HERBATA DATA CENTRE, NAAS

EIAR
NON-TECHNICAL SUMMARY

NI 2615
01
June 2024

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1 INTRODUCTION

1.1 The Project Overview

The Environmental Impact Assessment (EIA) Report (EIAR) is provided in support of the proposed Herbata Data Centre Campus which is subject of both a full planning application to Kildare County Council (KCC) and a Strategic Infrastructure Development (SID) application to An Bord Pleanála; the applicant for both applications is Herbata Limited. The Data Centre Application and the Substation Application together constitute the "Project" for the purposes of Environmental Impact Assessment and Appropriate Assessment, and references to the "Project" should be read as references to those two applications taken together as one project.

1.2 Purpose of the Non-Technical Summary

A standalone Non-Technical Summary (NTS) presents a summary of the EIAR in plain, non-technical language, as required by the EIA Regulations. The NTS provides a concise outline of the Project, the potential environmental effects identified, and mitigation measures proposed to avoid, reduce or offset these effects, as well as any related residual and cumulative impacts.

The NTS is a component of the EIAR which also comprises of the following elements:

- Volume I Main Report;
- Volume II Technical Appendices; and
- Volume III Design Drawings & Figures.

1.3 Structure of the Non-Technical Summary

The NTS presents the environmental topics in line with the structure of Volume I of the EIAR, which is as follows:

EIAR – Volume I

Chapter 1	Introduction and Need for EIAR
Chapter 2	Alternatives
Chapter 3	Project Scoping and Consultation
Chapter 4	Description of the Project and Project Need
Chapter 5	Biodiversity
Chapter 6	Lands and Soils
Chapter 7	Water and Hydrology
Chapter 8	Air Quality
Chapter 9	Noise and Vibration
Chapter 10	Cultural Heritage
Chapter 11	Landscape and Visual
Chapter 12	Traffic and Transportation
Chapter 13	Material Assets – Built Services
Chapter 14	Population
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2 INTRODUCTION AND NEED FOR EIAR

2.1 The Project Overview

The Environmental Impact Assessment Report (EIAR) is provided in support of the proposed Herbata Data Centre Campus which is subject of both a full planning application to Kildare County Council (KCC) and a Strategic Infrastructure Development (SID) application to An Bord Pleanála; the applicant for both applications is Herbata Limited.

The overall Data Centre development includes two main elements, namely:

(a) The Data Centre, comprising 6 no. two storey Data Centre buildings, an administration/management building, car parking, landscaping, energy infrastructure and other associated works. These elements are the subject of the planning application submitted to KCC, and that application is referred to hereafter as “the Data Centre Application”.

(b) The substation, comprising a grid substation and 110kV transmission connection. These elements are subject of the SID application to An Bord Pleanála, and that application is referred to hereafter as “the Substation Application”.

There is a separate statutory development consent process for each of these elements, with which Herbata must comply. The Data Centre element requires planning permission pursuant to section 34 of the Planning and Development Act 2000 (as amended) (the “2000 Act”), while the substation element is “Strategic Infrastructure Development” within the meaning of the 2000 Act and requires approval from An Bord Pleanála under section 182A of the 2000 Act (instead of a regular planning permission under section 34 of the 2000 Act).

It is therefore necessary for Herbata Limited to make two distinct applications, one to Kildare County Council in respect of the Data Centre (i.e. the Data Centre Application) and one to the Board in respect of the substation (i.e. the Substation Application). This is not at all unusual and is in compliance with legislation.

The Data Centre Application and the Substation Application together constitute the “Project” for the purposes of Environmental Impact Assessment and Appropriate Assessment, and references to the “Project” in the EIAR should be read as references to those two applications taken together as one project. Figure 2.1 below illustrates the extent of both planning application boundaries and the relevant project layout as subject of assessment within the EIAR.

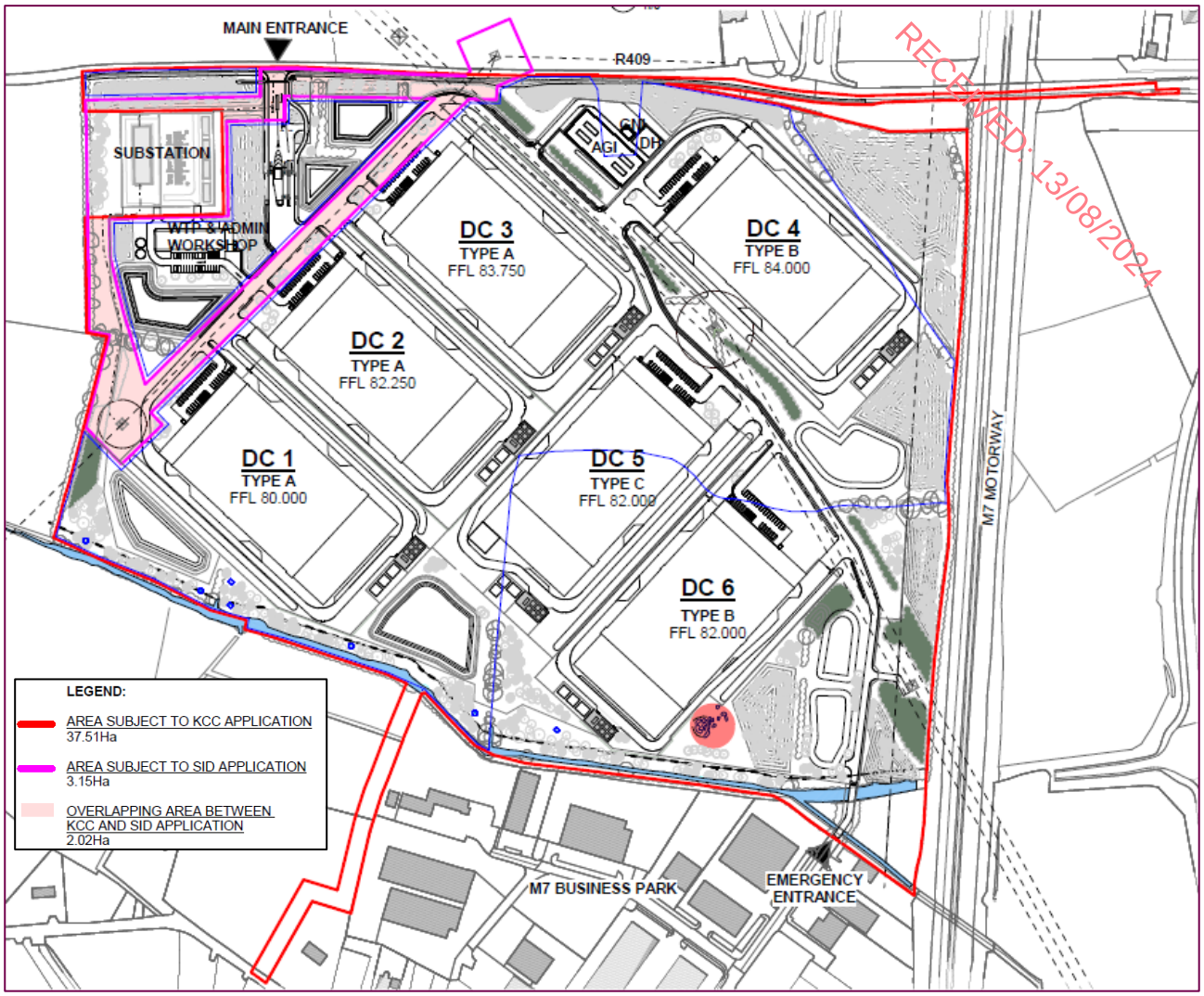

Figure 2.1: Proposed Site Context Plan Indicating both KCC (the Data Centre) Application and SID (the Substation) Application Planning Boundaries

For clarity, Figures 2.2 and 2.3 below illustrate the planning boundaries as they relate only to the KCC (the Data Centre) and SID (the Substation) applications respectively.

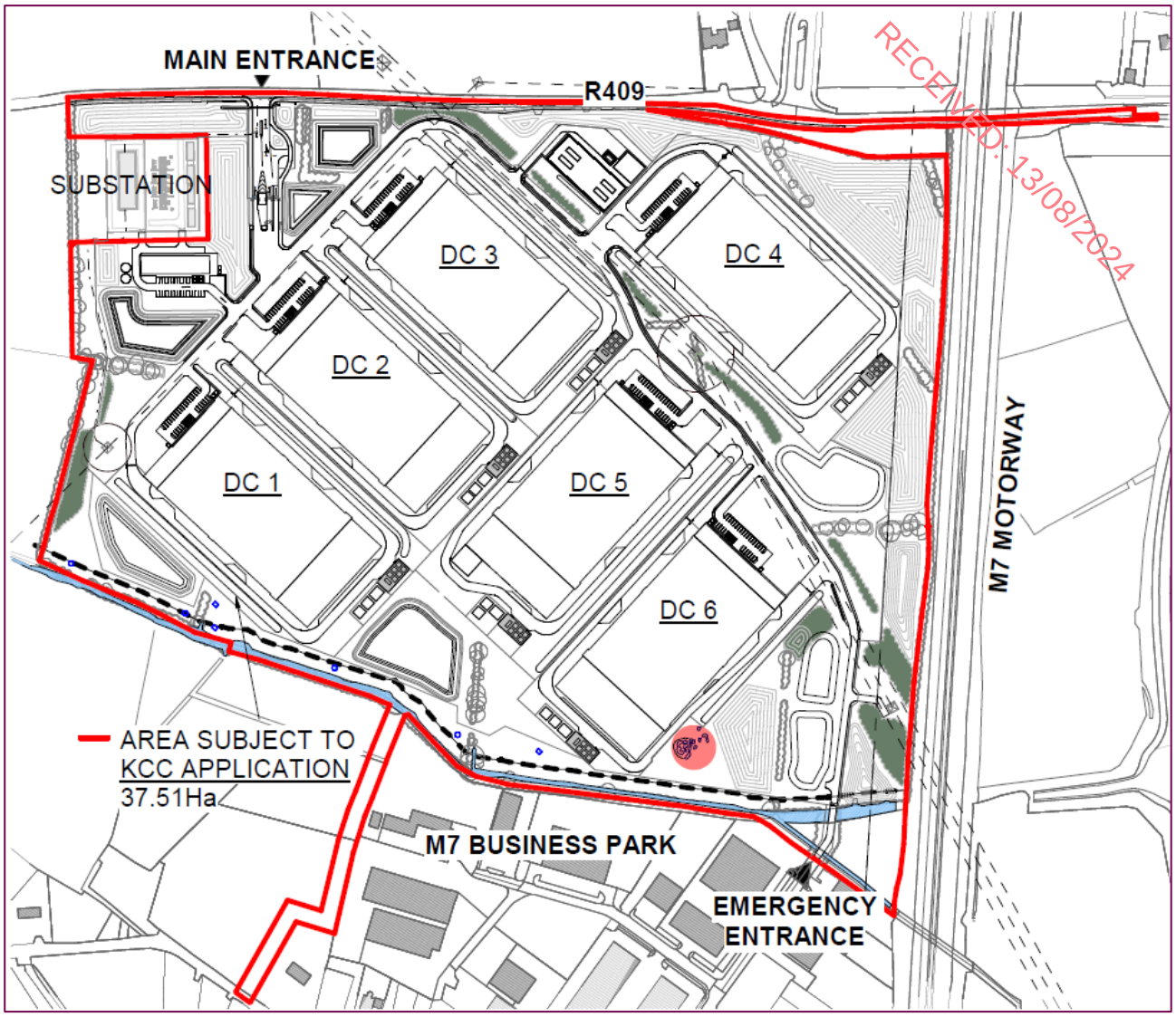

Figure 2.2: The Data Centre Application Planning Boundary

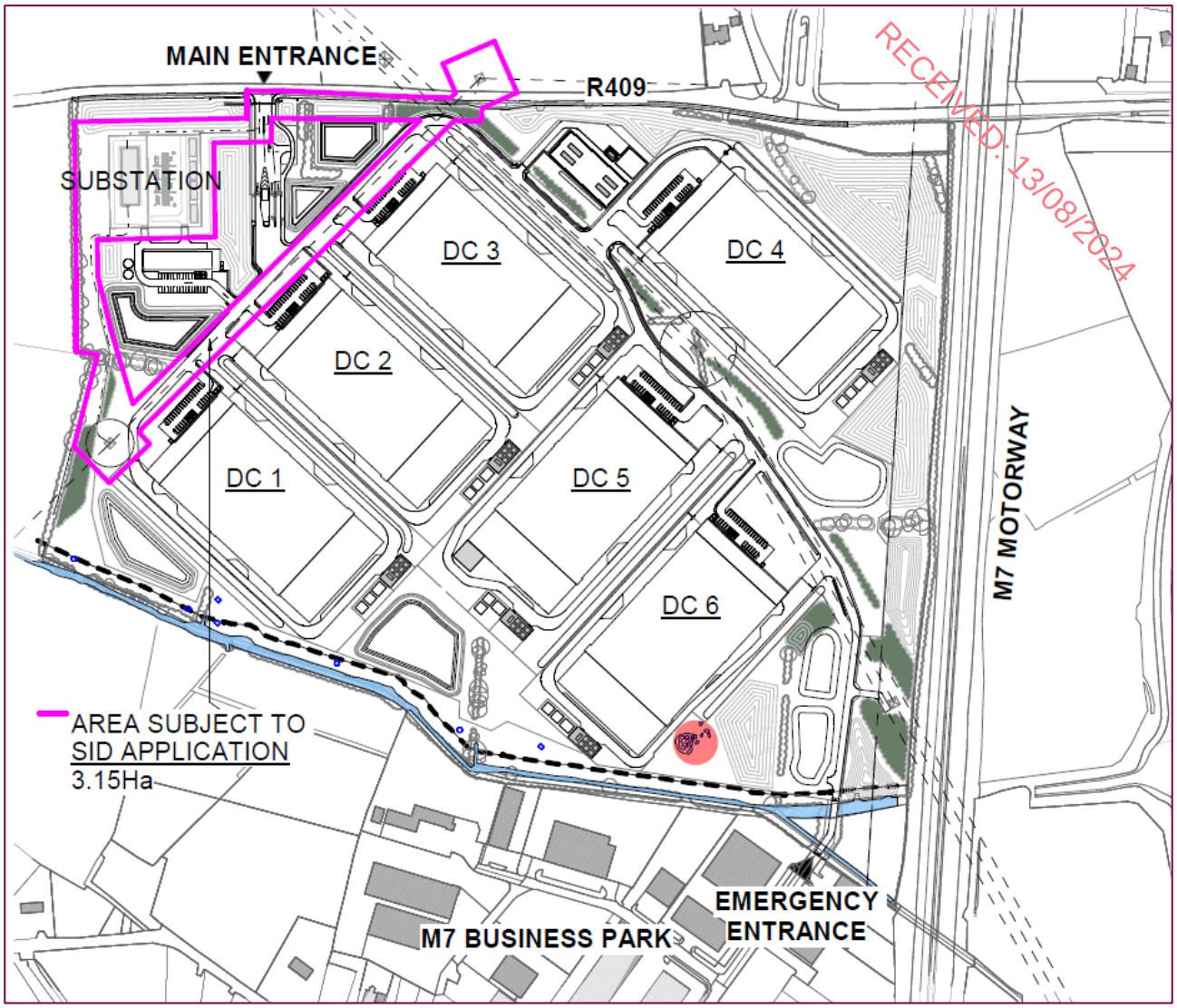

Figure 2.3: The Substation Application Planning Boundary

Figure 2.4 below illustrates the extent of the overlapping area (2.02ha) between the Data Centre and the SID applications.

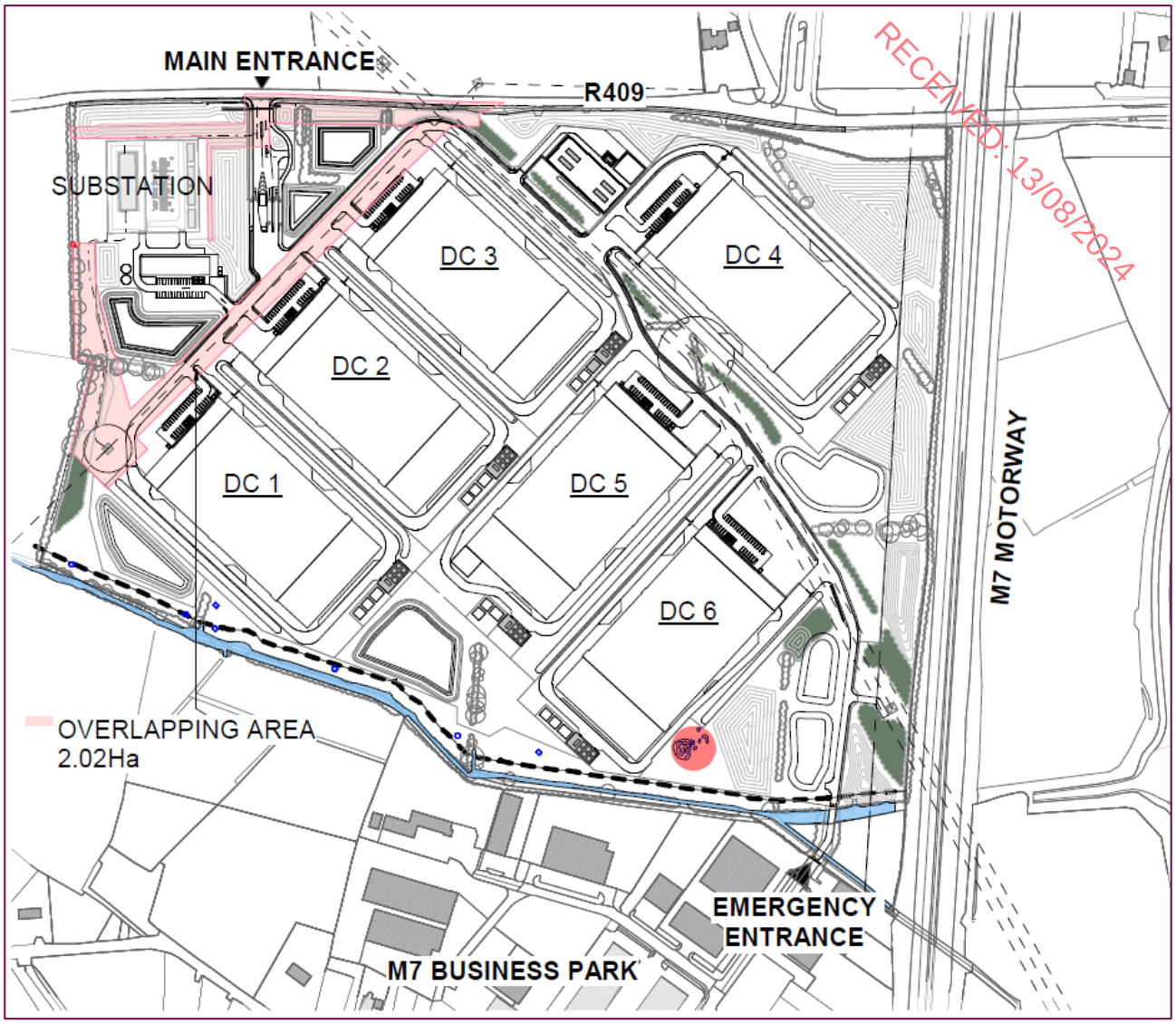

Figure 2.4: Overlapping Area Between KCC (the Data Centre) Application and SID (the Substation) Application Planning Boundaries

As illustrated in Figure 2.4, the Data Centre and the Substation application boundaries, have a partial overlap – this is due primarily to the alignment of the proposed underground 110kV connection because the existing overhead 110kV line (to be removed and replaced with an underground connection) runs above part of the area the subject of the Data Centre Application, and the proposed underground 110kV connection is to be provided in the substratum beneath part of the area the subject of the Data Centre Application.

2.2 Need for Environmental Impact Assessment

The requirement for EIA arises under Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (as amended by Directive 2014/52/EU) (the “EIA Directive”) with all Member States to bring the Directive into force by 16th May 2017.

The requirements of the EIA Directive, following its amendment in 2014, were transposed into Irish law with the enactment of a number of implementing legislative measures, including in particular the EU European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (SI 296 of 2018), which came into effect on the 1st September 2018 and gave effect to Directive 201 1/92/EU as amended by the EIA Amendment Directive.

Projects listed in Annex I of the EIA Directive as transposed in Part 1 of Schedule 5 to the Planning and Development Regulations 2001 (as amended) (the “2001 Regulations”), and projects listed in Annex II of the

EIA Directive (as transposed in Part 2 of Schedule 5 to the 2001 Regulations) that equal or exceed the thresholds set out in Part 2 of Schedule 5 to the 2001 Regulations, require a mandatory EIA.

Projects listed in Annex II, that do not equal or exceed the thresholds set out in Part 2 of Schedule 5 to the 2001 Regulations, require screening to determine whether an EIA is required.

Data Centres are not in themselves identified as a standalone class of development in either Annex I or Annex II to the EIA Directive, or in Schedule 5 to the 2001 Regulations for the purposes of EIA. However the Project constitutes "urban development" and therefore falls within Class 10 (b)(iv) of Part 2 of Schedule 5 to the 2001 Regulations, which is:

'Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built up urban area and 20 hectares elsewhere.'

