailed Construction Environmental Management Plan (CEMP). The detailed CEMP will set out the overarching vision of how the construction of the proposed development will be managed in a safe and organised manner by the Contractor. The CEMP will be a live document and it will go through a number of iterations before works commence and during the works. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent planning conditions relevant to the proposed development.

As a minimum, the CEMP will be formulated in accordance with best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;

- BPGCS005, Oil Storage Guidelines;
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- CIRIA 697, The SUDS Manual, 2007; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

6.6.1.2 Control of Soil Excavation

Site preparation, excavations and levelling works required to facilitate construction of foundations, access roads and the installation of services will require imported material. Suitable soils will be reused on site as backfill in the grassed areas, where possible. Contractors shall be required to submit and adhere to a method statement indicating the extent of areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

According to onsite investigations, the bedrock vulnerability is 'Moderate'. Removal and reinstatement of subsoil cover will not alter the vulnerability category of the underlying bedrock. The deposition of infill soil would increase the overburden thickness and thus may even decrease the groundwater vulnerability.

Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment and the material will be stored away from any open surface water drains. Movement of material will be minimised in order to reduce degradation of soil structure and generation of dust.

Although there is no evidence of historical contamination in the proposed development area, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Site investigations classified the subsoils as 'inert'. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be disposed of by a licensed waste disposal contractor.

Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated against through the implementation of appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the site and there will be no direct link or pathway from this area to any surface water body. Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible.

6.6.1.3 Sources of Fill and Aggregates

All fill and aggregate for the Proposed Development will be sourced from reputable suppliers. All suppliers will be vetted for:

- Aggregate compliance certificates/declarations of conformity for the classes of material specified for the Proposed Development;
- Environmental Management status; and
- Regulatory and Legal Compliance status of the Company.

It is anticipated that approximately 5,000 m^3 engineered fill will be required to facilitate construction. There will be no impact to mineral resources in the area as a result of the Proposed Development

6.6.1.4 Fuel and Chemical Handling

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or where possible off the site) which will be away from surface water gulleys or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

6.6.1.5 Control of Water During Construction

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt or sediment traps, 20 m buffer zone between machinery and watercourses, refuelling of machinery off site) and hydrocarbon interceptors. All water runoff from designated refuelling areas will be channelled to an oil interceptor or an alternative treatment system prior to discharge.

Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to the northeast of the site. It is therefore proposed that the water be discharged via the existing stormwater sewer network. Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the sewer. The use of slit traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry. Due to the very low permeability of the Dublin Boulder Clay and the

relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated.

6.6.2 Operational Phase

During operation measures there is no requirement for bulk fuels or chemical storage, no requirement for discharge to ground and no requirement for abstraction of groundwater.

The design includes hardstand cover across the site and 2 no. full retention interceptors prior to discharge into the attenuation system. Therefore, the risk of accidental discharge has been adequately addressed through design.

Emergency Response Procedures

ESB Networks has an Environmental Safety and Health Management System (EMS) which will be implemented at the proposed development during operations. An environmental management plan will apply to the overall development during the operational phase incorporating mitigation measures and emergency response measures.

There should be a comprehensive emergency response procedures and standard operating procedures to respond to an onsite fuel spillage. All employees should be provided with such equipment, information, training and supervision as is necessary to implement the emergency response procedures and standard operating procedures.

Spill Kit Facilities

The provision of spill kit facilities and training of operatives in use of same; should be undertaken at the operational stage in order to manage any leaks from fuel storage and vehicles resulting in soil and/or groundwater quality impacts:

6.7 RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

6.7.1 Construction Phase

The implementation of mitigation measures outlined above (Section 6.6) 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-neutral**. Following the TII criteria (refer to Appendix 6.1) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

6.7.2 Operational Phase

The implementation of mitigation measures highlighted above (Section 6.6) 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-neutral**. Following the TII criteria (refer to Appendix 6.1) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

6.8 MONITORING OR REINSTATEMENT

6.8.1 Construction Phase

During construction phase the following monitoring measures will be considered:

- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.
- Soil sampling to confirm disposal options for excavated soils.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.

6.8.2 Operational Phase

There will be no requirement for groundwater monitoring as there is no likely discharge to ground. Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to ground.

7.0 HYDROLOGY

7.1 INTRODUCTION

This chapter assesses and evaluates the potential impacts of the development on the hydrological aspects of the site and surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

7.2 METHODOLOGY

7.2.1 Criteria for rating of effects

This chapter evaluates the effects, if any, which the development has had or will have on Hydrology as defined in the Environmental Protection Agency (EPA) 'Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2017). The Draft EPA document entitled 'Advice Notes for Preparing Environmental Impact Statements' (EPA, 2015) is also followed in this hydrological assessment and classification of environmental effects. In addition, the document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009) is referenced where the methodology for assessment of impact is appropriate.

The rating of potential environmental effects on the hydrological environment is based on the standard EIAR impact predictions table included in Chapter 1 which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the Draft EPA Guidelines (2017) publication).

The duration of each effect is considered to be either momentary, brief, temporary, short-term, medium term, long-term, or permanent. Momentary effects are considered to be those that last from seconds to minutes. Brief effects are those that last less than a day. Temporary effects are considered to be those which are construction related and last less than one year. Short term effects are seen as effects lasting one to seven years; medium-term effects lasting seven to fifteen years; long-term effects lasting fifteen to sixty years; and permanent effects lasting over sixty years.

The TII criteria for rating the magnitude and significance of impacts and the importance of hydrological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Tables 1-3 in Appendix 7.1.

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

- River and stream water quality in the vicinity of the site (where available);
- Surface watercourses near the site and potential impact on surface water quality arising from proposed development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.

7.2.2 Sources of Information

Desk-based hydrological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- River Basin Management Plan for Ireland 2018-2021.
- 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));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- South Dublin City Council (2005), Greater Dublin Strategic Drainage Study: Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council; and
- 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001);
- National Parks and Wildlife Services (NPWS) – Protected Site Register.

Site specific data was derived from the following sources:

- Environmental Due Diligence (Phase 1). Huntstown, Dublin 11. AWN Consulting (April 2020);
- Environmental Due Diligence (Phase 2). Huntstown, Dublin 11. AWN Consulting (July 2020);
- Ground Investigation Report, Lands East of Huntstown Power Station North Co. Dublin. IGSL (July 2020);
- Construction and Engineering Management Programme. AECOM (2021);
- Flood Risk Assessment. AWN Consulting (2021);
- Various design site plans and drawings; and
- Consultation with site engineers.

7.3 RECEIVING ENVIRONMENT

The Proposed Development site extends to over 4.3 ha. on lands adjacent to Huntstown Power Station, North Road, Finglas, Dublin 11. The site is bounded to the north and east by agricultural fields, to the south by the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry and to the west by Huntstown Power Station.

7.3.1 Hydrology

The subject site is located within the former ERBD (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD The subject site is located in the Eastern River Basin District (ERBD) and the River Tolka WMU (Water Management Unit).

According to the EPA maps, the proposed development site lies within the Liffey and Dublin Bay Catchment (Hydrometric Area 09) and the Tolka River sub-catchment (refer to Figure 7.1 below). The current EPA watercourse mapping does not include any existing streams within the subject site boundaries, a review of the historical mapping

records provided within the GeoHive website do not indicate any watercourses within the site.

The site walkover conducted in June 2020 included a visual inspection of the drainage network on site and noted a series of shallow ditches running along the field boundaries. This visit concluded that these ditches consist of a series of local manmade drainage, with intermittent or ephemeral characteristics and likely fed from surface runoff. The local drainage ultimately flows in a northerly direction towards the Huntstown Stream (located c. 800 m to the north of the site, refer to Figure 7.2 below).

The existing onsite drainage ditches have been assessed in respect of the applicability of the Objective WQ05 within the Fingal County Development Plan 2017-2023. Objective WQ05 requires the establishment of a riparian corridors free from new development along all significant watercourses and streams in the County. The existing manmade ditches with intermittent or ephemeral characteristics are not considered to be a significant watercourse or stream, therefore Objective WQ05 is not considered to apply to any of the local drainage ditches on the site. Furthermore, Chapter 8 (Biodiversity) has assessed these onsite ditches for ecological value and concluded that due to their ephemeral nature have and they have no fisheries value and are also unfavourable for amphibians.

The Huntstown Stream joins the Ward River c. 5 km to the northeast of the site (at Saint Margaret Golf and Country Club). The Ward River flows towards Malahide Estuary, a Natura Site (SPA/SAC/pNHA) located c. 10 km to the northeast of the site after joining the Broadmeadow River.

Therefore, the subject site belongs to the Nanny Delvin Catchment (Hydrometric Area 08) and the Broadmeadows sub-catchment (WFD name: Broadmeadow_SC_010, Id 08_3) and would have an indirect hydrological connection with the Malahide Estuary SPA/SAC/pNHA through the local drainage network, the Huntstown Stream and the Ward River.

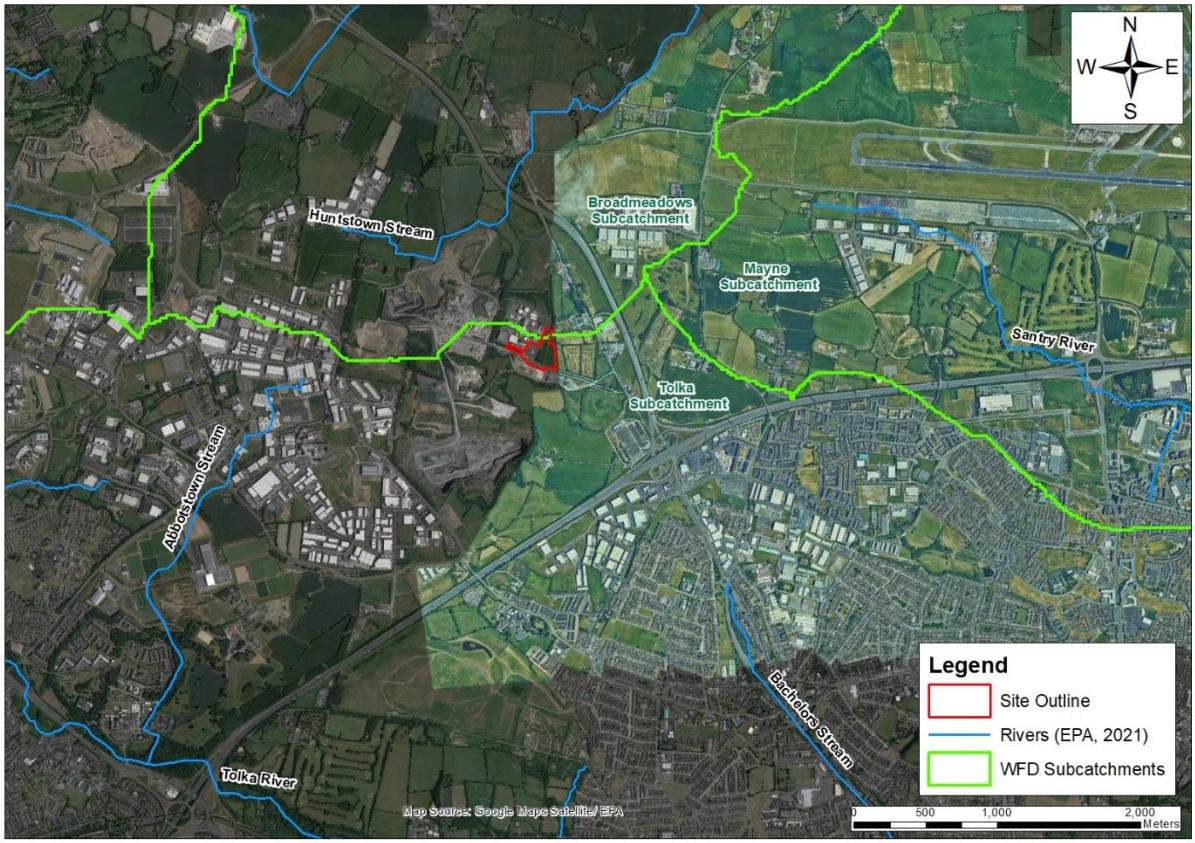

Figure 7.1 *Local Hydrological Environment (EPA, 2021)*

Figure 7.2 *Site Location and Local Drainage*

7.3.2 Surface Water Quality

The proposed development is located within the former ERBD (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD). It is situated in Hydrometric Area No. 08 of the Irish River Network and is located within the Ward/Broadmeadows Catchment.

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'. In 2009 the ERBD River Basin Management Plan (RBMP) 2009-2015 was published. In the ERBD RBMP, the impacts of a range of pressures were assessed including diffuse and point pollution, water abstraction and morphological pressures (e.g. water regulation structures). The purpose of this exercise was to identify water bodies at risk of failing to meet the objectives of the WFD by 2015 and include a programme of measures to address and alleviate these pressures by 2015. This was the first River Basin Management planning cycle (2010-2015). The second cycle river basin management plan for Ireland is currently in place and will run between 2018-2021 with the previous management districts now merged into one Ireland River Basin District (Ireland RBD).

This second-cycle RBMP aims to build on the progress made during the first cycle. Key measures during the first cycle included the licensing of urban waste-water discharges (with an associated investment in urban waste-water treatment) and the implementation of the Nitrates Action Programme (Good Agricultural Practice Regulations). In more general terms, three key lessons have emerged from the first cycle and the public consultation processes. These lessons have been firmly integrated into the development of the second cycle RBMP. Firstly, the structure of multiple RBDs did not prove effective, either in terms of developing the plans efficiently or in terms of implementing those plans. Secondly, the governance and delivery structures in place for the first cycle were not as effective as expected. Thirdly, the targets set were too ambitious and were not grounded on a sufficiently developed evidence base. The second cycle RBMP has been developed to address these points.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010); and
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011)
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988
- Local Government (Water Pollution) Acts 1977-1990
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality.

In relation to the subject site, the nearest active EPA monitoring stations located in the Ward River catchment are:

- 'Br N of Killeek' (EPA Code: RS08W010300): located in the Ward River c. 1.2km downstream from its join with the Huntstown Stream. The most recent status recorded by the EPA (2017) is classified as *Q4/Good*.
- 'Coolatrath Br' (EPA Code: RS08W010070): located in the Ward River c. 3.3km upstream of the Huntstown Stream. The most recent status recorded by the EPA (2017) is classified as *Q3-4/Moderate*.

Refer to Figure 7.3 below for locations of these EPA quality monitoring points in the context of the site.

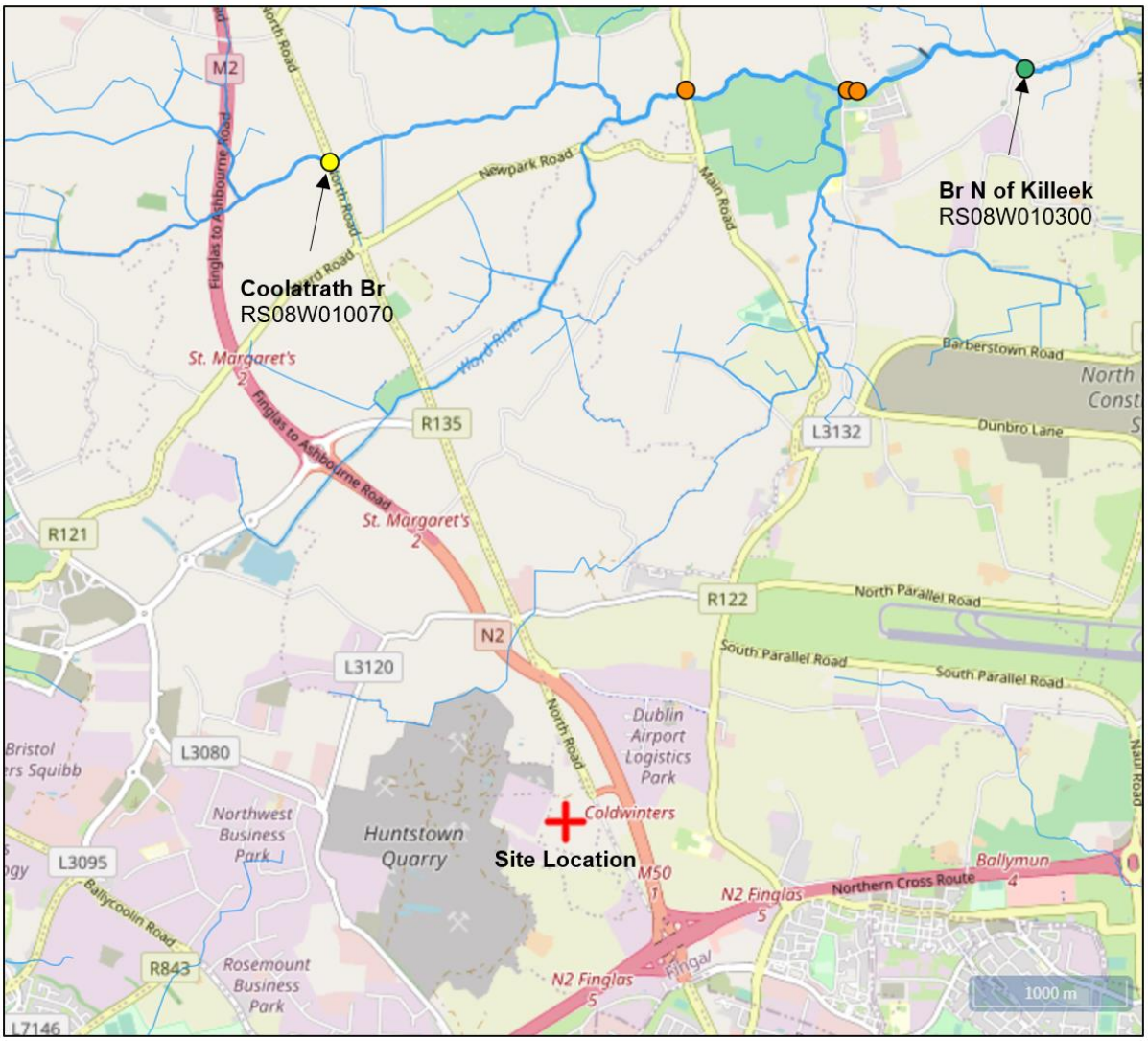

Figure 7.3 *EPA Surface Water Quality Stations (Source: EPA, 2021)*

The Water Framework Directive (WFD) Directive 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present. The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring. 'Good status' means both 'good ecological status' and 'good chemical status'.

The Huntstown Stream belongs to the Ward_030 WFD surface water body, which currently, the EPA classifies as having 'Moderate' and is '*At risk of not achieving good status*'. This moderate status is related to the nitrogen (nitrate, specifically) and orthophosphate conditions measured in the Ward River.

7.3.3 Flood Risk

According to the Flood Risk Assessment carried out by AWN Consulting (2021), there is no risk of flooding affecting the site from fluvial or coastal sources, since the site lies within Flood Zone C (i.e., where the probability of flooding from rivers is less than 0.1% or 1 in 1000).

However, as an existing ditch crosses the site (refer to Figure 7.2 above), this will need to be diverted. The diversion has been designed in accordance with OPW Guidelines in order to ensure there will be not impact on the site in terms of flood risk (refer to Section 7.4 below for further details).

7.3.4 Areas of Conservation

According to the NPWS (2021) on-line database there are no special protected area on or in the vicinity of the subject site. The closest European listed sites are as follows;

- The Royal Canal (002103) pNHA - circa. 4.2 km to the north of the site.
- The Santry Demesne (00178) pNHA – circa 4.4 km to the east of the site

The site would have an indirect hydrological connection with the Malahide Estuary SPA/SAC/pNHA through the local drainage network, the Huntstown Stream and the Ward River. The Malahide Estuary is located c. 10 Km to the east of the site.

Figure 7.4 below presents the location of these protected areas in the context of the Huntstown site.

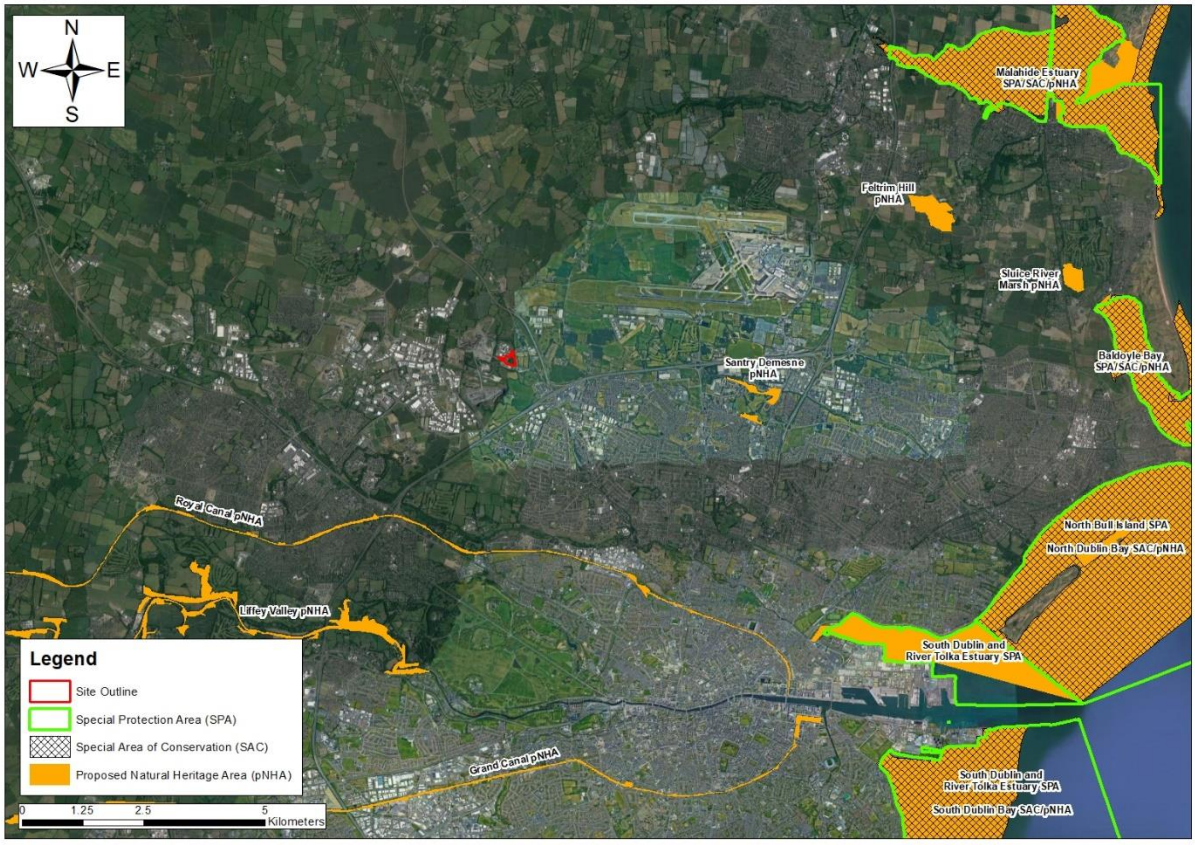

Figure 7.4 *Natura Sites in the Context of the Subject Site (Source: NPWS, 2021)*

7.3.5 Rating of Importance of Hydrological Attributes

Based on the TII methodology (2009) (See Appendix 7.1) the importance of the hydrological features at this site is rated as 'Low importance' based on the assessment that the attribute has a low quality significance or value on a local scale.

Although there would be an indirect hydrological connection between the site and Malahide Estuary protected sites (SAC, SPA, NHA), this is considered imperceptible due to the significant distance from the site (5 km).

7.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development site is located on a 4.33 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The proposed development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151 as well as any future development on the wider landholding (as described in Chapter 2, Section 2.4).

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development). The details of the construction and operation of the development in terms of Hydrology are detailed in the subsections below.

7.4.1 Construction Phase

The key civil engineering works which will have a potential impact on the water and hydrological environment during construction of the proposed development are summarised below.

- Excavations are required for the cable routes and foundations of installation of associated services included within the development.
- Possible discharge of collected rainwater/ dewatering during excavation works and groundworks (the extent of which is dependent on the time of year development works are carried out); and
- Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site.

7.4.2 Operational Phase

The key activities which will have a potential impact on the hydrological environment during operation of the proposed development are summarised below:

7.4.2.1 Increase in Hard Standing Area

The proposed development represents an overall increase in hardstanding surfaces of c. 2,245 m^2.

7.4.2.2 Storage of Hazardous Materials:

The development includes a requirement for oil storage for the transformers (offloading area); the transformers are located at ground level within the customer compound on the eastern side of the site and will be located on continuous hard standing. There will be full retention separation on the storm water outflow that will contain any leaks or spills and the diesel will be stored in belly-tanks situated at ground floor level within compound yards. These bunded areas will be greater than 110% of the storage capacity.

The risk to the aquifer is considered low due to the mitigation in place for containment, delivery and distribution and use of oil interceptors on the stormwater system downgradient of the offloading area and prior to discharge from the site.

7.4.2.3 Surface Water Management:

A surface water French drain is proposed at the base of cut slopes around the perimeter of the site to drain the access area outside the security fence and provide drainage to the formed slopes.

All drainage from the platform is via filter drainage systems except as shown at Transformer offloading and oiling bays, where a containment and interceptor system is adopted to prevent contamination during installation, operation of plant and delivery of liquids by others.

Roads within the platform are generally to be designed to be level longitudinally and drained to one side into a filter trench. Where roads are kerbed, road gullies connect direct to filter drainage. Proposed platform drainage consists of filter trenches located throughout the platform.

Surface water drainage is generally collected into two separate catchment areas, discharging to the existing ditches to the north east and south east of the site. This permits the discharges to the ditches to be made for similar catchment areas to that existing before the works, and also allows for separation of responsibility for drainage from the respective Data Centre and EirGrid areas. Surface water from buildings and associated hard standings is proposed to be connected to the site wide drainage system.

Final treatment and attenuation of flows will be in the attenuation pond located to the north of the site which eventually discharges into the adjacent ditch located to the north corner of the site. This ditch ultimately discharges into the Huntstown Stream c. 800 m to the north of the site.

The surface water network has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with the 1 in 100 year event to the attenuation basins without any overland flooding including an additional allowance of 10% in rainfall intensities due to climate change. Discharge flow will be restricted to the greenfield equivalent runoff for the catchment area.

In addition to the management of rainwater runoff; in order to facilitate the proposed development includes infilling existing land drain along the centre of the site and replacing with a pipe. This existing land drain flows south to north and is proposed to be replaced with a new 900mmø pipe. The proposed ditch diversion is required to take account of the requirements of OPW Guidelines for the Construction, Replacement or Alteration of Bridges and Culverts (OPW Guidelines)) which are outline below:-

- Diversion pipe to be capable of passing a fluvial flood flow with a 1% annual exceedance probability (AEP) or 1 in 100 year flow without significantly changing the hydraulic characteristics of the watercourse;
- Diversion pipe to maintain a freeboard of 300mm;
- Diversion pipe capable of operating under the above design conditions without causing a hydraulic loss of no more than 300mm;
- Diameter must not be less than 900mm;
- All calculations have allowed for an additional allowance of 10% in rainfall intensities to allow for climate change as per Table 6.1 of Volume 2 of the GDSDS.

Refer to Infrastructure Report (AECOM, 2021) and Flood Risk Assessment (AWN Consulting, 2021) for further details.

7.4.2.4 Foul water

The current foul drainage requirements for the site are located in the EirGrid control building, where toilet, shower and mess facilities are provided for visiting/maintenance staff. This building and site is normally unmanned on completion of the development except for maintenance.

Drainage from the GIS building will be gathered to a centrally located manhole where it will be pumped offsite to the adjacent Data Centre development private sewer. The

route, flows and general levels of the rising main has been agreed with the Data Centre designers. Flow buffering will be provided at the pump station and before discharge.

An existing 225mm foul sewer located in the R135 Regional Road to the north of the site. It is understood that there is inadequate capacity in this sewer to facilitate the proposed development and foul sewerage from the development will need to be pumped to an alternative location (to be confirmed by Irish Water) in the vicinity of Kilshane Cross where capacity is available.

A pre-connection enquiry (PCE) form was submitted to Irish Water which addressed wastewater demand for the concurrent Data Centre development this allowed for sufficient capacity for the proposed development site. The reference number for the Pre-Connection Enquiry is CDS20004468. Irish water responded to this request on 31 March 2021 (Appendix 14.1). The PCE confirmed that the connection to the mains is feasible without infrastructure upgrade works. This is detailed further in the Engineering Planning Report – Drainage and Water Services (Appendix 14.2).

7.4.2.5 Water Supply

A potable water supply and fire facility will be provided from the Data Centre private connection.

A pre-connection enquiry (PCE) form was submitted to Irish Water which addressed water demand for the concurrent Data Centre development this allowed for sufficient capacity for the proposed development site. The reference number for the Pre-Connection Enquiry is CDS20004468. Irish water responded to this request on 31 March 2021 (Appendix 14.1). The PCE confirmed that the connection to the mains is feasible without infrastructure upgrade works. This is detailed further in the Engineering Planning Report – Drainage and Water Services (Appendix 14.2).

7.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

An analysis of the potential impacts of the proposed development on the and hydrological environment during the construction and operation is outlined below. Due to the inter-relationship between soils, geology and hydrogeology and surface water the following impacts discussed will be considered applicable to both Chapter 6 and 7 of the EIAR. Remediation and mitigation measures included in the design of this project to address these potential impacts are presented in Section 6.6 below.

It should be noted that no impacts are expected on Malahide Estuary SAC/SPA. Given the potential loading and the distance from source to the Natura site (c. 10 Km), this risk would be imperceptible as any accidental discharge of potential contaminant would be attenuated, diluted and dispersed below statutory guidelines (i.e., S.I. European Communities Environmental Objectives Regulations, 2009 [S.I. No. 272 of 2009 as amended by SI No. 77 of 2019]).

7.5.1 Construction Phase

7.5.1.1 Increased Sediments Loading in Run-off

Surface water runoff during the construction phase may contain increased silt levels or become polluted from construction activities. Runoff containing large amounts of silt can cause damage to surface water systems and receiving watercourses. Silt water can arise from dewatering excavations, exposed ground, stockpiles and access roads.

During the construction phase at this site there is potential for an increase in run-off due to the compaction of soils. This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off and sediment loading which could potentially impact local drainage. Site investigations classified the subsoils as 'inert'.

The internal shallow ditches running along the field boundaries are the closest surface water receptors. The local drainage ultimately flows in a northerly direction towards the Huntstown Stream (located c. 850 m to the north of the site).

7.5.1.2 Accidental Spills and Leaks

As with all construction projects there is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water which arises from construction sites can pose a significant short-term risk to groundwater quality for the duration of the construction if contaminated water is allowed percolate to the aquifer. The potential main contaminants include:

During construction of the development, there is a risk of accidental pollution incidences from the following sources:

- Suspended solids (muddy water with increase turbidity) – arising from excavation and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons (ecotoxic) – accidental spillages from construction plant or onsite storage;
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

Machinery activities on site during the construction phase may result in contamination of runoff/surface water. Potential impacts could arise from accidental spillage of fuels, oils, paints etc. which could impact surface water if allowed to infiltrate to runoff to surface water systems and/or receiving watercourses. However, implementation of the mitigation measures detailed below will ensure that this does not occur.

Concreting operations carried out near surface water drainage points during construction activities could lead to discharges to a watercourse. Concrete (specifically, the cement component) is highly alkaline and any spillage to a local watercourse would be detrimental to water quality and local fauna and flora. However, employment of the mitigation measures highlighted below will ensure that any impact will be mitigated.

7.5.2 Operational Phase

7.5.2.1 Direct or Indirect Discharges

Surface water drainage will discharge directly into an existing ditch which ultimately outfalls into the Huntstown Stream. The surface water network has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with the 1 in 100 year event to the attenuation basins without any overland flooding including an additional allowance of 10% in rainfall intensities due to climate change. Discharge flow will be restricted to the greenfield equivalent runoff for the catchment area.

The proposed ditch diversion is required to take account of the requirements of OPW Guidelines for the Construction, Replacement or Alteration of Bridges and Culverts (OPW Guidelines)).

The development will be fully serviced with separate foul and stormwater sewers which will have adequate capacity for the facility and discharge limits as required by Irish Water licencing requirements. Discharge from the site to the public foul sewer will be sewage and grey water only due to the nature of the proposed development. The foul discharge from the site will join the public sewer and will be treated at the Irish Water Ringsend Wastewater Treatment Plant (WWTP) prior to subsequent discharge to Dublin Bay. This WWTP is required to operate under an EPA licence and meet environmental legislative requirements as set out its licence.

7.5.2.2 Accidental Spill and Leaks

The development includes the storage and use of diesel fuel, as well as transformer oil. The diesel will be stored in belly-tanks situated at ground floor level within compound yards. These bunded areas will be greater than 110% of the storage capacity.

Any accidental emissions of oil, petrol or diesel could cause contamination if the emissions enter the water environment unmitigated. However, any accidental discharge will be mitigated through petrol interceptors.

In the event of an accidental leakage of transformer oil or a spill from the emergency generator, this will be intercepted by the drainage infrastructure; the generator yard passes through petrol interceptor prior to connection to the onsite drainage networks.

7.6 REMEDIAL AND MITIGATION MEASURES

The design has taken account of the potential impacts of the development on the hydrology environment local to the area where construction is taking place and containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the hydrology.

The site is drained by a local network which is composed of ditches bordering the site. This network ultimately flows in a northerly direction towards the Huntstown Stream, which in turn joins the Ward River. The Ward River flows towards Malahide Estuary, a Natura Site (SPA/SAC/pNHA) located c. 10 km to the northeast of the site after joining the Broadmeadow River.

Thus, the site would have an indirect hydrological connection with the Malahide Estuary through the local drainage network, the Huntstown Stream and the Ward River.

As stated above, no impacts are expected on Malahide Estuary SAC/SPA, given the potential loading and the distance from source to the Natura site. The potential risk is considered to be imperceptible as potential contaminant would be attenuated, diluted and dispersed below statutory guidelines (i.e., S.I. European Communities Environmental Objectives Regulations, 2009 [S.I. No. 272 of 2009 as amended by SI No. 77 of 2019]).

Due to the inter-relationship between soils, geology, hydrogeology and hydrology, the following mitigation measures discussed will be considered applicable to all. Waste Management is also considered an interaction in some sections.

7.6.1 Construction Phase

In order to reduce impacts on the hydrological environment, a number of mitigation measures will be adopted as part of the construction works on site.

7.6.1.1 Construction Environment Management Plan

An Outline Construction Environmental Management Plan (CEMP) has been prepared by AECOM for the proposed development and is included with the planning documentation. In advance of work starting on site, the works Contractor will prepare a detailed Construction Environmental Management Plan (CEMP). The detailed CEMP will set out the overarching vision of how the construction of the proposed development will be managed in a safe and organised manner by the Contractor. The CEMP will be a live document and it will go through a number of iterations before works commence and during the works. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent planning conditions relevant to the proposed development.

As a minimum, the CEMP will be formulated in accordance with best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- CIRIA 697, The SUDS Manual, 2007; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

7.6.1.2 Surface Water Run-Off

As there is potential for run-off to entre current stormwater systems and indirectly discharge to a watercourse, mitigations will be put in place to manage run-off during the construction phase.

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt or sediment traps, 20 m buffer zone between machinery and watercourses, refuelling of machinery off site) and hydrocarbon interceptors.

Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to the northeast of the site. It is therefore proposed that the water be discharged via the existing stormwater sewer network. Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the sewer. The use of slit traps and an oil interceptor (if required) will be adopted if the monitoring

indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry. Due to the very low permeability of the Dublin Boulder Clay and the relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated.

Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal. Silt reduction measures on site 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. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the stormwater drainage and the material will be stored away from any surface water drains. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Soil from works will be stored away from existing drainage features to remove any potential impact.

Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water drains will be maintained.

7.6.1.3 Fuel and Chemical Handling

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or where possible off the site) which will be away from surface water gulleys or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

Emergency response procedures will be outlined in the detailed CEMP. All personnel working on the site will be suitably trained in the implementation of the procedures.

7.6.1.4 Soil Removal and Compaction

Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. The material will be stored away from any surface water drains (see Surface Water Run-off section above). Movement of material will be minimised to reduce degradation of soil structure and generation of dust.

All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

Site investigations carried out at the site in 2020 (Refer to Chapter 6) found no residual contamination on site. Nonetheless, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

7.6.2 Operational Phase

During operation measures there is no requirement for bulk fuels or chemical storage, no requirement for discharge to ground and no requirement for abstraction of groundwater.

The design includes hardstand cover across the site and 2 no. full retention interceptors prior to discharge into the attenuation system. Therefore, the risk of accidental discharge has been adequately addressed through design.

Petrol interceptors will be installed as part of the SuDS measures to capture any potential oil or hydrocarbon contamination prior to discharge into the attenuation system on site. This together with hardstand cover will minimise the potential for any impact to the hydrological environment.

Emergency Response Procedures

ESB Networks has an Environmental Safety and Health Management System (EMS) which will be implemented at the proposed development during operations. An environmental management plan will apply to the overall development during the operational phase incorporating mitigation measures and emergency response measures.

There should be a comprehensive emergency response procedures and standard operating procedures to respond to an onsite fuel spillage. All employees should be provided with such equipment, information, training and supervision as is necessary to implement the emergency response procedures and standard operating procedures.

Environmental Procedures

During operation the site will operate in compliance with the requirements of an Irish Water (IW) licence for discharge to sewer. The following containment measures are included within the design to reduce potential for environmental impact. There will be comprehensive emergency response procedures and standard operating procedures to respond to chemical spillage all types. All employees will be provided with such equipment, information, training and supervision as is necessary to implement the emergency response procedures and standard operating procedures.

Spill Kit Facilities

The provision of spill kit facilities and training of operatives in use of same; should be undertaken at the operational stage in order to manage any leaks from fuel storage and vehicles resulting in surface water quality impacts.

Storm Water & Foul Sewer Drainage

The proposed development will provide full attenuation for increase in hardstand area in compliance with the requirements of the Greater Dublin Strategic Drainage Study. A number of measures will be put in place to minimise the likelihood of any spills entering the water environment to include the design of the car park, fitting of refuelling areas with hydrocarbon interceptors and on-site speed restrictions. Refer to the Civil Engineering Planning Report for further details (AECOM, 2021).

It is proposed to ultimately discharge surface water from the proposed development, post attenuation and outflow restrictions into the existing local drainage.

7.7 RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

7.7.1 Construction Phase

The implementation of mitigation measures outlined above (Section 6.6) will ensure that the predicted impacts on the hydrological environment do not occur during the construction phase and that the residual impact will be **short-term-imperceptible-neutral**. Following the TII criteria (refer to Appendix 7.1) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

7.7.2 Operational Phase

The implementation of mitigation measures highlighted above (Section 6.6) will ensure that the predicted impacts on the hydrological environment do not occur during the operational phase and that the residual impact will be **long-term-imperceptible-neutral**. Following the TII criteria (refer to Appendix 7.1) for rating the magnitude and significance of impacts on the hydrological related attributes, the magnitude of impact is considered **negligible**.

7.8 MONITORING OR REINSTATEMENT

7.8.1 Construction Phase

During construction phase the following monitoring measures will be considered:

- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.

7.8.2 Operational Phase

Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to ground.

8.0 BIODIVERSITY; FLORA & FAUNA

8.1 INTRODUCTION

This chapter provides an assessment of the impacts of the proposed development on the ecological environment, i.e. flora and fauna. It has been compiled in compliance with 2014 EIA Directive, the Planning and Development Act 2000 as amended, and the European Commission's guidance on the preparation of the EIA Report, and follows the revised EPA Draft EIA Report Guidelines 2017).

The development site is predominately comprised of fallow farmland of relatively low local ecological value. Hedgerows and mature trees present opportunities for roosting and commuting bats.

The proposed development site is drained by a large deep drainage ditch adjacent to the Huntstown Power Facility at the western perimeter. This larger ditch is intermittently hydraulically linked to the Huntstown Stream depending on rain and flow rates and is a tributary of the Ward River, which flows northeast to Malahide Estuary over 15 river km downstream. Malahide Estuary is designated as both an SAC and SPA.

8.2 METHODOLOGY

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.

Appropriate Assessment was undertaken by Moore Group for the proposed development and a Report for AA Screening prepared, which is presented as Appendix 8.1 to this chapter.

8.2.1 Policy & Guidance

8.2.1.1 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 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.

8.2.1.2 EU Birds Directive

The “Birds Directive” (Council Directive 79/409/EEC amended by 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.