The relevant threshold for the purposes of the Project is 20 hectares. As the Project has a site area of 38.64 hectares, the relevant threshold set out in Part 2 of Schedule 5 to the 2001 Regulations is exceeded, and the Project requires a mandatory Environmental Impact Assessment as such the Project is considered to be EIA development.

2.3 Structure of the EIAR

The EIAR is comprised of the following elements:

- Volume I Main Report;
- Volume II Technical Appendices;
- Volume III Design Drawings & Figures; and
- Non-Technical Summary (NTS).

Chapters contained within Volume I of the EIAR are as per the list of environmental topics presented in Section 1.3 of the NTS.

The EIAR includes information identified in Annex IV to the EIA Directive and in Schedule 6 of the Planning and Development Regulations 2001 (as amended), as follows.

2.3.1 Annex IV to the EIA Directive

1. Description of the project, including in particular:

(a) a description of the location of the project;

(b)a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;

(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;

(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.

2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality),

air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

5. A description of the likely significant effects of the project on the environment resulting from, inter alia:

(a) the construction and existence of the project, including, where relevant, demolition works;

(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;

(g) the technologies and the substances used.

The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.

8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council (*) or Council Directive 2009/71/Euratom (**) or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

9. A non-technical summary of the information provided under points 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the report.

2.3.2 Schedule 6 to the Planning and Development Regulations 2001 (as amended) - Information to be contained in an EIAR

1. (a) A description of the proposed development comprising information on the site, design and size of the proposed development.

(b) A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.

(c) The date required to identify and assess the main effects which the proposed development is likely to have on the environment.

(d) An outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment.

2. Further information, by way of explanation or amplification of the information referred to in paragraph 1, on the following matters:-

(a) (i) a description of the physical characteristics of the whole proposed development and the land-use requirements during the construction and operational phases;

(ii) a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;

(iii) an estimate, by type and quantity, of expected residues and emissions (including water, air and soil pollution, noise, vibration, light, heat and radiation) resulting from the operation of the proposed development;

(b) a description of the aspects of the environment likely to be significantly affected by the proposed development, including in particular:

- *human beings, fauna and flora,*
- *soil, water, air, climatic factors and the landscape,*
- *material assets, including the architectural and archaeological heritage, and the cultural heritage,*
- *the inter-relationship between the above factors;*

(c) a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from:

- *the existence of the proposed development,*
- *the use of natural resources,*
- *the emission of pollutants, the creation of nuisances and the elimination of waste,*

and a description of the forecasting methods used to assess the effects on the environment;

(d) an indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.

2.3.2 Requirements of an EIAR

An EIAR document is produced as the key component of the environmental impact assessment (EIA) process. It provides a description of:

a) The baseline environment
b) Identification of the potential effects (if any - both positive and negative) that are predicted to be incurred as a result of the Project; and,
c) A description of any control and mitigation measures required to avoid, reduce or eliminate such potential effects.

The EIA Directive and its implementing Regulations requires that an environmental impact assessment must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of a project on the following factors and the interaction between those factors:

- population and human health;
- biodiversity, and in particular species and habitats protected under Council Directives 92/43/EEC (the Habitats Directive) and 2009/147/EC (the Wild Birds Directive);
- land, soil, water, air and climate;
- material assets, cultural heritage and the landscape.

2.3.3 Methodology

The methodology employed in the EIAR provides for a staged approach, which can be summarised as follows:

- **Desktop analysis and consultation**: has been undertaken to compile relevant background data and identify issues and constraints.

- **Baseline surveys**: including walk-over visits, detailed specialist surveys and discussions with relevant statutory and other consultees to determine the nature and extent of the existing environment.
- **Identification of potential significant effects**: predicting the likely significant environmental effects of the development during construction and operation of the facility for the range of predicted uses as well as setting the scene for the identifying appropriate mitigation for the development.
- **Mitigation**: on-going development and description of mitigation proposals which will be incorporated into the project design as it evolves, including regular review and evaluation, to mitigate the potential environmental effects.
- **Monitoring**: if considered necessary, monitoring requirements may be identified for both the construction and operational phase of the development.
- **Residual and cumulative effects**: consideration of the residual effects remaining after mitigation.
- **Reporting**: preparation of the EIA Report, including NTS.

The assessment of the likely significant effects of the Project on the environment will be undertaken through a variety of methods:

- Professional judgement and experience based on published guidance criteria
- Assessment of both temporary and permanent effects
- Assessment of cumulative effects
- Assessment of duration, frequency and reversibility of effects
- Assessment against local, regional and national planning policy
- Consultation with statutory and non-statutory consultees

Significance criteria will be based on the type of potential consequences, the probability of the consequence occurring and the magnitude of the consequence. Individual chapters set out the scale that will be used to evaluate significance of effect, thus providing a consistent approach throughout the EIAR. Each topic chapter will identify significant effects relevant to each topic having regard to this scale.

There are seven generalised degrees of effect significance that are commonly used in EIA: *Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound.*

2.4 Cumulative Effects

2.4.1 Definition of Cumulative Effects

The EIAR considers and assesses the potential for cumulative effects arising from the Project in association with other developments. The cumulative effects of a development refer to the way in which an environmental resource may be subject to a particular type of impact from more than one Project. The impacts from multiple projects may overlap or act in combination at a particular location or upon a particular resource, thereby leading to more significant environmental impacts than if the impacts were considered in isolation.

The EIA Directive 2014/52/EU specifies at Annex III that:

"the likely significant effects of projects on the environment must be considered […] taking into account [inter alia] the cumulation of the impact with the impact of other existing and/or approved projects"; and at Annex IV that "a description of the likely significant effects of the project on the environment resulting from, inter alia […] the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources" is required.

2.4.2 Cumulative and In-Combination Impacts

Cumulative effects are assessed in each chapter in respect of impacts resulting from the accumulation of impacts generated by the Project on the same receptors and the impacts potentially arising from adjacent or nearby developments together with those predicted for the Project.

The following guidelines and publications were considered when determining the other projects to be considered for their potential to generate cumulative effects with the Project:

- European Commission (EC) Guidelines for the Assessment of Indirect and Cumulative Impacts (1999).

The first step in determining cumulative effects comprised the identification of a list of other projects which may have the potential to overlap with the Project based on available information.

Other projects for which a development consent application has been submitted or consent granted were included. Potential future projects which have not submitted an application for consent were not included.

Those other projects whose impacts could foreseeably overlap with the construction or operation of the Project or where construction impacts may be consecutive but cumulative, were considered. The cut-off date for sourcing information on the other projects considered was November 2023.

Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from a number of sources, where relevant, including:

- the interaction between all of the different projects in the same area; and
- the interaction between the various impacts within a single project.

The cumulative effects of the Project, in conjunction with other proposed projects, are considered within each topic chapter. Relevant developments considered within the cumulative assessments include those which are:

- under construction;
- permitted, but not yet implemented;
- submitted, but not yet determined.

Each topic chapter considers whether there are significant cumulative effects which are likely to arise as a result of interaction between effects as part of the same project, so as to identify potential secondary, cumulative or synergistic effects.

2.4.3 Planning History

A planning history search was carried out to establish the most recent planning applications within and immediately adjacent to the site boundary, for the purposes of cumulative assessment. Whilst no pertinent permissions were identified on the subject site, a number of relevant applications were identified in the wider locale of the subject site which have been assessed with regards to cumulative impacts.

2.4.4 Gas Networks Ireland Gas Connection

The Project will use highly efficient on-site gas turbines to generate the majority of electrical energy required to operate the Data Centres. Whilst the Project includes an on-site Above Ground Installation (AGI) to regulate the supply to the turbines, a physical connection to the Gas Networks Ireland (GNI) gas network is required to provide the supply to the gas turbines.

GNI will be responsible for providing the required infrastructure works, to construct a new high-pressure gas distribution pipeline, to the Project site boundary (on the R409), from the existing GNI AGI at Glebe West, Co. Kildare.

The final, detailed design, consenting and construction of the required infrastructure works will be the responsibility of GNI in the exercise of their own statutory functions, and therefore Herbata Ltd is not seeking planning consent to carry out these works as part of the Project.

Notwithstanding the fact that Herbata Ltd is not seeking planning consent to carry out these works as part of the Project, given the functional interdependence that exists between the Project and the GNI Gas Connection, the cumulative impacts of the Project with the GNI Gas Connection have been considered and assessed in the EIAR, and their in-combination effects are considered and assessed in the related Appropriate Assessment Screening Report. This is consistent with the approach endorsed by the High Court on a number of occasions in the context of Environmental Impact Assessment of, for example, proposed wind farm developments and their associated grid connections (see, for example, the decisions of the High Court in Ó Gríanna & Ors v An Bord Pleanála & Ors [2014] IEHC 632 and [2017] IEHC 7, and the line of case law following those decisions).

In order to inform this consideration and assessment of the cumulative impacts of the Project with the GNI Gas Connection, a report identifying the most likely route for the new high-pressure gas distribution pipeline and a description of the works required to provide same has been prepared.

The GNI Infrastructure Upgrade Outline Report has been prepared following a review of the existing GNI network, to determine the most likely source of the connection and the most likely route. The location of the existing GNI above ground installations (AGIs) at Glebe West and Naas Town and the associated existing high-pressure transmission line between, has been used to inform the most likely connection point and route for the new high-pressure gas distribution pipeline.

From the existing Naas Town AGI, the most likely route for the new high-pressure gas distribution pipeline is considered to follow a combination of the existing road network (along the Southern Link Road, Naas) and the route of existing utilities (foul drainage network wayleave). From this point, the most likely route is considered to cross the M7 (east of the Project site) before following the route of the R409 to the Project site; ducts with capacity to facilitate the pipeline crossing of the M7 are known to be present.

The likely specification of the new high-pressure gas distribution pipeline, pressure levels, construction methodology and timelines, as set out with the GNI Infrastructure Upgrade Outline Report have been informed by experience and knowledge of comparable infrastructure developments. A summary of the most likely route and a description of the works required is also provided in Section 5 of the NTS.

The cumulative impacts of the Project with the GNI Gas Connection have been considered and assessed under each environmental discipline.

2.4.5 Off Site Renewable Energy

Corporate Power Purchase Agreements (CPPAs) will be used to procure sustainable energy from wind / solar farms. In addition to providing energy for the Project, CPPAs will fund the construction of wind and solar farms. The Applicant has had discussions with various solar and wind renewable energy suppliers with a view to supplying energy through CPPAs.

CPPAs will be finalised following a grant of permission (along with a connection agreement with Eirgrid). There is sufficient capacity available from suppliers to meet the 30% operational renewable energy target set out in the Kildare County Development Plan 2023-2029.

In implementing the CPPA arrangements as outlined, the Project will operate on the basis of a minimum of 30% energy from off site renewables, in line Kildare County Council's policy requirements as follows:

The Kildare County Development Plan 2023-2029 (KCDP):

> *RE O72 Require Data Centres to consider the use of sustainable renewable sources of energy to fuel their operations in whole in the first instance or in part (minimum of 30%) where this is not possible and where it has been satisfactorily demonstrated not to be possible, subject to all relevant and cumulative environmental assessments and planning conditions."*

2.4.6 Planning Policy

Planning reports are submitted in support of both the Data Centre and Substation applications and should be read in conjunction with the EIAR. The concluding points of the reports are as follows:

- The Data Centre Application aligns with national, regional and local policy supporting the ICT sector and Data Centres as a key component of this sector. At construction and operation phases the Data Centre Application will generate significant direct, indirect and induced employment.
- The innovative approach to energy generation and storage means the Data Centre Application does not require energy from the national electricity network. Indeed, the Data Centre Application will add resilience to national energy production and storage capacity. The onsite gas turbines and gas engines will be capable of exporting excess electricity to the wider network.
- The proposed gas turbines and engines will be fuelled from GNI's gas network ultimately, comprising of biomethane, abated natural gas and the use of hydrogen for the turbines in line with GNI objectives to ensure that there is a zero dependency on gas from fossil fuels at the subject Data Centre when GNI objectives are met.

- The energy storage component shall enable more efficient use to be made of renewable energy now being produced. Such an approach is considered to align fully with national policies and commitments and specifically the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy.
- The proposed Data Centre use at this site accords with the local land use zoning objective set out in the Naas LAP which has explicitly identified this location as being appropriate for a Data Centre.
- It is considered that the Data Centre Application accords with sustainable development objectives and adopts an exemplary approach to Data Centre development within the State.

2.5 EIAR Project Team

The production of the EIAR has been co-ordinated by RPS with design and technical input provided by the wider project team (the applicant, technical and design team and planning consultants).

3 ALTERNATIVES

3.1 Introduction

Chapter 2 of the EIAR outlines the rationale for selection of the site and key considerations for the design and layout of the main elements of the Project with comparison of environmental effects between alternatives where applicable.

The EIA Regulations require that the EIAR must provide a description of the reasonable alternatives studied by the applicant, which are relevant to the project and its specific characteristics. The EIAR shall contain a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.

The EIAR shall include a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

3.2 The Do-Nothing Scenario

The Project site currently comprises of predominantly lands is agricultural grass with smaller elements of residential and agricultural buildings; in a do-nothing scenario the Project site would remain in its current use.

The Project site comprises a range of vegetation that offers biodiversity potential for habitats for species such as bats, birds and bees, and in a do-nothing scenario these habitats will likely endure however in line with the findings of the EIAR, the Project site currently demonstrates a relatively low level of species or habitat diversity.

The Naas Local Area Plan (LAP) 2021 – 2027 explicitly identifies the Project site for Data Centre; the do-nothing scenario in this case would not fulfil the intended development of the site in accordance with local planning policy.

3.3 Project Location

3.3.1 National and Regional Site Selection

The Irish Government states *the twin transitions are largely complementary – digital solutions can unlock decarbonisation opportunities, for example through smart energy devices and networks. Digitalisation also presents opportunities for reducing carbon emissions, increased remote working, reduced business travel and digitalisation of supply chains* (Statement on The Role of Data Centres in Irelands Enterprise Strategy, July 2022). In parallel, the Irish Governments *Harnessing Digital - The Digital Ireland Framework* (2022) sets out the national digitisation strategy to position Ireland as a digital leader, at the heart of European and global digital developments. The need for the development of Data Centres in Ireland, versus alternative national locations, is established, with national policy reflective of the same.

Ireland represents a preferred location, in comparison to alternative national locations, due to the suitability of the climate which facilitates the use of outside air for cooling, reducing the need for additional technology to assist in temperature control which would require in turn, an increase in energy demands. Data Centres in Ireland represent a lower energy demand development in comparison to nations with a warmer climate. Reductions in potential impacts arising from noise and air quality emissions (arising from the need to employ additional temperature controls) are also realised in an Ireland development context.

In a regional context, it is acknowledged that many large, United States based clients are already headquartered in Dublin for their European operations. Consequently, there is a need to reduce the concentration of Data Centres in clustered areas of the greater Dublin region and distribute them more widely. The readiness of an available, suitable site and the availability of the necessary infrastructure connections, determines that the consideration of the Naas area as an alternative to Dublin, is acceptable.

3.3.2 Local Site Selection

In the selection of an appropriate site for the development of a data centre, the Applicant give due consideration to compliance with local plan policy, in considering options. The Project site is one of two sites zoned for development of a Data Centre within the *Naas LAP 2021 – 2027*. In respect of these sites, the LAP states *a specific zoning for the development of Data Centres has been applied to two sites which are considered suitable for land extensive development*; these zonings are Caragh Road South (Zoning P(2)) and Jigginstown (Zoning P(1)).

Sites not zoned for development of data centres within the LAP, were not considered or assessed by the Applicant as they would be perceived as less favourable in terms of plan policy.

Zoning P1 was the chosen site for the Project on the basis of a number of factors including access, adjoining land uses and zonings, proximity to services infrastructure and relative ease of connection with the existing 110kV network.

Notably, the delivery of the Project is dependent upon the availability of the subject lands to the Applicant. Agreement has been reached with the owner(s) of the subject lands, with letters of consent provided in support of the planning applications for the same. The lands associated with Zoning P(2) were not available to the Applicant.

The selection of the Project site, Zoning P1 and development of a Data Centre is considered entirely in line with the LAP and the realisation of LAP zoning and associated policies. The selection of Zoning P(1) at Jigginstown, in favour of Zoning P(2) is not considered a deviation from the LAP as both sites, are equally justified in terms of plan policy.

3.4 Alternative Site Layouts and Structure Design

Whilst responding to the physical characteristics, environmental considerations and desire to realise the capacity of the Project site, the design of the Project has been subject of an iterative process.

The scale, mass and layout of the Project has been informed by a Site Strategy Masterplan developed with design and technical input from architectural, civil, electrical, and mechanical consultants, taking account of the necessary technical and physical requirements to deliver a functional Data Centre facility which will seek to attract and serve the widest range of end user tenants (including *hyperscale* clients).

From the outset, the project planning and environmental consultants have worked closely with the design team to ensure the Project is compliant with necessary planning policy whilst minimising environmental impacts.

A comprehensive review of available desktop data along with information derived from project and site-specific technical surveys, has informed every aspect of the design of the Project

Engagement with statutory bodies including Kildare County Council planning authority, has also further influenced many aspects of the Project.

Key site specific considerations, which influenced the design layout from the outset of the process included:

- Bluebell Stream / southern boundary of the site;
- Retention of existing vegetation, particularly at the site boundaries;
- Setback from the M7 motorway to the eastern boundary;
- Exclusion zones associated with existing 220kV powerline.

In consideration of the above site constraints, a Preliminary Design was developed with the preliminary site layout comprising of 6 Data Centre buildings, GIS substation, exclusion zones, internal road network and 3 large attenuation ponds.

As the design process progressed, it was informed by further site, environmental and technical information including geotechnical site investigations, cut and fill analysis, services infrastructure surveys, landscape, ecology and arboriculture studies.

The next iteration of the design process represented a notable shift in the location and orientation of the Data Centre buildings, Data Centre 1 – 3 facing to the fore of the site (in terms of the main access from the R409) and re-distribution of attenuation ponds across the wider site and an increase in areas of land available for landscaping.

The revised site layout represents a realisation of the following:

- Minimise cut and fill within the site boundary (to ensure excess material is not required to be removed from site);
- Reuse of cut and fill material to develop berms (to enhance screening) along R409 and M7 boundaries;
- Maximising retention of existing hedgerows and trees including some of those which extend into the site from perimeter boundaries;
- A setback of the building line from the M7 (of approximately 51m) as agreed with KCC Roads Planning Section;
- A riparian buffer along the southern boundary (the Bluebell Stream).

Further influencing, environmental and technical factors which defined the proposed Project layout design and by default, the consideration of alternatives, included incorporation of the Landscape Masterplan, site cut and fill analysis and archaeology led geophysical surveys.

3.4.1 Data Centre Buildings

A total of 6 Data Centre buildings are proposed as part of the Project. In broad terms, a duplicate design has been employed across the 6 buildings, with each comprising of a 2-storey admin block, data hall and external plant yard.

The number and scale of the proposed Data Centre buildings is principally dictated by the demands of end user tenants, to include sufficient capacity, servicing and the facility requirements, needed to deliver a functional Data Centre, suitable for hyperscale clients.

The space requirements of the data halls (and associated equipment), the plant yards comprising of gas turbines and associated stacks and air circulation space, along with the various ancillary spaces which form the administration blocks, have all informed the final dimensions of the proposed Data Centre buildings which have remained principally the same throughout the design process. As such, there is limited scope to consider alternatives for the Data Centre buildings in terms of their scale and mass.

An iterative design process has been applied to the external elements of the Data Centre buildings. Careful consideration however was given to the choice of material, finishes and architectural details at the outset and the proposed building designs have remained largely consistent throughout the design process.

Whilst conforming to a broadly duplicate design, careful consideration has been given to the façade design of each Data Centre, with the heights and materials of the sperate components of each building, being chosen to help break up the massing.

Alternatives have been considered with regards to materials and colours used throughout the exterior of the Data Centre buildings in order to create an attractive façade approach. The mass of the large volume of the Data Centre building long elevations has been broken up by variations in the façade profile and the range of materials used.

Careful consideration has been given to the design of the admin block to create a visually appealing entrance to each building and use of colour to help with wayfinding throughout the site. A wide range of materials, finishes has been proposed to integrate the Data Centre buildings to site as much as possible, balancing access and wayfinding factors, taking cues from the surrounding landscape colour palettes.

Overall, the Data Centre buildings have been designed in such a manner as to assist in integrating the buildings to the site, in the context of the earthworks, landscape planting, existing retained vegetation and other built elements of the Project.

3.4.2 Energy Strategy

Whilst many Data Centre developments are typically powered via a traditional grid connection (obtaining [near to] 100% of energy demand directly from the grid), this Project seeks to utilise an alternative approach, incorporating an innovative, low carbon and renewable energy strategy in its operation.

Data Centres have become essential components of almost every element of everyday life. The Irish Government Statement on The Role of Data Centres in Irelands Enterprise Strategy (July, 2022) recognises that ‘data centres are core digital infrastructure and play an indispensable role in our economy and society.’

Whilst demand and need are clearly apparent, it is acknowledged that concerns existing around the resource demand associated with the functioning of Data Centres with the security of demand and impact upon Ireland's electrical grid, being an increasingly emotive issue.

Since 2018, annual increases in electricity demand usage associated with Data Centres have been around 600 GWh per year; this equates to an additional 140,000 households being added per year. The Irish Government Statement on The Role of Data Centres in Irelands Enterprise Strategy (July, 2022) notes that EirGrid predicts that if all contracted capacity were connected, data centres would make up between 25% and 33% of Ireland's electricity demand by 2030. This rate of increase in demand, coupled with new Data Centre projects (not currently contracted) and geographically dictated demand, has implications for the regional and national energy grid systems.

In 2020, 42% of all electricity generated in Ireland came from renewable sources with the remaining 58% generated from non renewable sources including a range of fossil fuels including coal and oil. Whilst the most recent approved Climate Action Plan 2024 sets a course for Ireland's targets to halve emissions by 2030 and reach net zero no later than 2050, at present a significant proportion of energy is still derived from fossil fuels.

In consideration of the trend for demand and the current makeup of the energy grid, it is apparent that the traditional model, of a grid reliant Data Centre development is not representative of a sustainable approach.

The Project seeks to provide an environmentally conscious facility by reducing embodied carbon and maximising the utilisation of renewable, power-grid free energy sources whilst also using the latest technologies in on-site power generation and power storage.

Accordingly, by way of considering an alternative approach, the energy strategy proposed for the Project, represents a low carbon, renewable strategy which meets the KCC policy of a minimum of 30% of the operational energy from renewable sources with the remaining 70% of energy for the Data Centres, to be generated on site using adjacent gas turbines, also linked directly to local battery storage of BESSs.

The proposed strategy was a fundamental element of the Project from the outset and has remained principally the same, throughout the design process.

The primary source of power generation will be derived on site using highly efficient gas turbines for most of the generation, with top up from gas engines. This strategy is in line with recent EU and Irish Government direction on the use of gas for generation as a transitional fuel. It also avoids any negative impact from the Project on the public electricity distribution system and allows for any excess power to be exported to the grid to aid Eirgrid in their supply of electricity. The onsite power generation capacity will be in excess of that required for the operation of the Data Centre and will provide an opportunity for the export of energy to the grid if and when required. The Project turbines operate at Medium Voltage (MV) level and are coupled with Battery Energy Storage Systems (BESS) to provide low emission 365/24/7 support to critical loads. For the purposes of providing uninterrupted and conditioned power, each Data Centre building will have a dedicated BESS.

3.4.1.2 Gas Connection

Whilst the Project includes an on-site Above Ground Installation (AGI) to regulate the supply to the turbines, a physical connection to the GNI network is required to provide the supply to the gas turbines.

GNI will be responsible for providing the required infrastructure works, to construct a new high-pressure gas distribution pipeline, to the Project site boundary (on the R409), from the existing GNI AGI at Glebe West, Co. Kildare.

The final, detailed design, consenting and construction of the required infrastructure works will be the responsibility of GNI in the exercise of their own statutory functions, and therefore Herbata Ltd is not seeking planning consent to carry out these works as part of the Project.

The GNI Infrastructure Upgrade Outline Report has been prepared following a review of the existing GNI network, to determine the most likely source of the connection and the most likely route. The location of the existing GNI above ground installations (AGIs) at Glebe West and Naas Town and the associated existing high-pressure transmission line between, has been used to inform the most likely connection point and route for the new high-pressure gas distribution pipeline.

From the existing Naas Town AGI, the most likely route for the new high-pressure gas distribution pipeline is considered to follow a combination of the existing road network (along the Southern Link Road, Naas) and the route of existing utilities (foul drainage network wayleave). From this point, the most likely route is considered to cross the M7 (east of the Project site) before following the route of the R409 to the Project site. It is

understood that similar crossings, below the M7 have previously been implemented in order to deliver comparable service infrastructure.

The likely specification of the new high-pressure gas distribution pipeline, pressure levels, construction methodology and timelines, as set out with the GNI Infrastructure Upgrade Outline Report have been informed by experience and knowledge of comparable infrastructure developments.

Alternatives to the most likely route for the new high-pressure gas distribution pipeline were considered, however were not deemed feasible/likely as GNI hold a wayleave agreement over the existing high-pressure pipeline route from Glebe West to Naas Town AGI. As such, the route of the existing pipeline, represents the most direct route from the nearest available AGI on a high pressure pipeline within 27km of the site.

3.4.1.3 Renewable Energy Sources

To achieve a minimum 30% renewable energy target, CPPAs will be used from a variety of sources as the Data Centre load level increases over time. Herbata Ltd have been in advanced discussions with various solar and wind renewable energy suppliers with a view to provide capacity through CPPAs.

The proposed energy strategy and arrangement of the same, has at least in part, informed the design of the Project, particularly the Data Centre plant yards which accommodate the gas turbines, with the associated grid connection (via the 110kV substation SID application) and exclusion zone (associated with the existing 220kV overhead line) also being key considerations in the layout of the overall site

Further consideration was given to on-site alternative renewable (Low and Zero Carbon (LZC)) technologies including solar photovoltaic (PV) panels, ground source heat pumps, wind turbines, biomass heating, biofuel heat and power and fuel cells. Of these technologies, PV panels were deemed viable for the site.

3.4.2 Electrical Grid Connection Design

A connection with the existing 110kV network is proposed as part of the Project, facilitating the use of renewable energy from the grid whilst also providing opportunity to feed back into the grid to aid capacity and assist in frequency stability.

An associated Gas Insulated Substation (GIS) is proposed to be located to the north west corner of the Project site and will provide the Project with the grid connection, formed from the *breaking into* and partial undergrounding of the existing 110kV overhead line that currently crosses the site.

The provision of the substation and grid connection will enable the export of energy generated onsite to the wider network. The substation will also enable the energy storage facility to be connected to the national grid and add greater capacity and resilience to the national electric energy generation capacity and the national electric grid. The substation will also allow for development outside of the site to be enabled by having spare 110kV circuits if required.

The location of the existing 110kV overhead infrastructure, has heavily influenced the placement of the GIS in the north west corner of the Project site, from the outset of the design process. The relatively close proximity of the existing 110kV overhead line and tower infrastructure, readily accommodates the proposed 110kV connection (more so than if the existing 110kV infrastructure were more remote).

With regards to the design and technical specification of the GIS and 110kV connection, these matters are determined by Eigrid requirements for such connections, which are made in accordance with Eirgrid Policy.

3.4.3 Gas Turbine and External Plant Area Design

During the design phase, the Project noise consultant worked in parallel with the design team in refining the detailed design of the gas turbine and external plant areas associated with the Data Centre buildings.

Following completion of baseline noise monitoring and modelling, to determine operational noise levels, it was predicted that the preliminary gas turbine and external plant area design had the potential to negatively affect noise-sensitive receptors (residential properties) in the vicinity.

In order to address this issue, the design team and noise consultant considered a series of alterations and refinements to the gas turbine and external plant design

Whilst the number and specification of the turbines, their placement relative to the Data Centre buildings and wider site layout and the open roof nature of the external plant area (to permit air circulation), were all relatively fixed parameters to ensure operational viability, a range of design alternative design elements were implemented.

The final design of the gas turbines and external plant area as proposed, includes the following:

- Use of noise absorbing panels for walls within external plant area;
- Bespoke acoustic enclosure for the gas turbine main casing;
- Exhaust silencer.

3.4.4 Surface Water Drainage

The proposed Surface Water Drainage Strategy is based on applying Greater Dublin Strategic Drainage Study (GDSDS) and Sustainable Drainage Systems (SuDS) best practice to provide an effective drainage design that maximises sustainability and promotes nature-based solutions for the management of surface water runoff. The sustainable management of water throughout the site is a key element of the Project and seeks to ensure there is no increased flood or pollution risk to the catchment, whilst ensuring the integration of SuDs principals throughout.

Study of the Project site established that the implementation of significant, infiltration-based water management is limited and not considered as a suitable solution across the site as a whole. The alternative solution proposed, comprises of the attenuation and discharge of surface water runoff to the Bluebell Stream at the southern boundary. The location and extents of attenuation ponds through the site have been subject of iterative design, in response to the wider site layout changes and studies informing detailed design. The attenuation of surface water runoff is proposed in a wide variety of nature-based SUDS and surface water network features including Swales, Bioretention areas, Bioretention Ponds, Blue/Green Roofs, Permeable Paving, Filter Drains, Rainwater Harvesting, using flow control devices.

3.4.5 District Heating

An alternative arrangement for recovery and reuse of waste heat has been implemented as part of the Project. Two of the gas turbines associated with Data Centre 5 are proposed to have waste heat thermal boilers installed within their exhaust flues in order to recover the medium to high grade heat. The heat from the thermal boilers will then be pumped via heat exchangers to the perimeter of the Data Centre campus, to enable district heating pipework to be connected to the identified uses.

4 PROJECT SCOPING AND CONSULTATION

Chapter 3 of the EIAR outlines the preparatory work undertaken to inform both the design of the Project and the scope and processes undertaken in completion of the EIAR.

The design of the Project has been informed through a consultation process undertaken with Kildare County Council (KCC) and other relevant statutory and non-statutory agencies. This process has been vital in the progression of the project and has both influenced and assisted in the design solutions.

Pre-application engagement has also assisted in informing the EIAR approach and the scope of associated surveys and assessments.

Whilst responding to the physical characteristics, environmental considerations and desire to realise the capacity of the subject site, the design of the Project has been subject of an iterative process.

The scale, mass and layout of the Project has been informed by a Site Strategy Masterplan developed with design and technical input from architectural, civil, electrical, and mechanical consultants, taking account of the necessary technical and physical requirements to deliver a functional Data Centre facility.

The project planning and environmental consultants worked in parallel with the design team to ensure the Project is compliant with necessary planning policy and minimises environmental impacts.

A comprehensive review of available desktop data along with information derived from project and site-specific technical surveys, has informed every aspect of the design of the Project.

Notably, this process was undertaken in parallel with and supplemented through, engagement with a number of statutory and non-statutory agencies. Such engagement by the Applicant and the project team has been beneficial in the progression of the project and has both influenced and assisted in the design solutions.

As noted, the Project is subject of both a full planning application to KCC and a SID application to An Bord Pleanála. Pre-Application was undertaken with both of these bodies as summarised below.

4.1.1 Kildare County Council

The Applicant and the project team liaised with a number of departments of KCC including pre-planning consultation meetings on 23rd November 2022, 16th March 2023 and 24th May 2023.

Pre-Planning meetings were attended by KCC representatives and by representatives from the Applicant, the project architects, engineers, environmental consultants, landscape designers and planners. Additionally a number of meetings were held with individual departments within KCC and the various team disciplines.

Key aspects of the Project were discussed with KCC, including the following:

- Landscaping and Green Walls
- Building Setback
- Car Parking Provision and R409 Works
- District Heating
- LVIA Viewpoints
- Noise Monitoring Locations and Assessment Methodology
- Sustainable Drainage Systems
- Fire Safety

4.1.2 An Bord Pleanála

With regards to the substation element of the Project (comprising a grid substation and 110kV transmission connection) the project team met with An Bord Pleanála on the 15th March 2023 to discuss the Project in the context of Strategic Infrastructure Development under the Planning and Development Act 2000. On the 5th July 2023 a determination was sought from An Bord Pleanála who subsequently issued a determination confirming that the substation element of the Project, falls within the scope of section 182 of the 2000 Act and as such, an application for approval for the Project must be made directly to An Bord Pleanála.

4.1.3 Additional Pre-Application Engagement

In addition to the above, members of the project team liaised with other statutory bodies where necessary to inform elements of design or the scope of environmental surveys as part of the EIAR, including the National Parks and Wildlife Service, Uisce Éireann, Eirgrid, ESB and Bord Gáis.

5 DESCRIPTION OF THE PROJECT AND NEED FOR THE PROJECT

5.1 Introduction

Chapter 4 of the EIAR comprises of a description of the Project in line with the requirements of the EIA Directive and implementing regulations, and the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (May 2022).

Chapter 4 of the EIAR should be read in conjunction with the design drawings included in Volume III (which comprise of selected design drawings of the Project) and the planning application submission(s) including all documentation, supporting materials and full drawing pack.

As stated, the Project is subject of both a full planning application to Kildare County Council (KCC) and a Strategic Infrastructure Development (SID) application to An Bord Pleanála; the applicant for both applications is Herbata Limited.

The overall Data Centre development includes two main elements, namely:

The Data Centre Application – comprising 6 no. two storey Data Centre buildings, an administration/management building, car parking, landscaping, energy infrastructure and other associated works. These elements are the subject of the planning application submitted to KCC

The Substation Application – comprising a grid substation and 110kV transmission connection. These elements are subject of the SID application to An Bord Pleanála.

The Data Centre Application and the Substation Application together constitute the “Project” for the purposes of Environmental Impact Assessment and Appropriate Assessment, and references to the “Project” in this EIAR should be read as references to those two applications taken together as one project.

Figures 2.1 – 2.4 of Section 2 of the NTS illustrate the extent of both planning application boundaries and the relevant project layout as subject of assessment within the EIAR.

5.2 Characteristics of the Project

5.2.1 Description of the Site

The subject site of the Project is largely located south of the R409, on the western side of the M7 motorway, positioned between Junctions 9a and 10, approximately 2.5km west of the Naas.

The site area (planning boundary) of the Data Centre Application is 37.51 ha. The layout of the Data Centre Application, is illustrated in Figure 5.1 below.

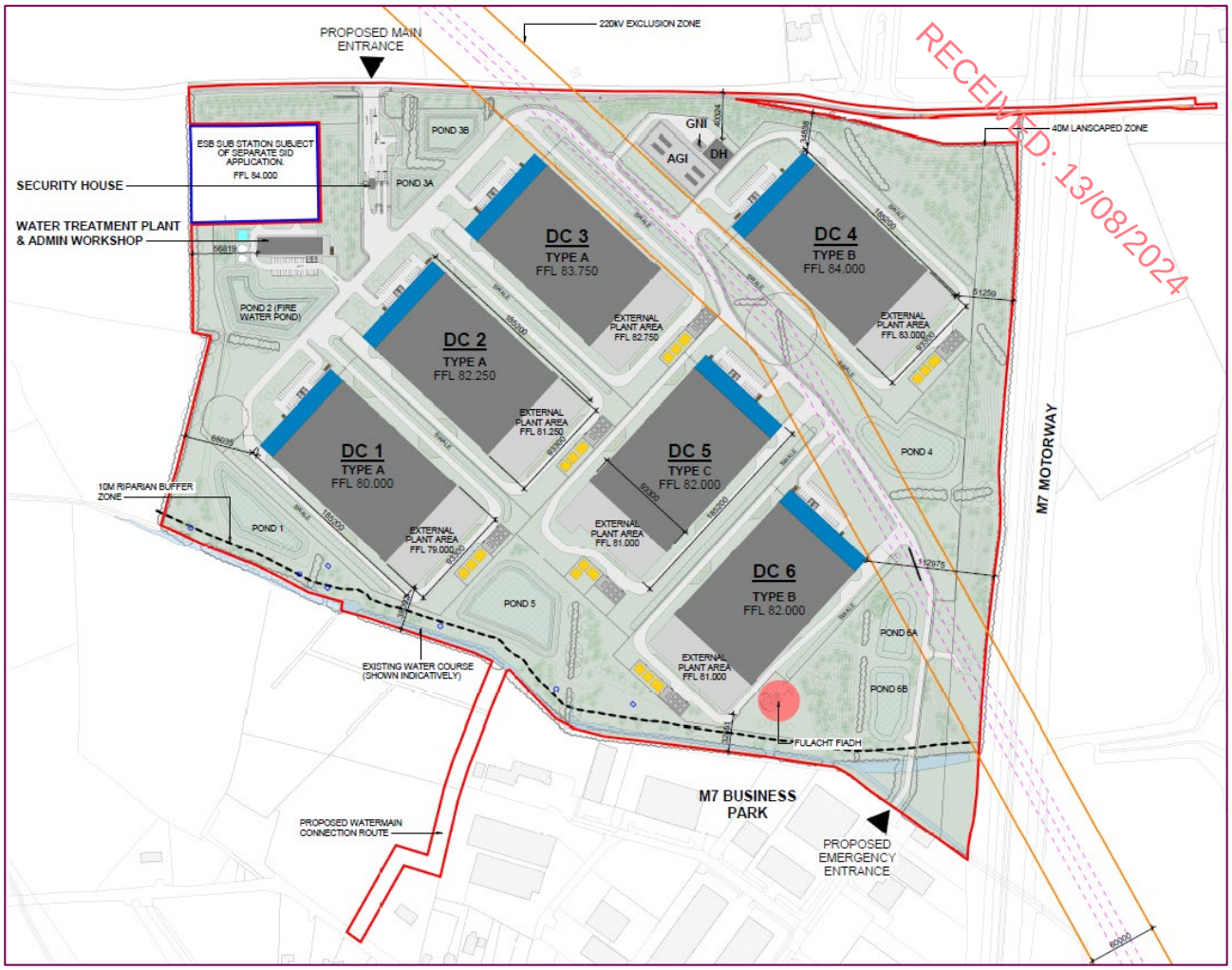

Figure 5.1: Data Centre Application Layout and Planning Boundary

The site area (planning boundary) of the Substation Application is 3.15 ha. The layout of the Substation Application, is illustrated in Figure 5.2 below.

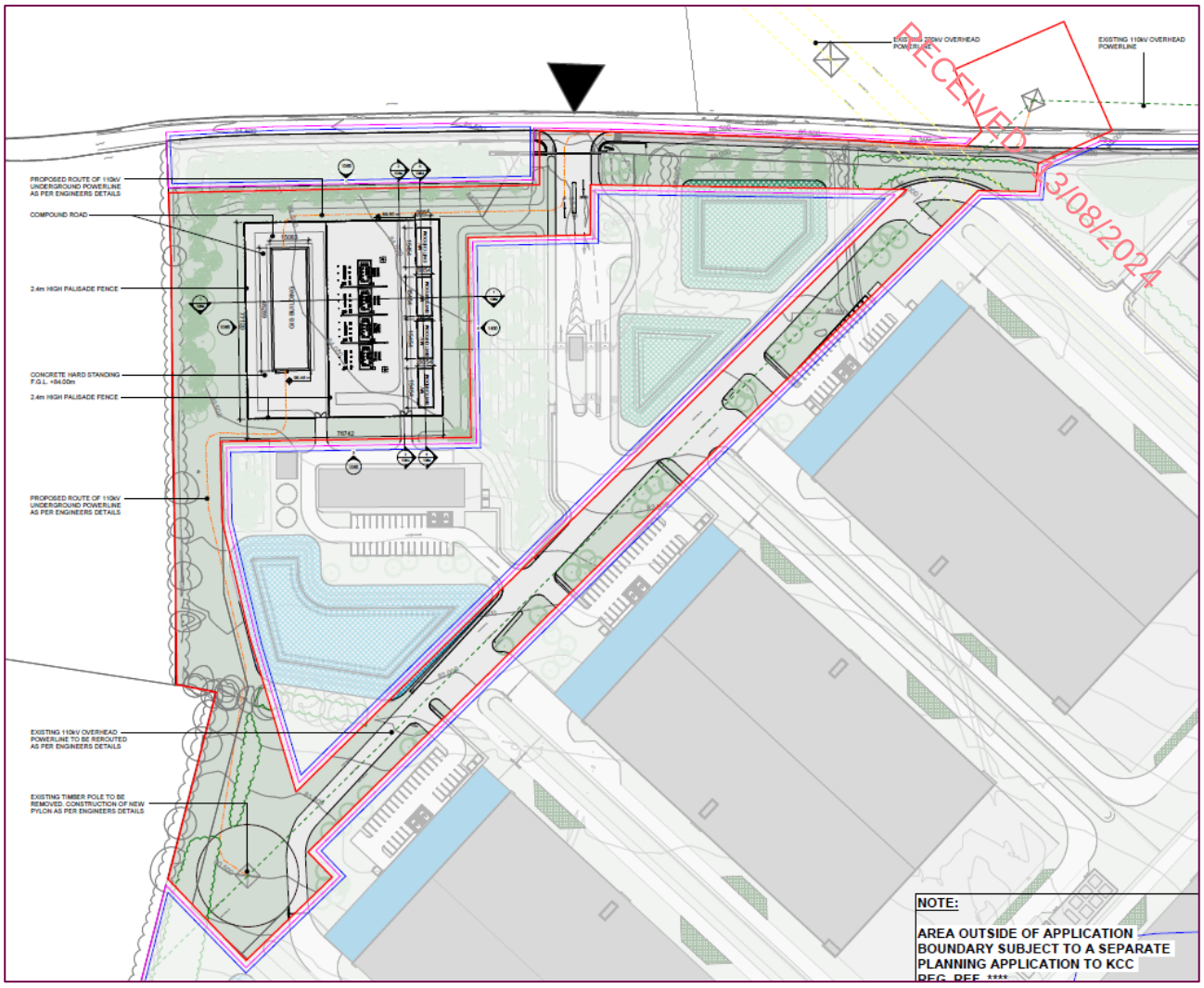

Figure 5.2: Substation Application Layout and Planning Boundary

The combined site area of both the Data Centre and Substation Applications is 38.64 ha. It should be noted that the aforementioned application boundaries, have a partial overlap – this is due primarily to the alignment of the proposed underground 110kV connection because the existing overhead 110kV line (to be removed and replaced with an underground connection) runs above part of the area the subject of the Data Centre Application, and the proposed underground 110kV connection is to be provided in the substratum beneath part of the area the subject of the Data Centre Application

The subject sites is largely bound to the north by the R409 road. The subject site comprises predominantly of agricultural grass land and smaller elements of residential and agricultural buildings.