8.2.1.3 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).

8.2.2 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 150m 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.

Other environmental information for the area was reviewed, e.g. in relation to soils, geology, hydrogeology and hydrology (Chapter 7 and Chapter 8). 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 a site visit 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 17 September 2019 and again on 2 December 2020 by conducting a study area walkover covering the main ecological areas identified in the desktop assessment. The first survey date is at the end of the survey period for botanical species but adequate given the improved nature of the farmland and the second date is appropriate for surveying for badgers. A photographic record was made of features of interest.

Signs of mammals such as badgers and otters were searched for while surveying the study area noting any sights, signs or any activity in the vicinity especially along adjacent boundaries.

Bat surveys were undertaken in August 2019 and focused on the adjacent arable crop fields bordered by mature tree lines and hedgerows. The bat report is presented as Appendix 8.2 to this chapter.

A survey of amphibians was undertaken on 19 September 2019 and the report is presented as Appendix 8.3 to this chapter.

Birds were surveyed using standard transect methodology and signs were recorded where encountered during the field walkover surveys. Signs of Winter Bird usage were assessed during the December 2020 site visit.

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:

- EPA Draft EIA Report Guidelines 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 – 2021);
- 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.

8.3 RECEIVING ENVIRONMENT

The site essentially comprises two adjacent fields of farmland previously used for arable crops and a portion of the existing developed brownfield site of Huntstown Power Station in northwest Co. Dublin.

The internal ditches primarily drain to ground and during extended periods of rain into a large deep drainage ditch adjacent to the Huntstown Power Facility. This larger ditch is intermittently hydraulically linked via the Huntstown Stream depending on flow rates and rainfall, and eventually leads north converging with several other streams to the Ward River, which flows into northeast to Malahide Estuary over 15 river km downstream.

The following is a description of the flora and fauna of the existing environment in the study area.

8.3.1 Designated Conservation Areas

Department of Environment, Heritage and Local Government (2009) Guidance on Appropriate Assessment recommends an assessment of European sites within a Zone of Influence (ZoI) of 15km. This distance is a guidance only and a zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source- Pathway-Receptor framework and not by arbitrary distances (such as 15 km).

The Zone of Influence may be determined by connectivity to the Proposed Development in terms of:

- Nature, scale, timing and duration of works and possible impacts, nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of pathways (dilution and dispersion; intervening ‘buffer’ lands, roads etc.); and
- Sensitivity and location of ecological features.

The potential for source pathway receptor connectivity is firstly identified and detailed information is then provided on sites with connectivity. European sites that are located within 15km of the Proposed Development are listed in Table 1 and presented in Figures 8.1 and 8.2, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on 1 June 2021.

Table 8.1 *European Sites located within the potential zone of impact[1] of the Project.*

Site Code	Site name	Distance (km)[2]
000199	Baldoyle Bay SAC	11.94
000205	Malahide Estuary SAC	9.76
000206	North Dublin Bay SAC	10.82
000208	Rogerstown Estuary SAC	12.83
000210	South Dublin Bay SAC	11.03
001398	Rye Water Valley/Carton SAC	11.83
004006	North Bull Island SPA	10.82
004015	Rogerstown Estuary SPA	13.44
004016	Baldoyle Bay SPA	11.97
004024	South Dublin Bay and River Tolka Estuary SPA	8.39
004025	Malahide Estuary SPA	9.81

The large deep drainage ditch adjacent to the Huntstown Power Facility at the centre of the proposed development area is intermittently hydraulically linked via the Huntstown Stream depending on flow rates.

The Huntstown Stream leads to the Ward River c. 6.6km downstream and the Ward River discharges to the sea at Malahide Estuary over 15 river km downstream of the site. Therefore, the proposed development site has limited connectivity to the Malahide Estuary SAC or SPA.

There is no potential for connectivity to any other European sites.

[1] All European sites potentially connected irrespective of the nature or scale of the Proposed Development.

[2] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS. Connectivity along hydrological pathways may be significantly greater.

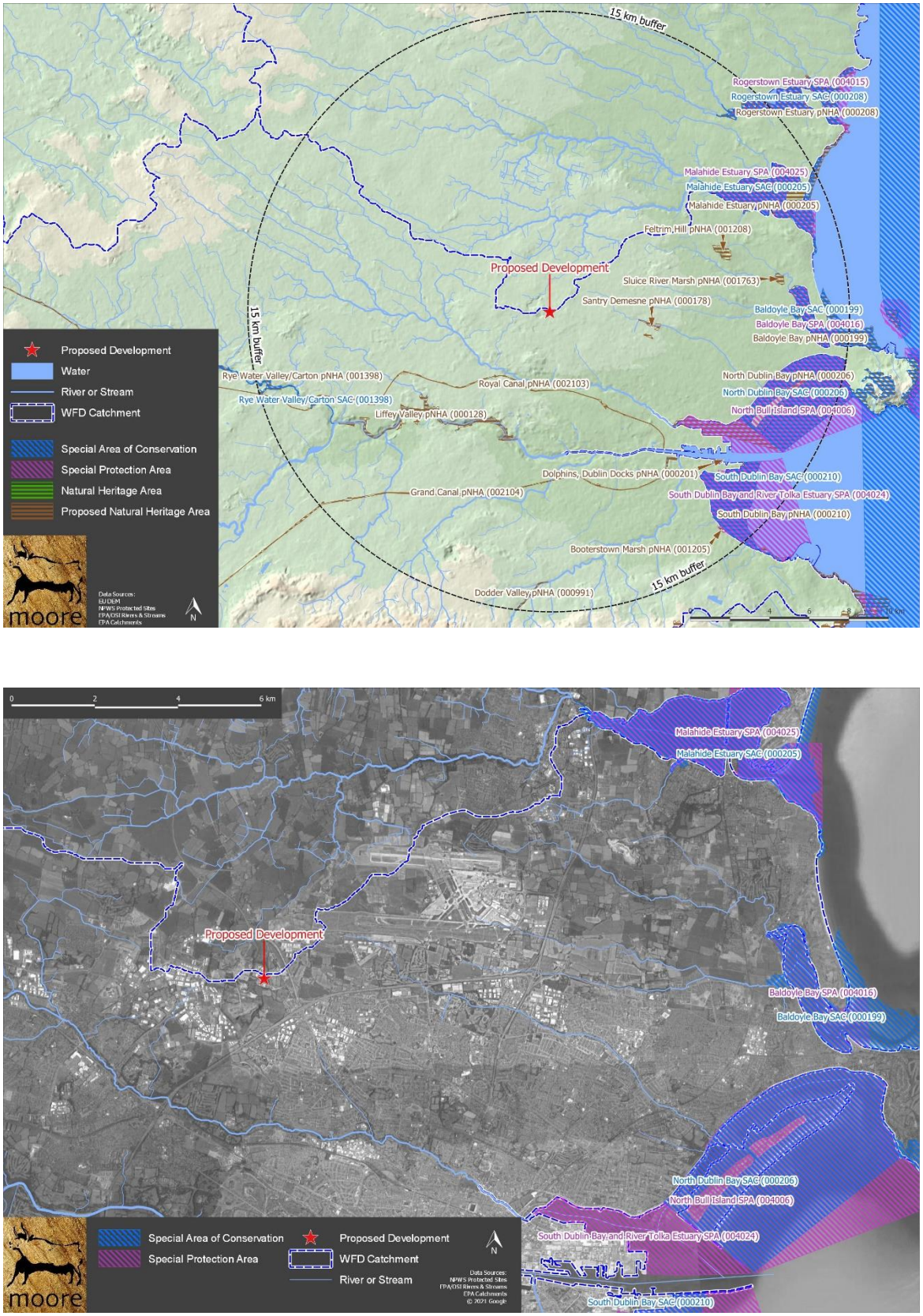

Figure 8.2 *Detail of site Location in relation to nearby designated sites.*

8.3.2 Non-Designated Habitats

The proposed development area is improved farmland with open former arable fields having been left fallow and recolonising with tall herbs. There are internal treelines and associated drainage ditches and surrounding outgrown hedgerows.

The main habitats are presented on the recent aerial photography in Figure 8.3. A list of habitats recorded and their corresponding Fossitt codes is presented in Table 8.2.

Table 8.2 *Details of habitats recorded and their corresponding Fossitt codes.*

Habitat	Habitat Category	Habitat Type
(F) Freshwater	(FW) Watercourses	(FW4) Drainage ditches
(G) Grassland	(GA) Improved grassland	(GA1) Improved agricultural grassland
(W) Woodland and Scrub	(WS) Scrub and transitional woodland	(WS1) Scrub
	(WL) Linear woodland	(WL1) Hedgerows

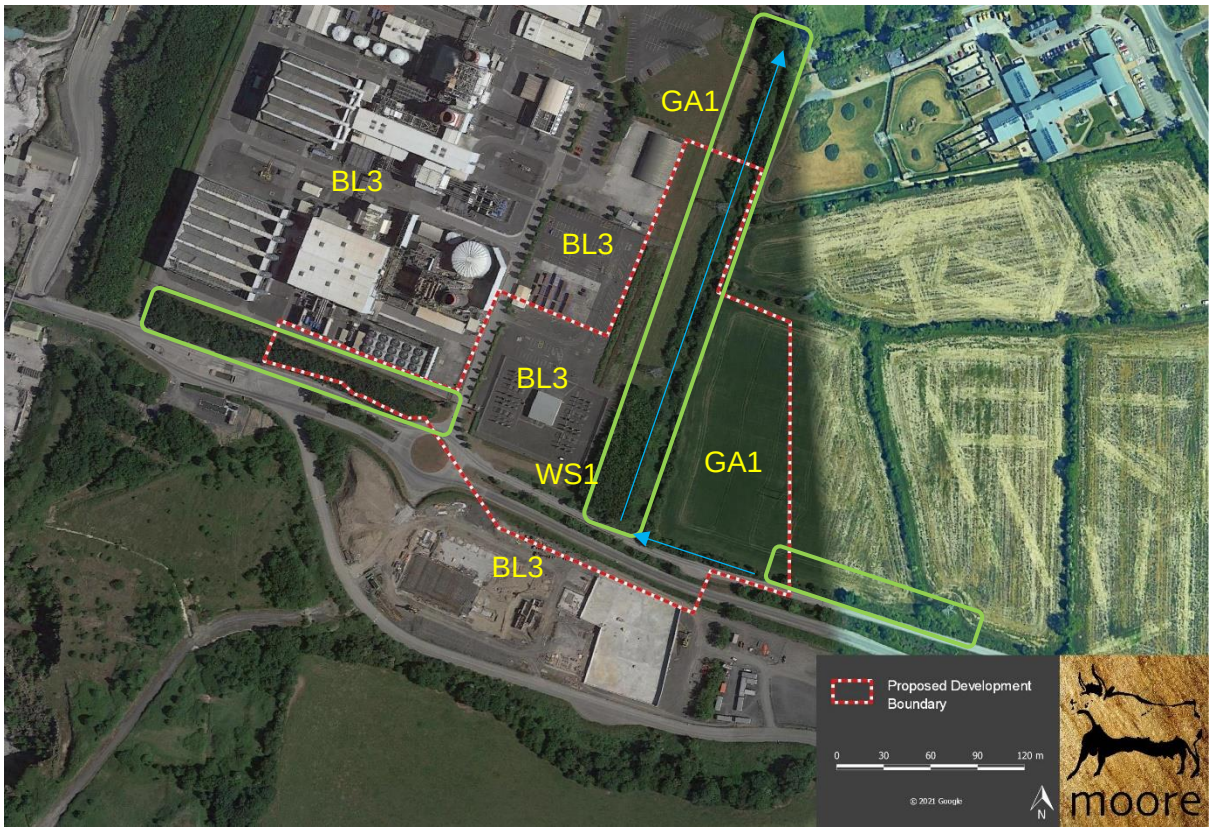

Figure 8.3 *Habitats recorded at the proposed development site at Huntstown.*

8.3.2.1 (FW4) Drainage ditches

This habitat classification applies to drainage ditches within the site associated with outgrown hedgerows. Draining ditches are generally shallow and stagnant being self-contained draining to ground.

Species present include Great willowherb (*Epilobium hirsutum*), Meadowsweet (*Filipendula ulmaria*), Buttercup (*Ranunculus acris*) and Nettle (*Urtica dioica*). Short stagnant sections contained Duckweed (*Lemna minor*).

The large ditch to the centre of the site was observed during site visits to contain either stagnant grey water or no water depending on the season and has no fisheries value.

The existing onsite drainage ditches have been assessed in respect of the applicability of the Objective WQ05 within the Fingal County Development Plan 2017-2023. Objective WQ05 requires the establishment of a riparian corridors free from new development along all significant watercourses and streams in the County. The existing manmade ditches with intermittent or ephemeral characteristics are not considered to be a significant watercourse or stream, therefore Objective WQ05 is not considered to apply to any of the local drainage ditches on the site.

8.3.2.2 (GA1) Improved agricultural grassland

This habitat refers to those arable and fallow grassland areas which comprise the former managed fields on the site. Species present include Cocks foot (*Dactylis glomerata*), Bent (*Agrostis* spp.), and Meadow grass (*Poa* spp.). Ribwort plantain (*Plantago lanceolata*), Buttercup (*Ranunculus acris*), Daisy (*Bellis perennis*), and Nettle (*Urtica dioica*) are common along with Dandelion (*Taraxacum* spp.). The fields have been fallow for at least one growing season and a succession of Willowherb (*Epilobium hirsutum*), Thistles (*Cirsium* spp.) and Nettle (*Urtica dioica*) is occurring.

8.3.2.3 (WL1) Hedgerows

This habitat refers the site boundaries and internal dividing field boundaries. The predominant species present is Hawthorn (*Crataegus monogyna*) and Ash (*Fraxinus excelsior*) along with Alder (*Alnus glutinosa*), Blackthorn (*Prunus spinosa*) and Willow (*Salix* spp).

The field boundary hedgerows are generally poorly maintained and are succeeding to scrub in places. Sections that have understorey flora includes Nettle stands and Bramble scrub.

8.3.2.4 (WS1) Scrub

This habitat was recorded in areas where succession of habitats has occurred from spreading Bramble adjacent to field boundaries and in field corners.

8.3.3 Invasive Species

An area of Japanese Knotweed (JKW) c. 40 m sq was record on the wider landholding during preliminary site visits by Mott MacDonald in May 2019. The area is located inside the farm access gate on the main road to the east and is within the boundary on the concurrent planning application for data hall development as described in Chapter 2 (Description of Development). The spread was treated and an eradication programme by Dig & Dump method completed by Knotweed Control Ireland in March 2020. The JKW was considered in the data storage facility application and is mentioned here only for reference.

8.3.4 Fauna

8.3.4.1 Badgers

There were no badger setts along field boundaries which would be disturbed and no signs of badgers in the study area.

8.3.4.2 Otters

There were no signs of otters in the site or along the drainage ditches which have no fisheries value.

8.3.4.3 Bats

The results of walked bat transects showed that three confirmed bats species were present in the fallow farmland to the east ; Common pipistrelle (*Pipistrellus pipistrellus*), Soprano pipistrelle (*Pipistrellus pygmaeus*) and Leisler's bat (*Nyctalus leisleri*). The majority of calls were recorded from the central east-west hedgerow.

These species were again conformed from the results a static detector survey with the addition of a fourth species; Nathusius's pipistrelle (*Pipistrellus nathusii*).

8.3.4.4 Other mammals

There were signs of fox recorded along with rabbits. These species are of low ecological concern and are not protected.

8.3.4.5 Birds

Species recorded included regular passerines such as Great Tit (*Parus major*), Chaffinch (*Fringilla coelebs*), Blackbird (*Turdus merula*), Wren (*Troglodytes troglodytes*).

A list of breeding bird species recorded during fieldwork in September 2020 is presented in Table 8.3.

Table 8.3 *Details of birds encountered during fieldwork in February 2020*

Birds	Scientific name	BWI Status	Habitat Type
Blackbird	*Turdus merula*	Green	Dense woodland to open moorland, common in gardens
Rook	*Corvus frugilegus*	Green	Open woodland and farmland
Chaffinch	*Fringilla coelebs*	Green	Hedgerows, gardens and farmland
Magpie	*Pica pica*	Green	Farmland, open country with scattered trees or bushes, increasingly in urban areas
Robin	*Erythacus rubecula*	Green	Woodland, gardens and parks
Woodpigeon	*Columba palumbus*	Green	Gardens, woods, hedges
Wren	*Troglodytes troglodytes*	Green	Low cover anywhere, especially woodlands

There were no signs of winter bird species using the site during the December survey of habitats. This is not surprising given the succession of tall herbs on the adjacent farmland having lain fallow.

There were no signs of Peregrine falcon feeding over the proposed development areas on any of the surveys dates.

8.3.4.6 Amphibians

The smooth newt, *Lissotriton vulgaris* (formerly *Triturus vulgaris*), hereafter newt, is a species of carnivorous amphibian that is found throughout continental Europe and is Ireland's only native newt species.

The ICUN categorises the species as of least concern, as their populations are stable throughout their range (ICUN 2008), although the loss of suitable terrestrial habitats for overwintering or refuge remains a concern. Newt are protected under the Wildlife Acts (1976 and 2000) and are also listed under Annex III of the Bern Convention. It is an offence to capture or kill a newt in Ireland without a licence.

At the time of survey the drainage ditches surveyed were not found to support ecological conditions favourable to newt or frogs. This was considered given the existing drainage ditch networks running north south and east west were steep sided (between 1 to 2.5m deep) and were heavily shaded with overhanging hedgerow. They did not contain water at the time of the survey within the site boundary. The adjoining heavily managed and compacted soils in the adjoining tillage areas provided poor terrestrial habitat for newts. No evidence of newt was found within the study area despite searching terrestrial refugia (deadwood, small boulders, leaf litter etc.).

8.3.5 Habitat Evaluation

The ecological value of the site was assessed following the guidelines set out in the Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (2019) and according to the Natura Scheme for evaluating ecological sites (after Nairn & Fossitt, 2004). Additionally, the TII Guidelines (formerly NRA) for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) outlines the methodology for evaluating ecological impacts Judgements on the evaluation were made using geographic frames of reference, e.g. European, National, Regional or Local.

Due cognisance of features of the landscape which are of major importance for wild flora and fauna, such as those with a "*stepping stone*" and ecological corridors function, as referenced in Article 10 of the Habitats Directive were considered in this assessment.

The Huntstown Stream leads to the Ward River c. 6.6km downstream and the Ward River discharges to the sea at Malahide Estuary over 15 river km downstream of the site. Therefore, the proposed development site has limited connectivity to the Malahide Estuary SAC or SPA.

Additionally, the proposed development design includes SuDS features to attenuate surface water. Thus the potential for downstream impacts is considered highly unlikely.

There is no potential for connectivity to any other European sites.

Given the above analysis, it is considered that there will be no potential for significant effects on any of the European sites considered and therefore potential effects on European sites can be excluded at a preliminary screening stage.

The open field habitats are considered of low biodiversity value at a local level as are the internal hedgerows.

There are no rare or protected habitats recorded in the study areas inside the licenced areas. Overall, the proposed development area is of Low Local Ecological Value.

8.4 CHARACTERISTICS OF THE DEVELOPMENT

The proposed development site is located on a 4.33 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The proposed

development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151 as well as any future development on the wider landholding (as described in Chapter 2, Section 2.4).

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development).

8.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

8.5.1 Construction Phase

8.5.1.1 Habitats

There will be a minor loss of modified grassland habitats. The potential effects on local ecology are ***neutral*** and ***imperceptible*** for the construction phase.

It is predicted that there would be a loss of c. 150m of internal hedgerow. The hedgerows are predominantly low value Hawthorn with semi-mature Ash and occasional mature trees. The potential effects on local ecology are ***neutral*** and ***imperceptible*** for the construction phase.

Deterioration in water quality as a result of elevated suspended solids or from chemical pollution has the potential to significantly impact on downstream habitats and ultimately species. However, the potential for downstream effects is unlikely given the distance of removal and potential for dilution prior to reaching the Ward River. While best practice construction methods are included, these are not required to avoid or reduce any effects on a European site. These measures are not relied upon to reach a conclusion of no likely significant effects on any European site.

Thus, there will be no impacts on the large drainage ditch to the centre of the site or downstream to Huntstown Stream or the Ward River.

8.5.1.2 Fauna

Badgers

There were no badger setts along field boundaries which would be disturbed and no signs of badgers in the study area.

Otters

There were no signs of otters and no suitable habitats for otters in the proposed development area. There is no potential for impacts on otters.

Bats

The bat survey provides a preliminary study of bat usage in the proposed development area.

- Disturbance

Works associated with development or building work are likely to lead to an increase in human presence at the site, extra noise and changes in the site layout and local environment.

- Loss of feeding habitat

The redevelopment of this site involves the removal of hedgerows that represent landscape features used primarily by Pipistrelle species and Leister's bats.

Activity by Myotis and brown long-eared bat was low. No evidence of commuting bats was noted from the survey. Given the amount of hedgerow features located in the surroundings the loss of the internal treelines and hedgerows will result in a low level permanent reduction of this habitat for local bat populations.

- Loss of potential roosting habitats.

Although no bats were found within the trees on the site it is possible bats will occupy trees prior to feeling.

Other mammals

There were signs of fox recorded along with rabbits. These species are of low ecological concern and are not protected.

Birds

Species recorded included regular passerines such as Great Tit, Chaffinch, Blackbird, Wren and typical farmland species such as Rook, Magpie and Wood pigeon.

There were no signs of Peregrine falcon feeding over the proposed development areas on any of the surveys dates. The site does not provide typical roosting habitat for Peregrine falcon and the succession of arable and grassland fields to tall herbs and scrub patches further reduces the potential of the site to foraging Peregrine falcons.

Potential impacts on nesting birds may occur as a result of vegetation cutting. The potential effects on local bird populations is not significant and can be avoided.

Amphibians

There is no potential for impact on amphibians during the construction phase.

8.5.2 Operational Phase

8.5.2.1 Habitats

Deterioration in water quality as a result of elevated suspended solids or from chemical pollution has the potential to significantly impact on downstream habitats and ultimately species. However, this will be avoided by the inclusion of SuDS design features such as swale drainage and attenuation.

Thus, there will be no impacts downstream on the Huntstown Stream or the Ward River. While best practice features such as SuDS are included, these are not required to avoid or reduce any effects on a European site.

These measures are not relied upon to reach a conclusion of no likely significant effects on any European site. Given the significant distance between the proposed development site and any European Sites, and the very weak and indirect ecological pathway is such that the proposal will not result in any likely changes to the European sites that comprise part of the Natura 2000 network in Malahide Estuary.

8.5.2.2 Fauna

Badgers

There were no badger setts along field boundaries which would be disturbed and no signs of badgers in the study area. There is no potential for impacts on badgers.

Otters

There were no signs of otters and no suitable habitats for otters in the proposed development area. There is no potential for impacts on otters.

Bats

Guidance on lighting has been based on the Bats & Lighting document; (BCI , 20 the Bats and artificial lighting in the UK Guidance Note 08/18 (BC T, 2018) and Guidelines for consideration of bats in lighting projects. EUROBATS Publication Series No. 8 (Voigt, 2018). Lighting can alter the behaviour of bats and the insects they prey on.

Other mammals

There were signs of fox recorded along with rabbits. These species are of low ecological concern and are not protected.

Birds

Species recorded included regular passerines such as Great Tit, Chaffinch, Blackbird, Wren and typical farmland species such as Rook, Magpie and Wood pigeon.

Potential impacts on nesting birds may occur as a result of vegetation cutting. The potential effects on local bird populations is not significant and can be avoided.

Amphibians

There is no potential for impact on amphibians during the construction phase.

8.6 REMEDIAL AND MITIGATION MEASURES

Potential impacts on birds will be avoided by cutting of vegetation outside the bird nesting season March 1st to August 31st. If this cannot be enforced then the site will be surveyed for the presence of nesting birds and/or nests prior to cutting and if none are recorded the vegetation may be removed within 48 hours.

Mature trees, which are to be removed, shall be felled in the period early September to late October, or early November, in order to avoid the disturbance of any roosting bats as per Transport Infrastructure Ireland (TII and formerly the National Roads Authority) guidelines (NRA 2006a and 2006b). Tree felling shall be completed by Mid-November at the latest because bats roosting in trees are vulnerable to disturbance during their hibernation period (November – April). Ivy-covered trees, once felled, shall be left intact on-site for 24 hours prior to disposal to allow any bats beneath the foliage to escape overnight.

Any mature trees that are to be removed, should, due to the passage of time, again be surveyed for bat presence by a suitably experienced specialist on the day of felling. If several bats are found within any one tree, that specific tree should be left in-situ while an application for a derogation licence is made to the National Parks and Wildlife Service to allow its legal removal.

The trees identified as having potential for use by bats should be felled carefully to avoid hard shocks which may injure any bats within. Large mature trees with bat roosting potential such as those onsite should essentially be felled by gradual dismantling by tree surgeons. Care should be taken when removing larger branches as removal of loads may cause cracks or crevices to close, crushing any animals within. Such cracks should be wedged open prior to load removal. If single bats are found during tree felling operations, they should be transferred to the previously erected bat boxes onsite (see below).

In addition to retention of existing hedgerows where feasible, the proposed data storage facility development includes a Landscape Strategy which provides for increased biodiversity through the additional planting.

The protection and enhancement of the existing landscape is an important aspect of the overall landscape strategy. The landscape strategy proposes to enhance and strengthen the existing hedgerow using native hedgerow and woodland species, while

retaining the existing trees planted in and around the hedgerow. In addition to strengthening the remnants of the existing hedgerow, planting of a new native hedgerow is also proposed. Through selective management of the hedgerows, the network of existing ecological corridors will be strengthened to support the local wildlife of the surrounding area.

All of the various landscape spaces and typologies in this development have been designed to consider local biodiversity and ecology. Maintaining and creating natural habitats for native flora and fauna and creating ecological networks is an essential element of the landscape strategy.

Retaining and strengthening existing native hedgerows, as well as proposing new native hedgerows, creates biodiverse native habitats and ecological green corridors which run through the site and link with external landscape features.

Woodland planting along site boundaries and on earth berms create dense belts of native woodland spaces which act as native habitat and similarly to the native hedgerows, form ecological corridors which connect with other landscape elements throughout the site.

In order to minimise the extent of light spill onto perimeter habitats, all lights that are pole mounted will be directional and/or cowled to ensure that light is directed downward and inwards. Lights will be programmed or otherwise to be off unless required.

8.7 RESIDUAL IMPACTS OF THE DEVELOPMENT

Specific local mitigation measures include the avoidance of cutting of vegetation during the bird nesting season with regard to the construction phase.

The outer perimeter boundary of the site provides good commuting and feeding opportunity for bats and this habitat will be retained for the operational phase of the Proposed Development. ‘Bat-sensitive’ lighting techniques have been incorporated into the lighting plan, which will avoid or minimise any potential impacts of lighting on bats for the operational phase.

It is a significant element of the proposal to maintain and enhance the ecological value of the site through a substantial green belt around the northern, eastern and southern boundaries and the integration of surface water attenuation ponds, landscaping and planting to provide a wild life corridor and a soft transition to neighbouring sites and the public realm.

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.

8.8 MONITORING/REINSTATEMENT

No ecological monitoring is required during the construction phase of development. The mitigation measures specifying review of the lighting plan by a bat ecologist may require additional surveys and monitoring during site construction and operation. The Local Authority may propose additional monitoring in order to address this.

No reinstatement measures are proposed.

8.9 REFERENCES

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9.0 AIR QUALITY AND CLIMATE

9.1 INTRODUCTION

This chapter evaluates the impacts in which the proposed development may have on Air Quality and Climate as defined in the Environmental Protection Agency (EPA) documents Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017) and the EPA Draft 'Advice Notes for Preparing Environmental Impact Statements' (2015).

9.2 METHODOLOGY

9.2.1 Criteria for Rating of Impacts

9.2.1.1 Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, National and European statutory bodies, the Department of the Environment, Heritage and Local Government in Ireland and the European Parliament and Council of the European Union, 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 (see Table 9.1).

Air quality significance criteria are assessed based on compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2011, which incorporate European Commission Directive 2008/50/EC, which has set limit values for numerous pollutants with the limit values for NO_2, PM_{10}, and $PM_{2.5}$ being relevant to this assessment. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC) and includes ambient limit values relating to $PM_{2.5}$.

Table 9.1 Ambient Air Quality Standards

Pollutant	Regulation [Note 1]	Limit Type	Value
Dust Deposition	TA Luft (German VDI 2002)	Annual average limit for nuisance dust	350 mg/(m^2*day)
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3 PM_{10}
		Annual limit for protection of human health	40 µg/m^3 PM_{10}
Particulate Matter (as $PM_{2.5}$)	2008/50/EC	Annual limit for protection of human health	25 µg/m^3 $PM_{2.5}$

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

9.2.1.2 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust, which are less than 10 microns, and the EU ambient air quality standards outlined in section 9.2.1.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regard to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland.

However, guidelines for dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m^2*day) averaged over a one year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled 'Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006). The document recommends that the Bergerhoff limit of 350 mg/(m^2*day) be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the proposed development.

9.2.1.3 Climate Agreements

Ireland is party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Paris Agreement, which entered into force in 2016, is an important milestone in terms of international climate change agreements and includes an aim of limiting global temperature increases to no more than 2°C above pre-industrial levels with efforts to limit this rise to 1.5°C. The aim is to limit global GHG emissions to 40 gigatonnes as soon as possible whilst acknowledging that peaking of GHG emissions will take longer for developing countries. Contributions to GHG emissions will be based on Intended Nationally Determined Contributions (INDCs) which will form the foundation for climate action post 2020. Significant

progress was also made in the Paris Agreement on elevating adaption onto the same level as action to cut and curb emissions.

In order to meet the commitments under the Paris Agreement, the EU enacted *Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013* (the Regulation). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. Ireland's obligation under the Regulation is a 30% reduction in non-ETS greenhouse gas emissions by 2030 relative to its 2005 levels.

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the Act). The purpose of the Act was to enable Ireland '*to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050*' (3.(1) of No. 46 of 2015). This is referred to in the Act as the '*national transition objective*'. The Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The *Climate Action Plan* (CAP) (Government of Ireland, 2019), published in June 2019, outlines the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlines the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The CAP also details the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The CAP has set a built environment sector reduction target of 40 - 45% relative to 2030 pre-NDP (National Development Plan) projections.

Following on from Ireland declaring a climate and biodiversity emergency in May 2019 and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019 followed by the publication of the Climate Action and Low Carbon Development (Amendment) Bill 2021 (hereafter referred to as the 2021 Climate Bill) in March 2021 (Government of Ireland, 2021). The 2021 Climate Bill was prepared for the purposes of giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Bill, if enacted, is to provide for the approval of plans '*for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050*'. The 2021 Climate Act will also '*provide for carbon budgets and a decarbonisation target range for certain sectors of the economy'.* The 2021 Climate Bill defines the carbon budget as '*the total amount of greenhouse gas emissions that are permitted during the budget period'.*

The 2021 Climate Bill removes any reference to a national mitigation plan and instead refers to both the Climate Action Plan, as published in 2019, and a series of National Long Term Climate Action Strategies. In addition, the Environment Minister shall request each local authority to make a 'local authority climate action plan' lasting five

years and to specify the mitigation measures and the adaptation measures to be adopted by the local authority.

9.2.2 Construction Phase

9.2.2.1 Air Quality

The Institute of Air Quality Management in the UK (IAQM) guidelines (2014) outline an assessment method for predicting the impact of dust emissions from demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development in order to predict the likely magnitude of the dust impacts in the absence of mitigation measures.

9.2.2.2 Climate

The impact of the construction phase of the development on climate was determined by a qualitative assessment of the nature and scale of greenhouse gas generating construction activities associated with the proposed development.

9.2.3 Operational Phase

9.2.3.1 Air Quality

Operational phase traffic has the potential to impact air quality. The UK DMRB guidance (UK Highways Agency, 2019a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. The TII guidance (2011) recommends the use of the UK DMRB guidance (UK Highways Agency, 2007) for predicting the impact from road schemes and can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- A change in speed band;
- A change in carriageway alignment by 5m or greater.

By definition of the criteria above, there are no road links impacted as a result of the proposed development. Therefore, no assessment using the DMRB model was required for the proposed development as there is no potential for significant impacts to air quality.

9.2.3.2 Climate

The UK Highways Agency has published an updated DMRB guidance document in relation to climate impact assessments *LA 114 Climate* (UK Highways Agency 2019b). The following scoping criteria are used to determine whether a detailed climate assessment is required for a proposed project during the operational stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy-duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

None of the road links impacted by the proposed development meet the scoping criteria above and therefore a detailed assessment has been scoped out as there is no potential for significant impacts to climate.

9.3 RECEIVING ENVIRONMENT

9.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions where pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport, which is located approximately 4.5 km west of the site. Dublin Airport met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 9.1). For data collated during five representative years (2016 – 2020) (Met Eireann, 2021), the predominant wind direction is westerly to south-westerly, with generally moderate wind speeds averaging 5.3 m/s for the period 1981 - 2010.

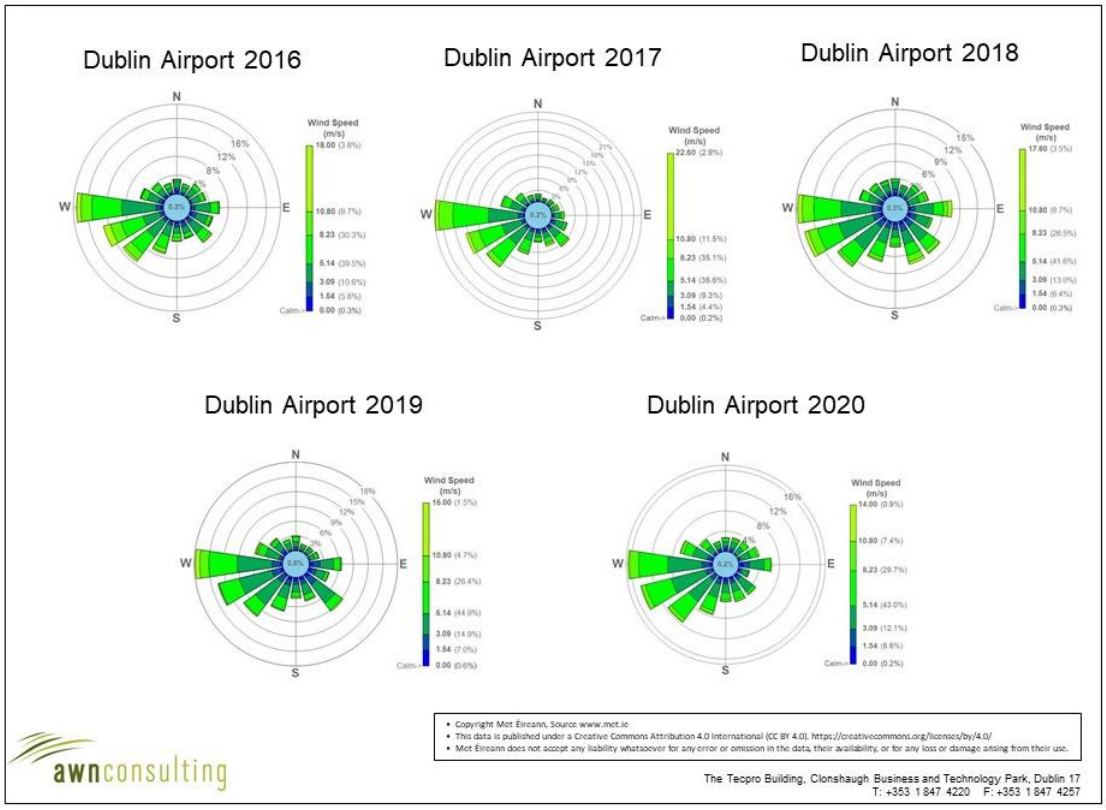

Figure 9.1 *Dublin Airport Windroses 2016 - 2020*

9.3.2 Baseline Air Quality

The EPA and Local Authorities have undertaken air quality monitoring programs in recent years. The most recent EPA published annual report on air quality "*Air Quality In Ireland 2019*" (EPA 2020a) details the range and scope of monitoring undertaken throughout Ireland.

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC), four air quality zones have been defined in Ireland for air quality management and assessment purposes as outlined within the EPA document titled '*Air Quality In Ireland 2019*' (EPA 2020a). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D. In terms of air monitoring, the area of the proposed development in Huntstown is categorised as Zone A.

NO_2

With regard to NO_2, continuous monitoring data from the EPA (EPA 2020a), at suburban Zone A background locations in Rathmines, Swords and Ballyfermot show that current levels of NO_2 are below both the annual and 1-hour limit values, with annual average levels ranging from 15 - 22 µg/m^3 in 2019 (see Table 9.2). Sufficient data is available for the station in Ballyfermot to observe long-term trends since 2015 (EPA 2020a), with annual average results ranging from 16 – 20 µg/m^3. Based on these results, an estimate of the current background NO_2 concentration in the region of the proposed development is 17 µg/m^3.

Table 9.2 Background NO_2 Concentrations In Zone A Locations (µg/m^3)

Station	Averaging Period	Year				
		2015	2016	2017	2018	2019
Rathmines	Annual Mean NO_2 (µg/m^3)	18	20	17	20	22
	Max 1-hr NO_2 (µg/m^3)	106	102	116	138	183
Swords	Annual Mean NO_2 (µg/m^3)	13	16	14	16	15
	Max 1-hr NO_2 (µg/m^3)	170	206	107	112	108
Ballyfermot	Annual Mean NO_2 (µg/m^3)	16	17	17	17	20
	Max 1-hr NO_2 (µg/m^3)	142	127	148	217	124

PM_{10}

Continuous PM_{10} monitoring carried out at the Ballyfermot, Rathmines, Tallaght and Phoenix Park Zone A locations in 2015 - 2019 showed annual mean concentrations ranging from 9 to 16 µg/m^3, with at most 5 exceedances (in Rathmines) of the 24-hour limit value of 50 µg/m^3 (35 exceedances are permitted per year) (EPA, 2020a). Based on this EPA data, an estimate of the background PM_{10} concentration in the region of the development is 14 µg/m^3.

Table 9.3 Background PM_{10} Concentrations In Zone A Locations (µg/m^3)

Station	Averaging Period	Year				
		2015	2016	2017	2018	2019
Ballyfermot	Annual Mean PM_{10} (µg/m^3)	12	11	12	16	14
	24-hr Mean > 50 µg/m^3 (days)	3	0	1	0	7
Tallaght	Annual Mean PM_{10} (µg/m^3)	14	14	12	15	12
	24-hr Mean > 50 µg/m^3 (days)	4	0	2	1	3
Rathmines	Annual Mean PM_{10} (µg/m^3)	15	15	13	15	15
	24-hr Mean > 50 µg/m^3 (days)	5	3	5	2	9
Phoenix Park	Annual Mean PM_{10} (µg/m^3)	12	11	9	11	11
	24-hr Mean > 50 µg/m^3 (days)	2	0	1	0	2

$PM_{2.5}$

Continuous $PM_{2.5}$ monitoring at the Zone A location of Rathmines over the period 2015 – 2019 (EPA, 2020a) indicated an average $PM_{2.5}/PM_{10}$ ratio ranging from 0.53 – 0.68. Based on this information, a conservative ratio of 0.70 was used to generate a background $PM_{2.5}$ concentration of 9.8 µg/m^3.

9.3.3 Sensitivity of the Receiving Environment

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (2014) prior to assessing the impact of dust from a proposed development the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time.

In terms of receptor sensitivity to dust soiling, there are 3 no. high sensitivity residential properties along the R135 which are within 350 m of the proposed site boundary (see Figure 9.2). Therefore, the overall sensitivity of the area to dust soiling impacts is considered low based on the IAQM criteria outlined in Table 9.4.

Table 9.4 Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	**Number Of Receptors**	**Distance from source (m)**			
		<20	**<50**	**<100**	**<350**
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	**Low**
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the proposed development is 14 µg/m^3 and are 3 no. residential properties along the R135 which are within 350 m of the proposed development boundary (see Figure 9.2). Based on the IAQM criteria outlined in Table 9.5, the worst case sensitivity of the area to human health is considered to be low.