There are 3 no. dwellings (along the frontage of the R409) and 5 no. farm buildings located on the subject site, these buildings are to be demolished as part of the proposed works.

There has been significant development in the locality in recent years, particularly light industry, logistics and services. The site is located between the existing 'M7 Business Park' and 'Osberstown Business Park'.

The Osberstown Wastewater Treatment Plant is located approximately 0.5km to the north of the subject site.

The subject site is largely bounded to the east by the M7 motorway and to the west by agricultural lands. The 'Newhall Retail Park' is located to the south of the site, on the east side of the M7 motorway.

The subject site is located in the townlands of Halverstown, Jigginstown, Osberstown and Newhall.

The rising main which extends south from the site across agricultural land, to Newhall Road, is within the townland of Newhall.

The SID application site boundary extends northwards, across the R409 to connect with the existing steel pylon, located in agricultural land.

There are public transport services in the vicinity of the site. The following bus services stop on the R445 c. 750m south of the site: 126 Dublin – Rathangan (29 times daily in each direction), 726 Dublin Airport – Portlaoise (via Red Cow Roundabout) (34 times daily in each direction) and the 125 University College Dublin – Newbridge (twice daily in each direction).

The site is currently in agricultural use and comprises a number of fields which are bounded by hedgerows, mature and semi-mature trees. A watercourse, the Bluebell Stream, is located to and largely forms the southern boundary of the site.

The site falls at a generally even grade from north to south.

Two overhead power lines currently cross the site (110kV and 220kV). The 110kV line crosses the northwestern corner of the site and the 220kV crosses the eastern part of the site.

A recorded monument is located within the south-eastern area of the site: recorded monument Ref. no. KD019-028, classified as a 'Fulacht Fia' (an ancient Irish *cooking pit*).

5.2.2 Overview of Project

Key elements of the Project are set out below:

- Combined site areas (planning boundaries) of both the Data Centre and Substation Applications - 38.64 ha
- Site area (planning boundary) of Data Centre Application – 37.51 ha;
- Site area (planning boundary) of Substation Application – 3.15 ha.
- 6no. Data Centre buildings following a *template design*, each with a total internal area and height as follows:
    - Total gross internal area (GIA) – 27,261m^2
    - Height to parapet – 18m
    - Height to flue – 19m
- Each Data Centre building will be c.19m in height;
- Admin workshop and Water Treatment Plant (WTP) GIA - 818.9 m^2;
- Site security hut GIA - 42.1m^2;
- District Heating (DH) building GIA - 340.5m^2;
- Total of 210 no. car parking spaces comprising of 63 electric car charging spaces and 14 disabled car parking spaces;
- Of the 210 total, each of the 6 Data Centre buildings will have 30 car parking spaces (total) and the administration building will also have 30 car parking spaces;
- 7 no. smoking shelters of 9m^2 each are proposed proximate to the entrance to each Data Centre and the admin / workshop building.
- Total number of 104 bicycle spaces (16 per each of the 6 Data Centre buildings and 8 for the administration workshop)
- Demolition of 5 no. agricultural buildings to the centre of the site;
- Demolition of 3 no. dwellings along the northern boundary of the site, fronting onto R409 road;
- Provision of a rising main, extending from south from the site and connecting into the existing network at Newhall Road; and
- Removal of internal hedgerows and provision of site wide landscaping, including 30m mounded landscape buffer along M7.

5.2.3 Data Centre Buildings and Processes

Each Data Centre will comprise of its own secure site boundary, encompassing the main building with dedicated car parking to the fore of the building.

Each of the Data Centre buildings will comprise of 8no. data halls with a capacity to support up to 30MW of IT equipment load in each building. Each data hall has an individual electrical capacity of 3.75MW allowing each Data Centre building to be split to facilitate multiple end users.

Whilst subject to internal layout requirements of end users, each Data Centre building will consist of the main data hall block with an external plant gantry and an enclosed yard to the rear encompassing the building energy infrastructure. The front of each Data Centre building will comprise of end-user clients administration/office areas, plus storage areas and the loading/receiving docks.

The administration/office space of the building is split over two floors with the ground floor facilitating security screening and check in, loading and associate storage. The upper level primarily comprises of office and welfare facilities to support client's operational needs.

Due to the secure nature of the building the ground floor has a flat panelled finish with the building entrance being accentuated with a featured coloured cladding pattern. The first floor by comparison is give more prominence due to the architectural overhang with large area of floor to ceiling glass.

The buildings will be steel-framed with insulated metal faced cladding panels to the façade which serves to maximise the speed of construction whilst also providing a sleek and modern appearance. The material choice is complemented a continuous louvre system with the massing of the building further compartmentalised by feature metal stairs located centrally along the façade. The rear external yard is also enclosed with a metal louvre system to align with the main building form and the building entrance area will have large, glazed windows.

The roof of each Data Centre building will be provided with a reflective finish to improve solar reflectivity and better sustainability. Solar panels will be provided on the roof of each Data Centre building to improve on-site renewable energy generation.

5.2.4 Overview of Energy Strategy

Energy usage and sourcing is a key element of any Data Centre development. The incorporation of low carbon and renewable energy sourcing is a key objective of the applicant and reflective of the Project energy strategy. The inclusion of a low carbon energy strategy is also a requirement of national, regional and local policy.

The Project will have its primary source of power generation on-site. Generation of electricity is proposed on site using highly efficient gas turbines for the majority of the generation, with top up from gas engines. This is in line with recent EU and Irish Government direction on the use of gas for generation as a transitional fuel. It also avoids any negative impact from the Project on the public electricity distribution system and allows for any excess power to be exported to the grid to aid Eirgrid in their supply of electricity.

The onsite power generation capacity will be in excess of that required for the operation of the Data Centre and will provide an opportunity for the export of energy to the grid if and when required.

The various elements which comprise of the energy strategy for the Project are detailed below.

5.2.4.1 Gas Turbines

Mains connected, on-site natural gas turbines are the proposed primary energy source for the Project. Generation of electricity is proposed using gas turbines, located within a dedicated, adjoined plant area, to the rear of each Data Centre building. Each Data Centre building will comprise of 8no. turbines.

This is in line with recent EU and Irish Government direction on the use of gas for generation as a transition fuel. It also avoids any negative impact from the Project on the public electricity distribution system and allows for any excess power to be exported to the grid to aid Eirgrid in their supply of electricity. The on-site power generation capacity will be in excess of that required for the operation of the Data Centre and will provide an opportunity for the export of energy to the national grid if and when required.

The gas supply from GNI will be sourced to provide the primary energy supply to the gas turbines. Gas Networks Ireland as set out in the Vision 2050 publication aim to decarbonise their gas network by 2050 by

injecting renewables gas (biomethane), abated natural gas, and hydrogen into the gas network over time. A biomethane gas injection point is proposed to allow sustainable gas to be inputted for use in the turbines and more broadly in the wider network.

In the unlikely event that gas supply to the turbines is interrupted or becomes unavailable, the reciprocating gas engines can operate either on piped gas supply or natural gas.

5.2.4.2 Gas Networks Ireland Gas Connection

The Project will use highly efficient on-site gas turbines to generate the majority of electrical energy required to operate the Data Centres. Whilst the Project includes an on-site Above Ground Installation (AGI) to regulate the supply to the turbines, a physical connection to the Gas Networks Ireland (GNI) gas network is required to provide the supply to the gas turbines.

GNI will be responsible for providing the required infrastructure works, to construct a new high-pressure gas distribution pipeline, to the Project site boundary (on the R409), from the existing GNI AGI at Glebe West, Co. Kildare.

The final, detailed design, consenting and construction of the required infrastructure works will be the responsibility of GNI in the exercise of their own statutory functions, and therefore Herbata Ltd is not seeking planning consent to carry out these works as part of the Project.

Notwithstanding the fact that Herbata Ltd is not seeking planning consent to carry out these works as part of the Project, given the functional interdependence that exists between the Project and the GNI Gas Connection, the cumulative impacts of the Project with the GNI Gas Connection have been considered and assessed in this EIAR, and their in-combination effects are considered and assessed in the related Appropriate Assessment Screening Report.

In order to inform this consideration and assessment of the cumulative impacts of the Project with the GNI Gas Connection, a report identifying the most likely route for the new high-pressure gas distribution pipeline and a description of the works required to provide same has been prepared. The GNI Infrastructure Upgrade Outline Report has been prepared following a review of the existing GNI network, to determine the most likely source of the connection and the most likely route. The location of the existing GNI above ground installations (AGIs) at Glebe West and Naas Town and the associated existing high-pressure transmission line between, has been used to inform the most likely connection point and route for the new high-pressure gas distribution pipeline.

From the existing Naas Town AGI, the most likely route for the new high-pressure gas distribution pipeline is considered to follow a combination of the existing road network (along the Southern Link Road, Naas) and the route of existing utilities (foul drainage network wayleave). From this point, the most likely route is considered to cross the M7 (east of the Project site) before following the route of the R409 to the Project site. It is understood that similar crossings, below the M7 have previously been implemented in order to deliver comparable service infrastructure.

The likely specification of the new high-pressure gas distribution pipeline, pressure levels, construction methodology and timelines, as set out with the GNI Infrastructure Upgrade Outline Report have been informed by experience and knowledge of comparable infrastructure developments. The GNI Infrastructure Upgrade Outline Report provides sufficient detail and information to allow a robust cumulative impacts assessment to be conducted.

The cumulative impacts of the Project with the GNI Gas Connection have been considered and assessed under each environmental discipline in the relevant chapters of this EIAR and in Chapter 17 Cumulative Effects and Interactions.

A summary of the gas connection, as set out within the aforementioned report, is set out below:

5.2.4.2.1 Overview

- The proposed works will likely comprise of a new high-pressure gas distribution pipeline from the existing GNI AGI at Glebe West, Co. Kildare to the subject site of the Project.
- The high-pressure gas pipeline is expected to be made available by GNI, to the Project site boundary on the R409, to connect into the AGI gas infrastructure compound which forms part of the Project.
- The high-pressure gas pipeline will comprise of a 300mm diameter high pressure gas pipeline.

- The most likely route for the gas pipeline is to follow the existing pipeline route from the Glebe West AGI to the Naas Town AGI, a distance of approximately 6.5km. It is considered that the gas pipeline will likely be constructed immediately adjacent to the existing pipeline, allowing for minimum separation requirements.
- From the point of the Naas Town AGI it is considered that the most likely route for the gas pipeline will be to follow the existing low-pressure distribution network around the Southern Link Road to the junction with the R445 Newbridge Road, after which it will likely cross the canal to follow the existing public foul sewer network which crosses agricultural lands, heading northwest.
- The gas pipeline will then likely cross under the M7 motorway, most likely, by directional drilling / pipe jacking to reach the west side of the M7, emerging onto the R409 Caragh Road, whereupon it will enter the Project site.
- The likely route from Naas Town AGI to the Project site is approximately 4km (2km along the public road from Naas Town AGI to the Newbridge Road, 1.55km across agricultural lands from the Newbridge Road to the M7 motorway and circa 0.5km crossing beneath the motorway and running along the R409 to the Project site).

Alternatives to the most likely route for the new high-pressure gas distribution pipeline (as set out above and in the GNI Infrastructure Upgrade Outline Report) were considered, however were not deemed feasible/likely as GNI hold a wayleave agreement over the existing high-pressure pipeline route from Glebe West to Naas Town AGI. As such, the route of the existing pipeline, represents the most direct route from the nearest available AGI on a high pressure pipeline within 27km of the site.

5.2.4.2.2 General Description of the Works

- A large portion of the gas pipeline will cross agricultural / open lands.
- A construction corridor for the works will be required in order to complete the construction and installation of the pipeline. This usually consists of a 14m wide strip, centred on the pipeline which will become the permanent wayleave following completion of the works.
- Access to the works on agricultural lands will typically be provided at public road crossing locations.
- Special considerations for construction traffic management, adequate site signage and risk assessments will be required for the route through agricultural lands and particularly at interfaces/accesses with public roads.
- Temporary roads may need to be constructed from existing access points to the location of the works in remote locations.
- Works along the public road will likely involve the installation of the new pipeline along the verge of the Southern link road, where the existing low-pressure transmission pipes are also located.
- There will also be a requirement for crossings at several public roads along the route of the pipe. Consultations with Kildare Co. Council Roads Department will be required as well as the preparation of temporary traffic management plans, road opening licences, construction traffic management plans and all associated safety and signage requirements in order to complete the works.

5.2.4.2.3 Typical Pipeline Installation

- The installation of the pipeline requires excavation of a trench through the agricultural land / roadway.
- Typically, the depth of burial will be 1.2m of cover to the pipe, with 2 layers of marker tape to be laid in the trench.
- The new pipeline will likely be installed at a pressure of 19 bar.

5.2.4.2.4 Watercourse Crossing

- The assumed route of the new pipeline will require crossing a number of watercourses, including the Grand Canal, Naas Rive, Bluebell Stream and numerous land drainage ditches.
- The method of constructing these crossings will typically consist of either open excavation (from smaller watercourses and ditches) or directional drilling / pipe jacking as appropriate.

- GNI will determine the best crossing method for all watercourses as part of their Environmental Assessment.
- The final design will be subject to consultations with Waterways Ireland / Inland Fisheries Ireland and Kildare Co. Council Water Services and Environment departments.

5.2.4.2.5 Construction Timeline

- The nature and extent of the required works dictate an approximate construction programme of 7-12 months.
- The construction of the AGIs will take approx. 7- 8 months each.

5.2.4.3 Battery Energy Storage System

For the purpose of providing uninterrupted and conditioned power, each Data Centre building will have a dedicated battery energy storage system (BESS) located within the adjoined plant area, to the rear of each Data Centre building.

The system will comprise of individual modules connected in parallel, with the total quantity of modules for each Data Centre building as required to match the load of the Data Centre. The modules will be housed in outdoor-rated enclosures.

The battery energy storage system will consist of rack mounted lithium iron phosphate battery modules connected to a DC bus. Rectification from AC to DC is achieved via an input inverter and conversion back to AC is achieved via an output inverter.

The inverters are contained within the BESS enclosures. Each BESS enclosure contains its own dedicated cooling and fire protection systems.

The storage capacity provides a back-up energy source and in addition adds resilience to the wider network, having the capacity to provide immediate export of energy to the national grid, or the capacity to store excess electricity generated externally, if required.

5.2.4.4 Reciprocating Gas Engines

The gas turbines are supported by smaller, reciprocating gas engines which provide a back up for various running scenarios to include for maintenance and demand requirements. In the unlikely event that gas supply to the turbines is interrupted or becomes unavailable, the reciprocating gas engines can operate either on piped gas supply or natural gas.

5.2.4.5 Off Site Renewable Energy

CPPAs will be used to procure sustainable energy from wind / solar farms. In addition to providing energy for the Project, CPPAs will fund the construction of wind and solar farms. The Applicant has had discussions with various solar and wind renewable energy suppliers with a view to supplying energy through CPPAs.

The process and technical aspects of CPPAs are considered more fully in the Herbata Data Centre Sources of Energy report. CPPAs will be finalised following a grant of permission, along with a connection agreement with Eirgrid). As demonstrated within the aforementioned report and accompanying letter from BOS Energy Limited, there is sufficient capacity available from suppliers to meet the 30% operational renewable energy target set out in the Kildare County Development Plan 2023-2029.

In implementing the CPPA arrangements as outlined, the Project will operate on the basis of a minimum of 30% energy from off site renewables, in line Kildare County Council's policy requirements as follows:

The Kildare County Development Plan 2023-2029 (KCDP):

> *RE O72 Require Data Centres to consider the use of sustainable renewable sources of energy to fuel their operations in whole in the first instance or in part (minimum of 30%) where this is not possible and where it has been satisfactorily demonstrated not to be possible, subject to all relevant and cumulative environmental assessments and planning conditions."*

The proposed Project energy strategy is further set out within The *Energy Efficiency and Climate Change Adaptation Design Statement* and *Energy Policy Compliance Report*.

5.2.4.6 Electrical Grid Connection

A 110kV GIS is proposed to be located to the north west corner of the subject site. The substation will provide the grid connection on site, formed from the *breaking into* and partial undergrounding of the existing 110kV overhead line that currently crosses the site. The 110KV Grid Substation and Transmission Line Report sets out further the context of the proposed connection and the rationale for the proposed specification and layout.

The substation and undergrounding of the 110kV overhead lines are subject of a Strategic Infrastructure Development (SID) planning application to An Bord Pleanála as it involves changes to electricity transmission and is considered strategic infrastructure. Pre-application consultation undertaken with An Bord Pleanála confirmed that *'the Board… is of the opinion that the Project falls within the scope of section 182A of the Planning and Development Act 2000, as amended. Accordingly, the Board has decided that the Project would be strategic infrastructure within the meaning of section 182A of the Planning and Development Act 2000 as amended. Any application for approval for the Project must therefore be made directly to An Bord Pleanála under section 182A(1) of the Act'* (*An Bord Pleanála correspondence, July 2023*).

The provision of the substation and grid connection will enable the export of energy generated onsite to the wider network. The substation will also enable the energy storage facility to be connected to the national grid and add greater capacity and resilience to the national electric energy generation capacity and the national electric grid. The substation will also allow for development outside of the site to be enabled by having spare capacity for 110kV circuits if required.

The design and technical specification of the GIS and 110kV connection are largely influenced by Eigrid requirements and standard arrangements, in accordance with Eirgrid *Policy Statement on Options for Connecting Customers to the Transmission Network* (https://www.eirgridgroup.com/site-files/library/EirGrid/Policy-Statement-on-Options-for-Connecting-Customers-to-the-Transmission....pdf)

The proposed design and specification (derived from the above Policy Statement) is *Option 1*, *a new looped-in transmission substation*, utilising an 8 bay format (2 bays for the incoming and outgoing connections to the existing transmission line, 2 bays for the Project and 4 remaining bays remaining available for future capacity [unrelated to the Project] in the Naas area).

The substation will comprise of the following elements:

- 110kV GIS Building/Grid Substation c. 1350sqm and 15m in height;
- Undergrounding of the 110kV transmission line;
- Interface towers (17m in height);
- Connection of the new 110kV underground cables into the substation;
- Client control building;
- Internal road layout;
- Boundary fences;
- Underground services (watermain, surface water, foul, power); and
- Ancillary works (including removal of obsolete 110kV infrastructure).

It should be noted that all of the works that are intended to be handed over to Eirgrid will be specified, procured and constructed to Eirgrid's standards and requirements for a grid substation at a node. The proposed design and layout of the GIS is a *standard arrangement* and has been developed in liaison with ESB.

The general arrangement and scale of the GIS has been largely determined on the basis of technical requirements, including the dimensions of the plant and equipment (including necessary separation and distances). In order to provide consistency across all elements of the Project, the design of the GIS buildings is in keeping with that of the Data Centre buildings.

Termination of the existing 110kV overhead lines will be delivered by new single circuit line/cable (L/C) interface towers.

An Eirgrid 220kV overhead line also crosses the site. It is not proposed to make any alteration to the 220kV line and the Project will not impact the line with development below the line, located and designed in accordance with Eirgrid transmission line clearance policies.

5.2.4.7 Solar Photovoltaics

Solar photovoltaic (PV) arrays are located on the roof top of each of the six Data Centre buildings. The solar PV arrays will provide a minimum 500kW peak per building provided as part of 30% renewable energy target for operational energy target.

5.2.4.8 Heat Recovery and District Heating

Two of the gas turbines associated with Data Centre 5 are proposed to have waste heat thermal boilers installed within their exhaust flues in order to recover the medium to high grade heat from the turbines. Each turbine as a nominal electrical output rating of 5MWe, the available maximum heat output is assumed at 10MWth per turbine, with a total capacity of 20MWth possible when both turbines are available and running. Both of these turbines will be prioritized in terms of running whenever possible.

The heat from the thermal boilers will then be pumped via heat exchangers to the perimeter of the Data Centre campus, to enable district heating pipework to be connected to the identified uses.

An average electrical load of the site associated with ICT (information and communications technology) and cooling, when fully operational, is likely to max out at 220MW, however typically Data Centres don't achieve 100% utilisation of the power, more normally they max out at 70-80% so in this case with all phases completed an annual power demand from the onsite generation of around 140MW. It is acknowledged that this load is unlikely to be present on the first operational day, with a phased approach being employed by the Data Centre developer, this will have to be taken into account in any detailed district heating assessment.

Having established the quantum and form of the heat that can be made available to the local area, a heat mapping assessment has been developed to identify where the heat could be best used in existing facilities, significant facilities that have recently received planning and areas of development that again would benefit from using a connection to a district heating system.

5.2.5 Ancillary Buildings

In addition to the 6 Data Centre buildings, other ancillary structures are located within the site boundary. The site security hut is located at the entrance of the site. The site administration workshop and water treatment plant is located in the north west portion of the site, adjacent to the main entrance. The AGI and DH buildings are located in the north of the site adjacent to the site boundary.

5.2.6 Drainage and Water Supply

5.2.6.1 Surface Water Drainage

Below ground drainage are to be separate foul and surface water systems. Currently there is no known public surface water connections available to the development.

The surface water drainage design aims to collect and attenuate, as far as practically possible, all surface water within a series of swales and ponds, which will discharge (at three locations) into the Bluebell River (subject to regulatory approval) at a rate no greater than greenfield runoff.

Some of the surface water ponds will also act as water retention ponds to use the water for fire fighting purposes. Most of the ponds will be dry detention basins. All roads will drain into swales and carparking bays will be designed with a permeable surface to allow for surface water to be cleansed and attenuated within the subbase.

Ancillary buildings such as the Admin Workshop and Security Hut will incorporate green roofs.

5.2.6.2 Foul Water Drainage

The proposed foul strategy will be to provide a new foul drainage network to collect effluent from the new the Project via a local piped network. Each Data Centre building shall be served by its own local foul drainage network which conveys flows to a main gravity line discharging to a pumping station located on the site.

There are two proposed foul drainage catchments on the proposed site. Data Centres 1,2 and 3 and the adjacent Substation (Catchment 1) shall discharge to a pumping station located to the west of the site while Data Centres 4, 5 and 6 and the AGI building (Catchment 2) shall discharge to a pumping station at the Eastern portion of the site.

Foul effluent will be pumped via two separate rising mains (one from each pumping station), crossing agricultural lands located south of the Bluebell Stream to discharge to the main public foul drainage network which is located along the L2030 via a stand-off manhole.

The proposed foul network has been designed in accordance with the principles and methods set out in Irish Water's Code of Practice for Wastewater Infrastructure IW-CDS-5030-03 (Revision 1 – December 2017), IS EN 752 Drain & Sewer Systems outside Buildings, IS EN 12056 Gravity Drainage Systems inside Buildings and the Building Regulations Technical Guidance Document Part H Drainage & Wastewater.

The proposed foul network shall convey effluent generated on the site as follows:

- Domestic activities on the site from the estimated workforce of approximately 400 persons.
- The network will receive an amount of "blow-down" water generated by the cooling system processes within each data centre. This volume of water is generated primarily during peak summer weather periods. A full breakdown of the expected blow-down water generated by this process is included in Appendix H as part of the foul drainage calculations.
- The foul system has been designed to facilitate a potential discharge generated by the activation of a sprinkler system in each data hall. The available foul pump station storage has been sized based on the water runoff from a fire event (400m3 per data hall).

5.2.6.3 Water Supply for Cooling

The proposed cooling system for the Data Centre buildings is based on direct air cooling, which will be used for over 90% of the year. During the remaining period, water may be needed to trim the cooling temperatures within the data halls by use of adiabatic cooling techniques.

At peak, during usually a couple of weeks in the summer, elevated amounts of water are required. To mitigate this demand, it is intended to provide significant amounts of underground tanked water storage to each building to provide for at least 48 hours of peak day cooling requirement.

Rainwater harvesting with extensive underground harvesting tanks of approximately 100m3 per Data Centre building are proposed to avoid reliance on mains supply water for mechanical cooling. Blue roofs are proposed for the administration wings of each Data Centre block which will collect up to two-thirds of precipitation on each Data Centre building roof.

A minimum of 1 year water storage is provided on site for the adiabatic cooling top-up and storage top-up from on-site ponds if required.

5.2.7 Telecommunications and Data Connections

The Project site is comprehensively served from a fibre and telecoms perspective, providing the opportunity for a straightforward and secure fibre and telecoms connection, whilst also limiting the works and associated impacts of the same.

It is proposed there will be three telecommunications points of entry to the site. These locations will be 1) at the main site entrance, 2) at the emergency site entrance located to the south corner of the site via the M7 Business Park and lastly, 3) via a connection opposite the Osberstown Business Park.

5.2.8 Site Access Overview

The main site access (vehicular and pedestrian) will be via a new access onto the R409 road with a secondary emergency access provided from the M7 Business Park to the south. As part of the R409 improvement works, a new footpath, cycleway and bus layby is proposed to the southern side of the R409. This access will be extended across the R409 bridge over the M7 motorway and link up to the existing footway to the eastern side of the bridge.

5.2.8.1 Proposed R409 Works

The R409 along the northern boundary of the site has no existing pedestrian or cyclist infrastructure. Footways are provided on both sides of the R409 approximately 100m east of the M7 boundary of the site, which then connects to a network of pedestrian and cycle ways travelling along the R409 and R445 Millennium Park Road towards the town of Naas and surrounding commercial areas respectively.

Engagement with KCC resulted in proposals for an extension of the existing pedestrian and cyclist infrastructure along the south side of the R409 from the east of the M7 bridge crossing.

5.2.8.2 Internal Access Roads

The internal roads within the development are to remain private and will be maintained by the Data Centre management company. The internal road network is comprised of a 7.5m wide main campus road with 5.5m one-way roads provided around each Data Centre Building.

Autotrack analysis has been undertaken for the site access road and the internal roads. Road arrangements have been provided at the security entrance so that there is no queuing of vehicles onto the R409 and so that any rejected traffic (including HGV's) can safely turn and exist the site without blocking or causing a road safety issue on the R409.

Internal access road with separate pedestrian footpath, provide a safe and uncomplicated access to building within the site. Car parking is located to the front of the Data Centre building for all visitors and staff arriving by car; separate pedestrian and cycle access is also provided for each Data Centre building.

A separate vehicular access to the rear of each Data Centre will be provided for HGV's and service vehicles only. This will be accessed through additional gates.

An emergency entrance is located to the south east corner of the site entered through the M7 Business Park. This connection will be over the existing Bluebell Stream and will be provided with a security gate which will be permanently closed except in emergency circumstances. A turning head has been provided for security to be able to patrol this part of the site. This access has been designed to accommodate the manoeuvring of all relevant permanent and maintenance vehicles including cranes.

5.2.8.3 Car Parking

Car parking has been provided based on the staffing levels anticipated for each Data Centre and the administration building.

A total of 210 no. car parking spaces, comprising of 63 electric car charging spaces and 14 disabled car parking spaces, are proposed.

Of the 210 total, each of the 6 Data Centre buildings will have 30 car parking spaces (total) and the administration building will also have 30 car parking spaces.

A total number of 104 bicycle spaces (16 per each of the 6 Data Centre buildings and 8 for the administration workshop) are also proposed.

5.2.8.4 Sustainable Travel Provision

Bicycle shelters will be located in the vicinity of each Data Centre and at the Admin Workshop Area. A total of 104 bicycle spaces are provided throughout the site; this figure is in line with consultation undertaken with KCC Roads Planning department.

Cycle provision is proposed as follows:

- 16 adjacent to the entrance of each Data Centre
- 8 adjacent to the entrance of the Admin Workshop

5.2.8.5 Temporary Construction Access

A temporary construction entrance will be created on the R409, approximately 120m west of the Osberstown industrial park entrance (to the north of the R409). This entrance will be used for the construction of Phases 1 and 2 of the Project. The access has been designed to accommodate vehicles up to and including larger cranes with sightlines drawn at 160m due to the R409 stated as an 80km/h road.

The proposed temporary access will provide direct access to the construction compound which will be located within the site boundary, in the north east corner of the site.

Upon completion of Phase 1 and 2 construction works, the temporary access will be closed and the proposed landscaping works implemented to provide screening at the location of the Project.

5.2.9 Lighting and Security

The Project will operate as a 'Dark Site' where minimal lighting is only used when required in order to avoid *light spill* beyond the site boundary and disturbance of wildlife.

New external lighting will be provided to the following areas:

- Internal site access roads
- Car parks (at Data Centres and ancillary buildings)
- Site security lighting (including emergency escape lighting)

Impact of proposed lighting is minimised by the use of the following: luminaires with good optical distribution, use of glare shields, selecting suitable luminaire height, dimmable light source, good lighting control and by switching the light off for a period (post curfew).

Lighting systems in areas covered by CCTV cameras will be designed and installed to facilitate high-definition images recorded by the video surveillance system. Perimeter lighting will be provided along the full boundary of the site. This will be triggered by movement detections covering the complete perimeter.

5.3 External Boundary Treatments and Landscaping

The existing external boundary trees and hedgerows will be retained, protected and augmented with additional native tree and hedge planting where necessary.

Around the eastern boundary of the site to the M7, there will be a 30m wide landscape buffer provided. On other boundaries a minimum 10m buffer will be provided, which will allow for earth mounding and native, screen woodland planting to be provided to help integrate the development into the landscape, mitigate visual effects and increase site biodiversity.

5.4 Construction Phase Overview

A number of technical documents are provided as appendices in Volume II in respect of the construction phase of the Project including the following:

- Appendix 4.1 Data Centre Application - Architectural Design Statement
- Appendix 4.2 Data Centre Application - Planning Engineering Report
- Appendix 4.3 Cut and Fill Analysis Report
- Appendix 4.5 Construction Environmental Management Plan
- Appendix 4.6 Construction Traffic Management Plan
- Appendix 4.7 Resource and Waste Management Plan
- Appendix 4.11 Substation Application – Architectural Design Statement
- Appendix 4.12 Substation Application – Planning Engineering Report
- Appendix 4.13 110kV Grid Substation and Transmission Line Report

5.4.1 Project Phasing

Site phasing is proposed for the construction of the Data Centres and ancillary buildings over 3 Phases, with individual elements constructed as summarised:

- Existing trees/hedgerows that are to be retained will be protected
- Prior to the commencement of any work, or any materials being brought on site, existing trees to be retained are to be protected with temporary fencing.
- Phase 1 includes Data Centre 1 and 2, the AGI compound, District Heating building, Admin Workshop, Water Treatment Plant, Security House and the main road network through the site.
- Phase 1 also includes Pond 1, 2, 3A and 3B and landscaping surrounding Data Centre 1 and 2, AGI compound and planting along the boundaries of the site.
- The GIS substation located in the north of the site and partial undergrounding of EirGrid's 110kV overhead lines will also be completed in Phase 1.
- Phase 2 will include the construction of Data Centre 3 and 5 and the District Heating Building.
- Phase 2 also includes landscaping surrounding Data Centre 3 and 5 and their roads. Pond 5 will also be constructed in Phase 2.
- Phase 3 will include Data Centre 4 and 6, their roads and surrounding landscaping.
- Phase 3 will also include ponds 4, 6A and 6B

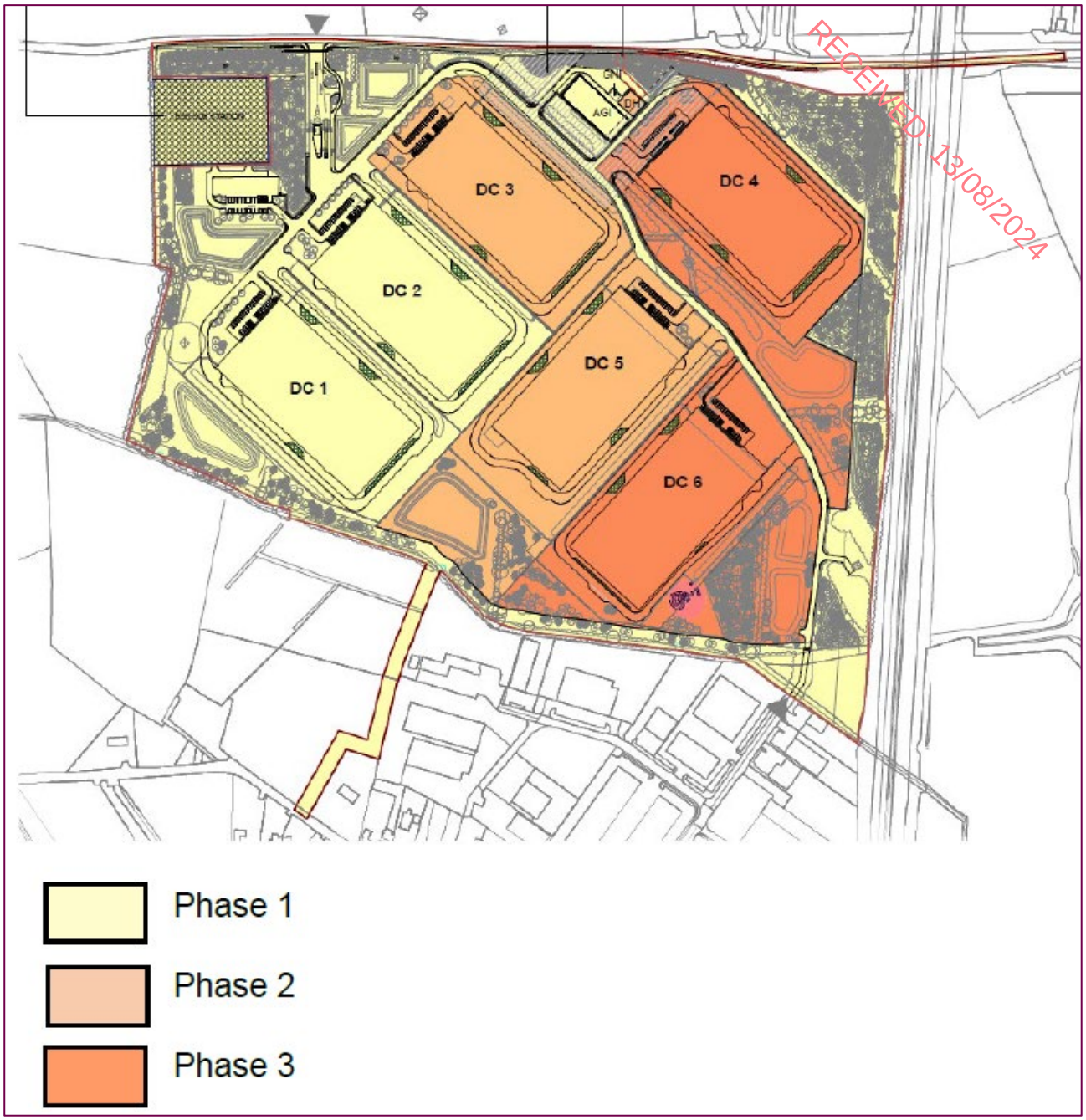

Figure 5.3: Project Construction Phasing

The proposed construction programme is an estimated 8 years and 9 months. Table 4.1 below provides an indicative construction phase programme for key milestones. A commencement date of January 2025 has been presented, serving as an indicative start date in order to illustrate the construction milestones. A final commencement date will be subject to the timescales for the Project in obtaining all necessary consents.

Table 5.1: Construction Key Milestones (Indicative)

Phases	Construction Programme	Start Date	End Date
HERBATA DATA CAMPUS OVERALL CONSTRUCTION PROGRAMMEME		08/01/2025	27/03/2033
Phase 1	Enabling Works Overall Construction Programme	08/01/2025	27/07/2025
	ESB Substation Overall Construction Programme	01/06/2025	28/03/2026
	AGI Building Overall Construction Programme	01/06/2025	28/07/2026
	DC 1 Overall Construction Programme	01/06/2025	17/07/2027
	R409 Road Improvement works that include the cycle lane, pedestrian walkway to both sides of the road.	08/12/2026	17/07/2027
	DC 2 Overall Construction Programme	16/07/2026	01/09/2028
Phase 2	DC 3 Overall Construction Programme	31/08/2027	16/10/2029
	DC 5 Overall Construction Programme	15/10/2028	30/11/2030
Phase 3	Construct Secondary Construction Compound around the site and remove the existing construction carpark	05/10/2030	30/01/2031
	DC 6 Overall Construction Programme	27/11/2029	13/07/2032
	DC 4 Overall Construction Programme	11/01/2031	27/08/2033
	Site Wide Works Overall Construction Programme	01/03/2032	27/09/2033

5.4.2 Construction Phase – Access, Compound and Car Parking

The proposed temporary access from the R409 will provide direct access to the construction compound which will be located within the site boundary, in the north east corner of the site. Figure 4.26 below indicates the location of the construction phase welfare facilities, site parking and material storage.

The construction compound for Phases 1 and 2 will be located within the site boundary, in the north east corner of the site; an average of 350 construction parking spaces will be required to be available for site during peak construction periods. The GIS substation will be constructed as part of Phase 1 as it is a critical element in the operation of the Data Centre buildings.

During Phase 3, the welfare facility shall remain in place whilst to accommodate the construction of Data Centre 4, construction car parking shall be distributed over the site in strategic locations, in order to avoid disrupting the operations of the Data Centre buildings constructed in Phases 1 and 2.

A reduced number of 230 construction parking spaces will be provided during Phase 3 with a reduced requirement for material storage space and no earthworks.

5.4.3 Site Preparation and Earthworks

The existing dwellings and agricultural buildings, on this site will require demolition. Demolition will be undertaken using mechanical plant and craneage. During 10-week process licensed waste carriers will deliver and collect waste skips. Following completion of soft internal strip, the dwelling will be demolished and crushed to be reused in the piling phase reducing the number of vehicles accessing the site. Any additional waste will be loaded into tipper lorries and removed from site.

The site will then be cut and filled to levels and the site compound is to be erected with the temporary compound area noted in Section 4.4.2. The site will then be cut and filled to levels and the site compound is to be erected

Site access roads, gate and layby areas are to be installed to allow access to the site and the site compound.

5.4.4 Vegetation Clearance

Clearance of vegetation on site shall be undertaken strictly in line with the provisions of the Tree Survey and Arboricultural Impact Assessment Report, associated Tree Removal, Retention and Protection Plans and mitigation measures contained within Chapter 5 of the EIAR. The felling of and pruning of trees will be undertaken by professional tree surgeons working to BS 3998 (2010) Tree Work – Recommendations.

Timber grade material from the felled trees will be processed into planks, beams, hurleys etc. All lower grade woody material arising from the clearance works should be disposed of at an appropriate green waste facility or recycled for use on the project (woodchip mulch for new planting areas for example).

5.4.5 Substation and 110kV Relocation Works

The GIS substation located in the north of the site and partial undergrounding of EirGrid's 110kV overhead lines will be subject of a separate Strategic Infrastructure Development (SID) planning application to An Bord Pleanála as it involves changes to electricity transmission. The GIS substation will be constructed as part of Phase 1 as it is a critical element in the operation of the Data Centre buildings.

5.4.6 Material Delivery and Storage

An onsite holding area will be provided to prevent construction vehicles waiting on R409 Road or blocking the private road from access by the other businesses using this access. All deliveries will be met on site by a representative of the delivery initiating organisation to ensure the vehicle is removed from the road and unloaded / loaded in an efficient manner in compliance with the agreed delivery protocols.

In all cases, access/egress for delivery and removal of materials will be planned, scheduled, and coordinated by the Contractor and all vehicle movement both on and around the site will be controlled by competent and certified banksman. A 'booking in' system will be implemented for all deliveries to ensure traffic movements are fully controlled.

Plant and materials will be stored in designated areas inside the boundary of the site in accordance with the manufacturer's instructions and delivered to site on a *just-in-time* basis to keep storage to the lowest levels reasonably possible. Storage of materials on site during Phase 3 will be kept to a minimum.

5.5 Data Centre Block Construction Overview

Each Data Centre will generally be constructed in line with the following methodology:

5.5.1 Piling and Excavation

The pile mat is to be constructed by the demolition contractor having reused the crushed materials from the demolition process. Additional imported hardcore is to be required and laid down to create a piling mat. Bored piles are to be installed for the foundations to support the new buildings.

The ground floor concrete base will allow construction to proceed with no new excavation required.

5.5.2 Sub-structure

Several cranes will be installed at the beginning of this phase which will not require temporary weekend road closure of the R409 and are to be erected during construction operation times.

The ground floor slab and core will be formed of concrete and therefore, concrete mixer trucks will be the primary vehicle accessing the site during this stage of construction. Lorries will be off loaded from a loading area within the site. A banksman will control the movement of vehicles, pedestrians, and cyclists when lorries are accessing and egressing the site.

5.5.3 Super-Structure

The frame will be built using standard hot rolled steel girders tied into steel columns and the flooring will be metal deck slab with concrete. The girders will be brought by lorry to the site and loaded from the loading area in the site. The metal decks will also be brought to site by lorry.

Using large, remanufactured components, the number of vehicles accessing the site will be reduced significantly.

5.5.4 Cladding

The design of the façade requires external access to all elevations. The strategy will be to have a minimum reliance on the crane to enable the crane to be servicing the construction of the steel and concrete slabs. The only crane dependent activity will be to lift large façade panels in position. The deliveries will be made out of hours as there will be no immediate demand for the supplies.

5.5.5 Fit Out, Testing and Commissioning

Typical procurement routes using off the shelf materials and construction in situ will not suit the delivery programme of this project. Components with a precise fit and finish will be manufactured off site to ensure the quality and programme sequencing objectives are achieved.

This will reduce the number of small vehicle and ad-hoc deliveries required. Bathrooms, balconies and railing and mechanical, electrical, and plumbing equipment are all expected to be manufactured and assembled offsite and brought to the site to be installed as a complete unit.

5.5.6 Electrical Supply

The Project is intended to use on site gas turbines for the majority of the power generation requirements, a direct connection to the grid will also be provided. The connection will primarily be for export purposes with infrequent import of power in a limited quantity.

The existing 110kV transmission line which extends across the site to the northwest corner will be rerouted underground to allow for the development of a GIS Substation on site.