Table 9.5 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	**Annual Mean PM_{10} Concentration**	**Number Of Receptors**	**Distance from source (m)**				
			<20	**<50**	**<100**	**<200**	**<350**
High	< 24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	**Low**
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low	Low

9.3.4 Climate Baseline

Anthropogenic emissions of greenhouse gases in Ireland included in the EU 2020 strategy are outlined in the most recent review by the EPA which details provisional emissions up to 2019 (EPA, 2020b). The data published in 2020 states that Ireland will exceed its 2019 annual limit set under the EU's Effort Sharing Decision (ESD), 406/2009/EC1 by an estimated 6.98 Mt. For 2019, total national greenhouse gas emissions are estimated to be 59.90 million tonnes carbon dioxide equivalent (Mt CO_2eq) with 45.71 MtCO_2eq of emissions associated with the ESD sectors for which compliance with the EU targets must be met. Agriculture is the largest contributor in 2019 at 35.3% of the total, with the transport sector accounting for 20.3% of emissions of CO_2.

GHG emissions for 2019 are estimated to be 4.5% lower than those recorded in 2018. Emission reductions have been recorded in 6 of the last 10 years. However, compliance with the annual EU targets has not been met for four years in a row. Emissions from 2016 – 2019 exceeded the annual EU targets by 0.29 $MtCO_2eq$, 2.94 $MtCO_2eq$, 5.57 $MtCO_2eq$ and 6.98 $MtCO_2eq$ respectively. Agriculture is consistently the largest contributor to emissions with emissions from the transport and energy sectors being the second and third largest contributors respectively in recent years.

The EPA 2020 GHG Emissions Projections Report for 2019 – 2040 (EPA 2020c) notes that there is a long-term projected decrease in greenhouse gas emissions as a result of inclusion of new climate mitigation policies and measures that formed part of the National Development Plan 2018-2027 (NDP) which was published in 2018 and the Climate Action Plan (CAP) published in 2019. Implementation of these is classed as a "*With Additional Measures scenario*" for future scenarios. A change from generating electricity using coal and peat to wind power and diesel vehicle engines to electric vehicle engines are envisaged under this scenario. While emissions are projected to decrease in these areas, emissions from agriculture are projected to grow steadily due to an increase in animal numbers. However, over the period 2013 – 2020 Ireland is projected to cumulatively exceed its compliance obligations with the EU's Effort Sharing Decision (Decision No. 406/2009/EC) 2020 targets by approximately 13.4 Mt CO_2eq under the "*With Existing Measures*" scenario and 12.6 Mt CO_2eq under the "*With Additional Measures*" scenario (EPA, 2020c).

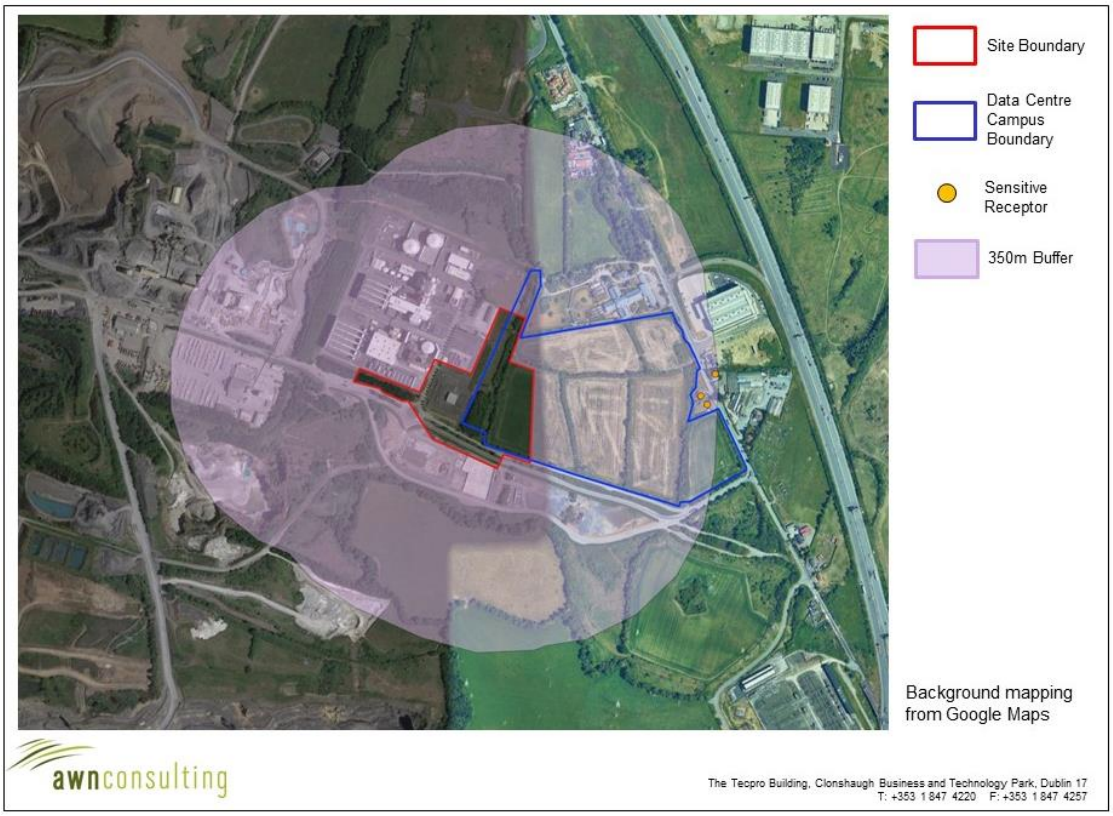

Figure 9.2 *Sensitive Receptors within 350m of Site Boundary*

9.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposal comprises the construction of a 2 storey 220kV Gas Insulated Switchgear (GIS) substation (known as 'Mooretown'), 1 no. 220kV series coil, 4 no. 220/20kV transformers, interconnecting 220kV underground cables, Client Control Building, and 4 no. 220kV short sections (100 – 300m) of underground cables to connect to the adjacent existing cable infrastructure, 4 no. cable trenches, fire walls, lightning monopoles and associated compound and site infrastructure to be located on a 4.3 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11.

The proposed 2 story 220 kV Gas Insulated Switchgear (GIS) substation is to be constructed to EirGrid standards, comprising cable pit/entry room, generator room, relay room, battery room, workshop, toilet, storeroom, mess room, hoist space, stair cores and circulation areas. The substation will serve the proposed data hall buildings (as described in Chapter 2, Section 2.3), as well as any future development on the wider landholding.

The proposed underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown GIS Substation extending south and then west just north of the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff – Huntstown A (AIS) cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown GIS Substation Compound / series coil extending south under the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas – Huntstown B (AIS) cable route. The proposed underground cable (Cable No. 3) will follow a route originating at the proposed Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown A AIS station. The route terminates in the Huntstown A AIS ESB Station. The proposed underground cable (Cable No. 4) will follow a route originating at the proposed Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the Huntstown B AIS ESB Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of car parking spaces in the substation compound.

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development). The details of the construction and operation of the development in terms of Air Quality and Climate are detailed in the subsections below.

9.4.1 Construction Phase

The key civil engineering works that will have a potential impact on air quality and climate during construction are summarised below:

(i) During construction, an amount of soil will be generated as part of the site preparation works and during excavation for building foundations and for the installation of ducting for the cable installations.

(ii) Infilling and landscaping will be undertaken.

(iii) Temporary storage of construction materials.

(iv) Construction traffic accessing the site will emit air pollutants and greenhouse gases during transport.

As outlined in Section 9.6, a dust minimisation plan will be formulated for the construction phase of the proposed development to ensure no dust nuisance occurs at nearby sensitive receptors.

9.4.2 Operational Phase

During the operational phase, traffic accessing the site for maintenance purposes has the potential to impact on air quality and climate. However, this traffic will not be of the magnitude to cause a significant impact.

9.5 POTENTIAL IMPACTS FO THE PROPOSED DEVELOPMENT

9.5.1 Construction Phase

9.5.1.1 Air Quality

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 350m of a construction site, the majority of the deposition occurs within the first 50m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 9.3.3). The major dust generating activities are divided into four types within the IAQM guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

Demolition

There are no demolition activities associated with the proposed development. Therefore, there is no demolition impact predicted as a result of the works.

Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

Large: Total site area > 10,000 m^2, potentially dusty soil type (e.g. clay which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds > 8 m in height, total material moved >100,000 tonnes;

Medium: Total site area 2,500 m^2 – 10,000 m^2, moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 4 – 8 m in height, total material moved 20,000 – 100,000 tonnes;

Small: Total site area < 2,500 m^2, soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 4 m in height, total material moved < 20,000 tonnes, earthworks during wetter months.

The dust emission magnitude for the proposed earthwork activities can be classified as medium as the total material moved (both excavations and infilling works) will be between 20,000 – 100,000 tonnes.

The sensitivity of the area, as determined in Section 9.3.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 9.6, this results in an overall low risk of dust soiling impacts and human health impacts as a result of the proposed earthworks activities.

Table 9.6 Risk of Dust Impacts – Earthworks

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	**Low Risk**	Negligible

Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

Large: Total building volume > 100,000 m^3, on-site concrete batching, sandblasting;

Medium: Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), on-site concrete batching;

Small: Total building volume < 25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as small as a worst-case as the total building volume will be less than 25,000 m^3.

The sensitivity of the area is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 9.7, this results in an overall negligible risk of dust soiling impacts and human health impacts as a result of the proposed construction activities.

Table 9.7 Risk of Dust Impacts – Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	**Negligible**

Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

Large: > 50 HGV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100 m;

Medium: 10 - 50 HGV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 - 100 m;

Small: < 10 HGV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

The dust emission magnitude for the proposed trackout can be classified as small, as at worst-case peak periods there will be at most 10 outward HGV movements per day.

As outlined in Table 9.8, this results in an overall negligible risk of dust soiling impacts and human health impacts as a result of the proposed trackout activities.

Table 9.8 Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	**Negligible**

Summary of Dust Emission Risk

The risk of dust impacts as a result of the proposed development are summarised in Table 9.9 for each activity. The magnitude of risk determined is used to prescribe the level of site specific mitigation required for each activity in order to prevent significant impacts occurring.

There is a low risk of dust soiling and human health impacts associated with the proposed works, best practice dust mitigation measures will be implemented to ensure there are no impacts at nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to be short-term, negative and imperceptible.

Table 9.9 Summary of Dust Impact Risk used to Define Site-Specific Mitigation

Potential Impact	Dust Emission Risk			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Emission Magnitude	-	Medium	Small	Small
Dust Soiling Risk	-	Low Risk	Negligible Risk	Negligible Risk
Human Health Risk	-	Low Risk	Negligible Risk	Negligible Risk

9.5.1.2 Climate

There is the potential for a number of greenhouse gas emissions to atmosphere during the construction of the development. Construction vehicles, generators etc., may give rise to CO_2 and N_2O emissions. The Institute of Air Quality Management document *Guidance on the Assessment of Dust from Demolition and Construction* (IAQM, 2014) states that site traffic and plant is unlikely to make a significant impact on climate. Therefore, the impact on climate is considered to be imperceptible, neutral and short term.

9.5.2 Operational Phase

9.5.2.1 Air Quality & Climate

During operation, the cables will be buried underground and therefore there will be no emissions to atmosphere. There is the potential for maintenance vehicles accessing the substation site to result in emissions of NO_2, PM_{10}/$PM_{2.5}$ and CO_2. However, due to the infrequent nature of maintenance activities and the low number of vehicles involved emissions are not predicted to be significant. A detailed air quality and climate assessment was scoped out for the operational stage of the development as per the UK DMRB screening criteria. Operational stage impacts to air quality and climate are predicted to be imperceptible, neutral and long-term.

9.5.3 Do Nothing Scenario

Under the Do Nothing Scenario no construction works will take place and the previously identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. The ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from new developments in the surrounding industrial estates, changes in road traffic, etc.). Therefore, this scenario can be considered neutral in terms of both air quality and climate.

9.6 REMEDIAL AND MITIGATION MEASURES

9.6.1 Construction Phase

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK and the USA based on the following publications:

- 'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014);

- 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996);
- 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002);
- 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003);
- 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997); and
- 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).

In advance of work starting on site, the works contractor will prepare a detailed Construction Environmental Management Plan (CEMP). The CEMP will set out the overarching vision of how the construction of the proposed development will be managed in a safe and organised manner by the Contractor. The CEMP will be a live document. It will set out requirements and standards that must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent planning conditions relevant to the proposed development.

Site Management

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.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 9.1 for the wind rose for Dublin Airport). As the prevailing wind is predominantly, westerly to south-westerly, locating construction compounds and storage piles downwind (to the east or northeast) of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

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. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (UK Office of Deputy Prime Minister (2002), BRE (2003)). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions near the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;

- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

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. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

Site Roads / Haulage Routes

Movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK Office of Deputy Prime Minister, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Access gates to the site will be located at least 10m from sensitive receptors where possible;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering will be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

Land Clearing / Earth Moving

Land clearing / earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering will be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions will be postponed until the gale has subsided.

Storage Piles

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Where possible storage piles will be located downwind of sensitive receptors;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency (UK Office of Deputy Prime Minister, 2002);
- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- At the main site traffic exits, a wheel wash facility will be installed. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. 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.

9.6.2 Operational Phase

No mitigation is proposed for the operational phase of the proposed development as impacts to air quality or climate will be imperceptible.

9.7 RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

9.7.1 Construction Phase

9.7.1.1 Air Quality

When the dust mitigation measures detailed in the mitigation section of this report (Section 9.6) are implemented, fugitive emissions of dust and particulate matter from the site will be short term, negative and imperceptible in nature, posing no nuisance at nearby receptors.

9.7.1.2 Climate

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, neutral and imperceptible in relation to Ireland's obligations under the EU 2030 target.

9.7.1.3 Human Health

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.

9.7.2 Operational Phase

9.7.2.1 Air Quality & Climate

Operational phase impacts associated with the proposed development are predicted to be long-term and imperceptible as the cables will be buried underground once constructed and there will be minimal emissions associated with maintenance vehicles accessing the substation site.

9.8 MONITORING OR REINSTATEMENT

9.8.1 Construction Phase

Monitoring is not proposed for the construction phase of the proposed development as impacts are predicted to be imperceptible. There is a negligible risk of dust soiling and human health impacts as a result of the construction phase. Once the dust mitigation measures outlined in the mitigation section are implemented construction dust emissions will be imperceptible.

9.8.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to air quality and climate are predicted to be imperceptible.

9.9 REFERENCES

BRE (2003) Controlling Particles, Vapours & Noise Pollution From Construction Sites

Government of Ireland (2015) Climate Action and Low Carbon Development Act

Government of Ireland (2019) Climate Action Plan 2019

Government of Ireland (2019) Draft General Scheme of the Climate Action (Amendment) Bill 2019

Government of Ireland (2020) Climate Action and Low Carbon Development (Amendment) Bill 2020

Government of Ireland (2021) Climate Action (Amendment) Bill 2021

EPA (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)

EEA (2014) NEC Directive Status Reports 2013

EPA (2015) Advice Notes for Preparing Environmental Impact Statements – Draft September 2015

EPA (2017) Guidelines on the Information to be contained in Environmental Impact Statements - Draft August 2017

EPA (2020a) Air Quality Monitoring Report 2019 (& previous annual reports)

EPA (2020b) Ireland's Provisional Greenhouse Gas emissions 1990-2019

EPA (2020c) Ireland's Greenhouse Gas Emissions Projections 2019-2040

EPA (2021) EPA Website: http://www.epa.ie/whatwedo/monitoring/air/

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft

Host In Ireland (May 2020) Ireland’s Data Hosting industry 2020 Q1 Update

IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction

Met Éireann (2021) Met Eireann website: https://www.met.ie/

Transport Infrastructure Ireland (2011) Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes

The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings

UK Office of Deputy Prime Minister (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance

UK Highways Agency (2019a) UK Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 LA 105 Air quality

UK Highways Agency (201b9) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate

USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures

World Health Organisation (2006) Air Quality Guidelines - Global Update 2005 (and previous Air Quality Guideline Reports 1999 & 2000)

10.0 NOISE AND VIBRATION

10.1 INTRODUCTION

This chapter evaluates the Noise and Vibration impacts which the proposed development may have noise sensitive locations during the construction and operational stages as defined in the Environmental Protection Agency (EPA) documents *Guidelines on the Information to be contained in Environmental Impact Statements* (EPA, 2017) and *Advice Notes for Preparing Environmental Impact Statements* (EPA, 2015).

The Proposed Development site is illustrated in Figure 10.1 below. The nearest noise sensitive locations are located to the east of the site in the form of a number of private residences along the R135 and the Dogs Trust buildings located to the north east. The immediate eastern boundary of the site is shared with adjacent development lands with the immediate western boundary shared with the existing Huntstown power station.

Figure 10.1 *Site Location and Context*

This proposed development has been assessed and discussed in terms of potential noise and vibration impacts on the surrounding environment.

A glossary of the acoustic terminology used in this chapter is presented in Appendix 10.1.

10.2 METHODOLOGY

10.2.1 Methodology Overview

The following methodology has been adopted for this assessment:

- review appropriate guidance, typical local authority planning conditions, etc. in order to identify appropriate noise criteria for the site operations;
- carry out noise monitoring at a number of locations (e.g. in the vicinity of nearest sensitive properties/boundaries) to identify existing levels of noise in the vicinity of the development;
- prepare construction noise calculations associated with the key construction activities to consider the potential noise impact of the proposed development; and
- comment on predicted noise levels against the appropriate criteria and existing noise levels and outline required mitigation measures (if any).

Appendix 10.1 of this document presents a glossary of the acoustic terminology used throughout this document. In the first instance it is considered appropriate to review some basic fundamentals of acoustics.

10.2.2 Fundamentals of Acoustics

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 0dB (for the threshold of hearing) to 120dB (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 3dB.

The frequency of sound is the rate at which a sound wave oscillates 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 250Hz. 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). An indication of the level of some common sounds on the dB(A) scale is presented in Figure 10.2.

The ‘A’ subscript denotes that the sound levels have been A-weighted. The established prediction and measurement techniques for this parameter are well

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

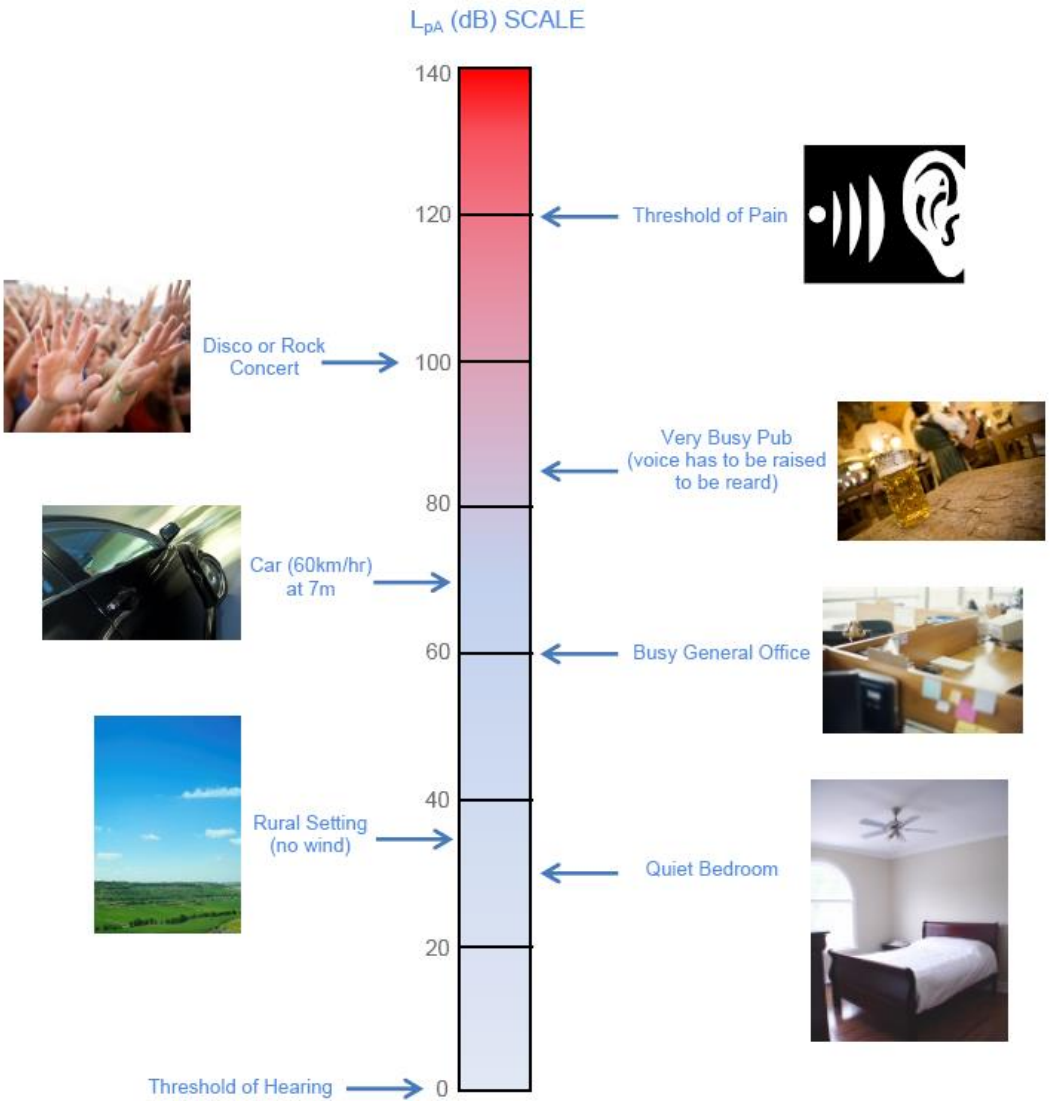

Figure 10.2 *dB(A) Scale & Indicative Noise Levels – (EPA: Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4 – 2016))*

10.2.3 Significance of Impacts

The significance of noise and vibration impacts has been assessed in accordance with the EPA's *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports* 2017 and the EPA's Draft *Advice Notes for Preparing Environmental Impact Statements* 2015, see Tables 10.1 to 10.3 below. As these guidelines do not quantify the impacts in decibel terms, further reference has been made to the '*Guidelines for Environmental Noise Impact Assessment*' produced by the Institute of Environmental Management and Assessment (IEMA) (2014).

With regard to the quality of the impact, ratings may be positive, neutral or negative where:

Table 10.1 *Quality of Potential Effects*

Quality of Effects	Definition
Negative	A change which reduces the quality of the environment (e.g. by causing a nuisance).
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment (e.g. by removing a nuisance).

The significance of an effect on the receiving environment is described as follows:

Table 10.2 *Significance of Effects*

Significance of Effects on the Receiving Environment	Description of Potential Effects
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

The durations of effects as described in the Draft EPA Guidelines are:

Table 10.3 Duration of Effects

Duration of Impact	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

10.2.4 Construction Phase Guidance

Criteria for Rating Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and may consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise*.

The approach adopted here calls for the designation of an NSL into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. A threshold noise value is applied to each category. Exceedances (construction noise only) of the threshold value, at the facade of a sensitive receptor during construction, indicates a potential significant noise impact associated with the construction activities. The threshold values recommended by BS5228-1 are depicted in Table 10.4.

Table 10.4 *Example Threshold of Significant Effect at Dwellings*

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A Note A	Category B Note B	Category C Note C
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends Note D	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

Note A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

Note D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

It should be noted that this assessment method is only valid for residential properties.

For the appropriate period (e.g. daytime) the ambient noise level is determined and rounded to the nearest 5 dB. Based on review of baseline noise monitoring to hand the relevant BS5228-1 threshold values at the various assessment locations are discussed in the Table 10.5.

Table 10.5 *Rounded Baseline Noise Levels and Associated Categories*

Period	Baseline Noise Category	Construction Noise Threshold Value $L_{Aeq,1hr}$ (dB)
Daytime (07:00 – 19:00) and Saturdays	A	65

(07:00 – 13:00)		
Evening (19:00 to 23:00hrs)	A	55
Night time (23:00 to 07:00hrs)	A	45

Guidance on the degree of significance is presented the UK document Design Manual for Roads and Bridges (2020) *LA 111 Sustainability & Environmental Appraisal. Noise and Vibration Rev 2*. The approach is as follows:

- to determine the threshold value for construction noise according to the method from BS5228 described above and
- to compare the predicted construction noise level with the existing noise levels and the threshold value according to the criteria in the Table 12.2 below.

Potentially this procedure is to be followed separately for each noise-sensitive location, however in this instance as the existing noise levels at all survey locations correspond to Category A according to table above, all noise-sensitive locations are considered together.

Similarly, for this proposed development the vast majority of construction works will take place within the 'Daytime' period, i.e. 07:00 – 19:00 on Mondays to Fridays and 07:00 – 13:00 on Saturdays.

The magnitude of the construction noise impact according the DMRB is mapped to the EPA significance terms as detailed in Table 10.6:

Table 10.6 *Description of the magnitude of impacts. Adapted from DMRB Table 3.16*

Predicted Construction Noise Level is	Magnitude of Impact (DMRB)	EPA Significance of Effect
Below or equal Baseline Noise Level	Negligible	Not Significant
Above Baseline and below or equal to threshold	Minor	Slight – Moderate
Above threshold and below or equal to threshold + 5dB	Moderate	Moderate – Significant
Above threshold + 5dB	Major	Significant – Very Significant

This assessment process determines if a significant construction noise impact is likely. Notwithstanding the outcome of this assessment, the overall acceptable levels of construction noise are set out in the Transport Infrastructure Ireland (TII) publication *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*[1], which should not be exceeded at noise sensitive locations during the construction phase of the development. Table 10.7 sets out these levels.

Table 10.7 *Maximum Permissible Noise Levels at the Facade of Dwellings during Construction*

[1] *Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1, 25 October 2004*, Transport Infrastructure Ireland

Days and Times	Noise Levels (dB re. $2x10^{-5}$ Pa)	
	$L_{Aeq(1hr)}$	L_{Amax}
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturdays 08:00 to 16:30hrs	65	75
Sundays & Bank Holidays 08:00 to 16:30hrs	60*	65*

Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.

In exceptional circumstances there may be a requirement that certain construction works are carried out during night-time periods. In these instances, the relevant evening (60 dB L_{Aeq1hr}) and night-time (50 dB $L_{Aeq,1hr}$) will apply.

Therefore, based on the above the following construction noise criteria are proposed for the site in relation to day to day works during the stated construction hours:

70 dB $L_{Aeq,1hr}$ at noise sensitive location

75 dB $L_{Aeq,1hr}$ at commercial property

Criteria for Rating Vibration Impacts

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. In both instances, it is appropriate to consider the magnitude of vibration in terms of Peak Particle Velocity (PPV).

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at around 0.5 mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short duration. For example, rock breaking and piling, two of the primary sources of vibration during construction, are typically tolerated at vibration levels up to 12 mm/s and 5 mm/s respectively. This guidance is applicable to the daytime only; it is unreasonable to expect people to be tolerant of such activities during the night.

Guidance relevant to acceptable vibration within buildings is contained in the following documents:

- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration, and;
- British Standard BS 5228-2: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Vibration.

BS 7385 states that there should typically be no cosmetic damage if transient vibration does not exceed 15 mm/s at low frequencies rising to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above. These guidelines relate to relatively modern buildings and should be reduced to 50% or less for more critical buildings.

BS 5228 recommends that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic

(i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above. Below these values minor damage is unlikely. Where continuous vibration is such as to give rise to dynamic magnification due to resonance, the guide values may need to be reduced by up to 50%. BS 5288-2 also comments that important buildings which are difficult to repair might require special consideration on a case by case basis.

The TII document *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* also contains information on the permissible construction vibration levels as follows:

Table 10.8 *Allowable Vibration during Construction Phase*

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of		
Less than 10 Hz	10 to 50 Hz	50 to 100 Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

10.2.5 Operational Phase – Noise Guidance

Reference has been made to the publication *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016*, which is used to set operational noise limits from activities under the control of the EPA (manufacturing, industrial, waste management etc.). This document sets out a procedure for applying appropriate operational noise limits from this type of facility at the nearest noise sensitive receptors taking account of the background noise environment. Table 10.9 summarises the criteria applied, depending on the prevailing background noise environment.

Table 10.9 *External Noise Limits from Licenced Sites2*

Location	Day, dB $L_{Ar,T}$[3] (07:00 to 19:00hrs)	Evening, dB $L_{Ar,T}$ (19:00 to 23:00hrs)	Night, dB $L_{Aeq,T}$[4] (23:00 to 07:00hrs)
Areas of Low Background Noise	45	40	35
All Other Areas	55	50	45

In order to establish whether the noise sensitive receptors in the vicinity of the site would be considered a 'low background noise' area, the noise levels measured during the environmental noise survey need to satisfy the following criteria:

- Arithmetic Average of LA90 During Daytime Period ≤40dB LA90, and;
- Arithmetic Average of LA90 During Evening Period ≤35dB LA90, and;
- Arithmetic Average of LA90 during Night-time Period ≤30dB LA90.

On review of the noise survey results (refer to Section 10.3), the background noise levels measured are above the assessment criteria outlined in Table 10.5. In this

2 Source: *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016*

3 The Rated Noise Level, $L_{A,r,T}$ is equal to the L_{Aeq} during a specified time interval (T), plus specified adjustments for tonal character and/or impulsiveness of the sound

4 During night time periods the L_{Aeq} parameter is applicable as no tonal or impulsive noise from the facility should be clearly audible or measurable at any NSL.

instance, the operational noise limits for areas of low background noise would therefore not be applicable for the proposed development.

The following noise criteria are appropriate for this development at the nearest noise sensitive locations:

Table 10.10 *Proposed Operational Noise Criteria*

Day (07:00 to 19:00hrs)	Evening (19:00 to 23:00hrs)	Night (23:00 to 07:00hrs)
55dB $L_{Ar\ (15mins)}$	50dB $L_{Ar\ (15mins)}$	45dB $L_{Aeq\ (15mins)}$

The use of the L_{Aeq} parameter for night-time reflects the criterion that tonal or impulsive noise at a noise-sensitive location is not acceptable during night-time periods.

The noise limits stated above apply to all noise emissions from the Proposed Development. Plant will be selected such that there are not audible tonal emissions at noise sensitive locations off site.

Assessment of Significance

The '*Guidelines for Environmental Noise Impact Assessment*' produced by the Institute of Environmental Management and Assessment (IEMA) (2014) have been referenced in order to categorise the potential effect of changes in the ambient noise levels during the operational phases of the proposed development.

The guidelines state that for any assessment, the potential significance should be determined by the assessor, based upon the specific evidence and likely subjective response to noise. Due to varying factors which effect human response to environmental noise (prevailing environment, noise characteristics, time periods, duration and level etc.) assigning a subjective response must take account of these factors.

The scale adopted in this assessment is shown in Table 10.11 below is based on an example scale within the IEMA guidelines. The corresponding significance of impact presented in the Draft '*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*' (EPA, 2017) is also presented.

Table 10.11 *Noise Impact Scale – Operational Noise Sources*

Noise Level Change dB(A)	Subjective Response	Long Term Impact Classification (IEMA, 2014)	Impact Guidelines on the Information to be contained in EIA Reports (EPA)
≥ 0	No change	Negligible	Imperceptible
≥ 0 and < 3	Barely perceptible		Not Significant
≥ 3 and < 5	Noticeable	Minor	Slight – Moderate
≥ 5 and < 10	Up to a doubling or halving of loudness	Moderate	Moderate – Significant
≥10	More than a doubling or halving of loudness	Major	Significant – Profound

The significance table reflects the key benchmarks that relate to human perception of sound. A change of 3dB(A) is generally considered to be the smallest change in environmental noise that is perceptible to the human ear. A 10dB(A) change in noise level represents a doubling or halving of the subjective loudness. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level.

It is considered that the ratings specified in the above table provide a good indication as to the likely significance of changes in noise levels in this case and have been used to assess the impact of operational noise.

Commercial Properties

A number of commercial / industrial properties are located in the vicinity of the site. In terms of noise emissions from the site it is considered that an appropriate noise criterion at these locations is 55dB $L_{Aeq,15min}$. This criterion has been derived with consideration of BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* which recommends that for *Study and work requiring concentrations* in an *Executive office* a design range of 35 to 40 dB L_{Aeq} is desirable internally. Arriving at an external noise level of 55dB $L_{Aeq,15min}$ would ensure that this range of noise levels internally will be achieved.

Recommended Criteria

Following review of relevant guidance, the following noise criteria are proposed for the development:

55dB $L_{Aeq,15min}$ (daytime)

50dB $L_{Aeq,15min}$ (evening)

45dB $L_{Aeq,15min}$ (night time)

Note plant noise emissions are to be designed and plant selected such that they are not tonal and do not have impulsive characteristics at the nearest noise sensitive locations.

10.2.6 Operational Phase – Vibration Guidance

Criteria for Rating Vibration Impacts

There are no vibration emissions associated with the operation of the Proposed Development. Consequently, there is no requirement to set operational vibration criteria.

10.2.7 Forecasting Methods

Construction noise calculations have been conducted generally in accordance with BS 5228: 2009+A1:2014: *Code of practice for noise control on construction and open sites - Noise.*

Prediction calculations for operational building services noise, car park activity and vehicle movements on site have been conducted generally in accordance with ISO 9613 (1996): *Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation.*

Changes in road traffic noise on the local road network have been considered using prediction guidance contained within *Calculation of Road Traffic Noise (CRTN)* issued by the Department of Transport in 1988.

10.3 RECEIVING ENVIRONMENT

A series of noise surveys have been undertaken as part of the EIA Report preparation for the Proposed Development. Table 10.12 reviews the findings of these surveys. Full details of the noise monitoring campaign are presented in Appendix 10.2.

10.3.1 Comment on Noise Levels

Figure 10.3 illustrates the noise sensitive locations in the vicinity of the Proposed Development site at which noise monitoring was undertaken as part of the current assessment.

Figure 10.1 *Noise Monitoring Locations*

Location A Located to the north east of the site and representative of the existing noise environment in the vicinity of the Dogs Trust.

Location B Located beyond the eastern boundary of the site in proximity of the nearest private residential locations to the site.

Location C Located at private residential locations situated off the R135 to the south east of the site. The noise levels at this location would be comparable to those expected at the private residence located on the opposite side of the R135 to Location B.

Location D Located at the nearest private residence located to the south of the site.

Road traffic noise, both distant and local was noted as the most significant source of noise and typically dictated ambient noise levels (i.e. $L_{Aeq,T}$) at the nearest noise sensitive locations to the site during daytime and night-time periods.

Background noise levels (e.g. $L_{A90,T}$) at the various locations were typically dictated by local and distant road traffic noise. These levels fell as would be expected into the early hours of the morning when the volume of traffic on the local and wider road network reduced.

Table 10.12 reviews the typical ambient and background noise levels at the sample locations discussed above.

Table 10.12 *Review of Typical Noise Levels*

Location	Period	Average Measured Noise Level over Survey Period	
		$L_{Aeq,T}$	$L_{A90,T}$
A	Day (07:00 – 19:00hrs)	61	52
	Evening (19:00 – 23:00hrs)	58	49
	Night (23:00 to 07:00hrs)	55	48
B	Day (07:00 – 19:00hrs)	61	54
	Evening (19:00 – 23:00hrs)	57	50
	Night (23:00 to 07:00hrs)	54	48
C	Day (07:00 – 19:00hrs)	62	56
	Evening (19:00 – 23:00hrs)	59	53
	Night (23:00 to 07:00hrs)	55	48
D	Day (07:00 – 19:00hrs)	59	55
	Evening (19:00 – 23:00hrs)	58	54
	Night (23:00 to 07:00hrs)	54	49

Traffic noise from the R135, the M2 and other roads in the study area dictated noise levels at all locations during the survey periods in question.

These typical noise levels have been considered when discussing appropriate noise criteria in relation to the development as outlined in Table 10.8. It is considered that these assumptions ensured and will ensure that appropriate noise criteria are applied to Proposed Development.

10.4 CHARACTERISTICS OF THE DEVELOPMENT

The proposed development site is located on a 4.33 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The proposed development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded

by a c.2.6 m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151 as well as any future development on the wider landholding (as described in Chapter 2, Section 2.4).

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development). The details of the construction and operation of the development in terms of Noise and Vibration is detailed below.

When considering a development of this nature, the potential noise and vibration impact on the surroundings must be considered for each of two distinct stages:

- construction phase, and;
- operational phase.

As stated, the construction phase will involve excavation, general site preparation over the development site and the erection of the new building over a phased construction period. Comment will also be presented in the following sections in relation to construction traffic on local roads in terms of noise and vibration. Construction activities will mostly be carried out during normal daytime working hours. Normal construction hours will be specified by planning conditions of a grant of permission for the Proposed Development, or by the local authority.

The primary sources of outward noise in the operational context are deemed long term and will involve:

- plant noise, and;
- additional vehicular traffic on public roads.

Once operational, there will be no significant off-site noise emissions from the operation of the substations and associated plant.

These issues are discussed in detailed in the following sections.

10.5 POTENTIAL IMPACTS OF THE DEVELOPMENT

10.5.1 Construction Phase

It is predicted that the construction programme will create typical construction activity related noise on site. During the construction phase of the proposed development, a variety of items of plant will be in use, such as excavators, lifting equipment, dumper trucks, compressors and generators.

The proposed general construction hours are 08:00 to 19:00hrs, Monday to Friday and 08:00 to 14:00hrs on Saturdays. Occasional weekday evening works may also be required; however evening activities will be significantly reduced in order to manage any associated noise impacts in an appropriate manner and more stringent construction noise criteria will be applicable during any evening works that may be required. As a result, noise emissions from evening activities are expected to be significantly lower than for other general daytime activities.

Due to the nature of daytime activities undertaken on a construction site there is potential for generation of significant levels of noise. The flow of vehicular traffic to and from a construction site is also a potential source of relatively high noise levels. The potential for vibration at neighbouring sensitive locations during construction is typically limited to excavation works and lorry movements on uneven road surfaces. Due to the proximity of sensitive locations to site works however, there is little likelihood of structural or even cosmetic damage to existing neighbouring dwellings as a result of vibration.

As the construction programme has been established in outline form only, it is difficult to calculate the actual magnitude of noise emissions to the local environment. However, it is possible to predict typical noise levels using guidance set out in BS 5228-1. Table 10.13 outlines typical plant items and associated noise levels that are anticipated for various phases of the construction programme.

For the purposes of the assessment, we have assumed that standard good practice measures for the control of noise from construction sites will be implemented. These issues are commented upon in further detail in the mitigation section of this report.

Table 10.13 *Typical Noise Levels associated with Construction Plant Items (BS5228-1)*

Phase	Item of Plant (BS 5228-1 Ref.)	Construction Noise Level at 10m Distance ($dB\ L_{Aeq,1hr}$)
1 – Site Preparation	Pneumatic Breaker (C5.6)	95
	Rock Breaker (C9.12)	85
	Wheeled Loader Lorry (C2 28)	74
	Tracked Semi-Mobile Crusher (C9.14)	90
	Track Excavator (C2 22)	72
	Dozer (C2.13)	78
	Dump Truck (C4.2)	78
2 – Foundations	Large Rotary Bored Piling Rig – Cast In-Situ (C3.14)	83
	Tracked Excavator (C3.24)	74
	Concrete Pump (C3.25)	78

Phase	Item of Plant (BS 5228-1 Ref.)	Construction Noise Level at 10m Distance (dB $L_{Aeq,1hr}$)
	Compressor (C3 19)	75
	Poker Vibrator (C4 33)	78
3 – Steel Erection	Tower Crane (C4.48)	76
	Sarens SCG 120 Crane	86
	Articulated lorry (C11.10)	77
4 – General Construction	Hand tools	81
	Pneumatic Circular Saw (D7.79)	75
	Internal fit – out	70
5 - Landscaping	Dozer (C2.13)	78
	Dump Truck (C4.2)	78
	Surfacing (D8.25)	68

A number of representative noise sensitive locations have been considered in relation to the Proposed Development as illustrated in Figure 10.4.

Table 10.14 *Assessment Locations*

ID	Description
NSL01	Private residence / office located to the south east of the development site along the R135
NSL02	Private residence / office located to the south east of the development site along the R135
NSL03	Private residence / office located to the south east of the development site along the R135
NSL04	Assumed to be a private residence located on the far side of the R135 beyond the eastern boundary of the site.
NSL05	Nearest façade of the Dogs Trust centre located on the far side of the northern boundary of the development site. This location is understood to be the kennel and administration areas associated with the site.
NSL06	Private staff residences located on the Dog's Trust site.
NSL07	Assumed to be a private residence located on the far side of the R135 beyond the eastern boundary of the site.
NSL08	Nearest residential location to the south of the site at some 640m distance.

Table 10.15 presents the predicted construction noise levels in the vicinity of the site. Calculations have assumed an on time 66% for each item of plant i.e. 8-hours over a 12 hours assessment period.

The highest predicted construction noise level at a specific assessment for the various construction stages has been detailed in Table 10.15.

Table 10.15 *Review of Potential Daytime Construction Noise Impact*

Ref.	Baseline Noise Level dB $L_{Aeq,1hr}$	BS5228-1 Threshold dB $L_{Aeq,1hr}$	Predicted Construction Noise Level for Various Phases (dB $L_{Aeq,1hr}$)				
			Site Preparation	Foundations	Steel Erection	General Construction	Landscaping
NSL01	61	65	45	38	38	43	34
NSL02	61	65	44	35	38	43	36
NSL03	61	65	45	35	37	42	35
NSL04	61	65	45	36	39	43	35
NSL05	61	65	55	46	46	50	45
NSL06	61	65	51	41	45	48	41
NSL07	61	65	47	40	40	45	37
NSL08	59	65	47	38	38	42	36

Table 10.15 details the baseline noise level measured at the nearest survey noise monitoring location or based on expected ambient noise levels in the vicinity of the location based on proximity to an existing noise source (e.g. road). If the predicted construction noise level is below this value, the associated impact is deemed to be 'Not Significant'.

Where the predicted construction noise level is above the baseline noise level but below the stated BS5228-1 threshold value the associated impact is deemed be 'Slight' if 5 dB or more below the threshold and 'Moderate' up to the threshold value. If a predicted noise level is below or equal to the BS5228-1 threshold value, the impact is deemed to be 'Not Significant'. Where the predicted construction noise level is 5dB or mode higher than the BS5228-1 threshold value the impact is assumed to be 'Moderate' to 'Significant'.

Based on the above rationale, and the predicted noise levels presented the assigned impacts are summarised as follows:

Table 10.16 *Review of Potential Daytime Construction Noise Impact*

Ref.	Baseline Noise Level dB $L_{Aeq,1hr}$	BS5228-1 Threshold	Construction Phase (dB $L_{Aeq,1hr}$)				
			Site Preparation	Foundations	Steel Erection	General Construction	Landscaping
NSL01	61	65	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
NSL02	61	65	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
NSL03	61	65	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
NSL04	61	65	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

NSL05	61	65	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
NSL06	61	65	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
NSL07	61	65	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
NSL08	59	65	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

There is no item of plant that would be expected to give rise to noise levels that would be considered out of the ordinary or in exceedance of the levels outlined in Table 10.7 or give rise to a significant impact through the process outlined here. In all cases, the construction noise impact is Not Significant.

It is anticipated that the construction of the facility will be completed during normal construction hours i.e. 08:00 to 19:00hrs Monday to Friday and 08:00 to 14:00hrs on Saturdays. However, it is possible that the contractor may wish to carry out certain operations outside these hours i.e. evening hours during long summer days etc. Such occurrences will be kept to a minimum and take place over a short timeframe and as such are unlikely to cause excessive disturbance. A more stringent construction noise criteria (as per Table 10.7) will be applicable during any evening works that may be required.

10.5.1.1 Construction Traffic

In terms of the additional construction traffic on local roads that will be generated as a result of this development the following comment is presented. In order to increase traffic noise levels by 1dB traffic volumes would need to increase by the order of 25% along the local road network. As outlined in the relevant sections of Chapter 12 relating to traffic, additional traffic introduced onto the local road network due to the construction phase of the Proposed Development will not result in a significant noise impact.

10.5.1.2 Review of Construction Impacts

In terms of noise associated with these construction activities the associated effect is stated to be:

Quality	Significance	Duration
Negative	Not Significant	Short-term

In terms of vibration, due to the distance of activities from the site to the nearest sensitive locations and controlling vibration levels to those detailed in 10.7 the associated effect is stated to be:

Quality	Significance	Duration
Neutral	Not Significant	Short-term

Figure 10.4 Noise Sensitive Locations Considered for Assessment

10.5.2 Operational Phase

In terms of the Proposed Development the noise model has been presented considering the operation of the adjacent proposed datacentre development as described in Chapter 2, Section 2.4.2 to the east of the site. Appendix 10.3 presents detailed of the assumptions made in relation to the development of the data centre model including noise ratings of proposed plant.

Figure 10.4 highlights the nearest noise sensitive locations at which predictions have been carried out. A noise contour is also presented for the proposed substation in order to demonstrate the noise impact of the proposed development over a wider area.

The results of the noise model are presented in Table 10.17. Note all plant will be selected such that no tonal noise emissions are evident at noise sensitive locations.

Table 10.17 *Predicted Plant Noise Levels for Various Scenarios*

Location	Predicted dB $L_{Aeq,T}$
	Proposed Sub Station (current planning application)
NSL01	21
NSL02	21
NSL03	22
NSL04	18
NSL05	24
NSL06	27
NSL07	24
NSL08	35

The above predicted levels are based on a situation where the receiver is downwind of all noise sources. For the purposes of the assessment against the adopted criteria this is a robust worst-case assumption.

Comment on Adopted Noise Criteria Day to Day Operations

The predicted noise levels presented in Table 10.17 have been compared to the relevant daytime, evening and night noise criteria as adopted for this assessment.

All locations are within the relevant adopted limits by a clear margin. All locations comply with the adopted criteria in relation to day-to-day operations. Figure 10.5 presents a noise contour for the proposed development.

Table 10.17 Comparison of Predicted Noise Levels vs. Adopted Noise Criteria

Location	Proposed Sub Station		
	Predicted dB $L_{Aeq,T}$	**Criterion dB $L_{Aeq,T}$**	**Complies?**
NSL01	21	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL02	21	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL03	22	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL04	18	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL05	24	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL06	27	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL07	24	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL08	35	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes

Figure 10.5 *Proposed Substation Development (current planning application) – Day to Day Noise Contour (Extent of 40dB(A))*

Comment *All locations are within the relevant adopted daytime and evening limits by a significant margin. All locations comply with the adopted criteria in relation to day to day operations.*

Summary

The predictions presented are representative of the typical day to day operations envisioned for the site. Review of the predicted noise levels and associated noise contours confirms that the site-specific levels comply with the noise criterion adopted for this assessment.

Review of Increases in Noise Level

Table 10.18 presents the predicted changes in noise level associated with the development at the nearest noise sensitive locations to the site.

Review of the predicted increases in noise level at the nearest noise sensitive locations conclude that the associated impact is '*not significant'* at all locations for the Proposed Development for day, evening and night-time periods. An '*imperceptible'* impact is predicted during all periods and all locations assessed. In essence the existing soundscapes that are encountered at the nearest noise sensitive locations are predicted to remain unchanged in terms of ambient noise levels with the development of the facility introducing a low level of plant noise.

Table 10.18 *Review of Predicted Changes in Existing Noise Levels*

Loc.	Scenario A – Typical Operation Daytime				
	Predicted dB $L_{Aeq,T}$	Background Level dB $L_{A90,T}$	Cumulative Noise Level (dB(A))	Change in Noise Level (dB)	EPA Glossary of Impacts
NSL01	21	56	56	0	Imperceptible
NSL02	21	56	56	0	Imperceptible
NSL03	22	56	56	0	Imperceptible
NSL04	18	54	54	0	Imperceptible
NSL05	24	52	52	0	Imperceptible
NSL06	27	52	52	0	Imperceptible
NSL07	24	54	54	0	Imperceptible
NSL08	35	55	55	0	Imperceptible
Loc.	Scenario A – Typical Operation Evening				
	Predicted dB $L_{Aeq,T}$	Background Level dB $L_{A90,T}$	Cumulative Noise Level (dB(A))	Change in Noise Level (dB)	EPA Glossary of Impacts
NSL01	21	53	53	0	Imperceptible
NSL02	21	53	53	0	Imperceptible
NSL03	22	53	53	0	Imperceptible
NSL04	18	50	50	0	Imperceptible
NSL05	24	49	49	0	Imperceptible
NSL06	27	49	49	0	Imperceptible
NSL07	24	50	50	0	Imperceptible
NSL08	35	54	54	0	Imperceptible

Loc.	Scenario A – Typical Operation Night				
	Predicted dB $L_{Aeq,T}$	Background Level dB $L_{A90,T}$	Cumulative Noise Level (dB(A))	Change in Noise Level (dB)	EPA Glossary of Impacts
NSL01	21	48	48	0	Imperceptible
NSL02	21	48	48	0	Imperceptible
NSL03	22	48	48	0	Imperceptible
NSL04	18	48	48	0	Imperceptible
NSL05	24	48	48	0	Imperceptible
NSL06	27	48	48	0	Imperceptible
NSL07	24	48	48	0	Imperceptible
NSL08	35	49	49	0	Imperceptible

In terms of noise associated with day to day activities the associated effect is stated to be as follows:

Quality	Significance	Duration
Negative	Imperceptible	Long Term

Additional Vehicular Traffic on Public Roads

In terms of the additional traffic on local roads that will be generated as a result of this development the following comment is presented: Considering that in order to increase traffic noise levels by 1dB traffic volumes would need to increase by the order of 25% it is considered that additional traffic introduced onto the local road network due to this development will not result in a significant noise impact. The resultant noise impact is ***neutral***, ***imperceptible*** and ***long-term***.

Vibration

There is no source of vibration associated with the day to day operation of the development that will give rise to impacts at nearby sensitive locations. In terms of these the operational phase of the development the associated effect is stated to be:

Quality	Significance	Duration
Neutral	Imperceptible	Long Term

10.6 REMEDIAL AND MITIGATION MEASURES

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.

10.6.1 Construction Phase

With regard to construction activities, reference has been made to BS5228 Parts 1 and 2, which offer detailed guidance on the control of noise and vibration from demolition and construction activities. Various mitigation measures will be considered and applied during the construction of the proposed development. As an example, the following measures will be implemented on site:

- 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 critical sensitive locations; and
- all site access roads will be kept even so as to mitigate the potential for vibration from lorries.

Furthermore, a variety of practicable noise control measures will be employed, such as:

- 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;
- situate any noisy plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.

We would recommend that vibration from construction activities to off-site residences be limited to the values set out in Table 10.7. It should be noted that these limits are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage these limits may need to be reduced by up to 50%.

Note Appendix 10.4 presents an indicative construction noise and vibration management plan that will be implemented in terms of the day to day operation of the site. This will focus on opening up and maintaining lines of communication with the local community to address issues in relation to noise and/or vibration and to advise the community of periods where specific activities take place (e.g. rock breaking) that have an increased potential in giving rise to issues off site (Note: no rock breaking is anticipated as part of the proposed development).

10.6.2 Operational Phase

Plant Noise

Once operational, there are no noise or vibration mitigation measures required.

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.

Additional Vehicular Traffic on Public Roads

The noise impact assessment outlined previously has demonstrated that mitigation measures are not required.

10.7 RESIDUAL IMPACTS OF THE DEVELOPMENT

This section summarises the likely noise and vibration impact associated with the proposed development, taking into account the mitigation measures.

10.7.1 Construction Phase

The construction noise assessment has shown that in accordance with the 'significance' thresholds presented in the *British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise* there is not a significant impact at residential locations, subject to the implementation of the mitigation measures outlined in Section 10.6.1.

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 (i.e. as per Table 10.5, 10.6 and Section 10.2.4), along with implementation of appropriate noise and vibration control measures (as summarised in Section 10.6.1), will ensure that noise and vibration impact is kept to a minimum. Also, it is reiterated that any construction noise impacts will be ***not significant, negative*** and ***short-term*** in nature.

10.7.2 Operational Phase

Building Services Noise

The robust analysis of potential operational phase plant has shown that in accordance with the scale in the EPA Draft EIA Report Guidelines 2017 there will be a ***not significant, negative, long term*** impact at the closest residences identified on Figure 10.4. The predicted change in background noise level due to current application is the order of 1dB during night-time periods. Ambient noise levels are, and will continue to be, dictated by road traffic noise in the area while a low level of plant noise is expected to be audible during lulls in other sources (e.g. distant traffic noise).

In terms of the nearest commercial properties ***not significant, negative, long-term*** impacts are predicted as the character of the noise environment in the vicinity of this location will not be altered.

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 operational noise assessment of vehicle movements associated with the site has shown that in accordance with the scale in the EPA Draft EIA Report Guidelines 2017 there will be an ***imperceptible, neutral, long-term*** impact off site noise sensitive locations considering existing traffic volumes on the local road network.

10.8 MONITORING/REINSTATEMENT

Noise and vibration monitoring will be considered at critical location during construction periods where elevated noise and/or vibration levels may be expected. This will be done as part of the construction noise and vibration management plan that will be developed for the project, a draft of which is presented in Appendix 10.4

It is considered appropriate that a commissioning noise survey be undertaken once the site becomes operational in order to ensure that the relevant noise criteria put forward in this document are complied with.

Reinstatement is not applicable in respect of noise and vibration.

10.9 REFERENCES

- EPA Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIA Reports) (2017) and draft revised Guidelines on information to be contained in Environmental Impact Statements; and Advice Notes for preparing EIS (2015).

- '*Guidelines for Environmental Noise Impact Assessment*' produced by the Institute of Environmental Management and Assessment (IEMA) (2014).

- *British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise*.

- Transport Infrastructure Ireland (TII) publication *Guidelines for the Treatment of Noise and Vibration in National Road Schemes.*

- British Standard BS 7385: 1993: *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*.

- British Standard BS 5228-2: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Vibration*.

- British Standard BS 4142:2014+A1:2019: *Methods for rating and assessing industrial and commercial sound.*

- BS 8233:2014: *Guidance on sound insulation and noise reduction for buildings.*

- Environmental Protection Agencies *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* (January 2016).

- ISO 1996-2:2017 *Acoustics - Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels.*

- British Standard *BS 6472 (1992): Guide to Evaluation of human exposure to vibration in buildings (1Hz to 80Hz).*

- ISO 9613 (1996): *Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation.*

- *Calculation of Road Traffic Noise (CRTN)* issued by the Department of Transport in 1988.

11.0 LANDSCAPE AND VISUAL

11.1 INTRODUCTION

The purpose of this assessment is to analyse the existing landscape and to assess the likely potential visual impacts arising from the Proposed Development on the existing landscape and any mitigation measures proposed. The criteria as set out in the current EPA Guidelines on Information to be contained in Environmental Impact Assessment Reports (2017, Draft) are used in the assessment of the likely impacts.

The significance of impacts on the perceived landscape will depend partly on the number of people affected, but also on judgments about how much the changes will matter and in relation to other senses i.e. sound, feeling, etc., experienced by those concerned.

11.2 METHODOLOGY

The assessment was carried out by analysis of the proposals through photomontages, plans, aerial photographs, tree survey by 'Rik Pannett, Arboriculture Consultant.', historic maps and by reference to the 'Fingal Development Plan 2017-2023', including specific reference to Section 9.4 'Landscape Character Assessment'.

This chapter has been prepared having regard to the following guidelines:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- 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 Environmental Impact Assessment Reports – Draft (EPA, 2017); and
- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (Landscape Inst. + IEMA 2013).

11.3 RECEIVING ENVIRONMENT

11.3.1 Site Context and Description

The subject site is located in the townland of Huntstown, north of Finglas West and west of Dublin Airport in North-West Dublin. Dogs Trust Ireland HQ is located to the immediate North-West of the subject lands along with some low-density commercial development, farmland and the N2 Motorway, which also extends to the east of the lands to meet the M50 Motorway. To the East of the subject lands, beyond the neighbouring agricultural field are the R135 Road and some larger scale industrial units. Huntstown Power Station and Roadstone Quarries are located to the west of the subject lands, while an associated access road is located to the immediate South.

Figure 11.1 *Wider Landscape Context*

The subject lands would be considered to have the character of an agricultural field with traditional hedgerow boundaries both around and within the site. Due to the nature of the development, for the most part the site boundary is not defined by physical features. The site boundary is defined to the North by an existing field hedgerow; however, the southern eastern and western boundaries have no physical elements associated. The subject lands extend across the access road to the South, while to the East, they overlap with the lands associated with the adjacent data centre development (refer to Section 11.4). The design of the proposed substation integrates into the existing Huntstown Substation, therefore there is no physical boundary on the western side.

General Landscape Setting

In the wider landscape the site is located in a generally flat area between four landscape typologies. The land to the North would be that associated with the flat agricultural land of North County Dublin, displaying traditional field patterns and hedgerow boundaries. Beyond the M50 Motorway to the South, development is mainly residential, typified by areas such as Finglas West, Ashtown and Glasnevin. Lands to the East are dominated by Dublin Airport and its ancillary infrastructure and buildings. To the West of the site, development is predominantly industrial and commercial, characterised by very large built developments. Huntstown Power Station, Roadstone Quarries and Rosemount and North West Business Parks are examples of this.

Trees and Vegetation

A tree survey was undertaken as part of the application for the neighbouring Data Centre, this also covers the vegetation on the subject lands. According to the Tree Survey and Report, by Rik Pannett, Arboriculture Consultant (included in Appendix 11.2) , the tree cover on the overall development site consists mostly of Ash, Beech, Lime, Oak, Pine and Sycamore, while the hedgerows consist of typical native species such as Blackthorn, Elder and Hawthorn.

Trees and vegetation found on the site for the Proposed Development lands includes a native hedgerow of Blackthorn, Elder and Hawthorn which traverses the site and contains a number of emerging Ash and Elm trees. To the West of this hedgerow, there is also a large tree group consisting of Ash, Beech, Oak and Scots Pine.

11.3.2 Characteristics of the Site and Environs

The character of the site and its environs has largely been determined by the following:

- the flat topography of the subject site and its surrounding environs
- landscape history of agricultural use with grassland and traditional hedgerow field boundaries.
- a number of large trees within hedgerow boundaries.
- a small number of individual residences located in the local area.
- the number of large-scale industrial and commercial built developments in the local area and on subject lands.
- the extent of large-scale infrastructure in the local area

The Proposed Development site has the character of an agricultural field with traditional hedgerow field boundaries. Part of the subject lands also extend into the existing Huntstown Power Station, therefore this part of the site has the character of an industrial/infrastructural development

The surrounding environment can be split into two landscape types. The landscape to the North with its historic field patterns would be considered an ‘agricultural landscape’. The landscape to the South, East and West typified by large scale industrial and commercial developments and associated transport centres and infrastructure would be considered an ‘industrial landscape’.

From a study and analysis of various historical map series; OSI 6-inch maps (1837-42) and OSI 25-inch maps (1888-1913), conclusions could be drawn on the landscape history of the local lands. The regional R135 Road in existence today is evident on historic maps as ‘North Road’ and appears to have been an important transport link at the time of mapping. The subject lands although now considered to be in Huntstown were at the time of mapping in the townland of Johnstown. Location of a number of the existing hedgerows on the lands can be traced back to the above maps. Due to the extent of industrial development in the local area many of the hedgerow boundaries on surrounding lands have been either removed or modified in recent times. It is clear from the historic mapping that at the time, the local lands were rural areas with scattered residential settlement in the form of rural villages, the closest to the subject lands being that of ‘Williamsville’ located to the East of the subject lands.

The landscape of the subject lands has no inherent aesthetic qualities of note.

Existing Views and Visibility

Due to the topography on subject and local lands and the significant number of trees and hedgerows in the area, the subject lands are not visible from many locations in the wider landscape. The western half of the subject lands lack any vertical features and are therefore not at all visible in the wider landscape. Where partial or distant views are possible it is the trees and the existing built developments in the local area which are most visible and prominent. The western half of the subject lands incorporates a portion of the existing Huntstown Power Station, these are the most prominent vertical features on subject lands

11.3.3 Landscape Planning

Within the Fingal Development Plan 2017-2023 there is 1 no. specific landscape objective that applies to the subject lands 'Objective NH36' as listed below. There are additionally a number of objectives that apply to the general environs of the site.

Green infrastructure objectives

- GI Objective 1 states: 'Create an integrated and coherent green infrastructure for the County by requiring the retention of substantial networks of green space in urban, urban fringe and adjacent countryside areas to serve the needs of communities now and in the future including the need to adapt to climate change.
- GI Objective 7 states: 'Integrate the provision of green infrastructure with infrastructure provision and replacement, including walking and cycling routes, as appropriate, while protecting biodiversity and other landscape resources.'
- GI Objective 19 states: 'Require all new development to contribute to the protection and enhancement of existing green infrastructure and the delivery of new green infrastructure, as appropriate'
- GI Objective 23 states: 'Ensure biodiversity conservation and/or enhancement measures, as appropriate, are included in all proposals for large scale development such as road or drainage
- GI Objective 35 states: 'Ensure green infrastructure provision responds to and reflects landscape character including historic landscape character, conserving, enhancing and augmenting the existing landscapes and townscapes of Fingal which contribute to a distinctive sense of place.'

Landscape Character Assessment Objectives

- Objective NH31 states: 'Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement patter, historic heritage, local vernacular heritage, land-use and tranquility.'
- Objective NH36 states: 'Protect skylines and ridgelines from development.'

There are **no protected trees or tree groups** within the subject lands listed in the Fingal Development Plan 2017-2023.

There are **no views or prospects** that include the subject lands listed in the Fingal Development Plan 2017-2023.

In the Landscape Character Assessment of Fingal, which can be found in Section 9.4 of the Fingal Development Plan 2017-2023, the subject lands are designated as having a 'Low Lying Character Type' which is characterised by agricultural pasture and arable land, with limited protected views or prospects. This area is listed as having a low landscape sensitivity and where appropriate screening and mitigation is proposed can tolerate a certain amount of built development.

Some of the 'Principles for Development' which apply to the Proposed Development are listed below:

- The skyline should be protected'
- 'Existing tree belts should be retained and managed and older stands of trees restocked. Roadside hedging should be retained and managed. Proposals necessitating the removal of extensive field and roadside hedgerows or trees should not be permitted. Strong planting schemes using native species, to integrate development into these open landscapes, will be required.'

11.3.4 Summary of Significance and Sensitivity of the Existing Landscape and Visual Environment

The flat topography of the wider area reduces the opportunity for expansive views over the landscape. The visual sensitivity is reduced further by the large industrial facilities close to the site, most notably the power station abutting the site to the west. The area is zoned in the development plan for Industrial uses and is considered in planning terms to be an extension of the surrounding industrial landscape. The industrial development general infrastructure in the area have created a landscape where there are no views of any notable landscape value in local and wider area. There are also no landscape planning objectives that relate specifically to the site

11.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

A full description of the proposed development, including phasing, is provided in Chapter 2 (Description of Development), and illustrated in the drawings accompanying the application. The Proposed Development involves the following works that have the potential to impact on the landscape. The characteristics listed below are in accordance with the proposed plans outlined as part of the drawings submitted as part of the planning application and can be summarised as:

Construction of a 2 storey 220kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m.

The compound includes 4 no. 220kV/20kV transformers, 4 no. 20kV switchgear buildings and 1 no. mv control room buildings (c.5m high and c. 35.5 sqm in area each), 220kV series coil (equipment), fire walls (ranging from c.10m-12.5m high), lightning finials and monopoles (c.20m high). The overall compound is surrounded by a c.2.6m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151.

Underground cabling as follows: the underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff

cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220kV Corduff cables and 220kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

The wider site, including the proposed substation site; are the subject of a development on adjacent lands of a two-storey data centre facility as submitted under application Reg. Ref. FW21A/0151. A planning decision on this recent application is currently pending decision from Fingal County council. There is also a separate application on subject lands, also pending a decision from FCC, for the undergrounding of existing overhead lines under application Reg. Ref FW21A/0144.

For clarity, throughout the rest of this document, the proposed substation development will be referred to as **'Proposed Development'**, while the development of the neighbouring Data Centre Development under FW21A/0151 and the undergrounding of the overhead lines' application FW21A/0144 will be referred to as **'Concurrent Development'.**

11.5 POTENTIAL IMPACTS OF PROPOSED DEVELOPMENT

Landscape assessments measure the sensitivity of specific landscape types and features and describe the nature and significance of changes to that landscape occurring because of a proposed development. In general, it can be assumed that landscape and visual impacts are intrinsically linked however both types of impacts are assessed separately in this study where a development characteristic may result in a starkly different type, quality or magnitude of impact in landscape or visual terms. The assessment of likely significant impacts has been made on the basis that all incorporated design mitigation measures are included.

Character, for the purposes of this assessment refers to the interaction of elements in the landscape that combine to give the area its identity. In this context, impacts on character include the effect on existing land uses and responses that are felt towards the combined effects of the new development.

11.5.1 Construction Phase

The change of use of the site from its current state to that of a construction site has the potential to result in the following impacts:

- Visual impacts due to the introduction of new structures, access roads, machinery, materials storage, associated earthworks, car parking, lighting and hoarding.
- Change of character due to the change in use.
- Visual impacts due to the removal of trees and vegetation.
- Visual impacts as a result of change in ground level and earthworks.

Removal of vegetation.

Any trees required to be removed to accommodate the proposed development will be mitigated by design measures implemented under the concurrent application for the Data Centre Refer to the Arborists package for details. The impacts in this instance have been mitigated by design measures taken to ensure that the trees that are more visually prominent, around the perimeter, are retained and protected adequately during construction along with a comprehensive landscape scheme proposing the planting of a significant amount of new woodland. The impact would be considered negative, long term in duration and moderate.

Change in use to a construction site.

The change of use of the site from its existing use to that of a construction site will result in an impact on the landscape character. The initial construction operations created by the clearance of the site and the construction of the buildings and plant will give rise to short-term impacts on the landscape character, through the introduction of new structures, machinery, ancillary works etc., There will also be a change to the landscape character as a result of a land-use change.

The Proposed Development site is located in close proximity to the Huntstown Power Station and Roadstone Quarry and the proposed Data Centre scheme on the adjoining lands. Consequently, the visual elements associated with construction would be considered part of a developing industrial landscape, the proposed development also forms part of a larger Potential Future Development as, described in Section 11.4, the scale of which exceeds the Proposed Development.

With the above considered the impact on the landscape character during construction would be negative and considered significant in magnitude and short-term in its duration.

11.5.2 Operational phase

The Development has the potential to result in the following impacts:

- Visual impacts due to the introduction of new buildings and built structures.
- Visual impacts due to the introduction of new roads, parking, mechanical plant and lighting.
- Change of character due to the change in use.
- Visual impact of landscape proposals associated with the Concurrent Development-earth modelling, hard surfaces, installation of new trees and vegetation.

Impact on Landscape Character

The operational phase will give rise to a noticeable change in the landscape character. The initial impact of the built development on the landscape character would be

perceived as negative in the short-term due to the change in type from a field to a built development.

The subject lands are specifically zoned for this type of development and there have been recent large-scale developments in the local vicinity. Many of these built developments are visible from the Proposed Development site. In this context the Proposed Development would be considered a continuation of existing trends in the local area.

The overall impact on the landscape character would therefore be considered negative, long-term and moderate in magnitude.

Visual impacts due to the introduction of new buildings and built structures

The Proposed Development and Concurrent Developments are intrinsically linked and are therefore all shown in the proposed views. The visual impact of the Proposed Development has been assessed with the Concurrent Developments taken into consideration. Although the height of the proposed substation buildings is at a considerable 20m, the scale of the Concurrent Development nullifies the visual impact of the Proposed Development as illustrated in the attached photomontages (Refer to Section 11.6.1)

The new buildings and built structures under the Proposed Developent will not be visible from the surrounding landscape. The overall visual impact would be considered neutral and long-term due to the extent of screening and scale of the buildings associated with the Concurrent Development paired with the level of similar scale development in the surrounding area.

The extent of potential visual impact of the Proposed Development on the built environment from 8 representative view locations is discussed in section 11.8.1. The view locations assessed are representative of locations from which it was suggested by mapping analysis that development might be visible. The view locations chosen for assessment stem from the application for the Potential Future Development and were agreed with Fingal County Council Planning Department after the desktop study and an initial assessment of visibility in the local landscape. Photomontages prepared by Digital Dimension Ltd. from these locations are included with this submission, as a separate A3 document.

Landscape and visual impacts due to the introduction of a new landscape.

The proposed landscape as part of the concurrent data centre development will create significant belts of native woodland on undulating earth berms. The proposed woodland will screen views of the proposed development in the wider landscape.

The native woodland to be created will be visible from the surrounding landscape and will result in a positive impact on local views. The impact of the proposed landscape scheme would be considered positive, long-term, and significant in magnitude.

Impact on Landscape Planning

The Green Infrastructure objectives that apply to the site and its environs, described under section 11.3.2 above, are mostly general objectives aimed at the protection of the existing green infrastructure network and strengthening ecological links in the wider landscape. The proposed landscape as part of the Concurrent Development will create significant belts of native woodland linking the existing hedgerows and trees into a

much larger ecological habitat. Most of the existing trees and hedgerows will be retained and improved and strengthened by the additional native planting proposed and invasive species management. The level of tree cover and woodlands proposed will significantly increase the ecological value of the lands and create strong ecological corridors through the site and connecting to the wider environment. The proposal would be considered in accordance with these policy objectives.

11.5.3 *Summary of Potential Impacts*

Table 11.1 *Impacts During Construction accounting for Incorporated Design Mitigation only*

Impact	Quality	Significance	Extent	Probability	Duration
Removal of Vegetation	Negative	Moderate	Local	Likely	Long Term
Change of Landscape Type	Negative	Moderate	Local	Likely	Long Term

Table 11.2 *Impacts During Operation accounting for Incorporated Design Mitigation only*

Impact	Quality	Significance	Extent	Probability	Duration
Landscape Character	Negative	Moderate	Local	Likely	Long Term
Visual Impact of Built Structures	Neutral	N/A	N/A	Likely	Long Term

11.6 REMEDIAL AND MITIGATION MEASURES

11.6.1 Incorporated Design Mitigation

As discussed in Section 11.4, the Proposed Development is part of a wider Concurrent Development. Therefore, the Proposed Development and all of its elements; buildings, structures, infrastructure, etc. has been designed and located in this context. The mitigation measures of the Concurrent Development; earthworks modelling, large tree planting, woodland planting and the retention of existing vegetation, have been put forward to provide adequate screening to the proposed substation.

11.6.2 Construction Phase Mitigation

The protection of existing trees and other vegetation to be retained to BS 5837:2012 standards with the Root Protection Area (RPA) securely protected by fencing for the duration of the construction process.

Implementation and monitoring of a well-managed and organised construction site, with control of construction activity, traffic, materials storage and lighting with due consideration for neighbouring residences

11.6.3 Operational Phase Mitigation

Implementation and monitoring of a landscape management plan for the full duration of the defects liability period to ensure successful establishment of all proposed trees and vegetation under the Concurrent Development.

Periodic tree surveys and implementation of a tree management plan for the mature trees on subject lands for the Proposed and Concurrent Development to ensure their continuing sustainability.

11.7 SUMMARY OF RESIDUAL IMPACTS

Table 11.2 *Impacts During Construction accounting for Incorporated Design Mitigation only*

Impact	Quality	Significance	Extent	Probability	Duration
Removal of Vegetation	Negative	Moderate	Local	Likely	Long Term
Change of Landscape Type	Negative	Moderate	Local	Likely	Long Term

Table 11.2 *Impacts During Operation accounting for Incorporated Design Mitigation only*

Impact	Quality	Significance	Extent	Probability	Duration
Landscape Character	Negative	Moderate	Local	Likely	Long Term
Visual Impact of Built Structures	Neutral	N/A	N/A	Likely	Long Term

11.7.1.1 *Visual Impacts from Specific Locations*

The extent of potential visual impact of the proposed development on the surrounding environment from 8 representative view locations around the proposed development. The photomontages on which the following assessments is based are provided in a separate document Appendix 11.1.

Figure 11.2 *Specific View Locations*

The Proposed Development is not visible from any of the above viewpoints, existing landscape features in the wider area along with the buildings and landscape scheme associated with the Potential Future Development deter any views of the Proposed Development.

As can be seen in Views 1, 3, 4 and 9, even where expansive views are offered over the subject lands, the Proposed Development is still hidden from view. The prominent features in these views are the proposed data halls, earth berms and large trees associated with the Concurrent Development.

In Views 1-8, the impact of local landscape features on the Proposed Development is apparent, with existing tree lines, hedgerows, railings, walls and buildings creating visual barriers in the landscape and preventing long-distance views of the Development.

View 1: From the N2 slip road at the R135

View 2: From the R135 on the eastern perimeter of the site

View 2: From the R122 to the east

View 3: From the pedestrian fly over at M50, Junction 5

View 4: From the roundabout at Cappagh Road at the M50

View 5: From the roundabout at Cappagh Road to the west

View 6: From the R135 to the north of Kilshane Cross

View 7: From the R135 to the south of 'The White House', public house

View 8: From the N2 flyover at Kilshane Cross

11.8 MONITORING OR REINSTATEMENT

Contracts will ensure good working practices to reduce any negative impacts arising from construction to the lowest possible level and to ensure that all machinery operates within clearly defined construction areas. Storage areas will be located to avoid impacting on sensitive views, trees, hedgerows, drainage patterns etc. and such areas will be fully re-instated prior to, and at the end of the construction contract. The works will also have continuous monitoring so as to ensure adequate protection of areas outside of the construction works.

12.0 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

12.1 INTRODUCTION

The following chapter assesses the predicted impacts of the proposed development on archaeological, architectural and cultural heritage. The development is located in the townlands of Huntstown and Johnstown in the Civil Parish of Castleknock, in the Barony of Castleknock, in the County of Dublin (ITM 711419, 741392; see Figure 12.1). The study area comprised a buffer of approximately 1.5km from the site, incorporating the following townlands: Balseskin, Coldwinters, Dubber, Grange, Huntstown, Kildonan, Kilshane and Newtown.

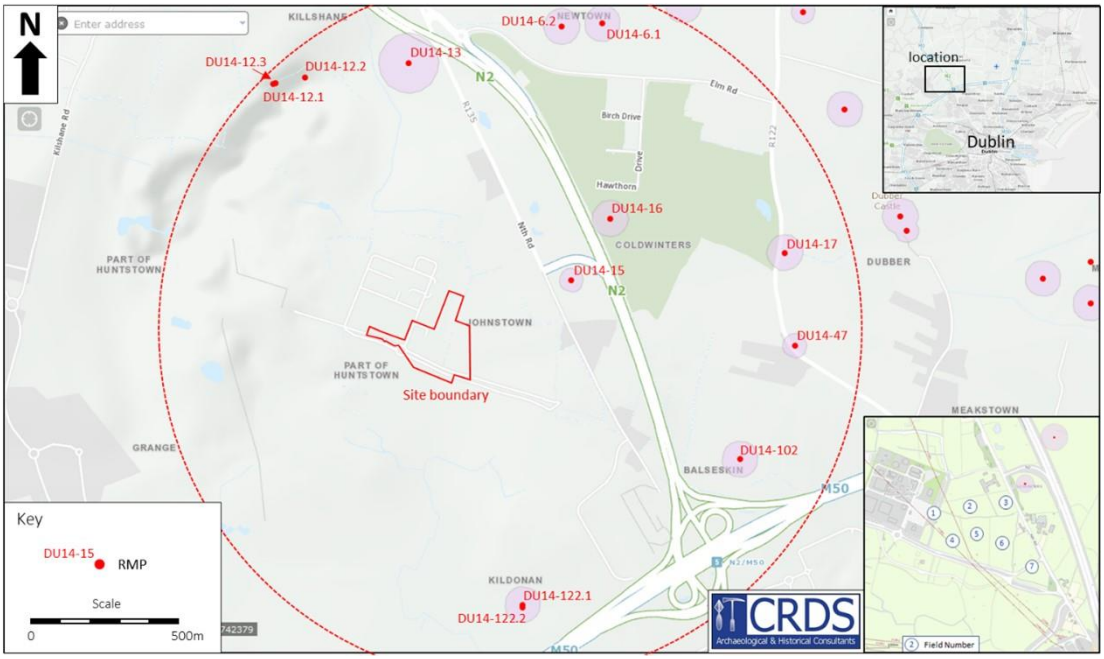

Figure 12.1 *Site location map showing Recorded archaeological monuments within c. 1.5km of the proposed development. Field numbers are also shown (insert) (source: www.archaeology.ie)*

12.2 METHODOLOGY

To set the proposed development within its wider archaeological, architectural and cultural heritage landscape, and to assess the potential of encountering such features on the site, a paper survey of archaeological, architectural heritage, historical and cartographic sources was undertaken. The following townlands were assessed: Balseskin, Coldwinters, Dubber, Grange, Huntstown, Kildonan, Kilshane and Newtown.

12.2.1 Recorded archaeological sites and monuments

The Record of Monuments and Places (RMP), comprising the results of the Archaeological Survey of Ireland, is a statutory list of all recorded archaeological monuments known to the National Monuments Service. The RMP was established under the National Monuments (Amendment) Act, 1994. The relevant files for these sites contain details of documentary sources and aerial photographs, early maps, OS

memoirs, the field notes of the Archaeological Survey of Ireland and other relevant publications. Sites included on the RMP all receive statutory protection under the National Monuments Acts 1930 - 2004. The information contained within the RMP is derived from the earlier non-statutory Sites and Monuments Record (SMR); some entries, however, were not transferred to the statutory record as they refer to features that on inspection by the Archaeological Survey were found not to merit inclusion in that record or could not be located with sufficient accuracy to be included. Such sites however remain part of the SMR. The record is a dynamic one and is updated so as to take account of on-going research. The RMP was consulted in the Archives of the Department of Culture, Heritage and the Gaeltacht. There are no recorded archaeological monuments located within the site boundary. There are fourteen recorded archaeological monuments within the study area which comprises a distance of c. 1.5km from the proposed development (see Figure 12.1 and Appendix 12.1).

12.2.2 Recorded archaeological finds

The topographical files in the National Museum of Ireland were not available for consultation at the time of the study, due to the Covid-19 outbreak. This is the National archive of all known finds recorded by the National Museum. It relates primarily to artefacts but also includes references to monuments and has a unique archive of records of previous excavations. Published catalogues of prehistoric material were studied: Raftery (1983 - Iron Age antiquities), Eogan (1965; 1993; 1994 - bronze swords, Bronze Age hoards and goldwork), Harbison (1968; 1969a; 1969b - bronze axes, halberds and daggers) and the Irish Stone Axe Project Database (Archaeology Dept., U.C.D.). The Heritage Maps website (http://www.heritagemaps.ie/) was also assessed. Only one archaeological find was recorded in these sources (Appendix 12.2). However, it is important to note that numerous artefacts would have been recorded during the excavation of archaeological sites as listed below (see Section 12.3.3

12.2.3 Recorded archaeological excavations

The excavations bulletin website (www.excavations.ie) was consulted to identify previous excavations that have been carried out within the study area. This database contains summary accounts of excavations carried out in Ireland from 1970 to 2019. The townlands within the study area were assessed and the results given in Appendix 12.3.

12.2.4 Architectural heritage

The National Inventory of Architectural Heritage (NIAH) is a systematic programme of identification, classification, and evaluation of the architectural heritage of the State. The Minister for Arts, Heritage and the Gaeltacht is currently using the Inventory as the basis for making recommendations for the NIAH. There are no structures included in the NIAH within c. 1.5km of the proposed development lands. There are also no structures identified in the Record of Protected Structures within the study area.

12.2.5 Cartographic sources

Cartographic sources were used to identify additional potential archaeological and cultural heritage constraints. Analysis of cartographic sources is important in tracing the development of the site. Sources included:

- William Petty's 1660 map (Figure 12.2)
- Rocque's 1760 map (Figure 12.3)

- Ordnance Survey 1st Edition – Scale 6 inches: 1 mile (1838-1842). The first comprehensive series of maps covering the whole of Ireland, which was the first country in the world to be mapped in this manner (Figure 12.4).
- Ordnance Survey 25-inch Maps: Scale 25-inches: 1 mile. Mostly date from the 1890s up to c. 1915 with later printings (Figure 12.5)

12.2.6 Griffith's valuation

Griffiths Valuation was the first full-scale valuation of property in Ireland, overseen by Richard Griffith and published between 1847 and 1864. It is one of the most important surviving 19th century genealogical sources (http://www.askaboutireland.ie/griffith-valuation/; see Figure 12.6 and Appendix 12.4).

12.2.7 Aerial photography

Available online sources for aerial photography were consulted, including the Ordnance Survey, Geological Survey and National Monuments Service collections (see Figures 12.7 - 8).