5.6 Landscaping and Ecological Mitigation

There are several natural features on the site, including existing hedgerows and trees which will be retained where possible. The Bluebell Stream runs along the south of the site, along with existing shrubbery and trees and a 10 m riparian buffer zone is proposed here to protect the existing ecology.

The Project provides for a setback of the building line of approximately 51m from the motorway at the external plant yard of Data Centre 4. However, the actual building stands at approximately 77m from the site boundary. This is consistent with existing development in the area and fully protects potential development of the motorway network. To block views from the motorway, several high mounds are proposed ranging from 2-4 m in height. These will have native woodland planting to act as visual and noise buffers from the motorway. A 40m landscaped zone is proposed along the eastern boundary to aid in screening the development from the M7 Motorway. The retention of existing hedgerows, high mounds and native woodland planting are also proposed along the northern boundary to create a buffer from the R409.

Bat houses and bat boxes are proposed throughout the site to protect and preserve existing bat populations in the area. Demolition of the agricultural buildings to the centre of the site which have been confirmed as a bat roost, shall be undertaken in line with appropriate mitigation measures.

Clearance of vegetation on site shall also be undertaken strictly in line with the provisions of the Tree Survey and Arboricultural Impact Assessment Report, associated Tree Removal, Retention and Protection Plans.

The site will operate as a ‘Dark Site’ where minimal lighting is only used when required so as to not disturb any wildlife on the site.

5.7 Need for the Project

5.7.1 Data Centre Need

There continues to be a significant need for Data Centres in Ireland to support both business and social activities, with many large, United States based clients headquartered in Dublin for their European operations. The Irish Government *Statement on The Role of Data Centres in Irelands Enterprise Strategy* (July 2022) sets out how the *twin transitions* of digitisation and decarbonisation of the economy and society will be achieved and the necessary role Data Centres will play as *core digital infrastructure… indispensable…in our economy and society.* The Statement recognises that Data Centres are intrinsic part of almost all aspects of our lives.

Whilst *demand* and *need* are clearly apparent, it is acknowledged that concerns existing around power security in Ireland and a general requirement to reduce the use of resources, (including both power and water), with potentially, neither being available for new Data Centre developments.

Herbata Ltd have appointed an experienced team of architectural, civil, electrical, and mechanical consultants, along with planning and environmental consultants to assist in achieving the vision of a world class Data Centre campus meeting the challenges of demand for the service whilst addressing the issue of energy sustainability. The Project seeks to become Ireland's first non-power grid dependent Data Centre campus utilising renewable, efficient technologies to support an IT load of 180MW.

Herbata Ltd have identified the opportunity in the market and have secured the subject site which is considered suitable to meet these needs and challenges.

5.7.2 Harnessing Digital – The Digital Ireland Framework

In February 2022, the Irish Government published *Harnessing Digital – The Digital Ireland Framework* which sets out pathway to support Ireland's ambition to be *a digital leader at the heart of European and global digital developments.* The Framework recognises the power of digital to deal with challenges such as climate, inclusivity and enhanced productivity.

The Framework contends that Ireland will play a key role in advancing the goal of *successful transformation of Europe by 2030 and for the Union to be digitally sovereign in an open and connected works.* Furthermore, the Framework recognises the strong capabilities and presence of global enterprises within Ireland already and the unique role the country has as a bridge between the United States and European Union.

Whilst emphasising the benefits and opportunities of the digital transition, the Framework also recognises the need for a *strong, coherent and stable digital regulatory framework.*

The Framework seeks alignment with the EU's Digital Decade to 2030, referencing the four dimensions of the *Digital Compass* which are as follows:

1. Digital Transformation of Business
2. Digital Infrastructure
3. Skills
4. Digitisation of Public Services

The Framework recognises the role of Data Centres as '*a core infrastructure enabler of a technology-rich, innovative economy, which makes Ireland a location of choice for a broad range of sectors and value-added activities, such as business collaboration, online commerce, banking, and supply chain management.'*

5.7.3 Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy

In July 2022, the Irish Government published the *Statement on The Role of Data Centres in Irelands Enterprise Strategy* which sets out how the *twin transitions* of digitisation and decarbonisation of the economy and society, will be achieved in respect of Data Centres.

The Statement recognises the critical nature of Data Centres in all aspects of the economy and society, stating that they are *core digital infrastructure and play an indispensable role …* and *provide the foundation for almost*

all aspects of our social and work lives, including video calling, messaging and apps, retail, banking, travel, media and public services delivery such as healthcare and welfare.

Whilst recognising the significance of Data Centres, the Statement also recognises the limitations around capacity for further Data Centre development with regards to the energy sector and need to decarbonise the same.

The Project represents delivery of digital infrastructure which is an essential part in the realisation of the ambitions set out at European and national level, to achieve Irelands digital transition.

5.7.4 Business Environment

Ireland's positioning for attracting Data Centres in the face of internal competition is largely focused on the key requirements of the sector namely: skilled workforce; climate; advanced infrastructure and renewable energy sources. Ireland meets the industries requirements.

5.7.5 Proximity to Key Markets

Ireland as a Member State of the European Union is subject to all the privileges of EU membership and the only native English-speaking country in the EU. Ireland, therefore, provides access to the largest single marketplace in the world. Ireland is also strategically located between the US and Europe, which makes it an ideal connection point for communications and data transmission. Equally, many multinational organisations require access to multiple platforms from multiple providers for their day-to-day operations to function successfully. The ability to access these quickly and securely provides significant advantages.

5.7.6 Availability of Infrastructure

Ireland has one of the most robust, reliable and stable grid systems in Europe. It has a predictable repeatable load profile for a developed country, showing a reduction by night and peaks during the working day. Eirgrid's All-Island Generation Capacity Statement report to 2026 indicates that during the day the average load factor is approximately 4.4 GW. The same report highlighted that there is currently capacity on the system for more than 10 GW with further capacity increases being facilitated initially under EirGrid's 'Grid25' plan.

In addition, Ireland has an abundance of renewable energy sources including wind, to meet energy demands of Data Centres which are increasingly looking to renewable energy sources for their operations. Another key factor in Ireland's favour is the broad array of choices for transatlantic connectivity, as well as direct access to the UK and Europe.

The Hibernia Atlantic provides high capacity subsea cable access from Ireland to the US, while the Emerald express, the largest low latency network across the Atlantic, links Ireland to Long Island/New York. Connectivity from Ireland to the UK and Europe is currently supported by 14 undersea fibre cables plus the new Arctic Fibre and the Ireland France Subsea Cable. Arctic Fibre has a new cable from Prudhoe Bay (Alaska) to Europe and 'tee's in from this cable into Ireland via Cork. This cable connects Japan – Alaska – Canada – Western Europe with the shortest direct route. (Shorter routes give lower latencies, meaning higher speeds).

The IFSC project connects France to Cork directly, made available to Dublin via multiple redundant routes. This route bypasses London providing direct connection to Europe improving transmission speed and overcoming Brexit related data transfer issues.

5.8 Naas Local Area Plan 2012 - 2027

Chapter 2 of the EIAR (Section 2.3.1) sets out the rationale for the selection of the subject site for the Project, in the context of the LAP zoning and related Policies and Objectives.

The subject site is zoned for development of a Data Centre within the Naas LAP 2021 – 2027; the site is zoned P(1) – Data Centre in the Naas LAP 2021 - 2027. The Plan seeks to provide for Data Centre development and their associated infrastructure only, for Land Use Zoning Objective 'P'.

Notably, the LAP states that *The Council will not consider any alternative use on these lands, other than those associated with Data Centres.* The only use therefore, considered by the Naas LAP to be 'Permitted in Principle' in lands zoned 'P', is Data Centres.

The Project represents the realisation of the zoning and related Policies and Objectives, of the Naas LAP.

5.9 Employment Generation

The Project represents significant development and investment within Naas town and the immediate environs. The *Naas LAP 2021 – 2027* designates Naas a "Key Town" and an important employment centre within the County and more widely.

The need to generate new employment within the town and in particular in sectors such as IT is identified:

> *"EDO 1.1 Encourage economic development and employment growth in Naas in accordance with its designation as a Key Town, while adhering to the overall Economic Development Strategy of the Plan.*
>
> *EDO 1.2 Promote enterprise and employment development in the Northwest Quadrant, focusing on high-tech manufacturing, research and development, ICT, food science and production, large scale offices, public administration, banking, tourism and bloodstock, within a high quality campus/park type development."*

The Project will generate approximately 225 jobs in the ICT sector directly and support employment in the sector more widely; in this regard the need for the Project is supported.

6 BIODIVERSITY

Chapter 5 of the EIAR outlines the Ecological Impact Assessment (EcIA) which has been undertaken, to identify ecological constraints within the study area. The Project has been subject to EcIA in terms of the terrestrial aspects of the proposals, in addition to potential impacts associated with downstream effects to freshwater habitats.

The Project site has been subject to a suite of ecological surveys to establish the ecological baseline of the site, including extended Phase 1 Habitat survey, badger survey, otter survey, preliminary roost assessment for bats and follow up associated emergence and re-entry surveys. It is considered that this comprehensive suite of surveys has facilitated an accurate assessment of the ecological baseline to assess against the potential impacts of the proposals.

Ecological impact assessment and surveys have been undertaken by competent members of the RPS ecology team and in accordance with the Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland.

Historical biological records were sought from the National Biodiversity Data Centre.

Potential effects upon sites designated for their nature conservation value were considered. While no designated sites lie within or in proximity to the Project site, a number of designated sites were considered relevant given their location hydrologically linked and downstream of the Project site. These sites include a number of SACs and SPAs in Dublin Bay including South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA and North Bull Island SPA. With sites further afield considered where relevant. These Dublin Bay sites are hydrologically linked with these sites via a 58km hydrological pathway inclusive of the River Liffey and an intervening minor watercourse.

Given the hydrological separation between the Project site and the Dublin Bay designated sites in addition to the nature of the qualifying interests of these sites, it is considered that the proposals will give rise to no potential adverse impacts to these designated sites, in the absence of mitigation. Nevertheless, the proposals will incorporate a range of standard measures to ensure the adequate protection of surface waters throughout construction.

A range of habitats were recorded within the Project footprint. The vast majority of the area comprised improved agricultural grassland with areas of dry neutral grassland, dry meadows and grassy verges, amenity grassland, wet grassland, large sedge swamps, tilled land, scattered trees, scrub, buildings, hardstanding, drainage ditches, lowland river, hedgerows and treelines. The Project will not give rise to the loss of any areas of Annex I habitat however the loss of areas of dry neutral grassland, wet grassland, large sedge swamps, hedgerows and treelines will give rise to minor to moderate adverse and significant effects. Minor adverse effects are also predicted to arise to lowland river habitat at construction phase and in the absence of mitigation.

Proposed compensatory planting, including proposed woodland planting and the provision of SUDs features and swales will effectively mitigate for the required habitat losses in the long term.

The Project site provides habitat for a range of terrestrial protected species including bats and birds. The site was recorded to support commuting and foraging populations of a limited range of bat species in addition to a single building which supports roosting bats. Subject to the implementation of a range of mitigation measures it is considered that no significant impacts to these species will arise as a result of the Project. Furthermore, the scheme will deliver significant enhancements for roosting bats through the provision of a number of bat houses and the use of bat boxes to be situated within areas of proposed woodland planting. The scheme will adopt an appropriate lighting regime to ensure no significant light pollution to these features and to areas of retained and proposed vegetation.

The only significant residual effect arising as a result of the Project is the loss of mature hedgerows and treelines at construction phase. While compensatory planting is likely to mitigate these losses in the long term, like for like replacement would require a significant establishment period. Such short-term effects are considered to be minor adverse.

A range of mitigation measures in respect of the Project will ensure that all other potentially significant effects will be fully mitigated.

7 LAND AND SOILS

Chapter 6 of the EIAR describes the likely significant effects of the Project in relation to soils, geology and hydrogeology. This chapter provides a description of the Project in the context of soils, geology and hydrogeology, the baseline soils, geology and hydrogeology environments for the Project site and a statement of the likely significant impacts associated with both the construction and operation phases of the development. In addition, a 'do nothing' scenario has also been considered. Mitigation measures are proposed in the form of avoidance, prevention, reduction, offsetting, and reinstatement or remedial measures and recommendations for monitoring are included where appropriate predicted residual effects are described.

An initial assessment was carried out which defined the Project in terms of location, type and scale, established the baseline conditions; established the type of soil/ geological environment; established the activities associated with the Project and; initial assessment and impact determination. These objectives were achieved by way of a geological desk study and baseline data collection. A full list of sources for the desk study are briefly listed below:

- Ordnance Survey of Ireland maps;
- Geological Survey of Ireland Groundwater and Geotechnical map viewer;
- Environmental Protection Agency Envision Maps; and
- National Monuments Service maps.

7.1.1 Geotechnical and Environmental Investigations

The second phase of the assessment includes the results from a geotechnical investigation which was commissioned by the Applicant and was undertaken in 2022 by IGSL (Report No.: 24330). The site conditions have not changed since the commissioning of this GI and the results are considered to continue to represent the existing conditions.

The second phase also includes a Detailed Assessment and Impact Determination which was carried out and incorporates the full range of site investigations and studies and a full assessment of any potential impacts. The approach adopted is as per the IGI Guidelines (IGI, 2013) and each potential effect of the Project has been described in terms of Quality, Significance, Extent, Probability and Duration. Proposed Mitigation Measures

The third phase identifies mitigation measures to address the identified impacts. The development, including all identified mitigation measures (assumed implemented), is then subject to impact assessment, to identify any residual impacts.

The final phase of work was the completion of this chapter and associated figures and appendices which has followed the EPA Guidance Note and Design Team Template.

7.1.2 Consultation

Pre-planning discussions were held in April 2023 between representatives from Donnachadh O'Brien & Associates, BSM and David Hall of Kildare County Councils in relation to the proposed Surface Water Strategy, including the provision of a 6.0l/s/ha surface water discharge rate based on the site conditions once a minimum two-stage surface water treatment process was designed and implemented.

In addition, consultation has taken place with Uisce Éireann (UE) through meetings and a Pre-Connection Enquiry. UE issued a Confirmation of Feasibility letter which confirmed that a connection from the Project to the existing wastewater and water supply networks can be facilitated.

7.2 Baseline

The Project is to be located on an existing greenfield site which is bound to the north by the R409 road, to the east by the M7 Motorway and to the south by the M7 Business Park, with agricultural land to the west. The site is currently used as agricultural land with 3 No. existing domestic properties along the northern boundary.

The site topography in level varies between +85.500m AOD and +77.500 AOD, and slopes generally from North to South. The Northeast corner slopes towards the eastern boundary.

A number of historical maps for the scheme location were obtained from Ordnance Survey Ireland (OSI). Overall, the area appears as undeveloped land in all of the maps. It is important to note that there is a watercourse (Bluebell Stream) running along the Southern boundary of the site.

Aerial Photographs of the site area were obtained from OSI records. Comparing the obtained aerial image to the current site, there have been no major developments within the site. Development of the general area has progressed to the north of the site with the introduction of the Osberstown Business Park and development to the south within the M7 Business Park. In recent years, the M7 motorway has also undergone a road widening scheme increasing each direction of motorway by 1 no. lane. This road widening has not affected the site boundary adjacent to the motorway from 2005.

GSI Quaternary maps indicate that superficial drift deposits consist predominantly of Till derived from Limestones (TLs). The surrounding superficial deposits within 1km proximity of the site further include Gravels derived from Limestones (GLs), and Alluvium, which runs along the Bluebell Stream bank.

The site is underlain by Carboniferous, Viséan-aged Rickardstown formation. The rock formation consists of cherty often dolomitised limestone. No outcrops were found on site during IGSL's site investigation.

There are currently OPW Eastern Catchment Flood Risk Assessment and Management Study (CFRAM) maps covering the site which shows that there have been no flood events on the Project lands. The Eastern CFRAMS mapping shows the site outside of the 0.1%, 1% and 10% AEP flood events.

The Site is directly overlying moderate permeability deposits. A small zone of High permeability is located along the southern boundary and to the west of the site. Sections of higher permeability to the south are likely reflecting thinner subsoil associated with gravels.

The site is located in an area of moderate groundwater vulnerability.

The majority of the site is located within areas of modearte groundwater recharge. With the north eastern corner be considered to also be moderate, but with wet soils. The average annual recharge for the site is approximatey 251-300mm/yr with the north each experiencing a rate of 51-100mm/yr.

7.3 Impact Assessment

7.3.1 Do Nothing Scenario

In the 'Do Nothing' scenario, if the construction of the development at the proposed site does not take place, the existing baseline conditions will remain and there would be no resulting additional impacts on the Soils or Geology in the area of the Project site.

7.3.2 Likely Significant Environmental Effects

There are a number of effects on the land, geological and hydrogeological environments that will occur due to the Project as follows: -

- Land use – change of use agricultural to Commercial/ Data Centre Use
- Soil excavation – removal of soil to facilitate the construction the foundations/ Pond Structures and underground services infrastructure.

In line with EIAR guidance, each potential impact for the development should be described in terms of its Quality, Significance, Extent, Probability, and Duration. The potential impacts, mitigation measures and resulting residual impacts have been combined in a Detailed Assessment (Table 7.1).

7.3.2.1 Construction Phase

Below is a summary of the likely potential impacts throughout the Construction Phase:

- Excavated and stripped soil can be disturbed and eroded by site vehicles during the construction phase. Rainfall and wind can also impact on non-vegetated/uncovered areas within the excavation or where soil is stockpiled. This can lead to run-off with high suspended solid content which can impact

on water bodies. The potential risk from this indirect impact to water bodies and/or habitats from contaminated water would depend on the magnitude and duration of any water quality impact.

- There is a potential for dust from demolition works, excavations or stockpiles to impact on air quality. This is discussed further in Chapter 8 Air Quality and Climate.
- Construction phase dewatering will likely be required to excavate the foundations/ pond structures and to maintain dry working conditions in the excavation due to rainfall and potential groundwater ingress as the excavation progresses with depth. Pumped surface water shall require treatment as part of the surface water strategy during construction as discussed further in Chapter 13 Material Assets Built Services.
- Noise and vibration will be generated through the construction phase particularly during excavation work. Given that rock excavation may be required, excavation of the same may require rock breaking via pneumatic hammers attached to large tracked excavators. Noise and vibration impacts are considered in detail in Chapter 9 Noise and Vibration.
- The construction phase which includes the importing or exporting of material to the site (as part of excavation or infilling works) will have implications for traffic in the surrounding road network. These impacts are considered further in Chapter 12 Material Assets Traffic and Transport.
- There is potential for surface water and/or groundwater to become contaminated with pollutants associated with construction activity. Contaminated water arising construction sites may pose a significant short-term risk to groundwater quality for the duration of the construction should it be permitted percolate to the aquifer. The potential sources of contaminants include the following: -
    - Contaminated groundwater within the site from previous site activities,
    - Suspended solids arising from excavation and ground disturbance,
    - Hydrocarbons arising from accidental spillages from construction plant or onsite storage,
    - Cement/concrete arising from construction materials,
    - Wastewater arising from poor on-site toilet and washrooms.

7.3.2.2 Operational Phase

During the Operational Phase of the Project there is limited impact on the geological environment of the area. The site has been designed to mitigate any soil contamination which may occur during the operational phase of the Project.

7.3.2.3 Worst Case Scenario

The “worst-case” scenario is the accidental release of diesel fuel or spillage of other similar hazardous materials occurring on site during the Construction phase, through the failure of secondary containment or a materials handling accident on the site. If this were to occur in an open excavation it could lead to these materials infiltrating through the soil contaminating the soil zone and any underlying groundwater which is an adverse, significant and temporary effect. Appropriate remediation measures would then be required depending on the nature and extent of any contamination caused under such a scenario and may include the excavation and treatment of contaminated soil and associated in-situ remediation techniques.

7.3.3 Summary

Table 7.1 below summarises the identified likely significant effects during the construction phase of the Project before mitigation.

Table 7.1: Summary of Likely Significant Effects during Construction Before Mitigation

Qual- **Quality**
Sig.- **Significance**
Ext.- **Extents**
Prob.- **Probability**
Dur.- **Duration**
Neg.- **Negligible**
Mod.- **Moderate**
Cert.- **Certain**
Per.- **Permanent**
Reg.- **Regional**

Activity	Construc. Element	Potential Impact Description	Qual.	Sig.	Ext.	Prob.	Dur.	Type
Earthworks	Pond Ex. Pond Construc. Found Construc.	Excavation of natural soils and subsoil for roads, foundations, ponds, swales, drainage, etc.	Neg.	Mod.	Local	Cert.	Per.	Irreversible
		Airbourne dust arising from soil stockpiles causing nuisance dust on public roads and neighbouring properties	Neg.	Slight	Local	Unlikely	Short	Worst Case
		Imported fill material shall be required as part of works	Neg.	Slight	Local	Likely	Per.	Irreversible
		Excavation of top soil material	Pos.	Slight	Local	Likely	Per.	Irreversible
		Excavation of subsoils can serve to reduce the local groundwater levels as the water table naturally lowers to a new equilibrium below the artificial ground level	Neg.	Mod.	Local	Likely	Per.	Worst Case
		Seepage of underlying groundwater	Neg.	Slight	Local	Likely	Short	Worst Case
		Discharge of contaminated groundwater to adjacent watercourse	Neg.	Slight	Local	Likely	Short	Worst Case
Groundwater Abstraction		Groundwater abstraction associated with temporary dewatering forcing changes in pore water pressures and potential settlement and/ or subsidence in downstream unconsolidated sediments	Neg.	Sig.	Local & Reg	Unlikely	Short	Worst Case
Groundwater Flow Paths		Groundwater flow paths may be potentially altered due to the construction of sub-surface structures.	Neg.	Sig.		Likely	Per.	Worst

		Groundwater mounding can theoretically occur where large impermeable structures are placed perpendicular to groundwater flow paths			Local & Reg			Case
Groundwater Quality		Potentially contaminated water generated within the excavation could impact the Bluebell Stream	Neg.	Sig.	Local & Reg	Likely	Short	Worst Case

7.3.4 Cumulative Effects

There are a number of other projects which have been identified for consideration in terms of their potential for cumulative effects. A number of planning applications (permitted, submitted but undetermined and under construction) have been identified within the locale of the Project site. Many of these projects are associated with the retail and industrial complexes located to the north and south of the Project site. It is not likely that the Project will result in any negative significant cumulative effects on Lands and Soils in combination with these projects.