12.2.8 County development plan

The Fingal Development Plan 2017-2023 was also consulted. The plan includes policy objectives for the protection of the County's archaeological, architectural and cultural heritage. The Record of Protected Structures (RPS) contained within the plan includes every structure which is of special architectural, archaeological, artistic, cultural, scientific, social or technical interest within the county boundaries.

12.2.9 Historical research

The baseline historical research utilised sources including Lewis' Topographical Dictionary of Ireland (Lewis 1837), the Proceedings of the Royal Irish Academy and the Journal of the Royal Society of Antiquaries. See Bibliography for full list of references used.

12.2.10 Archaeological testing

A significant portion of the proposed development lands have been subjected to geophysical survey by J.M. Leigh Surveys Ltd (License No. 19R0159), and archaeological testing by IAC Ltd (License No. 19E0645). These have been reviewed in the context of the proposed development.

A further, more detailed programme of pre-development archaeological testing was undertaken by AMS Ltd, under license to the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht Gaeltacht (Licence no. 21E0185 & 21R0064; see Appendices 12.5 and 12.6).

12.3 RECEIVING ENVIRONMENT

12.3.1 Archaeological, Architectural and Cultural Background

The proposed development lands comprise two townlands in the Barony of Castleknock, County Dublin (Fingal County), Huntstown and Johnstown. Huntstown is in the Electoral Division of Blanchardstown, in Civil Parish of Castleknock, in the Barony of Castleknock, in the County of Dublin. The Irish name for Huntstown is Baile

an Huntaigh. Johnstown is in the Electoral Division of Blanchardstown, in Civil Parish of Castleknock, in the Barony of Castleknock, in the County of Dublin. The Irish name for Johnstown is Baile Sheáin.

The recorded archaeology within approximately 1.5km of the proposed development lands is shown below in Tables 1 and 2 (see also Figure 12.1 and Appendices 12.1 – 12.3).

Table 12.1 *Recorded archaeological monuments and places within c. 1.5km of the proposed development lands (source www.archaeology.ie; see Figure 12.1 and Appendix 12.1)*

Record No.	Townland	Classification
DU014-006001-	NEWTOWN (Coolock By., Finglas ED)	Ringfort - unclassified
DU014-006002-	NEWTOWN (Coolock By., Finglas ED)	Ringfort - unclassified
DU014-012001-	KILSHANE	Church
DU014-012002-	KILSHANE	Burial ground
DU014-012003-	KILSHANE	Ritual site - holy well
DU014-013----	NEWTOWN (Coolock By., Finglas ED)	Castle - motte and bailey
DU014-015----	COLDWINTERS (Castleknock By.)	Ring-ditch
DU014-016----	COLDWINTERS (Castleknock By.)	Enclosure
DU014-017----	DUBBER	Enclosure
DU014-047----	DUBBER	Inn
DU014-102----	BALSESKIN	Enclosure
DU014-122001-	KILDONAN	Enclosure
DU014-122002-	KILDONAN	Kiln - corn-drying

Prehistory (c. 8000 BCE – 400 AD)

Although recent discoveries may provide evidence for human occupation of Ireland in the Upper Palaeolithic (Dowd and Carden 2016), the Mesolithic period is the earliest time for which there is clear evidence of prehistoric activity in Ireland. During this period people hunted, foraged and gathered food and appear to have had a mobile lifestyle. The most common evidence indicative of Mesolithic activity at a site comprises of scatters of worked flint material; a by-product from the production of flint implements (Stout & Stout 1997). Outside of the coastal areas, County Dublin has so far yielded little archaeological evidence dating to the Mesolithic period. Nonetheless, it has been suggested that the riverine landscapes of the Liffey were likely to have been inhabited towards the early part of the Mesolithic period (Kador 2007).

The Neolithic period saw the introduction and adoption of agriculture to Ireland. To facilitate farming, the landscape was altered dramatically, with forest clearance and the construction of field boundaries. Settlement become more permanent and pottery was produced, possibly for the first time.

Table 12.2 *Recorded archaeological excavations within c. 1.5km of the proposed development lands (source www.excavations.ie; see Appendix 12.3)*

Excavation	Location	SMR	Licence	Site type
1988:18	Kilshane	N/A	—	Christian Cemetery
1999:253	Kilshane	DU14-48	99E0220	Unenclosed cemetery

Excavation	Location	SMR	Licence	Site type
1999:269	Newtown	N/A	99E0028	Cultivation furrows
2001:430	Huntstown	N/A	01E1108	No archaeological significance
2001:456	Newtown	DU14-13	01E1214	Site of motte and bailey
2002:636	Newtown	DU14-13	01E1214 ext.	Near motte and bailey
2003:475	Coldwinters	N/A	02E1353 ext.	No archaeological significance
2003:476	Coldwinters	N/A	03E1450	No archaeological significance
2004:612	Kilshane	N/A	03E1359 ext.	Neolithic segmented enclosure, Early Bronze Age activity
2004:613	Kilshane	N/A	04E1191	No archaeological significance
2004:631	Newtown	N/A	03E1450 ext.	Burnt spread
2005:409	Coldwinters/ Newtown	N/A	05E0236	Prehistoric/medieval
2008:384	Coldwinters	N/A	05E0236	Testing
2008:481	Newtown	N/A	08E0043	Monitoring
2010:280	Kildonan	N/A	10E0462	Kildonan Corn-drying kilns and enclosure site
2017:424	Coldwinters	DU14-16	17E0285	Enclosure; Cremation
2018:257	Newtown	DU14-6.1	17E0569	Ringfort
2018:258	Newtown	DU14-6.2	17E0570	Ringfort
2018:259	Newtown	DU14-6.1	17E0569 ext.	Ringfort
2018:820	Huntstown	N/A	18E0561	No archaeology found

A concern for territory on which to farm contributed to the construction of megalithic tombs. These communal burial places would have required great planning and cooperation to construct and likely also served as a focus of ceremonial activities for the communities that built them. There are four types of megalithic tomb; court cairn, portal, passage and wedge tombs.

While the uplands of Dublin feature a number of megalithic tombs there are no sites of this type, or recorded habitation sites, located within the vicinity of the proposed development area.

The Bronze Age is marked for the production and use of metal in Ireland of the first time. Megalithic tombs were replaced in favour of individual, subterranean cist or pit burials that were either created in isolation or in small cemeteries. These burials contained inhumed or cremated remains and were often, but not always, accompanied by a pottery vessel. Different forms of burial barrows were being constructed during this period, as well as large scale ceremonial monuments such as henges. A ring ditch (DU014-015) is located 75m northeast of the proposed development area. The monument is recorded as c. 15m in diameter and was identified on an aerial photograph. A review of satellite imagery has shown that the monument was subject to archaeological testing in 2017 (Stirland 2017). The monument was located during

testing, with a circular slot trench possibly representing a structure/round house, rather than a burial monument. No dating evidence was recovered during the investigation.

Bronze Age activity is often clearly identifiable in the landscape by the presence of fulachta fiadh or burnt mounds. Over 4,500 fulachta fiadh have been recorded in Ireland making them the most common prehistoric monument in Ireland. These sites were used to heat water using hot stones. They have been interpreted as places where cooking, dyeing, brewing or bathing took place (O'Kelly 1954; Quinn and Moore 2009). A fulacht fiadh (DU014-050) was identified c. 1.3km west-southwest of the proposed development area during investigations for a gas pipeline in 1988. In the wider landscape, a bronze axehead was discovered c. 1.5km north-northeast in the townland of Newtown (NMI Ref.: 1962:259).

The Iron Age is period is traditionally known as a period for which we have little evidence. However, there is increasing evidence for Iron Age settlement and activity in recent years as a result of development-led excavations as well as projects such as LIARI (Late Iron Age and Roman Ireland). Large defensive structures and earthworks known as promontory or hill forts are characteristic of the period. The former is a banked and ditched structure located above a steep cliff or bluff and often found in coastal areas. Whilst a number of promontory forts are located along the coast of north County Dublin, there are no known Iron Age sites located within the vicinity of the proposed development area.

Early Medieval (c. 400 – 1100 AD)

Ireland at this time was a patchwork of larger and smaller kingdoms known as túath and trícha cét respectively. During this period, Ireland is depicted in the surviving historical sources as entirely rural. Huntstown and Johnstown were part of territory of Brega and earliest historical records note that the Síl nÁedo Sláine, a dynasty of the southern Uí Néill, were the dominant rulers during the early medieval period (Byrne 1973, 88). They likely paid tribute and gave fealty to the King of Tara.

Secular habitation sites in the early medieval period include crannógs, cashels and ringforts, which are largely defined as circular enclosures surrounded by banks and ditches. In addition to these, there is some evidence for unenclosed settlements which are more difficult to identify in the archaeological record. The ringfort or ráth is considered to be the most common indicator of settlement during the early medieval period. Ringforts are strongly associated with agricultural land and, as such, are rarely situated at higher altitudes. Ringforts and potential ringforts - often recorded as enclosures - are the most common archaeological sites recorded across the Irish landscape. There are two recorded ringforts in the study area (DU014-006.1 & DU014-006.2) and four enclosures (DU014-16, DU014-017, DU014-102 & DU014-122.1). The enclosure (DU014-016), located c. 310m to the northeast of the proposed development, was subject to test excavations in 2005 (Excavation No. 2017:424; see Appendix 2), but the feature was not located.

Later Medieval (c. 1100 – 1600 AD)

The Anglo-Norman's arrived in Ireland in 1169, to support the deposed king of Leinster, Diarmuid MacMurchadha. By the end of the 12th century the Anglo-Normans had succeeded in gaining control over much of the country (Stout & Stout 1997, 53). Leinster, including Dublin and Meath, was 'sub-infuedated', meaning that great swathes of land were parcelled out among the Anglo-Norman elites. The Anglo-Norman tenurial system more or less appropriated the older established land units known as túaths in the early medieval period but described the territories as manors

(MacCotter 2008). The feudal barony of Coolock was originally part of the Lordship of Meath until Hugh de Lacy granted the barony to the Tyrell family in the 12th century.

This time period is synonymous with castle-building, both masonry and earthwork, as well as the creation of new towns and enlargement of older urban centres. A motte and bailey castle in the townland of Dunsoghly known as Connaberry Moat (DU014-005003) is located c. 1.5km north of the proposed development area. Another motte and bailey (DU014-013) was situated c. 790m to the north until its destruction in 1952. A burial ground (DU014-048) was uncovered in advance of a gas pipeline in 1988 c. 1.7km to the northwest. The excavation revealed 123 skeletons aligned east- west in the Christian manner, some of which had 'pillowstones' indicating a 9th-13th century date.

During the later medieval period, tower houses emerged in Ireland. In the Dublin area, especially along the 'frontier zone', there are a substantial number of tower houses and fortified buildings. This may be in part due to the presence of The Pale, which was defined as a hinterland around the centre of Anglo-Norman rule based in Dublin. During the 15th century the 'Subsidised Castles Act' provided grants of ten pounds to encourage the construction of castles to defend the Pale against the native Irish. Dubber Castle (DU014-018), thought to have been constructed between 1582 and 1611, is likely to represent such a building. It is located c. 1.2km east-northeast of the proposed development area to the immediate north of Dubber House.

Post Medieval (c. 1600 – 1900 AD)

The 17th century witnessed the systematic reduction of all of Ireland to English authority, largely through conflicts and the forced settlements, 'The Plantations'. As part of the process of achieving colonial dominion a number of surveys and mapping programmes were completed throughout the post-medieval period. Simington's Civil Survey of 1654–56, was an inquisition that visited each barony (land division) and took depositions from landholders based on parish and townland, with written descriptions of their boundaries to facilitate the transfer of lands.

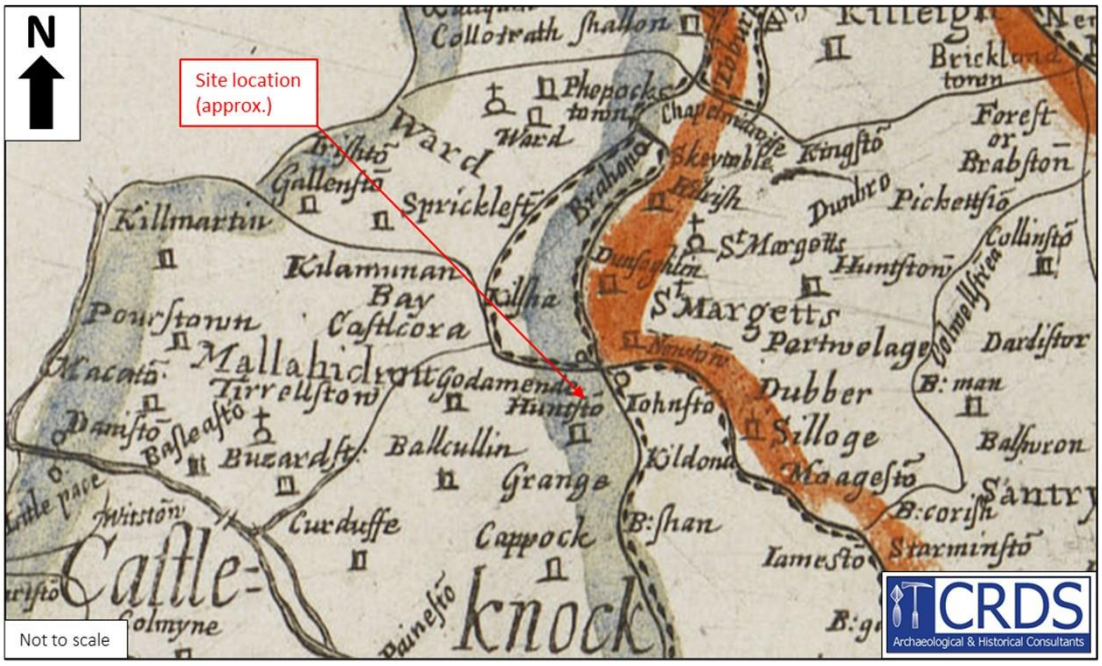

Figure 12.2. *Extract from William Petty's (1660) map of Dublin (source http://www.dublinhistoricmaps.ie/maps/1600-1799/index.html).*

Subsequent to the Civil Survey, a project known as the Down Survey 1656–58, used the collected cadastral information to map all forfeited lands. This survey was overseen by the surgeon-general of the English army, William Petty and a number of former soldiers. It was not just a project of mapping but of social engineering that was underpinned by a massive transfer in landownership from Irish Catholics to English Protestants. This survey is the first ever detailed land survey on a national scale anywhere in the world and gives great insight in Ireland at this time. The Old Red Lion Inn (DU014-047), first mentioned in the Finglas Vestry Books of 1675, is located c. 790m to the east of the area under assessment in Dubber (see Figure 12.2).

John Rocque's map of West Dublin (1760) shows the site as located in open pasture, comprising a small number of large fields, with a stream system originating within the lands. The site is located roughly equidistant from the settlements of Red Lyon, Killodin and Newtown (see Figure 12.3).

Figure 12.3. *Extract from Rocque's (1760) map of West Dublin (source http://www.dublinhistoricmaps.ie/maps/1600-1799/index.html).*

The first (Figure 12.4) and second (Figure 12.5) editions of the Ordnance Survey maps dating to the early 19th and early 20th century respectively, also show the site as being in agricultural land comprising a small number of fields. Portions of the townland boundary between Huntstown and Johnstown runs through the proposed development site.

A number of drainage ditches are depicted in the second edition map along field boundaries.

Figure 12.4. *Extract from 1st edition Ordnance Survey map (1830s; source www.archaeology.ie).*

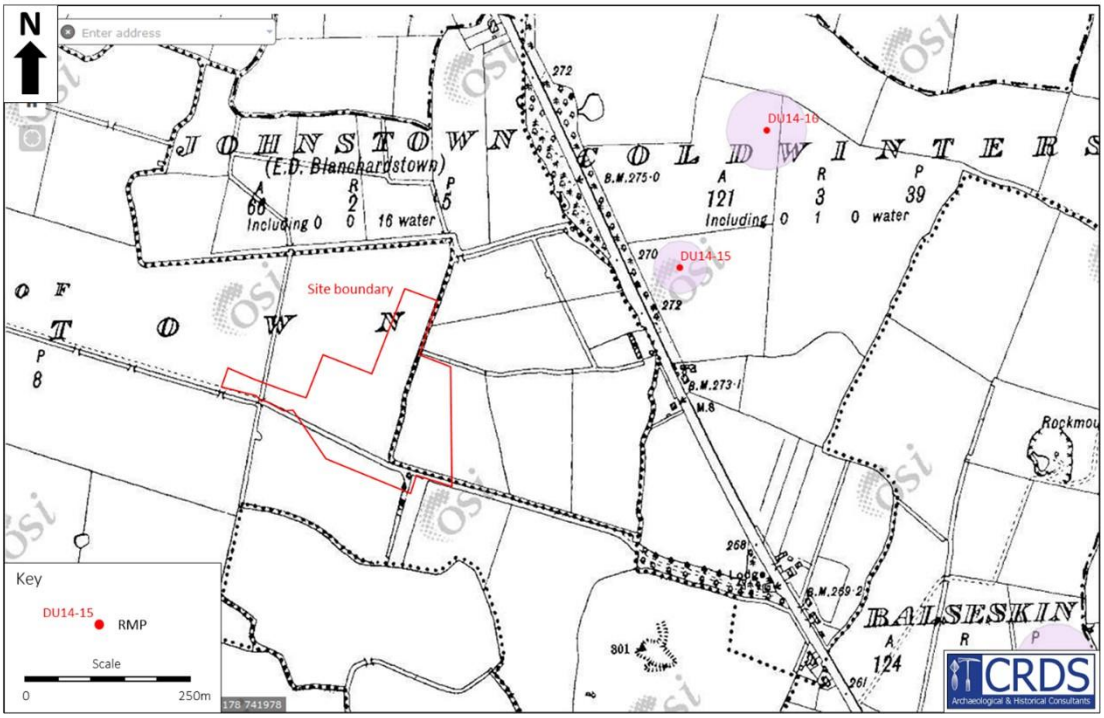

Figure 12.5. *Extract from 2nd edition Ordnance Survey map (1910s; source www.archaeology.ie).*

The Griffith's Valuation shows two occupiers of Huntstown townland but does not record any occupants in Johnstown townland (see Figure 12.6 and Appendix 12.5). Inbterestingly, Christopher Kelly is listed as the occupier of land holding 2 of Huntstown.

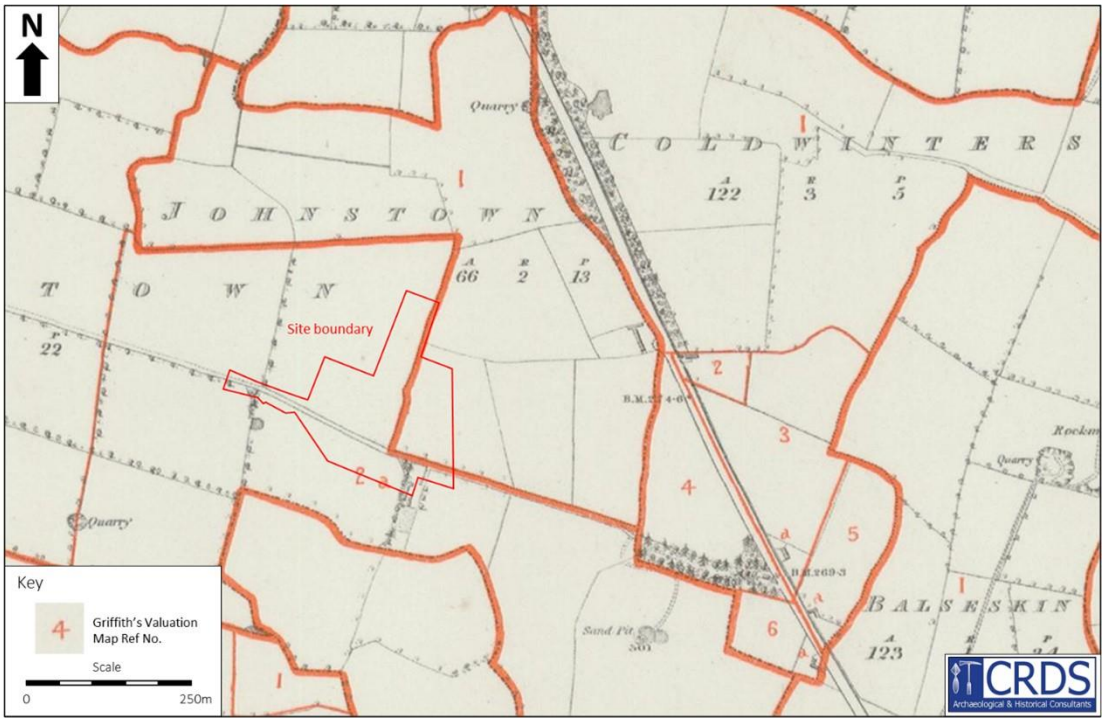

Figure 12.6. *Extract from 1st edition Ordnance Survey map showing Griffith's Valuation land holdings (http://www.askaboutireland.ie/griffith-valuation/).*

In modern times there has been significant development in the surrounding lands, but the proposed development lands remain in open pasture, with the field boundaries as depicted on the first and second edition Ordnance Survey maps intact as mature hedgerows. There is considerable development in the wider in the area (see Figure 12.7). Traces of a circular enclosure are visible to the immediate northwest of the proposed development lands as a cropmark (see Figure 12.8).

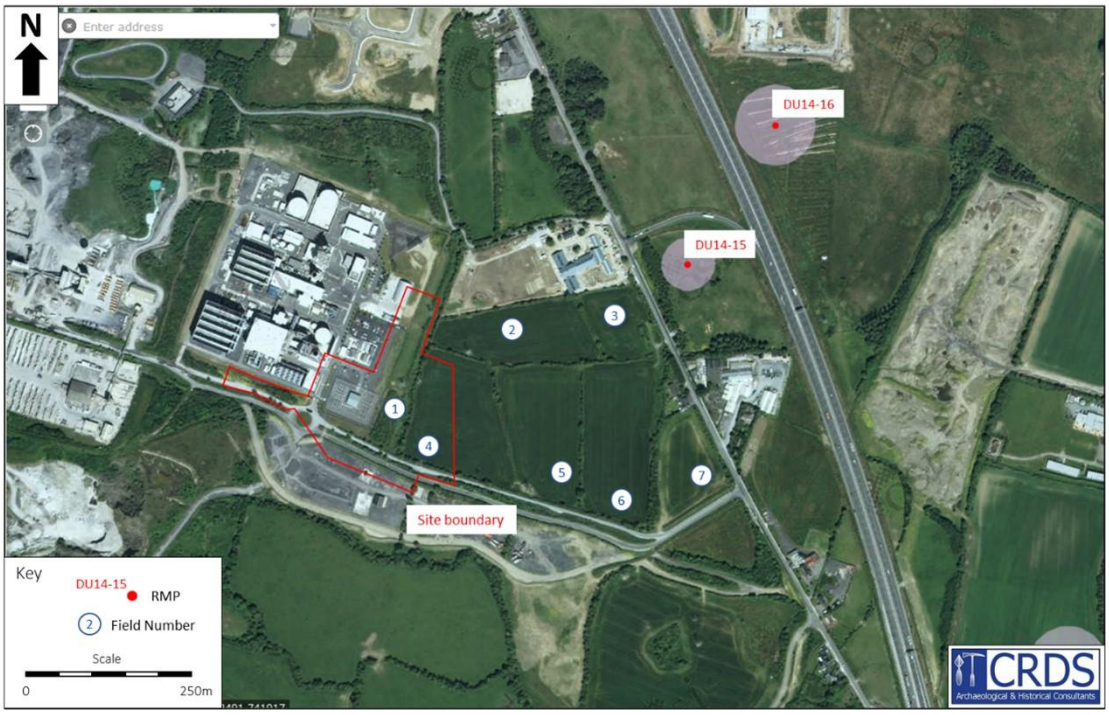

Figure 12.7. *Aerial photograph (digital globe) of the proposed development lands; Field numbers are shown (source www.archaeology.ie).*

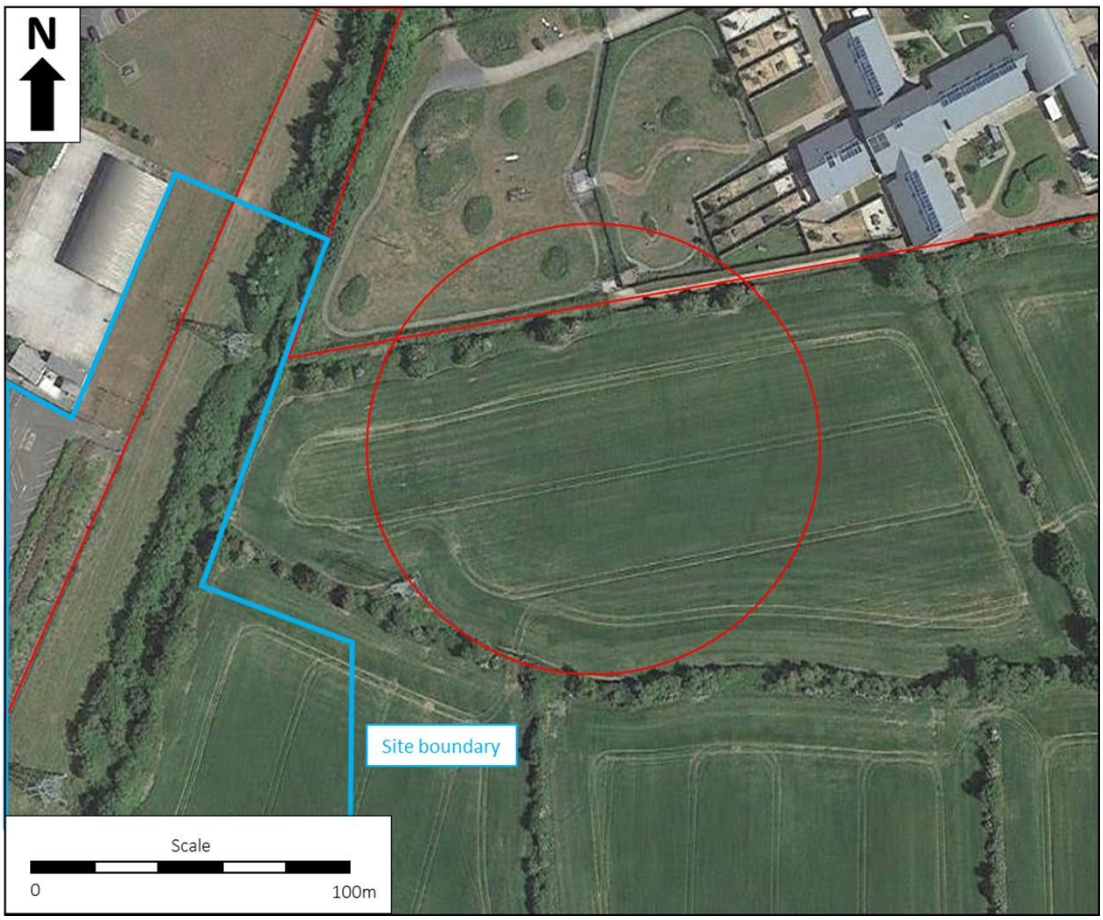

Figure 12.8. *Aerial photograph of the proposed development lands in blue showing enclosure (source Google 2018). (red line boundary shown in relation to data hall application)*

12.3.2 Geophysical survey

An archaeo-geophysical survey of the area including much of the lands proposed for development was undertaken by J.M. Leigh Surveys Ltd in 2019 (License No. 19R0159). A summary of the results are shown in Figure 12.8 and are summarised below.

The geophysical survey identified the probable remains of an oval enclosure measuring c.42m x 50m with a possible entranceway to the south. Within the enclosure are numerous responses and trends, most likely representing the remains of pits and ditches. To the east of the enclosure is another curvilinear ditch-type response and numerous trends, suggesting a possible outer ditch and associated field system. These features occur outside of the lands proposed for development in this assessment.

The field to the east of the enclosure comprises of modern responses. However, two broad responses within the modern disturbance may represent the remains of burnt or fired material. In the field to the south west of the enclosure are further broad responses. These may also represent burnt or fired features. However, interpretation is cautious as they may equally represent more recent activity.

Two clusters of isolated responses are evident in the southern half of the application area. These may represent the remains of plough damaged archaeology. The responses have a magnetic signature suggestive of pit-type features and an archaeological interpretation must be considered.

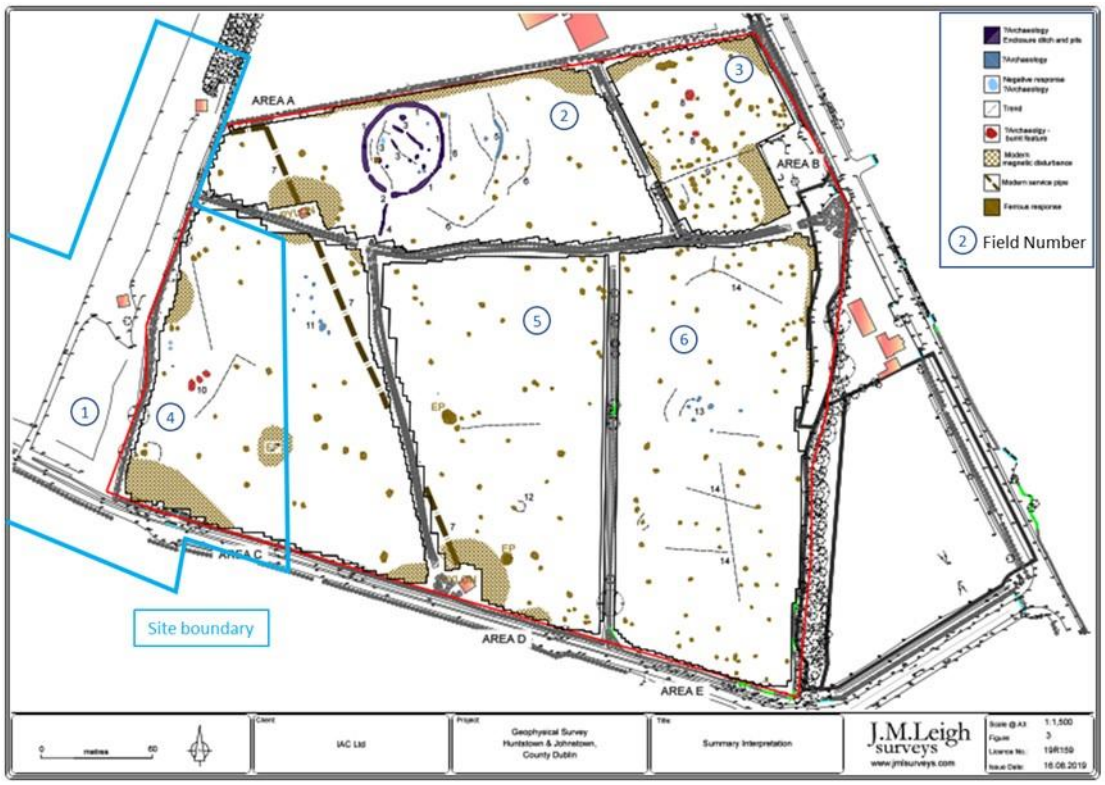

Figure 12.9. *Summary of results of geophysical survey undertaken by J.M. Leigh Surveys Ltd (License no. 19R0159).*

12.3.3 Archaeological testing

Pre-development archaeological testing was undertaken by IAC Ltd based on the results of the above geophysical survey in 2019 (License No. 19E0645). The results are shown in Figures 12.9 and are summarised below.

Archaeological testing across the area confirmed the results of the geophysical survey that indicated the presence of an enclosure and associated linear features and pits located on adjacent lands. This enclosure is located in the north/northwest of the site area outside the proposed development lands and measures c. 42m x 50m in width. The testing determined that the enclosing ditch is 3.6m wide and 1.3m deep.

In the interior of the enclosure, two linear features and two probable pits were recorded. These confirm the results of the geophysical survey and suggest the presence of further archaeological features in the interior of the enclosure.

External to the enclosure ditch, one curvilinear feature and eight linear features were identified that may be related to an outer enclosure and associated field system. The extent of AA1 covers 130m east-west by 75m north-south.

An isolated pit, possibly unrelated to the activity associated with the enclosure, was identified c. 50m to the southeast of the main area of activity. The composition of the fill of this pit was similar to that found in burnt mound activity. No evidence of an associated burnt mound was identified, so it is possible that this feature had a ‘’pot boiler’’ type function.

It is important to note that none of the above identified features are located within the proposed development lands subject to the current assessment.

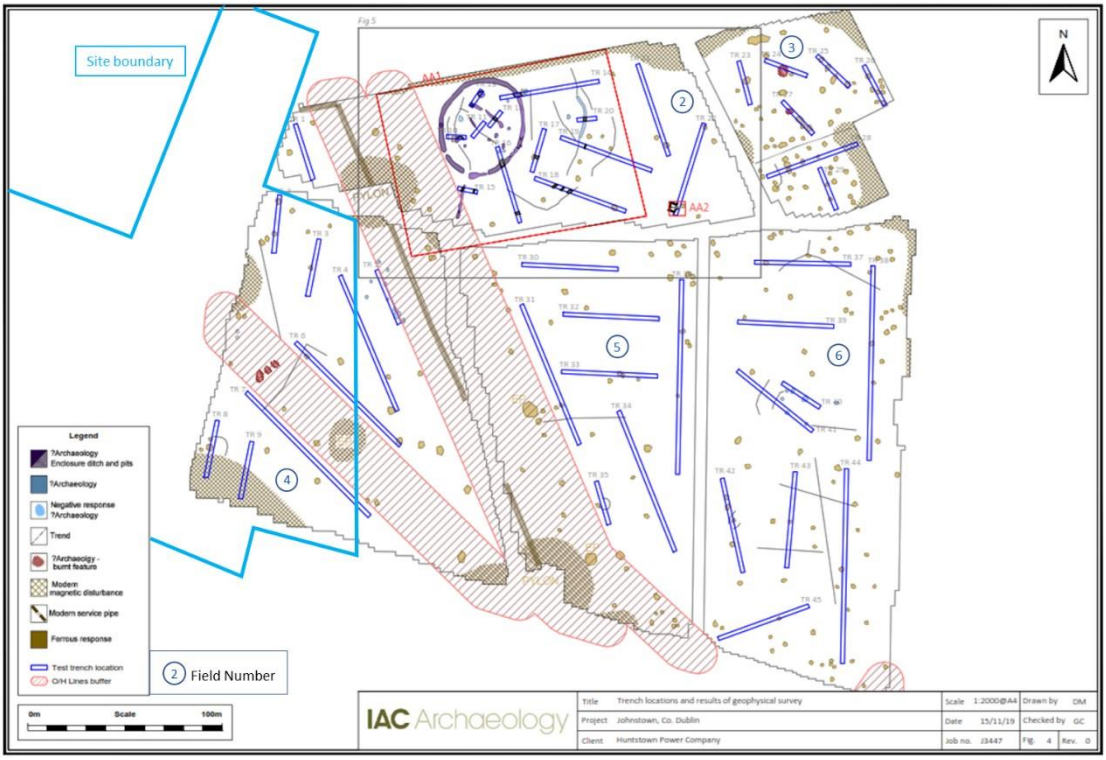

***Figure 12.10**. Summary of results of archaeological testing undertaken by IAC Ltd (License no. 19E0645).*

In order to fully assess the potential for archaeological remains across the lands, including the financial, time and logistical impacts of excavating these remains in advance of construction, a further, more detailed programme of pre-development archaeological testing was undertaken by AMS Ltd, under license to the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht Gaeltacht (see Appendix 12.5).

This is being undertaken in areas accessible for testing, shown as Fields 1-7 in Figure 12.11. It is anticipated that areas where the geophysical survey has not identified anything of potential archaeological significance, and have been subject to intensive testing, and no archaeology is found, that these areas would be considered archaeologically resolved.

The programme comprised the following:

- In total (including the test trenching undertaken by IAC Ltd (License No. 19E0645), the trenches covered approximately 9–10% of Fields 2-7 (see Figure 12.11..
- Trenches were dug by a tracked excavator equipped with a 1.8 m wide toothless ditching bucket. Each trench was excavated to the surface of archaeological features, deposits or structures, or to the surface of the undisturbed natural soil or bedrock (typically less than 75cm). Topsoil was removed from the test trenches in horizontal levels of not more than 0.20 m in thickness until sterile subsoil was reached.
- Archaeological or architectural heritage features, deposits or structures be uncovered during these were cleaned by hand, investigated and recorded.
- This testing strategy was approved by the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht (License no. 21E0185 & 21R0064; see Appendix 12.6).

Figure 12.11. Additional archaeological testing as agreed with the National Monuments Service (License no. 21E0185 & 21R0064) (red line boundary shown in relation to data hall application)

The testing strategy confirmed the results of the IAC testing in confirming the presence of a sub-surface enclosure in Field 2. It gave additional information regarding the nature and depth of the archaeology present, and importantly, confirmed the limits of archaeological potential around this feature. Testing also identified a second area of archaeological features in Field 3, confirming depth, nature and extent of the archaeological features present. These archaeological areas are shown as pink in Figure 12.11 and labelled Archaeological Area 1 and Archaeological Area 2 respectively.

No additional features of archaeological potential were identified in the remainder of the site (Fields 2-7). Please note that Field 1 showed evidence of previous ground disturbance and was heavily overgrown. Due to the overgrown nature of the ground, it was not possible to access the field to undertake testing.

12.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development site is located on a 4.33 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The proposed development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high

palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151 as well as any future development on the wider landholding (as described in Chapter 2, Section 2.4).

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development).

12.5 POTENTIAL IMPACTS OF THE DEVELOPMENT

12.5.1 Construction Phase

The archaeological, architectural and cultural heritage impact at the site can be summarised as follows:

- There are no recorded archaeological sites or monuments within the proposed development lands, as listed in the Record of Monuments and Places for Co. Dublin.
- There are thirteen recorded archaeological sites within c. 1.5km of the proposed development lands. None of these sites will be impacted, either directly or indirectly, by the proposed development works. However, they are indicative of the landscape having been densely populated since at least the Early Medieval Period (ringforts and enclosures).
- Archaeological excavations in the area in advance of development works over the past two decades has also revealed a number of significant previously unrecorded archaeological sites. The results of the excavation of these sites further indicate substantial prehistoric and medieval settlement and activity in the area.
- A desk-top survey of the lands proposed for development, particularly of aerial photography, identified the sub-surface potential remains of a bivallate ringfort adjacent to the site. This was confirmed by geophysical survey and archaeological testing, as well as other archaeological features dating to the medieval period and potentially earlier.

- These features are outside of the boundary of the proposed development currently being assessed.
- The western portion of the site was not subjected to the geophysical survey and archaeological testing programme. However, this portion of the site is located on previously developed land, in which the potential to encounter intact archaeological features is deemed negligible.

There will be no impacts on architectural heritage associated with the proposed development.

12.5.2 Operational Phase

There are no potential impacts on archaeological, architectural and cultural heritage expected as a result of the operational phase of the proposed development.

12.6 REMEDIAL AND MITIGATION MEASURES

12.6.1 Construction Phase

As noted above, the eastern portion of the site has been subjected to detailed geophysical survey and archaeological testing, as part of the overall assessment of the area, and no features of archaeological potential were identified. The western portion of the site has been subjected to development in the recent past, such that the risk of sub-surface archaeological features surviving is negligible.

Therefore, no mitigation measures relating to archaeology or architectural heritage are recommended.

12.6.2 Operational Phase

No mitigation measures are required for archaeological, architectural and cultural heritage during the operational phase of the proposed development.

12.7 RESIDUAL IMPACT OF THE DEVELOPMENT

12.7.1 Construction Phase

The construction of the proposed development will not impact directly on any sites included in the RMP.

No previously unrecorded features were identified during detailed geophysical survey and archaeological testing on the eastern portion of the site and the western and southern portions of the site have been subjected to development in the recent past.

Therefore, the overall impact of the proposed development on the archaeological heritage is deemed to be ***neutral*** and ***not significant***, and ***long term***.

12.7.2 Operational Phase

The operational phase of the proposed development is not predicted to have any impact on archaeological, architectural and cultural heritage.

12.8 MONITORING/REINSTATEMENT

No further archaeological monitoring will be required once construction is completed and the site is operational.

Reinstatement is not applicable in respect of archaeological, architectural and cultural heritage.

12.9 REFERENCES

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13.0 TRAFFIC AND TRANSPORTATION

13.1 INTRODUCTION

This Chapter of the EIA Report undertakes a full Traffic and Transportation Assessment (TTA) of any likely or significant impacts associated with traffic and transportation issues arising from the Proposed Development. The report presents an assessment of both the construction and operational stages in terms of vehicular, pedestrian and cycle access.

13.2 METHODOLOGY

This chapter has been prepared taking the following documents into account:

- Fingal County Development Plan (2017 – 2023) (FCDP);
- Design Manual for Urban Roads and Streets, DMURS, May 2019 (Department of Transport, Tourism and Sport/ Department of Environment, Community & Local Government);
- NRA's (now TII) Traffic and Transport Assessment Guidelines (PE-PDV-02045) (May 2014);
- TII Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projects (PE-PAG-02017) – May 2019
- Greater Dublin Area Cycle Network Plan.
- EIAR (TLI Group), Undergrounding of Overhead Lines, FCC Ref. Ref.:. F21A/0144.
- EIAR (Huntstown Power Company), Huntstown Data Centre, FCC Ref. Ref.: FW21A/0151.

The methodology used to conduct the assessment includes:

- Establishing baseline conditions – The existing conditions will be recorded including existing site location and use, surrounding road network, public transport services;
- Defining the development – This includes size, use, parking, staffing, trip distribution for the construction and operational stages of the development;
- Assess the potential impact of the development on the existing local transport network and its ability to carry the development traffic;
- Mitigation measures will then be proposed to offset any impacts that may result from the development.

13.3 RECEIVING ENVIRONMENT

13.3.1 Existing Road Access

The existing road network within the vicinity of the application site is illustrated in Figure 13.1 and is described further below.

The existing road network around the application site is defined by:

- The Roadstone Quarry and Huntstown Power Station access road which lies south of the site.

- The R135 (North Road) regional road to the east, which previously served as the N2 National Primary Road (up to 2006). This road is known locally as the North Road. It intersects with the N2 Dual carriageway at the Cherryhound Interchange to the north and forms a cul-de-sac to the south;

The N2 Dual Carriageway between the M50 Motorway and Cherryhound Interchange runs immediately east of the R135 North Road. It continues northwards from the Cherryhound Interchange as the M2 Motorway to the north of Ashbourne Co. Meath. From there, it becomes the N2 National Primary Road and continues northwards as a single carriageway road through the counties of Meath, Louth and Monaghan to the border with Northern Ireland.

The M50 3+3 lane motorway runs to the south of the site. This road provides the main circulatory ring road around Dublin.

In relation to the local road network, the application site is located to the north of the M50 motorway, west of the R135 North Road and the N2 dual carriageway.

The existing R135 North Road comprises of a single carriageway road generally of about 7.5m width with hard shoulders of varying width. The alignment essentially runs straight from the existing site entrance northwards up to the N2/M2 motorway at the Cherryhound interchange and southwards to the point at which it is severed by the M50 motorway at Finglas.

The Huntstown Quarry and Power Station access road comprises a private single carriageway road, bifurcating to two single carriageways from the R135 North Road into the respective sites.

A speed limit of 50kph applies along the existing R135 North Road and to the Quarry/Power Station access road.

Existing Site Access

The development lands are currently accessed via an agricultural entrance from the Quarry/Power Station access road approximately 130m west of its junction with North Road.

Pedestrian Facilities

There are no pedestrian facilities on the Quarry/Power Station Access Road. A footpath approximately 1.5m wide runs along the east side of the R135 North Road. This footpath connects to a pedestrian/cycle facility over the M50 to the south with onward connection with footpaths on the city side of the motorway. To the north of the development site the footpath terminates immediately south of the N2 off slip junction, with a short section continuing on the west side of the North Road to the CIE bus stop.

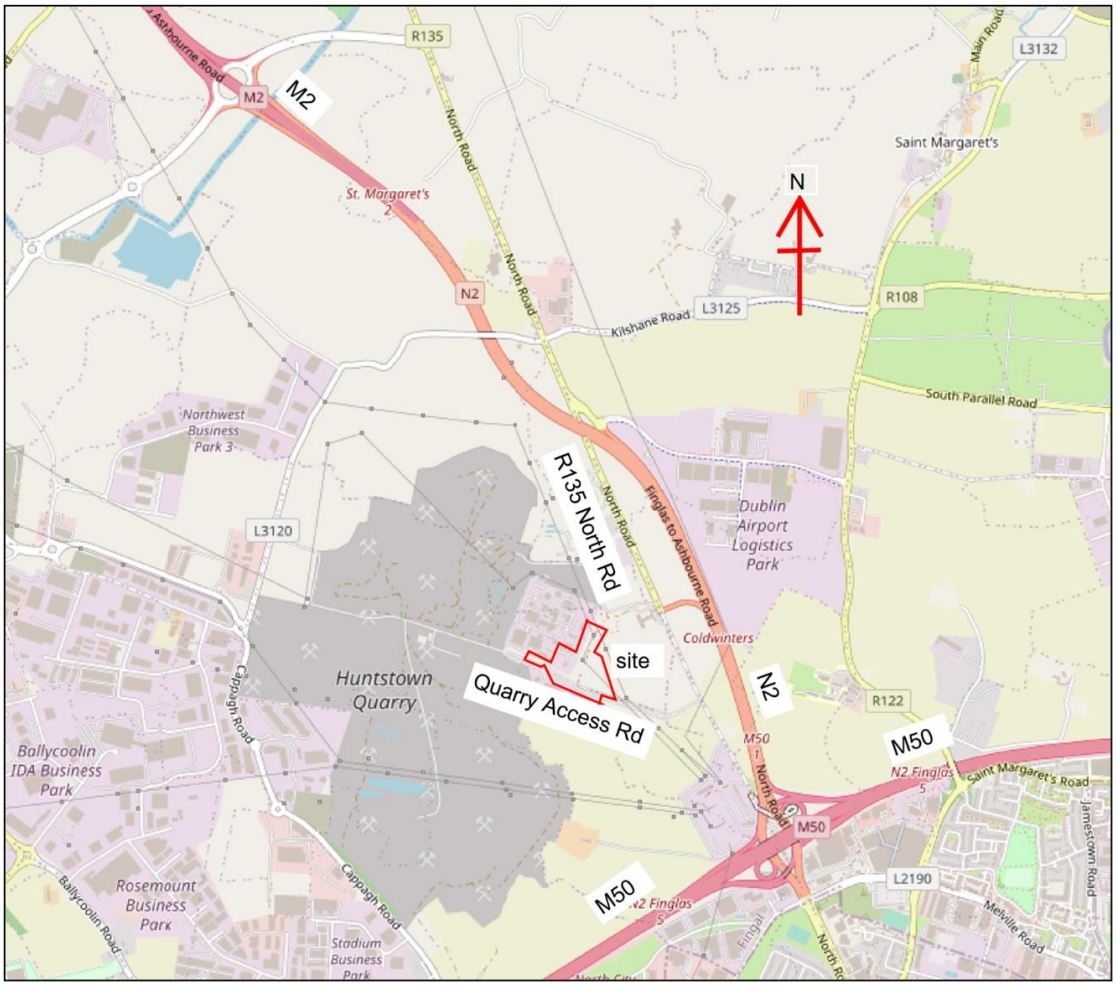

Figure 13.1 Location Plan (Source: Openstreetmap)

13.3.2 Existing Public Transport

The closest bus stop to the application site is situated on the North Road, to the north of the N2 off-slip. The bus stop is a simple flag-post stop serves northbound routes which is served by the Number 103 and 105X services operated by Bus Eireann. Both of the routes that service the bus stop run from Dublin to surrounding towns and villages. A bus stop serving southbound routes is located a further one kilometre north on the R135.

The Number 103 service runs between Dublin City and Ashbourne / Ratoath. The service operates 7 days a week and begins at 06:30 in the morning and runs at approximately 20 minute intervals throughout the day until approximately midnight.

The Number 105X service runs between Ratoath and Dublin City. The service operates 5 days a week and begins at 07:00 in the morning and runs three services, city bound in the morning and return in the evenings.

As identified above the local bus service is limited; however there are regular 20 minute services available from central Dublin throughout the day, seven days per week. Individual travel by bus to the application site is therefore available as an alternative to the car.

Given the distance to the nearest railway station, it is unlikely that travelling to work by train would be a feasible mode of transport for workers.

13.3.3 Road Safety

As part of the completion of this chapter, an assessment of collision statistics as published by the Road Safety Authority (RSA) was conducted. Collision statistics for 2005-2016 were reviewed. The collision statistics give information for fatal, serious or minor collisions.

Inspection shows there have been one recorded collision recorded within the vicinity of the subject site. The results of the analysis identify one incident on the R135 North Road, the collision was recorded as a minor single motorcycle collision but does not indicate any reoccurring collision hotspots or traffic concerns with the existing road network.

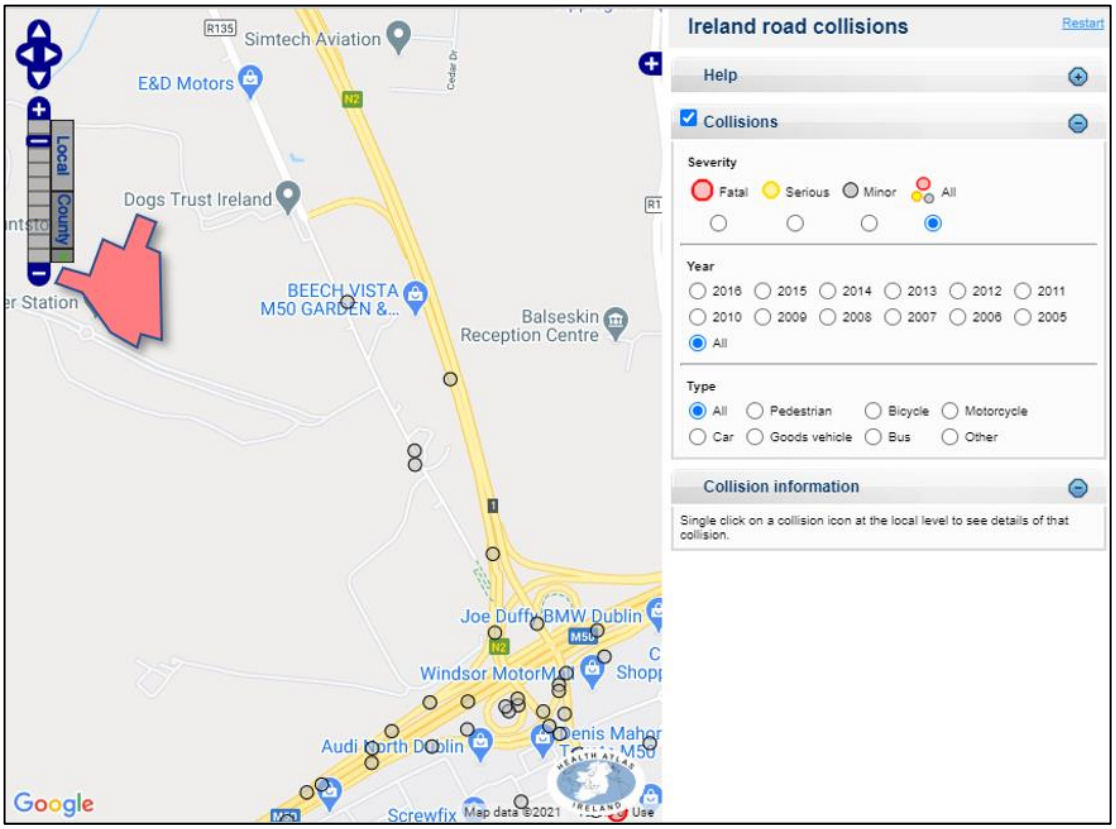

Figure 13.2 Collision Locations (Source: Road Safety Authority)

13.3.4 Existing Traffic Flow

In order to establish the existing local road network's traffic characteristics and subsequently enable the identification of the potential impact of the proposed development, traffic surveys (weekday classified junction turning counts) were conducted over a 12hr survey period from 07:00 – 19:00 on Thursday 5th September 2019 at the following locations:

- J1 R135 / N2 Slip Road – Priority Junction
- J2 R135 / Elm Road – Signalised Junction

As the site will be accessed from the existing Huntstown Quarry/Power Station access road additional traffic survey information was obtained for the junction with the North Road. This survey incorporated a 24 hour count on Wednesday 10th July 2019. This junction is referred to as:

- J3 R135 / Huntstown Quarry/Power Station access road.

Figure 13.3 Traffic Survey Locations

The traffic survey established that the local AM and PM peak hours occur between 08.00-09.00 and 16:30 –17:30, respectively. Traffic survey information is set out in Appendix 13.1.

13.3.5 Committed Development

There are a number of developments that were committed at the time of the traffic survey plus a number that have received planning permission since the survey was carried out. The following developments have been assessed in terms of committed development:

1. **F16A/0128** – Rohan Holdings Ltd. Dublin Airport Logistics Park, St. Margaret's Road, St. Margaret's, Co. Dublin. Four single storey units for industrial and/or warehouse use with ancillary two storey office with a gross floor area of 15,692 square metres. This speculative development was near completion at the time of the traffic survey but not occupied.
2. **F17A/0769 –** Coldwinters Devco Ltd. Coldwinters, St. Margaret's, Co. Dublin. Development will consist of the construction of two single storey units for

industrial and/or warehousing use with ancillary two storey offices with a gross floor area of 9422sq.m. This development was under construction at the time of the traffic survey.

3. **SID/02/18 –** Irish Water. Newtown, North Road (R135), Dublin 11. Provision of 2no. biosolids storage buildings, each approximately 50m wide, 105m long and 15m in height, including solar panels on the roof of one building. These buildings have a combined capacity to store up to 48,000 cubic metres of biosolids waste at any one time.
4. **FW20/0211** – Coldwinters Devco Ltd. Lands between the N2 and R135 (north of the N2-R135 link road), at Coldwinters, St. Margaret's, Co. Dublin. The development will consist of 3 no. buildings for industrial/warehouse/logistics use (Units 3,4 and 5) with gross floor area of 24,356sq.m.
5. **F18A/0146** – Killeen Properties Ltd. Newtown, Kilshane Cross, Co Dublin. A storage and distribution centre for new imported vehicles with a total capacity for 5,951 no. vehicles and comprises vehicle storage, internal circulation roadways, vehicle loading and unloading area and transporter parking spaces.

The occupation and operation of the above listed facilities will ramp up over the duration of the construction of the substation site. For the purposes of analysis it was assumed that Nos 1-4 all are fully operational at the time of commencement of construction i.e. 2021 (the additional peak hour traffic movements associated with No 5 are negligible and will not have a significant impact on the junctions counted and are considered to be accounted for in background traffic growth). This is considered a conservative approach as it would not be expected that the developments 3 and 4 will be completed until c.2024.

Development Under Consideration

The following development is currently under consideration by the local authority, and considered in respect of cumulative development within Chapter 16.

- **FW21/0144 –** TLI Group. The installation of approximately two underground cable circuits of 1.2km length (110kV) and one circuit 1.2km length (38kV) and associated underground ducting, joint bays and associated infrastructure between the existing ESB Finglas substation and Huntstown Power Station.
- **FW21A/0151–** Huntstown Power Company. The proposal comprises the demolition of two residential properties fronting the R135 (North Road), and the development of 2 no. data centre buildings arranged over three storeys and associated structures and infrastructure.

13.3.6 Proposed Road Network Improvements

Fingal Co Co have also identified that the N2/R135 priority junction (J1 above) has capacity issues and will require upgrading to a signalised junction in the near future.

It is also understood that consideration is being given to upgrading the existing Huntstown quarry access road/R135 North Road priority junction (J3) to a signalised facility. The background to this is to improve safety at this junction by reinforcing the flow priority on the R135 North Road.

The Greater Dublin Cycle Network Plan also provides for the implementation of an inter-urban cycle route (no. F8) along the R135 from Dublin to Ashbourne. This facility would pass along the eastern boundary of the development site. No further information regarding implementation of this proposed cycle route network is available at present.

13.4 CHARACTERISTICS OF THE DEVELOPMENT

The proposed development site is located on a 4.33 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The proposed development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151 as well as any future development on the wider landholding (as described in Chapter 2, Section 2.4).

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development). Further information in regards to traffic and transport is discussed below.

Vehicular entrances, roadways and vehicle parking are proposed. Due to the way the site operates there will be two segregated compounds; one operated by Eirgrid, the other by the concurrent data centre development (as described in Section 2.4.2 of Chapter 2) operator. The operational GIS building, and series coil compound will be accessed via the Huntstown Power Station link road on the western side of the site; and the 220kV/20kV transformers and 20kV switch and control rooms will be accessed from the eastern side of the site via the data centre campus internal road network. These entrances will be through an access-controlled entrance. The new access road off the Huntstown Quarry Road to the south will be used as a temporary construction

entranceway, once the site is operational this will be used as an alternative access only.

The concurrent data centre development (as described in Section 2.4.2 of Chapter 2) operator access will be from the proposed data centre campus road. Access for construction works will be from the Huntstown Quarry/Power Station access road.

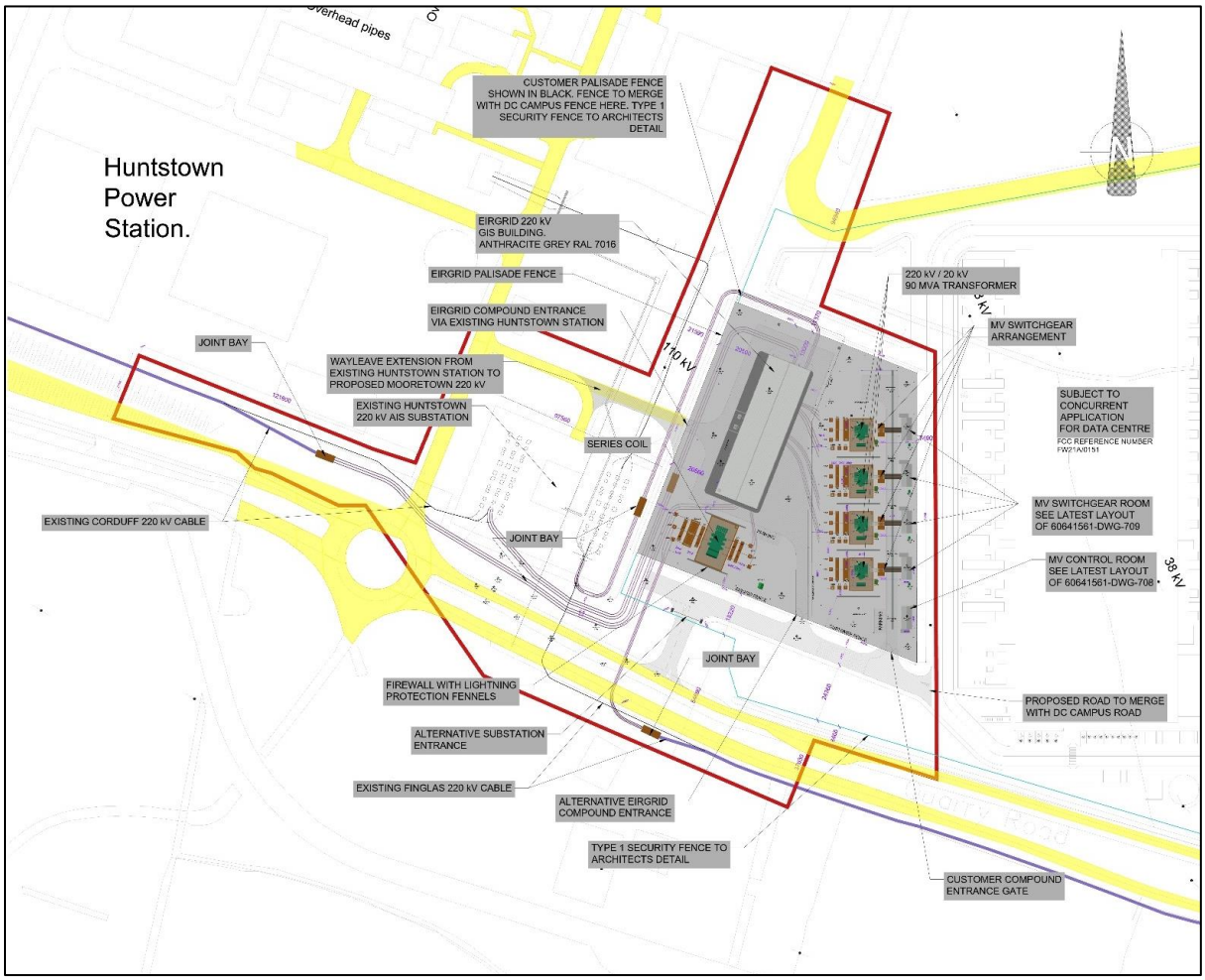

Figure 13.4 *Proposed Site Layout (AECOM 60641561-DWG-701)*

13.4.1 Construction Phase

The development site comprises gently sloping farm land. Construction activities will be contained within the boundary of the site. There will be a requirement for haulage of fill material to the site, however this will be minimised through optimisation of site levels. Construction materials will need to be brought to the site as will specialist plant. It is anticipated that these deliveries will occur throughout the day.

It is proposed that a separate construction access will be provided off from the Huntstown Quarry/Power Station access road. The access will be in the form of a left in left out priority junction. The construction access is discussed further under separate Outline Construction Environmental Management Plant prepared by AECOM (2021) and accompanying the application documentation and included as Appendix 6.5 of this EIAR.

A dedicated onsite parking area up to 33 vehicles will be provided for construction vehicles. In order to mitigate the impact of the construction traffic from this development and the concurrent data centre development (as described in Section 2.4.2 of Chapter 2) on the surrounding road network onsite parking will be limited to 200 no. spaces between the two developments. Overflow parking will be provided at an existing permitted parking area (DAA surface car park or similar such established facility) and operate as a park and ride facility for construction workers during peak construction periods. Further, site staff will arrive prior to at 07.00 hours daily to ensure staggered start times with those of the surrounding road network; site construction works are anticipated to commence at 08.00 hrs (Monday to Friday) This will ensure the impact of construction traffic on the receiving environment is minimised.

The estimated number of staff are set out as below:

Construction traffic would consist of the following:

- Private vehicles belonging to site construction staff and site security staff;
- Private vehicles belonging to professional staff (i.e. design team, utility companies);
- Delivery of building materials and equipment and removal of waste from site development works.

The following construction data has been used to estimate peak daily construction traffic:

- 20 HGV per day at peak (site clearance) over a period of approximately eight weeks 07.00hrs to 17.00 hours. This will not be coincident with the peak number of construction workers.
- Average construction workers 20, and peak of 50 no.
- 8 visitors no.
- 33 car parking spaces provided during construction

The breakdown of start and finish times of construction staff will be as follows:

- Start 07.00 - 80%;
  08.00 - 10%
  09.00 – 10%

- Finish 15.30-16.30 - 80%;
  16.30-17.30 – 10%;
  17.30-18.30 – 10%

These figures give peak hour flows of in Table 13.2 below.

It has been conservatively assumed that the peak HGV movements will be coincident with the peak construction worker movements. It is also assumed that all construction workers will be parked at the site.

Table 13.1 *2021 Construction Traffic – Peak Hour Generation*

Type	PCU factor	AM Peak (PCU's)		PM Peak (PCU's)	
		In	Out	In	Out
Construction staff vehicles 33/day	1	3	0	0	3
HGV's	2	4	4	2	2
LGV's	1	1	1	1	1
Peak Hour Totals		8	5	3	6
Two Way Traffic (PCU's)		13		9	

Construction phase work will occur over a period of approximately twenty four months.

Development Trip Distribution

The trip distribution for the development has been derived based on the surveyed traffic volumes at each junction under consideration.

As the R135 North Road south of the site is effectively a cul-de-sac it will be expected that all arrivals and departures will be to and from the north. The distribution of trips has been assessed on the basis of the surveyed arrivals to the R135 North Road at Junction 2. The total arrivals from the N2 Slip Road total 70% and 68% of the AM and PM peaks. Therefore for the assessment 70% of arrivals to the site will be from the N2 slip road (ie the M50/N2 south and associated road network), with 30% of all traffic arriving from R135 North Road (north). It is assumed that all departures will be to destinations based on the same proportions – ie 70% to M50/N2 south, with the remainder to other destinations to the north. The turning proportions for the Junction 2 are based on the relative proportions of traffic turning to and from the N135 North Road. The turning proportions are summarised in Figure 13.5 below.

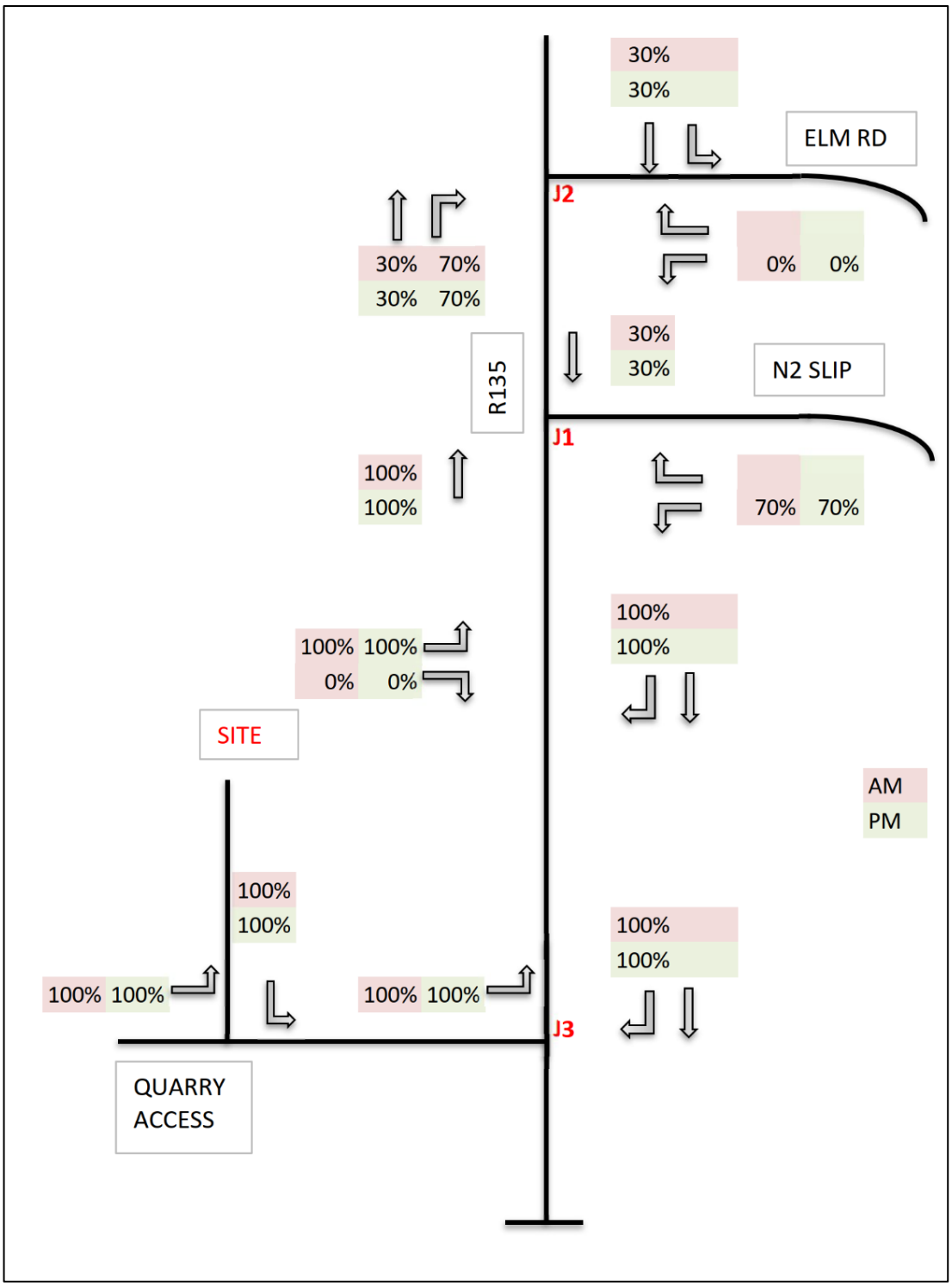

Figure 13.5 *Turning Proportions*

13.4.2 Operational Phase

Three accesses to the site will be constructed as set out in Figure 13.4 above and the accompanying AECOM drawing pack. The accesses will be for dedicated EirGrid/operator compounds. The EirGrid accesses will be 10m wide overall, whilst the operator access will be 9m wide. The accesses will accommodate two-way vehicular movements together with HGV access.

The internal layout of the site has been designed to give clear, legible routes for pedestrians and motorists to enter and exit the development.

The proposed development does not require any full time staff to operate it on a daily basis. For the purposes of this assessment it is forecast that there will be 10 van movements per week to the site for site maintenance purposes, together with some additional infrequent site visits for infrastructure maintenance. The number of visits equates to 2 vans per day – or 4 trips. For the purposes of this assessment it is conservatively assumed that these will occur at the peak hour of the surrounding road network.

An access from the concurrent data centre development (as described in Section 2.4.2 of Chapter 2) will be provided off the Quarry/Power Station exit carriageway. This junction will operate as a left-in/left-out junction only to the substation and for an alternative access to the data centre campus site. A 90m x 2.4m sight envelope will be achieved at this access.

2.0m wide footpaths are provided adjacent to internal roads to facilitate connectivity.

Car Parking

The site has access hard stand areas surrounding the substation equipment and housings. As access is only for maintenance, vans will park on the hardstand areas adjacent to areas of work.

Cycle Parking

No additional cycle parking spaces are proposed as part of the Proposed Development as all maintenance personnel servicing it shall access the site via Light Vehicles (LV).

13.5 POTENTIAL IMPACTS OF THE DEVELOPMENT

13.5.1 Construction Phase

The delivery to site of materials will be spread throughout the day and its impact on the existing road infrastructure is considered to be negligible. All vehicles will have sufficient space within the site to manoeuvre and turn around. Parking for construction operatives will be within the site.

The impacts of site operative and construction vehicles on the peak hours on the surrounding road network will be reduced by the offset nature of trips from that of the receiving road network.

The traffic flows from the 2019 survey on the surrounding road network have been grown to 2022 rates in order to set the baseline traffic for each of the junctions that were surveyed for the peak hours. These figures were then compared to the assigned additional flows arising from the construction traffic. The table below sets out the total and proportional changes in peak hour traffic flows that result from the construction phase traffic at each of the surveyed junctions.

Future Year Background Traffic Growth

The construction impact of traffic on the road network will be assessed for the 2022 baseline year, whilst the operational impact of traffic proposed development is

assessed for the 2023 opening year. Therefore the background surveyed traffic flows need to be grown.

Background traffic survey data was grown using rates set out in the Transport Infrastructure Ireland (TII) 'Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (May 2019)'.

The growth rates used are as per TII document Transport Infrastructure Ireland (TII) 'Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (PE-PAG-02017 - May 2019). A weighting was applied to the Central Growth Rates – for LV and HV's on the basis of the relative proportions of these vehicle types on the local network (76% LV, 24% HV).

Table 13.2 Traffic Growth Factors

Period	LV Growth Rate	HV Growth Rate	Weighted Growth Rate
2016-2030	1.10162	1.0295	1.0194

These growth rates have been applied to a pre COVID-19 survey figures and do not account for changes to work patterns and associated reduction in traffic growth of a pre pandemic survey that would be anticipated.

Background Traffic Growth Factors

2019 1.000

2021 1.039

2022 1.059

2023 1.080

Table 13.3 Percentage Impact on the adjacent road network – Construction 2022

Junction	**Baseflow Traffic (PCU)**		**Additional Flow thru Junction (PCU)**		**Proportional Increase (%)**	
	AM Peak	**PM Peak**	**AM Peak**	**PM Peak**	**AM Peak**	**PM Peak**
J1	1203	760	13	9	1.1	1.2
J2	1253	1169	7	7	0.6	0.6
J3	733	354	13	9	1.8	2.5

On the basis of the TII Traffic and Transport Guidelines (May 2014), if the impact on a junction does not exceed 10% of the existing two-way traffic flow (or 5% at sensitive locations), then modelling is not required for the junction. As all of the flows are considerably below threshold no further analysis is warranted.

As the construction access will operate on a left in left out basis, considering the very low volumes of construction traffic at peak hours no capacity issues would be anticipated.

From the above assessment it can be seen that there will negligible impact due to the construction phase works.

13.5.2 Operational Phase

The resultant number of peak hour trips due to the development are set out in Table 13.4 below.

Table 13.4 Percentage Impact on the adjacent road network during the Opening Year 2023

Junction	Baseflow Traffic (PCU)		Additional Flow thru Junction (PCU)		Proportional Increase (%)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
J1	1227	775	4	4	0.3	0.3
J2	1279	1192	4	4	0.2	0.2
J3	748	362	4	4	0.5	1.1

The maximum additional traffic for each of the will be negligible. On the basis of the TII Traffic and Transport Guidelines (May 2014), if the impact on a junction does not exceed 10% of the existing two-way traffic flow, modelling is not required for the junctions.

13.6 REMEDIAL AND MITIGATION MEASURES

13.6.1 Construction Phase

A detailed Construction Environmental Management Plan (CEMP) will be prepared by the contractor. This document will expand on the outline document submitted as part of this application. The plan will include measures to minimise the impacts associated with the construction phase upon the peak periods on the surrounding road network. The measures will include:

- A method of wheel cleaning prior to trucks etc. leaving site, regular cleaning of the main access road;
- surface of the car park will be prepared and finished to a standard sufficient to avoid mud spillage onto adjoining roads;
- monitoring and control of construction traffic during construction works;
- Construction Traffic Management Plan to minimise movements during peak hours; and
- Material deliveries and collections from site will be planned, scheduled and staggered to avoid unnecessary build-up of construction works related traffic.

HGV trips are anticipated to arrive and depart the site at a uniform rate throughout the day, to avoid pressure on the morning and evening peak hour periods.

Where importation of fill materials are required the materials are likely to be sourced from the adjacent quarry. The routing of associated HGV's would not be via the junctions north of the site – and therefore impact on these would be reduced. However, in the assessment of the junctions a conservative approach was taken with the assumption that materials would be sourced from more distant quarries.

A limited number of contractors vehicles will be facilitated to park within the development site area, in order to mitigate the impact of traffic movements on the surrounding road network when the construction of the subject works as well as the data centre works are being carried out concurrently. A park and ride facility utilising an existing approved surface car park will be used to accommodate Excess construction staff vehicles with buses transiting works to and from the site.

13.6.2 Operational Phase

The traffic impact estimated for this are significantly below the thresholds stated in the TII Guidelines for *Traffic and Transport Assessments, 2014* for junction analysis. Therefore, no junction modifications are recommended on the public road to facilitate the Proposed Development.

13.7 RESIDUAL IMPACTS OF THE DEVELOPMENT

13.7.1 Construction Phase

Construction works will include site levelling works at the site, and these will largely be contained within the site. There will be materials required for the building works, and deliveries will spread throughout the working day. Construction operatives will travel to and from the site, but the timing of trips will be offset from the worst peak times on the local road network. Additionally, remote off site overflow parking will be provided and will operated as a park and ride system. Additionally, construction shift times will be staggered from the peak hours of the local road network. Based on the assessment of the network junctions there will be slight impacts on the receiving traffic and transportation environments. The impact of construction works will be ***short term, not significant and neutral***.

13.7.2 Operational Phase

The proposed development will have an imperceptible impact on the road network, in particular the junctions in the proximity of the development. Overall the impact of the development will be ***long term*** in duration of ***imperceptible neutral*** effect. The proportional traffic increase through the relevant junctions with the Proposed Development are significantly below the thresholds stated in the *TII Guidelines for Traffic and Transport Assessments, 2014* for junction analysis.

13.8 MONITORING OR REINSTATEMENT

The volumes of traffic generated from the proposed development will have an insignificant effect on the road network traffic volumes and can be considered within the norms for development in such zoned lands. As such no monitoring or reinstatement works are proposed.

14.0 MATERIAL ASSETS

14.1 INTRODUCTION

This chapter prepared evaluates the potential impacts, from the proposed development on Material Assets as defined in the EPA Guidelines '*Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2017), Advice Notes *Draft Advice Notes for Preparing Environmental Impact Statements* (EPA, 2015), and *European Commission Guidance on Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report* (2017)

14.2 METHODOLOGY

The Directive 2011/92/EU defined Material Assets as '*resources that are valued and that are intrinsic to specific places; they may be of either human or natural origin'* this included architectural and archaeological heritage. The Directive 2014/52/EU included architectural and archaeological heritage as components of cultural heritage; this EIA report has also done so within in Chapter 12 Archaeological, Architectural and Cultural Heritage.

The EPA Guidelines (2017) state that material assets are taken to mean "*built services and infrastructure, roads and traffic and waste management"*. The EPA Advice Notes (2015) also gives examples of material assets including; assimilative capacity of air and water; ownership and access; and tourism and recreational infrastructure. The European Commission Guidance (2017) refers to a number of examples of material assets including buildings, other structures, mineral resources and water resources.

In this EIA Report, the impacts on some of the material assets described in the above guidance have already been considered in the following chapters and therefore these aspects will not be addressed in specific detail within this chapter.

- Chapter 5, Population and Human Health;
- Chapter 6, Land, Soils, Geology & Hydrogeology;
- Chapter 7, Hydrology;
- Chapter 9, Air Quality & Climate;
- Chapter 12, Cultural Heritage
- Chapter 13, Traffic & Transportation; and
- Chapter 15, Waste Management.

This chapter assesses ownership and access, built services and infrastructure, which have not already been addressed elsewhere in this EIA Report. The subsequent sections address built services and infrastructure. The potential impacts on built services and infrastructure, if any, are assessed in under the following subheadings:

- Land Use, Property, and Access
- Power and Electrical Supply;
- Surface water infrastructure;
- Foul drainage infrastructure;
- Water supply; and
- Telecommunications.

The associated built services and infrastructure in the vicinity of the site are summarised in the following sections; further detail is provided within the planning application documentation including details of consultation with utility suppliers.

14.3 RECEIVING ENVIRONMENT AND CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

14.3.1 Land Use, Property, and Access

Letters of consent, to apply for development on the lands from the site owners, including ESB Networks, are included with the planning documentation. While a portion majority of the proposed development site is under third party ownership, the applicant has an options agreement between the existing landowners for future purchase.

The proposed development site is c. 4.33 hectares of predominantly agricultural land and 2 no. existing residential properties located to the north west of the M50 orbital ring in the townlands of Huntstown, Johnstown and Coldwinters, North Road (R135), Finglas, Dublin 11. The 220kV substation is located within the overall development site for the concurrent data centre development as described in Section 2.4.2 of Chapter 2. Refer to Figure 2.2 in Chapter 2.

The lands are zoned *HI – Heavy Industry* under the *Fingal County Council Development Plan 2017-2023.* HI zoning is to facilitate opportunities for industrial uses, activities and processes that may cause or result in adverse conditions to appropriate locations. The HI zoned lands include the surrounding Huntstown Quarry and Huntstown Power Station complex. The context of the site is described further in Chapter 2 (Description of Development) and Chapter 3 (Planning and Development Context).

The site currently accessed via the existing agricultural entrance from the Quarry/Power Station access road approximately 130m west of its junction with North Road. A legal right of way exists at this entrance. The site can also be accessed via North Road (R135) through the agricultural fields to the east.

The proposed entrance to the GIS substation will be via two entranceways, one to the east and one to the west. The operational GIS building, and series coil compound will be accessed via the Huntstown Power Station link road on the western side of the site; and the 220kV/20kV transformers and 20kV switch and control rooms will be accessed from the eastern side of the site via the data centre campus internal road network. These entrances will be through an access-controlled entrance. The new access road off the Huntstown Quarry Road to the south will be used as a temporary construction entranceway, once the site is operational this will be used for an alterative access only, potentially as a maintenance entrance for large equipment. The access points are discussed further in Chapter 13 (Traffic and Transportation).

14.3.2 Power and Electrical Supply

The site boundary includes the existing ESB Huntstown 110kV Substation associated with the adjacent Huntstown Power Station. The site and wider lands are also traversed by an 110kV and 38kV overhead line. An application to divert these lines underground has been made by TLI Group under Planning Reg. Ref.: FW21A/0144. The site is strategically located directly to the east of the exiting Huntstown Power Station, and the existing Finglas 220 / 110 kV substation is located to the south.