The Project will require a physical connection to the gas network to supply the on-site gas turbines. The GNI Infrastructure Upgrade Outline Report provides sufficient detail and information to allow a robust cumulative impact assessment to be conducted.

The GNI Infrastructure Upgrade Outline Report notes that the proposed works will likely include the construction of a new circa 300mm dia. high pressure gas pipeline which is likely to follow the existing pipeline route from the Glebe West AGI to the Naas Town AGI. From there it will most likely closely follow the existing low-pressure distribution network around the Southern Link Road to the junction with the R445 Newbridge Road, cross the Grand canal and follow the existing public foul sewer network wayleave across agricultural lands in a north-westerly direction towards the proposed Herbata Data Centre site.

Much of the likely pipeline route will follow existing gas pipelines and other services. There are no predicted negative significant cumulative effects on Lands and Soils as a result of these associated projects.

7.4 Mitigation

The design of the pond structures and foundations will be such that the depths are of a minimum in relation to fluvial flood levels, thus maintaining the excavations required at a minimum also. This, in addition to a design that has tried to balance the cut and fill required for the development shall serve to reduce the volume of soils to be exported off-site and therefore reduce the quantity of imported materials. The Contractor shall seek to export waste arising from the Construction Phase to licensed facilities as close to the site as possible to minimise the carbon footprint associated with handling of the material.

The following sections describe the mitigation measures which shall be adopted as part of the construction works on site to reduce the potential impacts on the soils, geology and hydrogeological environment.

The proposed works shall incorporate, as identified in the Construction Environmental Management Plan, the reduce, reuse and recycle approach in relation to the excavation of soil on site. All excavation arisings shall be, where possible, reused on site. Stockpiles have the potential to cause negative impacts on air and water quality, therefore, the effects of soil stripping and stockpiling shall be mitigated through the implementation of an appropriate earthworks handling protocol implemented by the Contractor during the Construction Phases. Stockpiles shall be formed within the boundary of the excavation zone and there shall be no direct link or pathway from this zone to any surface water body. Only local/low level of stockpiling shall occur as the bulk of the material to be excavated shall be placed directly into haulage vehicles for transport off site to an appropriately licensed facility or, where possible, will be reused in other areas of the site as fill. The Contractor

shall implement dust suppression measures, vehicle wheel washes, road sweeping and general housekeeping to ensure that the surrounding environment is free of nuisance dirt and dust dirt on roads.

Where demolition and construction material, such as excavated material, cannot be reused on site it shall be transported for recovery/disposal at an appropriately licenced facility as outlined in the Construction Environmental Management Plan. Following the geo-environmental sampling and associated laboratory testing, the waste classification completed on the soils has found that all results indicate that the materials are free from asbestos and are classified as a non-hazardous soil waste suitable for disposal at an inert landfill facility. Additional Soil Classification shall be carried out as part of the Construction Phases and waste shall be delivered by the Contractor to licensed Waste facilities which are authorised under the Waste Management Act 1996, as amended, and which hold the appropriate certificate of registration, Waste facility permit or EPA licence.

The Contractor shall carry out the earthwork and excavation activities 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 silts. The Contractor shall exercise care to ensure that exposed soil surfaces are stable in order to minimise erosion and that all exposed soil surfaces shall be within the main excavation site thus limiting the potential for any offsite impacts. All surface water run-off shall be prevented from directly entering into any water courses whatsoever in accordance with the Construction Environmental Management Plan. During the excavation of the existing site for the pond structures and foundation excavations, surface water shall pond in the excavations. The Contractor shall implement pre-treatment and silt reduction measures on site and shall include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks) and hydrocarbon interceptors (as outlined in the Construction Environmental Management Plan). Qualitative and quantitative monitoring shall be implemented, with the client's Environmental Consultant auditing the Contractor's regular sampling and analysis results.

The Contractor shall source all imported fill and aggregate for the Project from reputable suppliers and shall ensure the following

- Aggregate Declarations of Performance for the classes of material specified,
- Environmental Management status and the Regulatory and Legal Compliance status of the proposed suppliers.

The Contractor may consider recycled or recovered materials as aggregates for the Project where appropriate.

The Contractor shall implement the following mitigation measures on site in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts:

- Dedicated bunded refuelling areas,
- Provision of spill kits for hazardous substances,
- Diesel/ petrol powered equipment to be placed on suitable drip trays.

The Project Construction Environmental Management Plan sets out the minimum requirements which will be adhered to during the construction phase of the Project to help ensure that construction activities are planned and managed in accordance with the environmental requirements identified within and the relevant guidance and legislation.

The Construction Environmental Management Plan will form part of the Contract Documents for the construction stage to ensure that the Contractor undertakes the works required to implement mitigation measures.

7.4.1 Operational Phase Mitigation

As noted above there is limited impact on the geological environment of the area expected during the operational phase of the development. The site has been designed to mitigate any soil contamination which may occur during the operational phase of the Project. This includes bunding of all chemical and fuel containers, the discharge of waste process water to the foul drainage network, the containment of firefighting water run-off in detention ponds and the provision of oil and fuel interceptors on drainage networks.

7.4.2 Residual Impacts

7.4.2.1 Construction Phase

The predicted impacts of the construction phase are described in Table 7.2 in terms of quality, significance, extent, probability and duration. The relevant mitigation measures are detailed and the residual impacts are determined which take account of the mitigation measures.

The construction impact is assessed to be a slight negative short-term impact which is unavoidable given the nature, requirement and design of the Project.

Table 7.2: Construction Phase Impact Determination

Qual.- Quality
Sig.- Significance
Ext.- Extents
Prob.- Probability
Dur.- Duration
Neg.- Negligible
Mod.- Moderate
Cert.- Certain
Per.- Permanent
Reg.- Regional

Activity	Construc. Element	Potential Impact Description	Qual.	Sig.	Ext.	Prob.	Dur.	Mitigation	Residual Impact
Earthworks	Pond Ex. Pond Construc. Found Construc.	Excavation of natural soils and subsoil for roads, foundations, ponds, swales, drainage, etc.	Neg.	Mod	Local	Cert.	Per.	The minimum amount of space required in order to construct the works have been allowed for. Excavated material, where possible, shall be reused on the site	Moderate Negative
		Airbourne dust arising from soil stockpiles causing nuisance dust on public roads and neighbouring properties	Neg.	Slight	Local	Unlikely	Short	The contractor shall implement dust suppression measures to minimise the generation of dust during dry weather periods. Dust monitoring shall be carried out by the contractor throughout the excavation works. Construction vehicle wheel wash facilities shall be provided on all site exits and the contractor shall implement a road sweeping programme for the duration of the works.	Imperceptible Negative
		Imported fill material shall be required as part of works	Neg.	Slight	Local	Likely	Per.	The contractor shall only source fill material with the requisite declarations of performance to ensure material supplied complies with the relevant project material specifications.	Imperceptible Negative
		Excavation of top soil material	Pos	Slight	Local	Likely	Per.	The contractor shall implement environmental sampling and testing of top soil to assess its potential suitability for landfills in the Republic	Slightly Positive

								of Ireland via comparison against the Landfill Waste Acceptance Criteria Limits.	
		Excavation of subsoils can serve to reduce the local groundwater levels as the water table naturally lowers to a new equilibrium below the artificial ground level	Neg.	Mod.	Local	Likely	Per.	The contractor shall install groundwater monitoring wells which shall be continuously monitored during earthworks on site. The impact of lowering the groundwater levels shall be minimum.	Imperceptible Negative
		Seepage of underlying groundwater	Neg.	Slight	Local	Likely	Short	The contractor shall implement the localised lowering of the water table through pumping of wells	Imperceptible Negative
		Discharge of contaminated groundwater to adjacent watercourse	Neg.	Slight	Local	Likely	Short	The contractor shall design on-site pre-treatment of groundwater prior to its discharge to the adjacent watercourse	Imperceptible Negative
Groundwater Abstraction		Groundwater abstraction associated with temporary dewatering forcing changes in pore water pressures and potential settlement and/ or subsidence in downstream unconsolidated sediments	Neg.	Sig.	Local & Reg	Unlikely	Short	Condition surveys should be completed on neighbouring properties and neighbouring sites and should be monitored during the construction works	Imperceptible Negative
Groundwater Flow Paths		Groundwater flow paths may be potentially altered due to the construction of sub-surface structures. Groundwater mounding can theoretically occur	Neg.	Sig.	Local & Reg	Likely	Per	Local dewatering will be required as the excavations remove overlying low permeability clays which act as a confining layer.	Imperceptible Negative

		where large impermeable structures are placed perpendicular to groundwater flowpaths							
Groundwater Quality		Potentially contaminated water generated within the excavation could impact the Bluebell Stream	Neg.	Sig.	Local & Reg	Likely	Short	In order to avoid the inadvertent pollution of Surface and groundwater resources, all runoff should be prevented from directly entering watercourses. Best- practices and correct handling and storage of potentially polluting substances should be adhered. Water should be collected in a centralised sump and will be treated prior to discharge; The sump should be lined appropriately to avoid contaminant ingress to the groundwater system should current confining conditions be breached	Imperceptible Negative

7.4.2.2 Operational Phase

During the Operational Phase of the Project there is a negative permanent imperceptible impact on the local and regional geological environment

8 WATER AND HYDROLOGY

Chapter 7 of the EIAR assesses the potential impact of the Project on receiving water quality environment and Water Framework Directive (WFD) compliance.

The baseline water quality was defined through desk-based assessment and consultation with relevant statutory organisations. Information on the water bodies that could potentially be impacted by the Project have been collated from the most recent published information from the Water Framework Directive (WFD) monitoring programme. This ensures the potential impact from the Project is considered based on the most up to date information on water quality and to ensure that the development does not compromise the achievement of the environmental objectives of the water bodies affected as established under the WFD.

The project lies within the 'Naas' and the 'Curragh Gravels East' groundwater bodies (EA-G-027 and EA_G_017). These water bodies have remained at 'good' status since 2007 and achieved 'good' status during the most recent 2013-2018 WFD monitoring cycle for groundwater. All the waterbodies are grouped into the Liffey_SC_050 (09_7) and the Liffey_SC_060 (09_6) sub-catchments, are within the Liffey and Dublin Bay Catchment (Hydrometric Area 09) in the Irish River Basin District.

The core objectives of the WFD are for all water bodies to achieve 'good status' where they are currently at less than good status and to prevent the deterioration in status. In addition, WFD objectives requires that the water dependent protected areas linked to the water bodies must not be compromised. It will be a requirement that this project does not result in any deterioration of the current status of the relevant water bodies and does not prevent the improvement in status where this is required under the WFD.

The key focus of the water quality impact assessment is to ensure the development can be undertaken in a way which is consistent with the objectives of the WFD. Therefore, likely significant effects were assessed for construction and operational stages of the project with particular regard to the objectives of the WFD.

The potential construction phase impacts include increased suspended solids in the water environment, potential risks to water quality and WFD objectives as a result of pollution from concrete, oils and other chemicals. During the operational phase, there is a potential for impacts from contaminated storm water run-off and inadequate sewage infrastructure to service the development.

Proposed mitigation measures include careful management, implementation and adherence to best practice guidelines during construction and operation particularly when working in the vicinity of water features within the site which are connected to the downstream water bodies identified above. The development has incorporated a variety of Sustainable Drainage Systems (SuDS) techniques to counteract the potential increased need for supply. SuDS, supplemented by bypass separators on the piped storm water network, will include green roofs, permeable paving, rain gardens, attenuation tanks, bioretention pods, as well as, grassed and open space landscape portions of the site.

Foul wastewater generated on-site particularly during the operational phase of the development will be piped and discharged to the existing Irish Water foul sewer. Agreement in principal to discharge to the existing foul network and Osberstown WWTP will be secured with Irish Water and will ensure the wastewater discharge authorisation for the existing agglomeration will not be adversely affected.

Furthermore, each data centre building is serviced by its own local foul drainage network which conveys flows to one of two onsite pumping stations, located west and east of the site. Each pumping station will have sufficient capacity to accommodate wastewater generated by a sprinkler discharge event by a data centre (max 440m^3). This is sufficient to accommodate 24 hour storage for domestic and process wastewater generation.

An assessment of the significance of the residual impacts for the construction and operational phases of the project with the implementation of the mitigation measures proposed, resulted in a residual impact considered to be imperceptible with no likely significant effects on the objectives of the water bodies affected.

9 AIR QUALITY

Chapter 8 of the EIAR assesses the potential impacts to air quality arising from or associated with the Project. Potential effects to air quality may arise during the construction phase, such as from the generation of construction dusts and emissions from construction traffic/machinery. The construction activities have been examined to identify those that have the potential for air emissions. The operational development will give rise to potential emissions from road traffic and operational emissions from plant combustion systems. Each of these potential sources has been identified and emissions have been evaluated using standard procedures.

A number of commercially available dispersion models are able to predict ground level concentrations arising from emissions to atmosphere from elevated point sources. The dispersion modelling study consisted of the following components:

- Review of emissions data and other relevant information needed for the modelling study;
- Review of background ambient air quality in the vicinity of the facility;
- Air dispersion modelling of significant substances released from the site;
- Identification of predicted concentrations of released substances beyond the site boundary;
- Evaluation of the environmental significance of these predicted concentrations, including consideration of whether these concentrations are likely to exceed relevant ambient air quality standards and guidelines.

Air quality monitoring data was obtained from the Environment Protection Agency (EPA) monitoring stations to establish the status of existing air quality. The data was used as the basis for air quality modelling and predictions.

During the demolition and construction works, there is the potential for vehicle emissions and dust emissions to arise at existing off-site human health receptors, as well as a loss of amenity at nearby existing residential and commercial properties. During construction traffic flows would be controlled through the implementation of the Construction Environmental Management Plan (CEMP). The effects of demolition and construction related traffic emissions would be low and not significant in terms of EIA. Based on criteria set out in the IAQM guidance, the construction works would present a medium risk from dust impacts in the absence of appropriate mitigation. With the implementation of suitable mitigation measures, already incorporated within the Project's CEMP, it is anticipated that dust effects could be mitigated to at worst result in low effects at existing off-site receptors, which would not be significant in terms of EIA. Overall, the demolition of existing buildings on the site and construction of the Project would result in a low effect on air quality and identified receptors, and as such would not be significant in terms of EIA.

The predicted annual average completed development traffic flows are not expected to exceed the Institute of Air Quality Management (IAQM) guidance threshold such as to require formal assessment. The effects of operation stage related traffic emissions would be long-term and not significant in terms of EIA.

The potential impact to air quality during the operation stage of the Project is a breach of the ambient air quality standards because of air emissions from the Project emergency engines. The modelled predicted concentrations are below the relevant standards at all the existing receptor locations for the operation stages. It is considered that the operation of the Project emergency generators would result in a low effect on air quality and identified receptors that is not significant in terms of EIA.

Pollutant concentrations are predicted to be within the relevant health-based air quality objectives. Therefore, air quality is acceptable at the receptors surrounding the development site, making it suitable for its proposed uses. The operational impact of the Project on existing receptors is predicted to be 'negligible' taking into account the changes in pollutant concentrations and absolute levels. Using the significance criteria adopted for this assessment together with professional judgement, the operational air quality effects are considered to be 'not significant' overall.

10 NOISE AND VIBRATION

Chapter 9 of the EIAR outlines the noise and vibration impact assessment for the Project and assesses the potential impacts and likely significant effects of noise and vibration associated with the construction and operation of the Project.

During the construction phase, there is potential for noise and vibration impacts at the nearest noise sensitive properties from the use of associated construction plant and equipment. The operation of the Project has the potential to impact nearby noise-sensitive receptors due to noise sources associated with the Project, such as plant and equipment, traffic movements and car parking.

The effect of construction and operational noise have been assessed in full within the noise and vibration chapter. The construction noise targets are set out along with the assessment methodology and results of the construction noise predictions. Construction noise mitigation measures are detailed such that noise targets are met throughout the construction phases. Operational noise has been assessed, and noise mitigation recommendations made where appropriate.

The specific objectives of the noise and vibration assessment are to:

- Describe the existing noise baseline;
- Define the assessment methodology and significance criteria used in completing the noise and vibration impact assessment;
- Describe the potential effects, including direct, indirect and cumulative effects;
- Describe the mitigation measures proposed to address the likely significant effects; and
- Assess the residual effects remaining following the implementation of mitigation.

The baseline noise monitoring provides quantification and an understanding of the acoustic environment adjacent to and in proximity to the Project. A baseline noise monitoring survey consisting of unattended noise measurements was conducted within and close to the Project site. The noise monitoring locations (NMLs) have been chosen to be representative of the nearest noise sensitive receptors within and in close proximity to the Project site. The purpose of the noise monitoring survey was to determine the baseline noise levels at the nearest noise sensitive receptors to the Project site and assess these levels in accordance with the relevant guidance.

During the construction phase, the methods of working will comply with all relevant legislation and best practice in reducing the environmental impacts of the proposed works. By their nature, construction phase impacts will be short-term and localised. Pre-mitigation, the predicted construction noise impacts are anticipated to result in effects ranging from negligible to major at construction noise receptors. The Construction Environmental Management Plan (CEMP) includes specific noise and vibration control measures and construction noise monitoring may be requested by Kildare County Council, if deemed necessary. Mitigation by careful scheduling of the works, timing of activities and using best practicable will be implemented such that no significant effects arise, and levels are as low as possible.

Residents will be informed of the timing and duration of activities that may produce high noise. Elevated levels can be tolerated if prior notification and explanation is given. No permanent residual noise and vibration impacts are predicted during construction of the Project. With construction mitigation measures in place the noise and vibration impact of construction activities is predicted to be reduced to temporary minor / moderate.

There are no significant sources of vibration associated with the Project. As such, the operational assessment includes noise only. An acoustic model of operational plant and equipment noise has been developed, based on the detailed design drawings and manufacturer data. This has informed the assessment of operational daytime and night-time noise at the closest noise-sensitive receptors using the relevant standards.

Road traffic noise associated with the Project site has been assessed based on predicted vehicle movement rates during operation. Car parking noise has been assessed, as there is potential for night-time arrival or departure of vehicles to cause sleep disturbance. Assessment of L_{Aeq} and L_{AMax} noise levels was carried out with reference to the appropriate standards and guidance.

The significance of effects has been determined based on the Magnitude of Impact for each aspect of operational noise which has been assessed and the receptor sensitivity. The assessment of operational noise

from all aspects of operation of the Project found a ‘Negligible; or ‘Negligible/Low’ impact at all receptors. The overall significance of effect was found to be ‘Minor’.

A review of future proposed or approved developments found that no significant operational cumulative effects are expected. Significant cumulative construction effects could arise from combinations of noise sources throughout the construction programmes of both the Project and the proposed Gas Networks Ireland Gas Connection , if works take place concurrently. Any cumulative construction noise effects would be expected to impact receptors in the short-term only. Combined construction noise effects should be taken into consideration when developing the construction noise management plan for both the Project and the GNI Gas Connection, with mitigation employed as necessary.

11 CULTURAL HERITAGE

Chapter 10 of the EIAR covers the cultural heritage assessment of the Project. UNESCO define the term 'Cultural Heritage' as encompassing several aspects of tangible assets (*immovable*: archaeological sites and monuments, architectural heritage buildings; *movable*: artefacts; and *underwater:* shipwrecks and ruins) and intangible assets (e.g. folklore, oral tradition and language).

The cultural heritage assessment describes the surveys and assessments conducted as part of the impact assessment for the Project. It describes the archaeological baseline (monuments and historic buildings) of the site and the surrounding area; and presents an assessment of the impact of the Project on said monuments and historic buildings. This assessment also contains a detailed mitigation strategy outlining steps that should be taken prior to and during construction to minimise any potential impact.

The assessment was based on a programme of desktop research combined with a field survey of the Project site, in addition to two geophysical surveys (23R0105 and 23R0225) of all fields within the development boundary except Field 6 and the southern half of Field 10 which were unsuitable for survey due to waterlogged and uneven ground conditions. The recorded and potential cultural heritage resource within a study area encompassing the lands comprising the Project site, and surrounding lands extending for 1km in all directions, was assessed in order to compile a comprehensive cultural heritage context for the area.