During construction, contractors will require temporary power for onsite accommodation, and construction equipment /plant. The power requirements will be relatively minor. During construction it is anticipated that generators will be provided on site to provide temporary power. Any excavations within the vicinity of existing electrical services will be carried out in consultation with EBS Networks to ensure there is no potential impacts on existing users. Once the construction of the Proposed Development is completed, ESB Networks personnel will be mobilised to complete the commissioning. The electrical connection should have no disruptions to the national grid during connection works

The proposed 220kV substation and the underground cable connections are designed to support power demand for the full development of the concurrent data centre development as described in Section 2.4.2 of Chapter 2, the proposed development will ultimately be owned and operated by ESB Networks.

14.3.3 Surface Water Infrastructure

The site is currently agricultural land, and stormwater currently discharges through a series of land drains into the onsite ditches and flows northwards towards the Huntstown Stream, and the Ward River. There is no existing public surface water infrastructure available on the site.

During construction run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing along with mitigation measures in place to ensure that any impacts on surface water is minimised at source. Any discharge water will be treated using a silt-buster or similar to removed suspended solids prior to discharge.

The proposed development will capture rainwater runoff from building roofs, yards and the internal road network and divert into a stormwater drainage network. The surface water drainage infrastructure for the concurrent data centre development under concurrent application Reg. Ref. FW21A/0151 (as described in Section 2.4 of Chapter 2) has been designed to accommodate surface water drainage from the proposed development. The proposed development will connect to attenuation basin 2 of the concurrent data centre development that will discharge into the existing land drain in the north-west and flow northwards towards the Huntstown Stream, and the Ward River replicating the exiting drainage regime. Prior to discharging, the surface water runoff will be reduced to the existing greenfield runoff via hydro-brake flow control or similar approved device. The proposed development will have no connection to local surface water drainage infrastructure.

As set out in the AECOM Drainage and Water Services (Appendix 14.2) and CSEA Engineering Planning -Drainage and Water Services included within, the surface water network for the concurrent Data Centre development has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with the 1 in 100 year event to the attenuation basins allowing for 20% climate change, following the Greater Dublin Strategic Drainage Strategy (GDSDS) guidelines. The design measures will ensure that the development does not contribute to flooding on neighbouring properties.

As set out in the AECOM Drainage and Water Services (Appendix 14.2) and CSEA Engineering Planning -Drainage and Water Services included within, in order to facilitate the proposed development the infilling existing land drain along the centre of

the site and replacing with a pipe. This existing land drain flows south to north and is proposed to be replaced with a new 900mmø pipe. The proposed ditch diversion is required to take account of the requirements of OPW Guidelines for the Construction, Replacement or Alteration of Bridges and Culverts (OPW Guidelines)) which are outline below:-

- Diversion pipe to be capable of passing a fluvial flood flow with a 1% annual exceedance probability (AEP) or 1 in 100 year flow without significantly changing the hydraulic characteristics of the watercourse;
- Diversion pipe to maintain a freeboard of 300mm;
- Diversion pipe capable of operating under the above design conditions without causing a hydraulic loss of no more than 300mm;
- Diameter must not be less than 900mm;
- All calculations have allowed for an additional allowance of 10% in rainfall intensities to allow for climate change as per Table 6.1 of Volume 2 of the GDSDS.

Further information in relation to surface water infrastructure is detailed in the AECOM Drainage and Water Services (Appendix 14.2) and CSEA Engineering Planning - Drainage and Water Services included within, and the included drainage drawings 60641561-DWG-713 which accompanies the planning application. Further reference is made to surface water drainage and flood risk in Chapter 7 (Hydrology).

14.3.4 Foul Drainage Infrastructure

There is an existing 225mm ø foul sewer located in the R135 Regional Road to the north-east of the site.

Welfare facilities will be provided for the contractors via portable sanitary facilities within the construction compound site during the construction works. Wastewater generated at the welfare facilities in the construction compound will be managed by means of a temporary sealed storage tank, with all wastewater being tankered off-site to an appropriately licensed facility for disposal.

The proposed foul water network collects foul water flows from the toilet, shower and mess facilities within the GIS building. The substation building is an unmanned facility with visiting maintenance crews. This is generally a two man crew visiting site for two days per month.

Foul drainage from the GIS building will be gathered to a centrally located manhole where it will then be pumped offsite to the adjacent Data Centre's private sewer. The route, flows and general levels of the rising main has been agreed with the Data Centre designers and allows for local flow buffering at the pump station before discharge. The foul water drainage infrastructure for the concurrent data centre development as described in Section 2.4.2 of Chapter 2 has been designed to accommodate foul water drainage from the Proposed Development.

As part of the application for the concurrent data centre development a pre-connection enquiry (PCE) form was submitted to Irish Water which addressed wastewater demand for the development. The reference number for the Pre-Connection Enquiry is CDS20004468. Irish water responded to this request on 31 March 2021 (Appendix 14.1). The PCE confirmed that the connection to the mains is feasible without infrastructure upgrade works.

Further detail in relation to wastewater infrastructure for the proposed development is presented in the AECOM Drainage and Water Services (Appendix 14.2) and the foul water drainage drawing set 60641561-DWG-713 that accompanies the planning application, with the wider site connection discussed in CSEA Engineering Planning - Drainage and Water Services included within. Further reference is made to foul water in Chapter 7 (Hydrology).

14.3.5 Potable Water Supply

There is an existing 150mmø water main located in the R135 Regional Road to the east of the site.

During construction, a temporary connection will be required for welfare facilities, dust suppression and general construction activities. It is an anticipated that a combination of tankered water and bottled water will be used. If a temporary connections is required this will be subject to relevant applications and approvals. The water demand during the construction phase will not be significant enough to affect existing pressures.

The proposed development shall have a requirement for water to cater for the sanitary facilities this will be provided from the concurrent Data Centre's private water supply. A peak water demand of 400 litres/day during an 8-hour occupied shift has been allowed. Due to the gaps in use from the supply, potable water will be imported bottled water. The potable water infrastructure for the concurrent data centre development as described in Section 2.4.2 of Chapter 2 has been designed to accommodate potable water from the Proposed Development.

As part of the application for the concurrent Data Centre development a pre-connection enquiry (PCE) form was submitted to Irish Water which addressed water and wastewater demand for the development. The reference number for the Pre-Connection Enquiry is CDS 200004468. Irish water responded to this request on 16 March 2021 (Appendix 14.1) and have confirmed that the connection is feasible subject to additional off-site upgrade works. This is detailed further in the CSEA Engineering Planning -Drainage and Water Services included within.

Irish Water has confirmed that the extent of these works include the upgrade of approx 1500m of new 450mm diameter main, and the upgrade of pumps at Ballycoolen Highlands Tower. These works located in public domain and will be undertaken by Irish Water, thus there is no requirement for third-party consent to undertake such works. The applicant intends to engage with Irish Water regarding funding a portion of these upgrading works at connection application stage. It is proposed to connect a new 250mmø watermain to the proposed 450mmø water main in the R135. These works are detailed further in the CSEA Engineering Planning -Drainage and Water Services included within.

Further detail in relation to water supply infrastructure for the proposed development is presented in the AECOM Drainage and Water Services (Appendix 14.2) and the surface water drainage drawing set 60641561-DWG-713 that accompanies the planning application, with the wider site connection discussed in CSEA Engineering Planning -Drainage and Water Services included within. Further reference is made to water supply in Chapter 7 (Hydrology).

14.3.6 Telecommunications

Telecommunications including fibre required during the construction phase will be provided via a mobile connection or temporary connection to the nearby telephone network.

There are telecommunication lines in existence for telephone and broadband services in the area. There are existing underground carrier ducts in the vicinity of the site that will be utilised for the development. The connection into the wider telecommunications network will be undertaken by a statutory telecommunications operator. The installation of a telecommunication network to the site will be carried out in accordance with best practice standards.

14.4 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

14.4.1 Land Use, Property, and Access

During the construction phase there are potential short-term nuisances such as dust, noise, as well as the potential for pollution of groundwater or the existing drainage ditches associated with demolition, excavations and construction. In advance of work starting on site, the works contractor will prepare a detailed Construction Environmental Management Plan (CEMP) to manage potential nuisance impacts on nearby residential receptors. The potential impact associated with land use and property for the construction phase will be ***negative, not significant,*** and ***short term***, with a localised extent.

During the operational phase the proposed development is not anticipated to generated significant air (including odour), noise or water emissions during normal operating conditions; these have been discussed further in the respective EIAR chapters, Chapter 7 (Hydrology), Chapter 9 (Air Quality & Climate) and Chapter 10 (Noise and Vibration) Chapters.

The proposed development is within the consultation distance of the adjacent Huntstown Power Station Seveso site, a Land Use Planning Assessment (Appendix 5.1) has been with the planning documentation.

The majority of the land is zoned '*HI – Heavy Industry'*, the proposed development represents a loss of agricultural land however in the overall context of Ireland's available agricultural land the loss is negligible.

Due to the zoning of these lands, the overall potential impact associated with land use and property for the operational phase will be a ***neutral, not significant,*** and ***long term***, with a localised extent.

14.4.2 Power and Electrical Supply

The power requirements for the construction phase will be relatively minor. The potential impact associated with power and electrical supply for the construction phase will be a ***neutral, imperceptible*** and ***short term.***

In this instance the nature of the proposed development ensures that rather than utilising electricity, the proposed development will connect existing infrastructure to the concurrent Data Centre development. It has been confirmed by EirGrid through a Transmission Connection Agreement that there is sufficient power available from the existing area network to facilitate the Data Centre. EirGrid as the national authority for

the grid has the requirement to ensure that the connection will not impact or reduce the capacity available within the local network to support the neighbouring area. If there was a potential impact or inadequate capacity this would have been confirmed to the developer during consultation.

There are no potential impacts associated with power and electricity supply for the proposed development for the operational phase.

14.4.3 Surface Water Infrastructure

There is no connection to any public surface water infrastructure proposed during the construction or operational phase, there are therefore no potential impacts on the existing surface water infrastructure.

During the construction phase, there is potential for an increase in run-off due to the introduction of impermeable surfaces and the compaction of soils. This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off and sediment loading which could potentially impact local drainage. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses. This is addressed in Chapter 7 (Hydrology).

The operational phase of the development represents an increase in hardstanding area that, if not properly mitigated, has the potential to cause an increase in surface water run-off and flooding offsite and downstream of the development site. In addition silty water or water contaminated with hydrocarbons can arise from hardstand areas and carparks.

The design of the site as included measures to attenuate surface water to acceptable flows and treat stormwater prior to discharge following GDSDS guideline; thus the design has appropriately mitigated potential risks associated with flooding taking into account climate change risk. In addition, the design of the culvert for the centre of the site meets OPW guidance and is not anticipated to significantly change the hydraulic characteristics of the watercourse. This is addressed in Chapter 7 (Hydrology).

The potential impact associated with surface water for the operational phase is ***neutral, imperceptible, and long term.***

14.4.4 Foul Drainage Infrastructure

Welfare facilities will be provided for the construction workers on site during the construction works and wastewater will be of domestic origin only, this is likely to be tankered off site by an apparently licenced contractor. The works contractor will be required to apply to Irish Water for connection to discharge any contaminated surface water which collects in excavations, if it is required. The works contractor will be obliged to comply with any conditions of the discharge license to control discharge quality and rate of flow.

The potential impact on foul drainage for the construction phase is ***neutral, imperceptible,*** and ***short term.***

During the operational phase the wastewater discharged from the site will ultimately discharge to the Ringsend WWTP. Irish water have confirmed through the PCE that there is available capacity in the network.

The potential impact on foul drainage for the operational phase is ***neutral, imperceptible,*** and ***long term.***

14.4.5 Water Infrastructure

During the construction phase the water requirements for the site will be minimal and facilitated through road tanker delivery. This will serve the construction compound, welfare facilities and any other construction activities for the duration of construction works on the proposed development. The demand during the construction phase is not expected to be significant enough to have any potential impact on the existing water supply network.

The potential impact on potable water infrastructure for the construction phase is ***neutral, imperceptible,*** and ***short term.***

Irish water have confirmed through the PCE that there is available supply within the network for the proposed development. Irish Water is the National Authority for water management and should there have been an inadequate supply this would have been confirmed to the developer during consultation.

The potential impact on potable water infrastructure for the operational phase is ***neutral, imperceptible,*** and ***long term.***

14.4.6 Telecommunications

There are no potential impacts associated with telecommunications for the proposed development for the construction phase.

It is assumed that there is sufficient capacity available in the network to accommodate the development, so there are no potential impacts associated with telecommunications for the proposed development for the operation phase.

14.5 REMEDIAL AND MITIGATION MEASURES

14.5.1 Construction Phase

Ongoing consultation with the Irish Water, EirGrid, ESB Networks, and other relevant service providers within the locality and compliance with any requirements or guidelines they may have will ensure a smooth construction schedule without disruption to local and business community. The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to these utilities, unless this has been agreed in advance.

Coordination and consultation should be had between the project team and ESB and Irish Water and other relevant service providers within the locality as the design progresses. This is to ensure a smooth construction schedule without disruption to the local and business community. It is not anticipated that connections to these would have any significant offsite impact.

An outline Construction Environment Management Plan (CEMP) (Appendix 6.5) has been provided with the planning documentation, and it is anticipated that a detailed will be developed by the construction contractor this will be required to detail surface water protection measures including silt control features and measure for the management of spills. In order to mitigate any impact on surface water runoff, the new drainage

network should be constructed on a phased basis and consideration will be given to the construction of temporary pipes and detention ponds, if required.

During construction any liquid materials, paints, fuels etc. should be stored within temporary bunded areas, doubled skinned tanks or bunded containers.

14.5.2 Operational Phase

It is expected that consultation with the Irish Water, EirGrid, ESB Networks, and other relevant service providers within the locality and compliance with any requirements or guidelines they may have will ensure that there will be no ongoing impacts on material assets.

The stormwater system has been designed to collect rainwater runoff from the impermeable areas of the site, roofs and road/car park and directed to an appropriate SuDS and attenuation system. The discharge from site will pass through hydrocarbon interceptors to remove any hydrocarbons and screen rubbish, debris and sediment from the surface water.

No further remedial or mitigation measures are required in relation the operational phase.

14.6 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

14.6.1 Construction Phase

The works contractor will be obliged to put best practice measures to ensure that there are no interruptions to service from the existing telecommunications network, watermain, sewer and electrical grid. Any planned interruptions will be agreed in advance with the utilities suppliers. Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration. The predicted impact will be ***neutral, imperceptible,*** and ***short term*** for the construction phase.

The implementation of mitigation measures within each chapter, and detailed in Section 14.5.1 will ensure that the predicted impacts on the material assets will be ***neutral, imperceptible,*** and ***short -term*** for the construction phase.

14.6.2 Operational Phase

It has been confirmed by EirGrid that there is sufficient power available from the existing area network for the proposed development. Therefore, there are no predicted impacts associated with power and electricity supply. There are no predicted impacts associated with telecommunications for the proposed development for the operational phase.

The operator has engaged with Irish Water and FCC to ensure that there is sufficient capacity in the public sewer and watermain to cater for the Proposed Development. Irish water have confirmed that there is adequate capacity. It is not anticipated that connections to these would have any significant offsite impact. The predicted impact will be ***neutral, imperceptible, and long-term*** for the operational phase.

The implementation of mitigation measures within each chapter, and detailed in Section 14.5.2 will ensure that the predicted impacts on the material assets during the operational phase will be ***neutral, imperceptible*** and ***short-term***.

14.7 MONITORING AND/OR REINSTATEMENT

Monitoring arrangements will be reached with utility suppliers. No additional monitoring or reinstatement is required.

15.0 WASTE MANAGEMENT

15.1 INTRODUCTION

This chapter has been prepared to address the potential issues associated with waste management during the construction and operational phases of the Proposed Development, in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. Waste will be generated during the construction phase and to a lesser extent during the operational phase of the project.

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 15.1. The C&D WMP has been prepared in accordance with the *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* (DoEHLG & NCDWC, 2006).

The C&D WMP along with the mitigation measures in Section 15.6 will ensure the sustainable management of wastes arising at the development in accordance with legislative requirements and best practice standards.

15.2 METHODOLOGY

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 (as set out in Section 15.2.1), 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. A summary of the documents reviewed, and the relevant legislation, is provided in Appendix 15.1 C&D WMP.

This Chapter is based on the proposed development, as described in Chapter 2 (Description of the Development) and considers the following aspects:

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

A desk study was carried out which includes the following tasks:

- 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 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 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.

Mitigation measures are proposed in Section 15.6 to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal.

A detailed review of the existing ground conditions on a regional, local and site-specific scale and the environmental quality of soils which will have to be excavated to facilitate construction of the proposed development is presented and in Chapter 6 (Land, Soils, Geology and Hydrogeology).

15.2.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended).

In addition, the Irish government issues policy documents which outline measures aimed to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, “A Resource Opportunity” in 2012. The need to embed climate action in all strands of public policy aligns with the goals of the European Green Deal.

The strategy for the management of waste from the construction phase is carried out in line with the requirements of the *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* (DoEHLG, 2006), and the Construction and Demolition Waste Management – A Handbook for Contractors and Site Managers (CIF & FAS, 2002).

There are currently no Irish guidelines on the assessment of operational waste generation and guidance is taken from industry guidelines, British Standards and other relevant studies and reports including BS 5906:2005 Waste Management in Buildings – Code of Practice (2005), the Eastern-Midland Region Waste Management Plan 2015 – 2021 (Dublin City Council, 2015), the EPA National Waste Database Reports 1998 – 2018 and the EPA National Waste Statistics Web Resource.

15.3 RECEIVING ENVIRONMENT

The proposed development is located within the Local Authority area of Fingal County Council (FCC) as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the *Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021*. The EMR *Waste Management Plan* has three main overarching performance targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020. While this date has passed the EPA are yet to release an update on these targets. The new Waste Action Plan for a Circular Economy continues with this target of keeping the reuse, recycling and other recovery of construction and demolition waste at or above 70%.

The National Waste Statistics update published by the EPA in August 2020 identifies that Ireland's current progress against this C&D waste target is at 77% and our progress against 'Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)' is at 51%. Both of these targets are required to be met by 12 December 2020 in accordance with the requirements of the Waste Framework Directive, however the EPA are yet to confirm that these were met.

The FCC Development Plan 2017 – 2023 also sets policies and objectives for the FCC area which reflect those set out in the regional waste management plan.

In terms of physical waste infrastructure, FCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the Eastern-Midlands Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and two waste-to-energy facilities.

15.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development site is located on a 4.33 ha site in the townland of Huntstown, Johnstown and Coldwinters, North Road, Finglas, Dublin 11. The proposed development comprises the construction of a 2 storey 220 kV Gas Insulated Switchgear (GIS) substation known as 'Mooretown' comprising switchgear floor, cable pit/entry room, generator room, relay room, battery room, workshop, toilet, store room, mess room, hoist space, stair cores and circulation areas (c.2,068 sqm total gross floor area) with an overall height of c.17m located within an overall EirGrid and Customer compound (c.11,231 sqm in area). Lightning electrodes are attached to the roof of the substation building resulting in an overall height of c.20m. The compound includes 4 no. 220/20 kV transformers, 4 no. 20 kV switchgear buildings and 1 no. 20 kV control room buildings (c.5 m high and c. 35.5 sqm in area each), 220 kV series coil (equipment), fire walls (ranging from c.10 m-12.5 m high), lightning finials and monopoles (c.20 m high). The overall compound is surrounded by a c.2.6 m high palisade fence. The proposed substation will serve the data centre proposed under concurrent application Reg. Ref. FW21A/0151 as well as any future development on the wider landholding (as described in Chapter 2, Section 2.4).

The underground cable (Cable No. 1) will follow a route originating at the proposed Mooretown Substation extending south and then west along the private road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Corduff cable route. The underground cable (Cable No. 2) will follow a route originating at the proposed Mooretown Substation Compound / series coil extending south across the internal road connecting the North Road with Huntstown Power Station and Huntstown Quarry. The route terminates at a proposed joint bay on the existing Finglas cable route. Removal of the redundant sections of the 220 kV Corduff cables and 220 kV Finglas cables serving the existing AIS bay to Huntstown Power Station. The underground cable (Cable No. 3) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing ESB Huntstown A AIS station. The route terminates in the ESB Huntstown A AIS Station. The underground cable (Cable No. 4) will follow a route originating at the Mooretown GIS Substation extending south and then west to the adjacent existing Huntstown B AIS station. The route terminates in the ESB Huntstown B AIS Station.

The development includes all associated and ancillary site development and construction works, services provision, drainage works, connections to the substations, all internal road/footpath access routes, landscaping and boundary treatment works, vehicular access onto the private road to the south of the site and provision of 9 no. car parking spaces in the overall compound.

detailed description of the proposed development and a site layout is presented in Chapter 2 (Description of Development) and the included planning documentation. The details of the construction and operation of the development in terms of waste management are detailed in this section.

15.4.1 Demolition Phase

No demolition will be required to facilitate the construction of the proposed development.

15.4.2 Construction Phase

Topsoil, Subsoil and Stones from Excavations

The construction of foundations for the Substation compound and the underground transmission lines, and cable trenches, will require the excavation of made ground, topsoil, subsoil, tarmac, and possibly bedrock (if encountered).

The optimum depth of excavation required to facilitate installation of the 110kV ducting for the transmission line is 1.2m below ground level (bgl) but may increase up to 4 m bgl at road crossings and depending on existing constraints, utilities, etc. The typical width of each trench is up to 2.5 m, however this may vary depending on ground conditions and existing services. These are indicative dimensions and can vary greatly per installation.

It is estimated that approximately 12,045 m^3 of topsoil, subsoils, tarmacadam / hardcore fill will be excavated to facilitate construction of the proposed development. Suitable soils and stones will be reused on-site as backfill in the grassed areas, where possible. However, it is currently envisaged that the majority of the excavated material will be removed from site. The estimates will be refined prior to commencement of construction.

If the material that requires removal from site is deemed to be a waste, removal and reuse/recycling/recovery/disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery/disposal will dictate whether a Certificate of Registration is required.

In order to establish the appropriate reuse, recovery and/or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication Waste Classification –List of Waste & Determining if Waste is Hazardous or Non-Hazardous. Environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste including potential pollutant concentrations and leachability. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities/landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment/recovery or exported abroad for disposal in suitable facilities.

In the event that any excavated material is removed off-site for reuse as a by-product (and not as a waste), it will be done in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011. Article 27 requires that certain conditions are met and that by-product decisions are made to the EPA via their online notification form. However, it is not currently anticipated that any excavated material will be removed offsite for reuse as a by-product. Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27.

Construction Waste Materials

It is expected that wastes generated (other than excavated material and trees/shubbery) from other construction activities will be negligible and will generally comprise waste generated from construction workers. These wastes would generally be organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided at the site compound during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices. The construction compound will facilitate office, portable sanitary facilities, equipment storage, parking etc. for contractors.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific C&D WMP included as Appendix 15.1 of the Appendix document.

An outline Construction Environmental Management Plan (CEMP) has been prepared by AECOM to accompany the planning application and is included with the application documentation. The appointed main contractor will be required to prepare a detailed CEMP and C&D WMP prior to commencement of construction which will refine the above waste estimates.

15.4.3 Operational Phase

Once operational, it is anticipated that very small amount of waste will be generated at the proposed GIS substation from ESB networks staff during their inspections and maintenance works.

These wastes may include organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons) and non-recyclable waste. Waste fuels/oils, waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently.

15.5 POTENTIAL IMPACTS OF THE DEVELOPMENT

This section details the potential waste impacts associated with the proposed development.

15.5.1 Construction Phase

As detailed in Section 15.4, the Proposed Development will generate surplus excavated material, as well as waste from the welfare facilities and site office at the site compound.

There is a quantity of material (made ground and soils and stones) which will need to be excavated to facilitate the Proposed Development. Clean inert soils and stones excavated will be reused on site as backfill, where practical. The reuse of suitable clean inert excavated material onsite, where practical, will reduce consumption of natural quarry resources.

Surplus excavated material classified as waste will be segregated at source and transferred directly from site by a suitably permitted waste contractor(s) to suitably authorised receiving facilities. In the event that potentially contaminated material is encountered, correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on the health and safety of workers as well as on the receiving environment, both on and off-site. Contaminated material will need to be removed off-site for appropriate treatment and/or disposal. In the absence of mitigation measures the effect on the local environment is likely to be ***short term, significant,*** and ***negative***.

Waste materials generated at the site compound from the welfare facilities and site office will be temporarily stored in dedicated receptacles at the site compound pending collection by a suitably permitted waste contractor(s). The waste storage area will need to be easily accessible to waste collection vehicles.

If waste material is not managed and stored correctly on the site or at the site compound, it is likely to lead to litter or pollution issues at site, site compound and/or on adjacent properties. The knock-on effect of litter issues is the presence of vermin on the site, site compound and the surrounding areas. Waste material will be appropriately managed on site so as to avoid these issues. In the absence of mitigation measures the effect on the local environment is likely to be ***short term, significant,*** and ***negative***.

The use of non-permitted waste contractors for transportation or unauthorised receiving facilities could give rise to inappropriate management of waste and result in

negative environmental impacts or pollution. In the absence of mitigation measures the effect on the local environment is likely to be ***short term, significant,*** and ***negative***.

Wastes collected by a suitably permitted contractor(s) will be transferred to suitably registered/permitted/licenced waste facilities for processing and segregation, reuse, recycling, recovery and/or disposal. There are numerous authorised waste facilities in the Leinster region which can accept non-hazardous and hazardous waste materials and acceptance of waste from the Proposed Development would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the predicted construction waste materials at facilities in the region. In the absence of mitigation measures the effect on the local environment is likely to be ***short term, significant,*** and ***negative***.

Where offsite reuse of the wastes generated is not feasible, recycling and/or recovery of the waste will be carried out where possible. Recovery and recycling of construction waste has a positive impact on sustainable resource consumption, for example where waste trees/shrubbery is mulched into a landscaping product or waste asphalt is recycled for use in new pavements. The use of recycled materials, where suitable, reduces the consumption of natural resources.

In the absence of mitigation measures the potential impact of construction waste generation from the development is considered to be ***short term, significant,*** and ***negative***.

15.5.2 Operational Phase

No waste will be generated from the operation of the proposed 110kV transmission lines.

Small volumes of waste will be generated at the proposed GIS substation. The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. However, in the absence of mitigation, significant effects are not likely. The effect is likely to be **long term, non-significant** and **negative**.

The nature of the development means the generation of waste materials during the operational phase is an unavoidable impact. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

The waste materials generated will require site storage within the substation prior to collection by an authorised waste contractor. Waste collection vehicles will be required to service the development on a regular basis to remove waste.

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The knock-on effect of litter issues is the presence of vermin within the development and the surrounding areas.

The use of non-permitted waste contractors or unlicensed facilities could give rise to inappropriate management of waste and result in negative environmental impacts or

pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices.

The potential impact of operational waste generation from the development is considered to be ***long-term, negative*** and ***not significant***.

15.6 REMEDIAL AND MITIGATION MEASURES

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

15.6.1 Construction Phase

A project specific outline 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 enclosed in Appendix 15.1 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.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen with an aim to ‘design out waste’;
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated:
- Concrete rubble (including ceramics, tiles and bricks);
- Plasterboard;
- Metals;
- Glass; and
- Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks/bricks) and any suitable construction materials shall be re-used on-site, where possible;
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities; and

- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Soil/stones will be generated from the excavations required to facilitate construction. The main contractor will endeavour to ensure that surplus material is reused on site. It is not anticipated that there will be surplus material that will require removal from site. In the event that there is excess soils/stones requiring removal from site, any nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, which requires removal off-site.

If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011) as previously referred to and detailed in the C&D WMP (Appendix 15.1).

These mitigation measures will ensure that the waste arising from the construction phase of 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 to 2009 and the EMR Waste Management Plan (2015 - 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

15.6.2 Operational Phase

Small volumes of waste will be generated at the proposed GIS substation. No waste will be generated from the operation of the proposed 110kV transmission lines.

Any waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the proposed development are summarised below.

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
- Dry Mixed Recyclables;
- Organic food/green waste;
- Mixed Non-Recyclable Waste;
- Batteries (non-hazardous and hazardous);
- Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment; and
- Cleaning chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.).
- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly labelled with the approved waste type to ensure there is no cross contamination of waste materials;
- All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

These 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.

15.7 RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

This section describes the residual impacts of the proposed development the final or intended effects which occur after the proposed mitigation measures have been implemented.

15.7.1 Construction Phase

A carefully planned approach to waste management as set out in Section 15.6.1 and adherence to the C&D WMP during the construction and demolition phase will ensure that the impact on the environment will be ***short-term, neutral*** and ***imperceptible***.

15.7.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 15.6.2 will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and 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***.

15.8 MONITORING AND/OR REINSTATEMENT

15.8.1 Construction phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the construction phase where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The C&D WMP specifies the need for a waste manager to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste, as required. Where targets are not being met, the waste manager should identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects.

15.8.2 Operational phase

During the operational phase, facility management personnel should monitor waste generation volumes against the predicted waste volumes outlined earlier. There may be opportunities to reduce the equipment and number of bins required for the development where estimates have been too conservative. Reductions in equipment/bin requirements will reduce waste contractor costs. Waste legislation and FCC Waste Bye-Laws should also be consulted on a regular basis in case of any changes which may impact on waste management procedures.

15.8.3 Reinstatement

In the event that the proposed development is discontinued, there is not likely to be any significant impacts on waste management at the site. Where contaminated soil is encountered and excavated at the site with the intention of removal from site for off-site treatment or disposal, a management plan should be put in place in the event that the work is stopped and the contamination is left exposed to the public and the environment.

15.9 REFERENCES

Department of Environment, Heritage and Local Government (DoEHLG) & National Construction and Demolition Waste Council (NCDWC). Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (July, 2006).

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Waste Framework Directive)

Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate and associated legislation includes:

- European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended.
- Waste Management (Collection Permit) Regulations 2007 (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 2000 (S.I No. 185 of 2000) as amended.
- European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
- Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended.
- 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. No. 508 of 2009) as amended.
- European Union (Household Food Waste and Bio-waste) Regulations 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.
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
- European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
- European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended.

Department of the Environment, Climate and Communications (DoECC*), A Resource Opportunity – Waste Management Policy in Ireland* (2012).

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Dublin City Council. Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015).

Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2012.

Environmental Protection Agency (EPA), National Waste Statistics. Accessed: https://www.epa.ie/nationalwastestatistics/

Fingal County Council (FCC), Fingal County Council Development Plan 2017 – 2023.

Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.

Environmental Protection Agency, Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2015)

Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

16.0 CUMULATIVE IMPACTS

16.1 INTRODUCTION

This chapter considers the potential cumulative impact of the proposed development with any future development (as far as practically possible) on the site and the cumulative impacts with developments in the locality (including planned and permitted developments). As described in Chapter 2 (Description of the proposed development), the proposed development will comprise the construction of a 2 storey 220kV Gas Insulated Switchgear (GIS) substation (known as 'Mooretown'), 4 no. 22kV transformers, Client Control Building, and 2 no. 220kV underground transmission lines, 4 no. cable trenches, fire walls), lightning monopoles and associated compound and site infrastructure.

Cumulative impacts are those impacts that relate to incremental / additive impacts of the planned development in addition to historical, present or foreseeable future actions. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.

Changes to the environment that are caused by activities/projects in combination with other activities/projects.

16.2 METHODOLOGY

The cumulative effects are assessed in this chapter in accordance with the most relevant guidance, including:

- EIA Directive (2011/92/EU) as amended by EIA Directive (2014/52/EU);
- Planning and Development Act 2000 (as amended);
- Planning and Development Regulations 2001 (as amended);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018);
- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2017);
- Guidance on the preparation of the Environmental Impact Assessment Report (European Union, 2017);
- Draft Advice Notes for Preparing Environmental Impact Statements (EPA, 2015); and
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, European Commission, 1999.

The EPA guidelines (2017) define cumulative impacts as "*The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects".* The guidance is clear this assessment is required because a single activity can have a minor impact on its own, however, when combined with other impacts (minor or significant), it can have a cumulative impact that is collectively significant. It may also be relevant to consider the possible potential environmental loadings resulting from the development of zoned lands in the planned project's immediate vicinity.

European Union guidance (2017) states that *"It is important to consider effects not in isolation, but together; that is, cumulatively.*" Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from:

- the interaction between all of the different Projects in the same area; and
- the interaction between the various impacts within a single Project

The European Union guidance (2017) is also clear that the effects to be assessed in the EIA should be determined to be significant. This ensures that effort is not wasted on insignificant effects.

This assessment considers the potential cumulative impact of the proposed development with the concurrent and future developments related to the application as identified within Chapter 2 (Description of Development), Section 2.4, and the potential cumulative impact with planned and permitted developments in the locality of the site.

The potential cumulative effects are considered and assessed for each environmental aspect in Section 16.4. Where the cumulative effects are also addressed within the relevant Chapters, this has been crossed referenced as applicable.

16.3 RECEIVING ENVIRONMENT

16.3.1 Permitted Development and Existing Local Land Uses

The proposed development site is c. 4.33 hectares of predominantly greenfield located to the northwest of the M50 orbital ring in the townland of Johnstown and Coldwinters, North Road, Finglas, Dublin 11.

The surrounding area is characterised by a variety of energy, industrial, commercial, quarrying, agricultural and residential uses. The subject site is generally bounded to the northeast by the Dogs Trust (Dog Rescue and Rehoming Charity), to the south by a vehicular entrance leading to the Huntstown Quarry and to the south by an Anaerobic Digestion Plant, to the east by existing greenfield lands that are intended to serve data hall buildings proposed under concurrent application to Fingal County Council.

The wider area is characterised by a variety of energy, industrial, commercial, quarrying, agricultural and residential uses. The Dublin Airport Logistic Park located to the northeast, Balseskin Direct Provisions Estate (reception centre for international asylum seekers) is located to the east across the N2, and an area of commercial development and Charlestown Shopping Centre is located further to the south of the M50.

The lands are zoned HI – Heavy Industry under the *Fingal County Council Development Plan 2017-2023.* HI zoning is to '*facilitate opportunities for industrial uses, activities and processes that may cause or result in adverse conditions to appropriate locations*'. The HI zoned lands include the surrounding Huntstown Quarry and Huntstown Power Station complex. The HI zoned lands are surrounded almost exclusively by GE – General Employment, with GB - Green Belt lands located to the north, as well as a small area of are of WD - Warehousing and Distribution.

As part of the assessment of the cumulative impact of the proposed development, account has been taken of any relevant developments that are currently permitted, or under construction and substantial projects for which planning has been submitted

within the surrounding areas, as well as existing local land uses discussed above and shown on Figure 16.1 below.

Figure 16.1 *Existing local land uses*

In addition to the existing surrounding land use there are permitted developments recently granted permission or partially implemented with the potential for cumulative impacts with the proposed development within the immediate vicinity of the site are listed below:

FW20/0211 – Coldwinters Devco Ltd. Lands between the N2 and R135 (north of the N2-R135 link road), at Coldwinters, St. Margarets, Co. Dublin. The development will consist of 3 no. buildings for industrial/warehouse/logistics use (Units 3,4 and 5) with gross floor area of 24,356sq.m.

SID/02/18 - Irish Water, Newtown, North Road (R135), Dublin 11. Provision of 2no. biosolids storage buildings, each approximately 50m wide, 105m long and 15m in height, including solar panels on the roof of one building. These buildings have a combined capacity to store up to 48,000 cubic metres of biosolids waste at any one time.

F18A/0146 - Killeen Properties Ltd. Newtown, Kilshane Cross, Co Dublin. A storage and distribution centre for new imported vehicles with a total capacity for 5,951 no. vehicles and comprises vehicle storage, internal circulation roadways, vehicle loading and unloading area and transporter parking spaces.

F17A/0769 - Coldwinters Devco Ltd. Coldwinters, St. Margaret's, Co. Dublin. Development will consist of the construction of two single storey units for industrial

and/or warehousing use with ancillary two storey offices with a gross floor area of 9422sq.m.

F16A/0128 - Rohan Holdings Ltd. Dublin Airport Logistics Park, St. Margaret's Road, St. Margaret's, Co. Dublin. Four single storey units for industrial and/or warehouse use with ancillary two storey office with a gross floor area of 15,692 square metres.

The review of the existing and permitted development within the surrounding noted a significant number of small extensions, changes of use, retention and other minor alterations as the Dublin Airport Logistics Park and Vantage Business Park. These permissions were for established business within the vicinity of the development and have been considered as a part of the overall project impact to not be significant.

It is important to note that each project currently permitted is subject to an EIA and/or planning conditions which include appropriate mitigation measures to minimise environmental impacts. Any new development proposed on the lands after the submission of the proposed development would be accompanied by an EIA, or EIA Screening as required and the take into consideration the development of this site.

16.3.2 Concurrent Development

16.3.2.1 Underground Cable and Removal of Transmission Towers

As described in Section 2.4 of Chapter 2 (Description of the Proposed Development), there is an application currently under consideration by Fingal County Council (FCC) relating to the proposed development lands under FCC Reg. Ref: FW21A/0144. This concurrent development consists of the installation of electrical infrastructure between Finglas substation and Huntstown Power Station to facilitate the removal of existing Overhead Electricity Transmission Lines (OETL) and substitution with underground cabling (UGC) within the townlands of Johnstown Huntstown, Coldwinters, and Balseskin, at Finglas, Co Dublin. The electrical infrastructure includes two underground cable circuits of 1.2km length (110kV) and one circuit 1.2km length (38kV) and associated underground ducting, joint bays and associated infrastructure.

Cumulative Impacts - Construction Phase

Through engagement with the prospective developer the overall start-to-finish duration for this concurrent development, underground cable and to facilitate the removal of existing transmission towers, is estimated to be six months. Subject to planning approval construction is anticipated to commence in Q4 2021 and be completed by Q2 2022.

It is proposed that the construction works for the proposed substation development will commence in Q1-Q2 2022. Based on the applicant’s current timelines, it is unlikely that the construction of the concurrent development will directly coincide with the construction and commissioning works for the future substation. However, it is submitted that these timelines may be subject to change outside the applicant’s control.

In the unlikely event of construction overlap, it is likely that such an overlap would include works associated with the end stages of the undergrounding (i.e. connecting of lines and retirement of masts) and the initial site preparation of the substation (i.e. surveying, setting out for structures, rerouting of services and setting up of the construction site with fencing, site compounds etc).

In the event that there is any overlap between the construction phase of the proposed substation and the construction phase of the undergrounding of cables, it is considered that any potential overlap would be for ***temporary*** in duration.

Cumulative Impacts – Operational Phase

As noted previously, once constructed, the proposed development will not require regular any staff to operate the substation. This is also the case for this concurrent development, underground cable and to facilitate the removal of existing transmission towers.

EirGrid and ESB Networks will operate both the substation and the underground cable (transmission and distribution circuits) remotely from their control centres in accordance with their statutory Licences. and ESB Networks will carry out any local operations on Eirgrid's behalf. ESB Networks maintenance staff will carry out a routine inspections of the asset.

As highlighted through this EIAR the proposed development, when operational, will generate limited additional traffic, noise, air, water emissions, or waste generation from the operational activities. Therefore, the proposed development is not anticipated to cumulatively create any potential significant impacts during the operations of the proposed development.

16.3.2.2 Data Hall Building Development

As described in Section 2.4 of Chapter 2 of Chapter 2 (Description of the proposed development), the proposed development will provide the permanent power supply to the concurrent data hall development currently under consideration by Fingal County Council FCC Reg. Ref: FW21A/0151. This concurrent development is adjoining to the east of the proposed development and comprises the demolition of two residential properties fronting the R135 (North Road), and the development of 2 no. data hall buildings arranged over three storeys and associated structures and infrastructure.

Subject to planning approval and based on the expected construction programme, it is proposed that the construction works for the proposed data hall building development will commence in Q1-Q2 2022, with the entire site fully operational by Q4 2027.

Cumulative Impacts - Construction Phase

It is anticipated that the construction and commissioning works of the proposed development will coincide with the construction program for the data hall development. Cumulative impacts have the potential to arise during the construction phase these are potential short-term nuisances such as dust, noise, as well as the potential for pollution of groundwater or the existing drainage ditches associated with demolition, excavations and construction.

In advance of work starting on site, the works contractor will prepare a detailed Construction Environmental Management Plan (CEMP). The CEMP will set out the overarching vision of how the construction of the proposed development will be managed in a safe and organised manner by the Contractor.

The CEMP minimisation measures to ensure that pollution and nuisances arising from demolition, site clearance and construction activities is prevented where possible and managed in accordance with best practice and any subsequent planning conditions relevant to the proposed development.

The potential cumulative effects are considered and assessed for each environmental aspect in Section 16.4. Where the cumulative effects are also addressed within the relevant Chapters, this has been crossed referenced as applicable.

Cumulative Impacts – Operational Phase

As noted previously, once constructed, the proposed Development will not require regular any staff to operate it. Instead, EirGrid and ESB Networks will operate the substation and distribution circuits remotely from their control centres in accordance with their statutory Licences. and ESB Networks will carry out any local operations on Eirgrid's behalf. ESB Networks maintenance staff will carry out a routine inspection of the asset.

As highlighted through this EIAR the proposed development, when operational, will generate limited additional traffic, air, water emissions, or waste generation from the operational activities.

The only potential cumulative impact of note is in relation to noise generation during the operational phase of the substation and data hall building development.

The potential cumulative effects are considered and assessed for each environmental aspect in Section 16.4. Where the cumulative effects are also addressed within the relevant Chapters, this has been crossed referenced as applicable.

16.4 ASSESSMENT OF POTENTIAL CUMULATIVE IMPACTS

16.4.1 Human Health and Populations

The proposed development has been designed to ensure there are no significant effects on human health during construction and operation, when taking into account the surrounding land uses and population, once appropriate mitigation measures as outlined in each chapter and summarised in the following sections of this EIA Report are put in place.

The proposed development and the concurrent data hall development will create additional short-term employment in the area during construction phase.

As demonstrated by the noise modelling results presented in Chapter 10 (Noise and Vibration), the predicted cumulative noise emissions on the site during the operational phases are compliant with the adopted noise limit values which are based with due consideration of the effect on human health. The cumulative noise model considered the concurrent data hall development, and through the baseline noise assessment considered existing developments in the locality. In essence, the cumulative assessment in relation to noise levels that are encountered at the nearest noise sensitive locations are predicted to be within relevant noise criteria.

Aside from the proposed development and the concurrent development under consideration, the permitted developments and existing facilities listed in above within the vicinity of the proposed development site which are considered to have a negligible impact on the local population. There is no predicted significant cumulative impact associated with the construction or operational phases of the permitted developments with the proposed development once appropriate mitigation measures are put in place for each development.

Any future development will be required to incorporate appropriate mitigation measures (e.g. noise management, dust management, traffic management, management of water quality in run-off water, landscape, etc) during the construction phase as such any cumulative development will not have a significant effect on human health.

Overall, it is concluded that once appropriate mitigation measures are put in place any cumulative effects on population and human health (in relation to quality) will be ***long-term***, ***positive*** in terms of employment and ***long-term, neutral*** in terms of environmental factors in relation to human health and and ranging from ***imperceptible*** to ***slight*** significance.

16.4.2 Land, Soils, Geology and Hydrogeology

In relation to the potential cumulative impact on the geological or hydrogeological environment during the construction phases, those key engineering works which could result in cumulative impact if not adequately mitigated include:

- The removal of topsoil and subsoil cover during construction, which will further increase the vulnerability of the underlying bedrock, and;
- Accidental spillages and leakage from construction traffic and construction materials may occur, which could result in localised contamination of soils and groundwater underlying the site.

Contractors for the proposed development will be contractually required to operate in compliance with the CEMP which includes the mitigation measures outlined in this EIA report. In respect of the other permitted developments, the concurrent development, the respective CEMP for these projects will include mitigation measures to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016). As a result, there will be minimal cumulative potential for change in soil quality or the natural groundwater regime. The cumulative impact is considered to be neutral and imperceptible.

In relation to the current Huntstown Quarry operation which lies c. 300 m to the west (i.e., downgradient), it is understood that dewatering activities are taking place at the quarry. This dewatering is likely to have a local influence on the groundwater flow within the bedrock underlying the subject site.

However, given the projected excavation depths during Construction Phase, the bedrock aquifer will not be affected by the proposed development (only localised dewatering from the subsoils is expected to collect perched groundwater). Therefore, no cumulative effects on the groundwater regime are expected in relation to the simultaneous operation of the Huntstown Quarry and the proposed development.

In addition to the Huntstown Quarry aforementioned, there are no other large projects proposed within this area of the aquifer so no cumulative impact on recharge to the aquifer will occur. All developments are required to manage groundwater discharges in accordance with S.I. 9 of 2010 and S.I. 266 of 2016 amendments. As such there will be no cumulative impact to groundwater quality and therefore there will be no cumulative impact on the Groundwater Body Status. The operation of the proposed development is concluded to have a long-term, imperceptible significance with a neutral impact on soil and water quality.

In relation to the potential cumulative impacts from the operational stages, the following could result in a cumulative impact if not adequately mitigated:

- Overall increase in hardstanding: Cumulatively these developments will result in localised reduced recharge to ground and increase in surface water run-off.
- Accidental releases from fuel storage/unloading could contaminate groundwater or soil environments.

The proposed development and the concurrent developments will incorporate containment measures for oil tanks and include interceptors in car park areas and refuelling areas. All developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (primarily the Local Government (Water Pollution) Act, 1977 and 1990 as amended).

The residual cumulative impacts on land, soils, geology and hydrogeology for the construction and operation phases are anticipated to be ***long-term***, ***neutral*** in terms of quality and of ***imperceptible*** significance, once the appropriate mitigation measures, such as those outlined in Chapter 6 for the proposed development, are put in place for each development on the site.

16.4.3 Hydrology

The potential for cumulative impact due to contaminated runoff impact on local surface water quality during construction is low as there is no direct hydrological pathway. The current Huntstown Quarry operation lies c. 300 m to the west (i.e., downgradient). However this operation lies within the Tolka River sub-catchment and the subject site belongs to the Nanny Delvin Catchment (refer to Chapter 7, Section 7.3.1 for further details).

It is understood that dewatering activates are taking place at the quarry. This dewatering is likely to have a local influence on the groundwater flow within the bedrock underlying the subject site which is not connected to the subject site, as bedrock aquifer will not be affected by the proposed development (refer to Chapter 6 for further details). Therefore, there would be no hydrological connection between the two operations and no in-combination effects are expected.

Contractors for the proposed development will be contractually required to operate in compliance with the CEMP which includes the mitigation measures outlined in this EIA report. In respect of the permitted development and concurrent development the CEMP for these projects will include mitigation measures to protect water quality. These other developments will have to incorporate measures to protect water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019). As such there will be no cumulative impact to groundwater quality and therefore there will be no cumulative impact on the Surface Waterbody Status. As a result, there will be minimal cumulative potential for change in the natural hydrological regime. The cumulative impact is considered to be neutral and imperceptible.

During operation there is no potential for increase in flooding as each permitted development which receives permission from the Local Authority is required to comply with the Greater Dublin Strategic Drainage Strategy (GDSDS) and Local Authority requirements by providing suitable attenuation on site to ensure greenfield run-off rates and ensure that there is no increase in off-site flooding as a result of development. There are no other large projects proposed within this area (other than the Huntstown

Quarry mentioned above) that are anticipated to have a cumulative impact on hydrological regime.

Increase in wastewater loading and water supply requirement is an impact of all development: Every development will require approval from Irish Water (IW) confirming available capacity in the water and wastewater infrastructure. The surface water and foul drainage infrastructure and water supply requirements for the concurrent data hall development has been designed to accommodate the proposed development.

The residual cumulative impact on water and hydrology for the construction and operational phases is anticipated to be ***long-term***, ***neutral*** in terms of quality and of ***imperceptible*** significance, once appropriate mitigation measures to manage water quality runoff in compliance with legislative requirement are put in place for each development.

16.4.4 Biodiversity

As part of the Screening for an Appropriate Assessment (AA), in addition to the proposed development, other relevant projects and plans in the region must also be considered at this stage. This step aims to identify at this early stage any possible significant cumulative effects / impacts of the proposed development with other such plans and projects.

A review of the National Planning Application Database was undertaken. The first stage of this review confirmed that there were no data outages in the area where the proposed development is located. The database was then queried for developments granted planning permission within 500m of the proposed development within the last three years.

The Fingal County Development Plan (2017-2023) in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect the Natura 2000 sites in the same zone of impact of the proposed development site would be initially screened for Appropriate Assessment (AA) and if requiring Stage 2 AA, that appropriate employable mitigation measures would be put in place to avoid, reduce or ameliorate negative impacts. In this way any, in-combination impacts with Plans or Projects for the proposed development area and surrounding townlands in which the proposed development site is located, would be avoided.

Any new applications for the proposed development area will be *initially* assessed on a case-by-case basis by Fingal County Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

The existing and permitted development considered in the AA Screening in combination with the proposed development will have no predicted impacts on European sites and cumulative impacts can be ruled out for both the construction and operational stages of the proposed development. The concurrent adjacent application for the removal of existing overhead towers and the installation of two underground cable circuits and the data hall development have been assessed by Moore Group and reports for AA Screening report found that the proposed development will not have a significant effect on any Natura 2000 site within a 15km radius of the subject site. No in-combination effects are predicted.

16.4.5 Air Quality and Climate

According to the IAQM guidance (2014), there is the potential for cumulative dust impacts to any nearby sensitive receptors should the construction phase of the proposed development coincide with the construction phase of other permitted developments within 350m of the site. There is the potential for cumulative construction dust impacts associated with construction works associated with the proposed data storage facility development on the wider site should these works coincide with the construction of the proposed development.

There is a negligible risk of dust soiling impacts and a negligible risk of human health impacts associated with the proposed development. The dust mitigation measures outlined in this chapter will be applied during the construction phase which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development and the proposed data storage facility development on the site and / or simultaneous construction of any other developments within 350m of the site are deemed short-term and imperceptible.

Due to the relatively small scale of the proposed development and the short-term construction stage significant cumulative impacts to climate are not predicted.

With appropriate mitigation measures in place, the predicted cumulative impacts on air quality and climate associated with the construction phase of the proposed development are deemed short-term and imperceptible.

Operational phase direct impacts on air quality associated with the proposed development are predicted to be imperceptible. As there are no emissions to atmosphere associated with the cables once constructed as they will be buried underground there are no potential impacts associated with this aspect of the development. Cumulative traffic emissions associated with site maintenance vehicles and vehicles on the local road network have the potential to impact air quality. However, as the number of vehicles required for maintenance activities is low and infrequent in nature cumulative impacts are considered imperceptible and long-term.

In relation to climate, there will be no direct operational CO_2 emissions associated with the proposed development. The proposed development will facilitate the development of the concurrent data hall development (Reg. Ref. FW21A/0151). The indirect CO_2 emissions associated with the electricity to operate the concurrent data storage facility development were determined within the EIAR for the development, (summarised below) and were found to be insignificant in relation to climate.

The indirect CO_2 emissions from electricity to operate the proposed data hall development will not be significant in relation to Ireland's national annual CO_2 emissions. A Report titled 'Energy Related CO_2 Emissions In Ireland 2005 – 2018 (2019 Report)' published by the Sustainable Energy Authority of Ireland (SEAI, 2020) states the average CO_2 emission factor for electricity generated in Ireland was 375 gCO_2/kWh in 2018. This average CO_2 emission factor is based on the national power generating portfolio. On the basis that the proposed development will consume 150MW of power this equates to 1,310 GWh annually based on the assumption of the national fuel mix. This translates to approximately 490,000 tonnes of CO_2eq per year. Without any commitments from the applicant, the result of the proposed cumulative development will have an **indirect**, **long-term, negative** and **slight** impact on climate.

However, the applicant is committed to running its business in the most environmentally friendly way possible and has developed an approach which will (i) use existing infrastructure; and (ii) provide a mechanism which will aim to secure additional renewable energy generation. These commitments will enable new renewable energy generation calculated to offset the energy consumed by the proposed development from the electricity grid.

USE OF EXISTING INFRASTRUCTURE	The concurrent data hall building (FCC Ref. Ref. FW21A/0151) has been strategically located to adjoin the Huntstown Power Station. Collocating power generation and electricity consumption on the same site is beneficial as it: • Minimises the need for national grid network improvements, including new high voltage wires and cables, that would otherwise be the case to transfer additional electricity to a new location, the cost of which would be partly paid for by all electricity users; and • Provides the most energy efficient location for the electricity consumer that minimises electrical losses that occur when transferring electricity longer distances In addition, this 'co-location' approach will avoid the requirement to build new on-site gas power generation, thus avoiding the potential introduction of additional new fossil fuel generations and associated greenhouse gas emissions. The development is also adjacent to the Huntstown Bioenergy plant and feasibility studies will be undertaken to understand the suitability of any excess heat generated from the Data Centre being used in the Anaerobic Digestion process at the neighbouring site, hence making both developments more efficient.
RENEWABLE ENERGY GENERATION	Working alongside the concurrent data hall development (FCC Reg. Ref. FW21A/0151) the applicant will obligate the facility end user, to enter into arrangements which are capable of underpinning new renewable energy generation calculated to offset the energy consumed by the proposed development from the electricity grid. These arrangements will: Be in the form of Corporate Power Purchase Agreements between the applicant's group and the facility end user; Provide for the establishment of new renewable energy generation projects by the applicant's group, that will not be supported by government or consumer subsidies – these new renewable energy projects will be: Located throughout Ireland; Phased over the expected ramp up of the energy demand of the proposed development; and In total, are calculated to exceed the expected annual volume of energy consumed on site by the proposed development; Through these obligations, it is the goal of the applicant that for every unit of energy consumed by the data hall building, a unit of new renewable energy generation would be despatched to the wider electricity system to off-set it thus delivering the objective of operating the proposed development on a net zero carbon basis that would not impact Ireland's overall climate targets. Any associated additional renewable energy supply would also increase energy security through indigenous energy sources.

As the concurrent data hall development is over 20 MW, a greenhouse gas emission permit will be required for the facility which will be regulated under the EU-wide Emission Trading Scheme (ETS). Electricity providers form part of the ETS and thus greenhouse gas emissions from these electricity generators are not included when determining compliance with the targeted 30% reduction in the non-ETS sector i.e., electricity associated greenhouse gas emissions will not count towards the Effort Sharing Decision target. Thus, any necessary increase in electricity generation due to data storage facility demand will have no impact on Ireland's obligation to meet the EU Effort Sharing Decision. On an EU-wide basis, where the ETS market in 2018 was approximately 1,655 million tonnes CO_2eq, the impact of the emissions associated with the proposed development will be less than 0.03% of the total EU-wide ETS market which is imperceptible.

In addition, as outlined above, the applicant will enter into arrangements to provide new renewable energy generation which will have a greater power generation capacity than that consumed by the proposed development. Thus, the amount of renewable energy available to the non-ETS sector will not be diminished as a result of the proposed development.

16.4.6 Noise and Vibration

During construction of the Proposed Development it is anticipated that noise and vibrations associated with construction work on the proposed substation and associated plant will typically be lower than those generated by existing traffic movements on the local road network. The noise environments at the nearest noise sensitive locations to the proposed works are and will continue to be dominated by road traffic noise.

During construction of the proposed development it is anticipated that construction work on the concurrent data hall development site will be the dominant noise source for the identified receptors to the east and north of the site as detailed in Section 10.1 of Chapter 10 of the EIA for the concurrent development (FCC Reg. Ref. FW21A/0151)

All sites will be expected to work within conditioned and or best practice noise and vibration limits such that the associated noise and vibration impacts and managed. Based on this it is reiterated that any construction noise impacts will be ***slight, negative*** and ***temporary*** in nature.

Once the mitigation measures outlined in Section 10.6 of Chapter 10 are implemented there should be no significant cumulative impact with permitted, planned or existing developments as a result of the proposed development.

The environmental noise survey takes account of noise emissions from existing developments. It was noted that the existing ambient noise levels in the area were dominated primarily by road traffic on the surrounding road network. The potential cumulative noise emissions during the operational phase of the concurrent data centre development together with proposed development have been modelled with cumulative predicted noise levels. A cumulative assessment, identifying expected increases in noise level is presented in Table 16.1 and Table 16.2.

Table 16.1 *Comparison of Predicted Cumulative Noise Levels vs. Adopted Noise Criteria*

Location	Proposed Sub Station		
	Predicted dB $L_{Aeq,T}$	Criterion dB $L_{Aeq,T}$	Complies?
NSL01	28	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL02	28	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL03	27	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL04	31	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL05	37	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL06	33	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL07	38	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes
NSL08	35	55 (Day)	Yes
		50 (Evening)	Yes
		45 (Night)	Yes

Review of the predicted increases in noise level at the nearest noise sensitive locations conclude that the associated impact is '*not significant'* at all locations for the cumulative noise levels presented here. An '*imperceptible'* impact is predicted during all periods and all locations assessed. In essence the existing soundscapes that are encountered at the nearest noise sensitive locations are predicted to remain unchanged in terms of ambient noise levels with the development of the data storage facility introducing a low level of plant noise; in this context and against the existing noise levels in the area, noise from the proposed substation is expected to be inaudible.

Table 16.2 *Review of Predicted Changes in Existing Noise Levels*

Loc.	Scenario A – Typical Operation Daytime				
	Predicted dB $L_{Aeq,T}$	Background Level dB $L_{A90,T}$	Cumulative Noise Level (dB(A))	Change in Noise Level (dB)	EPA Glossary of Impacts
NSL01	28	56	56	0	Imperceptible
NSL02	28	56	56	0	Imperceptible
NSL03	27	56	56	0	Imperceptible
NSL04	31	54	54	0	Imperceptible
NSL05	37	52	52	0	Imperceptible
NSL06	33	52	52	0	Imperceptible
NSL07	38	54	54	0	Imperceptible
NSL08	35	55	55	0	Imperceptible
Loc.	Scenario A – Typical Operation Evening				

	Predicted dB $L_{Aeq,T}$	Background Level dB $L_{A90,T}$	Cumulative Noise Level (dB(A))	Change in Noise Level (dB)	EPA Glossary of Impacts
NSL01	28	53	53	0	Imperceptible
NSL02	28	53	53	0	Imperceptible
NSL03	27	53	53	0	Imperceptible
NSL04	31	50	50	0	Imperceptible
NSL05	37	49	49	0	Imperceptible
NSL06	33	49	49	0	Imperceptible
NSL07	38	50	50	0	Imperceptible
NSL08	35	54	54	0	Imperceptible
Loc.	Scenario A – Typical Operation Night				
	Predicted dB $L_{Aeq,T}$	Background Level dB $L_{A90,T}$	Cumulative Noise Level (dB(A))	Change in Noise Level (dB)	EPA Glossary of Impacts
NSL01	28	48	48	0	Imperceptible
NSL02	28	48	48	0	Imperceptible
NSL03	27	48	48	0	Imperceptible
NSL04	31	48	48	0	Imperceptible
NSL05	37	48	48	0	Imperceptible
NSL06	33	48	48	0	Imperceptible
NSL07	38	48	48	0	Imperceptible
NSL08	35	49	49	0	Imperceptible

In terms of noise associated with day to day activities the associated effect is stated to be as follows:

Quality	Significance	Duration
Negative	Not Significant	Long Term

The resultant noise impact is ***negative***, ***not significant*** and ***long-term***.

There are no operational vibration impacts associated with the Proposed Development or the permitted data centre, hence cumulative impacts do not arise in this instance.

16.4.7 Landscape and Visual Impact

Additional cumulative effects may arise from the combined effects of this scheme and other developments. The combined effects of these developments with the subject development may result in increased or decreased impacts, the main assessment set out in Chapter 11 has been carried out with consideration of the cumulative impacts. In relation to the subject development there are two proposals that would be currently considered to combine with this site to create a cumulative landscape and visual impact.

Most relevant is the concurrent data hall development for permission to develop a 2 no. data halls and associated development located to the east of the proposed development site. The proposed development is located between the data hall building development and the existing power station. The substation building is considerably lower than the proposed data halls and will therefore not be visible in views from the surrounding area. It may be partially visible in views from the south but will read visually as a part of the built mass of the data halls and power station.

Also of consideration is the proposal to underground the existing overhead lines in the vicinity of the Huntstown Power Station. If the scheme is permitted and developed, the result will be the removal of some of the visual clutter caused by the pylon structures

and the powerlines in surrounding views. Whilst this on its own would result in a generally positive visual impact the resulting impact of this scheme would be to make it more visually prominent by removing some of the existing built elements from views. With this considered, the photomontages have shown the pylons and lines removed and this has been included in the resulting visual assessment.

While the schemes described above, combined with the proposed development, will further alter the landscape character and views and visual amenity in the area. The resultant impact would be consistent with existing and emerging trends and has been considered where deemed appropriate in the assessment. Therefore, the cumulative impact of this scheme and the surrounding recent developments would not significantly affect the fabric of the landscape beyond the impacts outlined in this study.

16.4.8 Archaeology and Cultural Heritage

An assessment of the potential for cumulative impacts on archaeological, architectural and cultural heritage to arise was undertaken by assessing planning applications in the vicinity of the proposed development, the concurrent development removal of overhead lines, and data hall development.

These developments were subject to archaeological, architectural and cultural heritage impact assessment as part of their associated environmental impact assessment and/or planning processes. Previously unrecorded archaeological features have been discovered as part of the assessment process within the lands to be occupied by concurrent data hall development and the underground transmission lines. A method statement and license to undertake the archaeological excavation (preservation by record) of these features will be agreed with the National Monuments Service. These excavations will record (through preservation by record) these features in full, thereby contributing to the academic and cultural understanding of the area. Therefore, the cumulative impact of development is ***neutral*** and ***significant***.

There are no potential impacts on archaeological, architectural and cultural heritage expected as a result of the operational phase of the proposed development. Therefore, there are no cumulative impacts expected.

16.4.9 Traffic and Transportation

The potential for impact on transportation during construction primarily arises from additional trips due to the works associated with the development. There are permitted developments that are likely to be carried out concurrently with the construction of the development within the stated timeline. The operational traffic for those developments have been accounted for in the background traffic flows and as the construction phase traffic volumes would be less than operational volumes the generated traffic is considered to have been accounted for. There will however, be a cumulative effect from when they are added to one another.

Additionally, separate associated works for the adjacent data hall building which serves the development will be constructed together with the proposed undergrounding of existing overhead electricity cables. Programming for the data hall development will account for the peak construction associated with the development under consideration in this section to mitigate the impact. The data hall building development construction will share the on-site construction car parking facility which will have a limited capacity. Extra over car parking demand will be facilitated at the off site parking facility and workers will be transported by bus to the substation construction site, thus mitigating the cumulative adverse impact on the local road network.

Programming for undergrounding of the overhead lines (subject to a grant of permission) is unlikely to result in construction overlap. If an overlap occurred it is likely that the traffic associated with the end stages of the undergrounding and the initial site preparation of the future datacentre and substation will account for a negligible number of additional movements of vehicles on the local road network.

Contractors for the proposed development will be contractually required to operate in compliance with a Construction Environmental Management Plan CEMP which will include the mitigation measures outlined in this EIA report. As a result, there will be a minimal impact on the receiving environment. The cumulative impact is considered to be ***short term, negative and slight.***

The proposed development will necessitate a negligible number of additional movements of vehicles on the local road network. The construction of the adjacent data hall building will result in additional traffic within the local environment. Other development in the immediate vicinity of the site is accounted for in background traffic flows. The development will have a cumulative impact on the broader transportation environment. Even accounting for background traffic growth the development will not have a significant impact capacity of the local network. The operation of the proposed development is concluded to have a ***long*** term, ***not significant neutral*** impact on traffic and transportation quality in the local environment.

16.4.10 Material Assets

During the construction phase there are potential short-term nuisances such as dust, noise, as well as the potential for pollution of groundwater or the existing drainage ditches associated with demolition, excavations and construction. In advance of work starting on site, the works contractor will prepare a detailed Construction Environmental Management Plan (CEMP) to manage potential nuisance impacts on nearby residential receptors. There is no connection to any public surface water or foul water infrastructure proposed during the construction or operational phase.

The proposed development entails minimal use of material assets during construction. Coordination and consultation should be had between the project team and ESB and Irish Water and other relevant service providers within the locality as the design progresses. In respect of the concurrent development, the works contractor will be obliged to put best practice measures to ensure that there are no interruptions to service from the existing telecommunications network, watermain, sewer and electrical grid. Any planned interruptions will be agreed in advance with the utilities suppliers.

The concurrent development that this substation supports will have a maximum operational electrical demand of 150MW. It has been confirmed by EirGrid through the Transmission Connection Agreement that there is sufficient power available from the existing area network to facilitate the proposed development. EirGrid as the national authority for the grid has the requirement to ensure that the connection will not impact or reduce the capacity available within the local network to support the neighbouring area. If there was a potential impact or inadequate capacity this would have been confirmed to the developer during consultation.

Once operational, the proposed development will result in minimal impact on surface water, foul drainage and water infrastructure. The concurrent development, the removal of existing overhead towers and the installation of two underground cable circuits will have no demand on water or wastewater infrastructure and therefore no cumulative impacts. In respect of the data hall development, as noted in Chapter 14 a pre connection enquiry form was submitted to Irish Water (IW) which addressed water

and wastewater demand for the concurrent data hall building development, and the proposed development. IW have confirmed that a foul water and water supply connection to IW is feasible pre connection enquiry (PCE) reference CDS20004468 (refer to Appendix 14.1, and 14.). Irish Water have confirmed through the PCE that there is available supply within the network. Irish Water is the National Authority for water management and should there have been an inadequate supply this would have been confirmed to the developer during consultation.

During the operational phase the proposed development is not anticipated to generated significant air (including odour), noise or water emissions during normal operating conditions; these have been discussed further in the respective EIAR chapters, Chapter 7 (Hydrology), Chapter 9 (Air Quality & Climate) and Chapter 10 (Noise and Vibration) Chapters.

Based on the above, it is predicted that the cumulative impact of the proposed development with other permitted, planned and existing developments is considered to be ***short-term*** and ***not significant*** during the construction phase and ***long-term*** and ***not significant*** during the operational phase.

16.4.11 Waste Management

The construction of the proposed development and other surrounding proposed, permitted and future developments will require site clearance, excavations and levelling, which will generate a requirement for soil removal and/or import, works on these sites occurring concurrently will also generate additional C&D Waste in the local area. An increased density of construction activities in the short term will impact in respect to waste on increased traffic from waste contractors, but overall is likely to provide an improvement in the efficiencies of waste collections in the area and will be short term.

The construction of the proposed development, and the concurrent data hall building development within the overall landholding will require site clearance, excavations and levelling which will generate additional waste, as discussed in Chapter 15. Mitigation measures as outlined in Chapter 15 will be implemented for the proposed development alongside a project-specific Construction and Demolition Waste Management Plan (C&D WMP). The C&D WMP aims to ensure maximum recycling, re-use and recovery of waste with diversion from landfill, where possible. It also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources).

Provided mitigation measures set out in the planning permissions / EIA Reports for these developments are implemented during construction of the proposed development, the cumulative effect will be and ***neutral, not significant,*** and ***short-term****.*

There are existing residential properties close by these developments which will generate similar waste types. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely to provide an improvement in the efficiencies of waste collections in the area.

The waste quantities to be generated from the operation of the proposed development, and the concurrent data hall building development within the site are anticipated to be relatively small based on the nature of the operation, as discussed in Chapter 15. The

proposed development will implement the mitigation measures outlined in Chapter 15, which will ensure the waste arising from the proposed 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)*, as well as ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved. As such, the predicted impact of the operational phase will be ***long term*** and ***imperceptible***.

Other proposed or permitted developments will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative impact relating to waste management will be ***long-term, neutral*** and ***imperceptible.***

Provided that mitigation measures set out in the EIA Reports for the Permitted Development, concurrent data hall building development are implemented during construction of the proposed development, the cumulative impact will be ***short term*** and ***imperceptible***.

17.0 INTERACTIONS – INTERRELATIONSHIPS BETWEEN THE ASPECTS

17.1 INTRODUCTION

This chapter has been produced following the guidance within the EIA Directive, the *Planning and Development Act 2000* (as amended), the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2017) and EPA Draft *Advice Notes for Preparing Environmental Impact Statements* (EPA, 2015).

In accordance with the guidance not only are the individual significant impacts required to be considered when assessing the impact of a development on the environment, but so must the interrelationships between these factors be identified and assessed.

The majority of the EIA Report chapters have already included and described assessments of potential interactions between aspects, considered by the various specialists contributing to this impact assessment. The quality, magnitude and duration of potential impacts are defined in accordance with the criteria provided in the EPA 2017 Guidance as outlined in Chapter 1 (Introduction). This section of the assessment presents a summary and assessment of the identified interactions.

Section 171A of the Planning and Development Act requires that the interactions between the following be assessed:

- Population and human health;
- Land, soil, water, air and climate;
- Biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive; and
- Material assets, cultural heritage, and the landscape.

17.2 DISCUSSION – POSITIVE IMPACTS

The reasoning behind the interactions that are considered to have a positive effect (i.e. a change which improves the quality of the environment) is outlined in this section.

17.2.1 Planning and Alternatives on:

Population and Human Health

The proposed development will be designed to provide a permanent power supply for the concurrent data hall buildings FCC Reg. Ref. FW21A/0151.

The proposed development will create up to 20-50 temporary jobs during the construction phase, which will have a ***short-term***, ***positive*** and ***short-term, positive*** effect on employment in the local area.

17.3 DISCUSSION – NEUTRAL IMPACTS

The reasoning behind the interactions that are considered to have a neutral effect (i.e. no effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error) is outlined in this section.

17.3.1 Population and Human Health and:

Land, Soils, Geology and Hydrogeology

There will be a loss of soil available for agricultural use due to the development. However, within the overall context of Ireland's available farmland, the loss is considered negligible. The employment created by the construction and operation of the proposed development counterbalances this economic loss to some extent.

The proposed system is not anticipated to impact on domestic wells or any groundwater protection areas. The impact is ***long-term, imperceptible*** and ***neutral***.

Hydrology

The proposed development represents an increase in hardstand, the proposed sustainable drainage measures and flood risk assessment undertaken demonstrates that the development will not result in offsite flooding or impact on on surface water flows in the local area.

The proposed development will generate wastewater emissions (foul water) from the site. Wastewater will be collected in a newly constructed foul drainage network discharge to the Local Authority wastewater treatment plant (WWTP) at Ringsend for offsite treatment.

There are no other interactions. The effect is considered to be ***long-term, imperceptible*** and ***neutral***.

Archaeological, Architectural and Cultural Heritage

Archaeological assessment for the proposed development has identified features of archaeological interest on the site. Further, aspects of the proposed development have the potential to impact on unidentified archaeological features during construction works. The ability to excavate these sites through the construction phase will provide data to the archaeological community from the potential subsurface sites. The potential to gain knowledge outweighs the negative impact. And the mitigation measures detailed Chapter 12 (Archaeological, Architectural and Cultural Heritage) including a comprehensive programme of archaeological excavation, will ensure that the effect is ***long-term, imperceptible*** and ***neutral***.

Material Assets, including Transport and Waste

The proposed development will have an impact on material assets such as surface water drainage, water supply, wastewater drainage, power supply and road infrastructure. The individual chapters of this EIA Report (Chapter 13 (Traffic and Transportation) and Chapter 14 (Material Assets)) have assessed the capacities of the available infrastructure to accommodate the proposed development and the implementation of the mitigation measure proposed in these chapters will ensure there are no residual negative impacts on the local population. The predicted effect is therefore ***imperceptible*** to ***not significant*** and ***neutral***.

Hydrocarbon sludge, waste, and debris will be generated in the hydrocarbon interceptors that will treat the surface water run-off from the proposed development during the operational phase. This waste stream will be managed in accordance with the relevant legislation identified in Chapter 15 (Waste Management) such that the effect of the waste generation will be ***long-term, imperceptible*** and ***neutral***.

Landscape and Visual Impact

The extent of potential visual impact of the proposed development on the surrounding environment from 8 representative view locations around the proposed development have been undertaken. The proposed development is not visible from any of the above viewpoints, existing landscape features in the wider area along with the buildings and landscape scheme associated with the future development (data hall development) deter any views of the Proposed Development. The development would cause a shift in landscape character, from the current peri-urban condition towards employment-dominated urban, which may impact on Populations and Human Health. It is important to note that this effect is an inevitable result of the site's zoning and is a realisation of the development strategy for the area. Overall, the interactions between Landscape and Visual Impact, and Population and Human Health are ***slight, neutral and long term***.

17.3.2 Land, Soils, Geology and Hydrogeology and:

Hydrology

The main potential impact of the construction works proposed is on surface water quality (due to sediment laden run-off, material spillages) and groundwater quality (due to removal of protective soil) in the environs of the construction area; however, the implementation of a CEMP as detailed in Chapter 7 (Hydrology) will ensure the effect will be ***short-term, imperceptible,*** and ***neutral***.

The main potential impact of the operational phase of the proposed development on surface water quality is accidental spills of fuels and other chemicals. However, with the implementation of comprehensive emergency response procedures and standard operating procedures to respond to chemical spillage and training, the effect will be ***long-term, imperceptible,*** and ***neutral***.

Biodiversity

The construction phase will result in land disturbance during cut and fill activity that may impact on indigenous flora and fauna. Appropriate mitigations have been implemented to reduce the impact on indigenous flora and fauna which will be ***neutral, short term,*** and ***imperceptible.***

Although the operational phase will alter the existing agricultural habitat to a built environment, it is not envisioned that there will be any long-term impact on overall biodiversity. Appropriate mitigations have been implemented to reduce the impact on indigenous flora and fauna. The development is located in an area of low local ecological value and, as such, is predicted to have a ***neutral*** and ***imperceptible*** effect on biodiversity.

Archaeological, Architectural and Cultural Heritage

Archaeological assessment for the proposed development has identified features of archaeological interest on the site. Further, aspects of the proposed development have the potential to impact on unidentified archaeological features during construction works. The ability to excavate these sites through the construction phase will provide data to the archaeological community from the potential subsurface sites. The potential to gain knowledge outweighs the negative impact. The mitigation measures detailed Chapter 12 (Archaeological, Architectural and Cultural Heritage), including a

comprehensive programme of archaeological excavation, will ensure that the effect is ***long-term, imperceptible*** and ***neutral***.

Material Assets, including Transport and Waste

As detailed in Chapter 15 (Waste Management), excavated soil and stone will be generated from the site preparation, excavations and levelling works required to facilitate construction. Any spoil which cannot be reused on site will be removed off site for reuse or recovery, where practical, with disposal as last resort.

Adherence to the mitigation measures in Chapter 15 and the requirements C&D Waste Management Plan (included as Appendix 15.1), will ensure the effect is ***short-term, imperceptible*** and **neutral.**

17.3.3 Hydrology and:

Biodiversity

Mitigation measures will be in place during construction and operation to ensure that any accidental emissions to the local environment are controlled.

The proposed development will result in increased surface water run-off. Any surface water run-off will be attenuated to the greenfield runoff rate. The proposed sustainable drainage measures include hydrocarbon interceptors, and off-site attenuation storage and flow control device will ensure emissions are treated and controlled. The proposed will not have areas of permanently standing water the proposal includes dry detention basis means it is unlikely to attract flocks of waterfowl, and therefore considered unlikely to pose a significant hazard to aviation.

There is no direct connectivity to any national or internationally designated sites. The predicted effect will be ***neutral, imperceptible***, and ***long-term.***

Air Quality and Climate

Mitigation measures implemented during the construction phase will ensure that the deposition of dust is minimised and therefore the predicted effect from air (including dust) on the hydrological environment during construction is ***short-term, imperceptible*** and ***neutral***.

The operational procedures and other general site maintenance regime will ensure that the impact of the facility complies with all ambient air quality legislative limits and therefore the predicted impact from air (including dust) on the hydrological environment is ***long term, imperceptible*** and ***neutral***.

Land, Soils, Geology and Hydrogeology

As there is potential for silt laden run-off to enter current stormwater systems and indirectly discharge to a watercourse, mitigations will be put in place to manage run-off during the construction phase. Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal. Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds). The effect will be ***short-term***, ***imperceptible,*** and ***neutral***.

There are no significant surface watercourses on the site so there will be no impact on the natural hydrological regime from the addition of hardstanding across the site. Any surface water run-off will be attenuated to the greenfield runoff rate.

Material Assets, including Transport and Waste

Hydrocarbon sludge waste and debris will be generated in the hydrocarbon interceptors will treat the surface water run-off from the proposed development during the operational phase. This waste stream will be managed in accordance with the relevant legislation identified in Chapter 15 such that the effect of the waste generation will be ***long-term, imperceptible*** and ***neutral***.

The proposed development will result in changes to surface water drainage, water supply and wastewater networks. However, a combination of mitigation measures to be implemented as detailed in Chapter 7 (Hydrology), as well as the capacity already built into these networks, will ensure that these changes will result in a ***long-term, imperceptible*** and ***neutral*** impact.

17.3.4 *Biodiversity and:*

Air Quality and Climate*:*

There is a potential for the construction activity to impact on air quality in terms of dust generated but mitigation measures outlined in both Chapter 6 (Land, Soils, Geology & Hydrogeology) and Chapter 9 (Air Quality & Climate) of this EIA Report, implemented through the CEMP, will ensure that the impact on biodiversity is **short-term**, **neutral and imperceptible.**

Air dispersion modelling was undertaken as set out in Chapter 9 (Air Quality and Climate) and the results from the modelling of air emissions including emissions from back-up generators during the operational phase show that the emissions from the facility will comply with the relevant air quality legislative limits, and as such there will be a ***long-term, imperceptible, neutral*** effect on biodiversity.

Landscape and Visual

There will be a minor loss of hedgerow and modified grassland habitats as part of the proposed development during the construction phase. The operational development and the implementation of the Landscape Plan will result in an overall ***neutral*** interaction. The proposed will not have areas of permanently standing water the proposal includes dry detention basis means it is unlikely to attract flocks of waterfowl, and therefore considered unlikely to pose a significant hazard to aviation.

17.4 DISCUSSION – NEGATIVE IMPACTS

The reasoning behind the interactions that are considered to have a negative effect (i.e. a change which reduces the quality of the environment) is outlined in this section.

17.4.1.1 Population and Human Health and:

Air Quality and Climate

The potential for dust during construction will be managed through dust control measures to minimise the impact on human health. Therefore, the impact of the

proposed development in terms of dust soiling or particulate matter emissions will be ***negative, imperceptible*** and ***short-term*** at nearby receptors.

Noise and Vibration

The potential interaction of noise on the local population is discussed in Chapter 5 (Population and Human Health) and Chapter 10 (Noise & Vibration). 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. 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.***

As detailed in Chapter 10 (Noise and Vibration), proprietary noise and vibration control measures will be employed as part of detailed design in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at any nearby noise sensitive locations. The predicted change in noise levels associated with Building Services and Plant during the operational phase is expected to be ***negative***, ***not significant*** **to** ***moderate*** and ***long-term***.

17.4.2 Biodiversity and:

Noise and Vibration

Noise and vibration generated during the construction phase of the proposed development will have a ***short-term, negative*** impact on fauna which are likely to be displaced during construction works.

17.5 SUMMARY

In summary, the interactions between the environmental factors and impacts discussed in this EIA Report have been assessed and the majority of interactions are neutral.

There are no significant negative impacts are predicted from the interactions of the constituent elements of the proposed development when viewed in the light of their associated mitigation measures.

17.6 TABLE OF INTERACTIONS

Table 17.1 Summary of interrelationships Between the Aspects

	Planning and Alternatives		Population & Human Health		Land, Soils and Hydrogeology		Hydrology		Biodiversity		Air Quality and Climate		Noise and Vibration		Landscape and Visual Impact		Cultural Heritage		Material Assets, including Transport and Waste	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Planning and Alternatives			+	+	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Population & Human Health					o	o	o	o	×	×	-	-	-	-	o	o	o	×	o	o
Land, Soils and Hydrogeology							o	o	o	o	×	×	×	×	×	×	o	×	o	o
Hydrology									o	o	o	o	×	×	×	×	×	×	o	o
Biodiversity											o	×	-	×	o	o	×	×	×	×
Air Quality and Climate													×	×	×	×	×	×	×	×
Noise and Vibration															×	×	×	×	×	×
Landscape and Visual Impact																	o	×	×	×
Cultural Heritage																			×	×
Material Assets, including Transport and Waste																				

Con.	Construction Phase
Op.	Operational Phase
×	No Interaction

+	Positive Interaction
o	Neutral Interaction
-	Negative Interaction