The Project site contains one recorded monument, fulacht fia (KD019-028----). There are a further five recorded monuments within a 1km radius of the Project boundary. A geophysical survey (23R0105) undertaken within the development boundary as part of the pre-planning works for this project identified the precise location and extent of fulacht fia (KD019-028----) in the southern portion of eth Project area. Project designs have been amended to allow for the preservation in situ of this feature as identified by geophysical survey within green space. A second geophysical survey (23R0225) of the wider Project area identified an enclosure in Field 8, which cannot be preserved in situ within the project designs.

Archaeological works associated with the development of the Millennium Park Western Link Road c.200m east of the site in 2005 identified a fulacht fia (SMR no. KD019-068----) which was subsequently excavated (05E0442, 05E0524). There are four designated Recorded Protected Structures within 1km of the development boundary, of which three are also recorded on the RMP. The field inspection identified a group of partially derelict vernacular buildings located at the centre of the Project area.

The proposed site works associated with the development of the data centre will involve substantial ground reduction to facilitate the construction of 6 no. two storey data centre buildings, an administration / management building, car parking, landscaping, gas storage and gas turbines, energy storage and other associated works. These works will be in close proximity (c.5m) to recorded monument (KD019-028----), and will necessitate the removal of previously unrecorded potential archaeological features identified from geophysical investigation, including the enclosure identified in Field 8, thus there is a predicted negative impact associated with the construction phase of works.

The recorded monument (KD019-028----) as identified by the geophysical survey will be preserved in situ, however development designs will encroach into the zone of notification associated with this monument and will be set in close proximity (c.5m) to the monument. Significance of Effect on this monument is adjudged to be slight. The existing recorded monument has no surface expression, as such there will be no predicted visual impact on its setting during the operational phase. A minimum 5m buffer from the outer edge of the archaeological site will be established prior to any construction works commencing within the site. The c.5m buffer around fulacht fia (KD019-028----) will be fenced-off prior to the commencement of construction in order to protect the site during the course of works. This fence shall remain in place until all development works have been completed.

The Significance of Effect for previously unrecorded archaeological features, including an enclosure identified by geophysical survey in Field 8 is adjudged to be significant, however this will be ameliorated by the implementation of the proposed mitigation measures. The Significance of Effect for undesignated cultural heritage features in the form of vernacular buildings and townland boundaries within the site is adjudged to be moderate, due to their proposed demolition/removal, however this will also be ameliorated by the implementation of the proposed mitigation measures. There is no predicted impact on any other archaeological sites recorded in the RMP and other recorded cultural heritage sites within the 1km study area.

Archaeological investigations have identified the existence of several previously unrecorded features of potential archaeological origin within the development area. With the exception of the recorded monument (fulacht fia KD019-028----) preservation in situ of the identified features of archaeological potential is not a

viable option within the Project. Therefore, they will be preserved by record through a programme of archaeological excavation and recording under licence from the National Monuments Service (NMS) in the Department of Housing, Local Government and Heritage.

12 LANDSCAPE AND VISUAL

Chapter 11 of the EIAR identifies and determines the effects on landscape character, landscape features, visual receptors, and visual amenity as a result of the works associated with the construction and operation of the Project.

A review of the Kildare County Development Plan 2023-2029 has established that the Project is not located in proximity to any landscape or scenic designations and as such there are no predicted effects on any primary or secondary amenity area and/or scenic views.

Analysis of the landscape character within the immediate environs of the Project site displays typical rural character consisting of largely flat, gently undulating topography with grassland vegetation and agricultural crops. The Project is located within an existing industrial area with other industrial developments in close proximity. Therefore, the Project will not be out of character with the surrounding environment. The LCA is considered to have the scope and capacity for positive enhancement, and to have a high tolerance to change. The value of the LCA is judged to be low. Overall, taking into account the susceptibility and value attached to the LCA, the sensitivity of this LCA is judged to be low.

The Northern Lowlands LCA has been classed as an area of Low Sensitivity in the County Development Plan. Furthermore, the Project is classed as an 'Industrial Project' which is seen to have a high compatibility with the Northern Lowlands LCA. Taking this into account, the Project should not have a detrimental impact to this LCA or the surrounding area.

Of the 15no. viewpoints assessed for impacts, only moderate visual impacts at the operational stage predicted for a small number of viewpoints, while the rest of the viewpoints will either have minor changes or no changes at all to the view. This is due to the large amounts of existing mature vegetation and existing built form in the area surrounding the Project site that provides adequate screening to the site. Additionally, the proposal includes planting which will provide further screening.

A Glint and Glare Assessment in respect of the solar PV panels located on the roof of each Data Centre, has been completed and no significant effects are predicted upon aviation operations associated with the nearby airfields (Allenwood Airfield, Millicent Airfield, and Gowran Grange Airfield) and no Glint and Glare effects are predicted towards road users travelling along the nearby roads and the residential amenity for nearby dwellings due to the buildings' parapet blocking the views of the panels.

The potential for impacts from lighting has been assessed and the findings show that new lights will be read against the background of significant existing lights in the Project area and the wider night-time landscape and the significance of effect is predicted to be negligible adverse for night-time views where such views are available.

Overall, when potential construction and operational stage cumulative landscape and visual effects are considered for the Project in combination with permitted and planned projects they will not result in any significant cumulative landscape and visual effects due to a combination of separation distance, intervening development and the nature and setting of the proposals.

Overall, the wider landscape and visual resources of the development's surroundings have the capacity to accommodate a development of this type and scale.

13 TRAFFIC AND TRANSPORTATION

Chapter 12 of the EIAR considers the potential impacts on traffic and transportation. It outlines the key issues and provides an overview of the likely significant effects of the Project on transportation. The assessment reports on the likely environmental effects, the further mitigation measures which may be required to prevent, reduce or offset any adverse effects or further enhance the beneficial effects. The conclusions are provided in terms of the residual effects and whether these are considered significant.

The proposed subject site is accessed via the R409, which is a regional road the purpose of which is the connect many small towns to each other as well as to the national road network. The R409 provides connectivity to the R445 Millennium Park, which provides direct access to the M7 motorway via grade separated interchanges to both north and south. The M7 is part of the Dublin – Limerick route and provides connectivity to the M9 to the south and the N7 to the north. The N7 connects to the M50, providing further connectivity to the M1, M2 and M4 northbound and the N11 southbound.

Therefore, it is clear that the site is well served by both the local and strategic road network which provides good connectivity for both the construction and operational traffic associated with the Project site.

The majority of construction related vehicles will be normal sized HGVs that are permissible on the surrounding road network and do not require any special permissions. Should any abnormal loads be required (not anticipated at this stage) then the formal process for abnormal loads will be undertaken in terms of the route being pre-planned and all relevant authorities will be notified.

The peak construction period level of traffic is predicted as ~47no. vehicles per day, outside of these peak construction periods the volumes of construction traffic will be considerably less.

The 47no. vehicles will arrive and depart throughout the day and therefore assuming an 8no. hour working day this equates to an average of 6no. vehicles per hour (1no. vehicle every 10no. minutes).

During the peak construction period it is predicted that a maximum of 1,100no. staff will be required to travel to / from the site per day. This is predicted to result in an average of 425no. vehicle trips per day, with ~175no. vehicle trips occurring during the peak hour periods (AM & PM).

Whilst there will be an increase in traffic on the surrounding road network during the construction period, the percentage impacts during the AM and PM peak hour periods is less than 10% and given the volumes of traffic this section of the network is not currently congested. Therefore, the impact on the surrounding road network falls within the thresholds as set out in the relevant guidance. Given the percentage impact it is unlikely that the construction phase will result in a significant impact upon the surrounding road network.

During the operational phase the Project is anticipated to generate 225no. total staff at with 125 – 175no. visitors daily. It is anticipated that there will be 56no. person arrivals during the AM peak hour period and 56no. person departures during the PM peak hour period. In terms of operational HGVs, there is expected to be 26no. total trips per day. Whilst there will be a traffic generation associated with the operational phase of the development, this impact will be staff vehicles i.e. cars and therefore any impact upon the surrounding road network will be insignificant. The proposal is well served by the strategic and regional road network which will be able to accommodate the traffic generation associated with either the construction or operational phases. Therefore, the overall impact of the Project upon the surrounding highway network is considered to be negligible.

There is no proposed mitigation upon the surrounding highway network as part of this proposal. The Project is served by existing motorways and regional roads which can accommodate the predicted levels of traffic during the construction and operational phases.

14 MATERIAL ASSETS – BUILT SERVICES

Chapter 13 of the EIAR presents findings of the assessment on existing material assets and built services which could be impacted by the Project. The assessment of potential impacts on material assets focuses on resources that are valued and are intrinsic to a place – these may be of either human or natural origin, and the value may arise for either economic or cultural reasons. In this context, this assessment focuses on buildings, built services and existing infrastructure within and directly adjoining the indicative study area.

The matters assessed within this section focus on the environmental effects on utilities and infrastructure.

The baseline environment is defined as the existing environment against which future changes can be measured. This chapter has been prepared having regard to the following guidelines;

- Guidelines for planning Authorities and An Bord Pleanala on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2022)

A desktop study to identify baseline conditions has been undertaken to establish the existing provision of services and utilities in the areas. The following sources of information were used in the completion of this assessment:

- Kildare County Council (Drainage and Water Supply Mapping)
- Uisce Éireann Water and Wastewater Utility Plans
- Submission of a Pre-Connection Enquiry to Uisce Éireann
- Gas Networks Ireland (GNI Utility Plans)
- ESB Utility Plans
- EIR Utility Plans
- Virgin Media Utility Plans
- J&L Topographical Survey Drawings
- Metroscan Ground Penetrating Radar (GPR) Survey Drawings.

14.1.1 Consultation

As part of the planning process, the Design Team has attended a number of consultations with authority bodies to confirm and develop the aspects of the design. The following are a list of the formal consultations attended by the Design Team:

- Kildare County Council: 3 No. formal pre planning meetings;
- Uisce Éireann: 1 No. consultation meeting.

14.2 Baseline

The existing site is not served by any public or formal surface water drainage system. Currently surface water from rainfall flows across the land and is collected in several ditches which traverse the site and discharge into the Bluebell Stream (also known as the Yeomanstown watercourse) which runs in a northwest direction along the southern boundary of the site.

The existing site is not served by any public or formal foul water drainage systems. Foul drainage mapping from Kildare County Council and Uisce Éireann illustrate that there is no formal public sewer drainage on the R409, adjacent to the Northern boundary of the site. There are a number of existing properties on and adjacent to the subject site. These properties are served by private, on-site WWTP/ septic tanks.

There is a 300mm diameter sewer along the L2030 Newhall Road to the south of the site which runs in a South East to North West direction towards a pumping station which subsequently conveys flows to the Osberstown Wastewater Treatment plant to the north of the site.

The Uisce Éireann (UE) record drawings indicate the presence of a 225mm dia. HPPE watermain to the north of the site along the R409. The location of the watermain was verified following a Ground Penetrating Radar (GPR) survey of the existing site and adjacent roads which was commissioned by the Applicant. There is minimal domestic demand from the existing properties on and adjacent to the subject site along the northern boundary. There is also a minimal demand for water on the existing farmyard within the subject site. Water demand is required for the day-to-day operation on the agricultural lands such as animal feeding troughs etc.

The Applicant commissioned SES Water Management to carry out Fire Flow Simulation Testing on the nearest existing hydrants to the site. The hydrant was pressure logged for a period of 7 days which determined that the existing flow rate is approximately 26 l/ sec.

The Project will require a physical connection to the gas network to supply the on-site gas turbines. Whilst the Project includes an on-site Above Ground Installation (AGI) to regulate the supply to the turbines, a physical connection to the Gas Networks Ireland (GNI) gas network is required to provide the supply to the gas turbines. There is currently no adequate (high-pressure) gas main close to the site.

GNI will be responsible for providing the required infrastructure works, to construct a new high-pressure gas distribution pipeline, to the Project site boundary (on the R409), from the existing GNI AGI at Glebe West, Co. Kildare.

The final, detailed design, consenting and construction of the required infrastructure works will be the responsibility of GNI in the exercise of their own statutory functions, and therefore Herbata Ltd is not seeking planning consent to carry out these works as part of the Project.

The GNI Infrastructure Upgrade Outline Report, identifying the specification and most likely route for the connection and a description of the works required to provide same, provides sufficient detail and information to allow a robust cumulative impact assessment to be conducted.

Currently there are 2 overhead powerlines on site. On the west of the site, there is an existing 110kV overhead powerline which crosses the site in a north easterly direction. This overhead powerline has a single tower on site at the following co-ordinate: northing 686128.8208m, easting 719763.4211m. There are a further 2 towers for this overhead powerline, one located to the southwest of the onsite tower in the adjacent farmers field and one to the northeast of the onsite tower, across the R409 also located in a farmer's field.

In addition to the existing 110kV overhead powerline, there is an existing 220kV overhead powerline to the east of the site. This more substantial overhead powerline crosses the site in a south easterly direction. This overhead powerline has 2 towers on site at the following co-ordinate: Northing 686552.7548m, Easting 686552.7548 and Northing 686635.9805m, Easting 686635.9805m. There are a further 2 towers for this overhead powerline, one located to the northwest of the onsite towers, across the R409, in the adjacent farmers field and one to the southeast of the onsite tower, across the M7 motorway also located in a farmer's field.

In addition to the major overhead powerlines, there are domestic 10kV overhead powerlines which provide power to dwelling 1 and the agricultural buildings. It's currently unknown where the power for dwelling 2 and dwelling 3 is provided from. The 110kV and the 220kV overhead powerlines, as well as the 10kV, are owned and operated by EirGrid.

There are various options available to the data centre occupiers, which will develop over time.

14.3 Impact Assessment

14.3.1 Do Nothing Scenario

If the Project was not undertaken, it is expected that there would be no significant change on the subject site regarding the surface water drainage, wastewater drainage or water supply.

In the absence of this Project, surface water runoff from the site would continue to flow to existing onsite traversing watercourses which all ultimately discharge to the bluebell river adjacent to the southern boundary of the site. This would be considered a neutral, imperceptible and long-term effect.

In the absence of this Project, the existing properties on and adjacent to the subject site would continue to be served by private, on-site WWTP/ Septic Tank systems. There would continue to be no foul drainage discharging from the subject site. This would be considered a neutral, imperceptible and long-term effect.

In the absence of this Project, there would continue to be only minimal domestic demand for dwellings along with an additional domestic demand for agricultural usen the water network for the subject site which is a neutral, imperceptible, long-term effect.

There are no predicted impacts should the Project not proceed. However, it's likely that future expansion of the gas services will be brought along the R409.

There are no predicted impacts should the Project not proceed.

There are no predicted impacts should the Project not proceed. However, it's likely that future expansion of the fibre services will be brought along the R409.

14.4 Likely Significant Environmental Effects

14.4.1 Assessment of Construction Effects

During the construction and demolition phase of the development, surface water from the existing development shall continue to discharge to the onsite, traversing watercourse and ultimately to the Bluebell Stream adjacent to the southern boundary of the site.

The following are the potential impacts of the proposed scheme during the construction phase:

- Mobilisation of sediments and harmful substances during the construction phase, due to exposed soil, and earth movement/ excavations, which may be flushed into the watercourses currently serving the site.
- Accidental spills of harmful substances such as petrol/ diesel or il during the delivery and storage of harmful substances or by leakages from construction machinery. Construction materials such as concrete and cement are alkaline and corrosive and can cause pollution to watercourses.
- Potential from building materials or silts to be washed into the onsite watercourses and Bluebell Stream adjacent to the southern boundary of the site, causing pollution. Waterborne silts can arise from dewatering excavations, exposed ground, stockpiles and site aul roads. Heavy siltation or grit in the surface water runoff would lead to maintenance issues such as desilting or dredging of the receiving watercourses.

In the absence of mitigation measures, these potential impacts are considered to be adverse, significant and temporary.

During the construction and demolition phase of the development, the contractor shall install temporary and welfare and toilet facilities. The discharge from these facilities shall be removed from the site using tankers. There shall be no effects to the surrounding Foul Drainage networks, particularly on the L2030 Newhall Road. This is due to no formal Foul Drainage Network Currently Serving the site.

During the construction and Demolition phase of the development, the contractor shall install temporary facilities on site for construction personnel. The water demands during the Demolition and Construction phase arising from the contractor's welfare facilities on the existing water supply networks are considered to have a neutral and imperceptible effect with a short-term duration.

It is currently envisaged that GNI will construct the new gas main will alongside an existing high-pressure and low pressure main and then on to the Herbata site via the R409 road, a total distance of approximately 10.5km. It's not envisaged that this enhancement will have a significant environmental impact.

The undergrounding of the existing overhead 110kV line will primarily occur on the Herbata site with limited impact to adjacent areas. It's not envisaged that this enhancement will have a significant environmental impact.

It is currently proposed that the new fibre services will be run in ducts in roads, pavements, and verges and then on to the Herbata site via existing roads. It's not envisaged that this enhancement will have a significant environmental impact.

14.4.2 Operational Phase

The existing site consists mainly of agricultural land that is currently being farmed. The current operational activities on the subject site are predominantly agricultural and farming, Bovine and Sheep enterprises are currently operating with a large number of animals inhabiting the lands. Watercourse traversing the site are the animals' source of water supply, meaning that animals are standing and moving through the watercourses. In addition to this, each watercourse on the site is vulnerable to animal waste entering route. This suggests that the current operations on site result in some water pollution through regular and normal activities.

As part of the Project, the site shall adopt a competent water cleaning train which shall with a minimum two stage strategy of SuDS measures such as swale, filter drains, permeable paving, pond structures, and petrol/ oil interceptors. The proposals for the surface water treatment shall considerably increase the quality of the water entering the Bluebell stream compared to current operations.

The impacts on surface water discharge from the site are considered to be positive, significant and permanent.

The proposed foul strategy will be to provide a new foul drainage network to collect effluent from the new development via a local piped network. Each Data Centre building shall be served by its own local foul drainage network which conveys flows to a main gravity line discharging to a pumping station located on the site. There are 2 No. foul drainage catchments on the proposed site. Foul effluent will be pumped via two separate rising mains (one from each pumping station) and crosses agricultural lands located south of the Bluebell Stream in order to discharge to the main public foul drainage network which is located along the L2030 via a stand-off manhole

Uisce Éireann have advised, through the Connection and Developer Services (CDS) confirmation of feasibility letter, that a connection to the existing public sewer on the L2030 is feasible.

The impacts of Foul Water discharge from the site are considered to be insignificant and permanent.

The Water use proposed for the subject site shall be in three various systems. Process water for general operations and system cooling, firefighting water in the event of a fire within the site and potable water for general human consumption etc. It is proposed, as part of the development to supply the site from the existing Uisce Éireann network on the R409 with potable water only. Supply for process water and fire fighting will not be permitted. The below sections outline the extent of water demand/ supply networks proposed as part of the site development.

It is understood from pre-planning consultations held with Uisce Éireann that process water supply from the public water supply system is not permitted. It is proposed to provide water for the industrial processes via rainwater harvesting from the data hall building roofs.

The available supply of water via rainwater harvesting therefore greatly outweighs the demand over the course of a year and any surplus rainwater will be directed to the site surface water swales and network serving each building.

The recommended firefighting water demand purposes for the proposed site is 100l/sec per data hall. (4 hydrants operating simultaneously at a flow rate of 25l/sec).

Uisce Éireann have noted that they cannot guarantee a fire-fighting flow of water during summer months and have recommended that the full quantity of water supply for fire-fighting purposes be stored on site. This volume will be provided in a static water storage tank which will be pressure boosted to an internal fire-fighting watermain with 8 No. Fire hydrants located in accordance with Building Regulation requirements around each Data Hall building.

14.4.2.1.1 Potable Water

A new dedicated water supply is proposed to be taken from the existing 225mm diameter public water supply located along the R409 to serve the potable water supply demands of the site.

Uisce Éireann have advised through the Connection and Developer Services (CDS) confirmation of feasibility letter, that a connection to the water supply network on the R409 is feasible.

The impacts on Water Supply to the site are considered to be insignificant and permanent.

It is proposed that the development will be serviced by a dedicated high pressure gas supply which will supply the Turbines via a network of on-site gas supply pipework.

Excess power from the gas turbines will feed back into the onsite GIS Substation which is part of a separate SID Application.

From the proposed fibre connection to the site will be a network of onsite fibre route which will connect to each of the separate buildings.

14.4.3 Cumulative Effects

There are a number of other projects which have been identified for consideration in terms of their potential for cumulative effects. A number of planning applications (permitted, submitted but undetermined and under construction) have been identified within the locale of the Project site. Many of these projects are associated with the retail and industrial complexes located to the north and south of the Project site. It is not likely that the Project will result in any negative significant cumulative effects on Material Assets - Built Services in combination with these external plans/projects.

The Project will require a physical connection to the gas network to supply the on-site gas turbines. The GNI Infrastructure Upgrade Outline Report, identifying the specification and most likely route for the connection and a description of the works required to provide same, provides sufficient detail and information to allow a robust cumulative impact assessment to be conducted.

In conclusion, much of the likely pipeline route will follow existing gas pipelines and other services. It is considered that the new pipeline can be delivered along this route without the need to divert or relocate significant existing infrastructure.

There are no predicted negative significant cumulative effects on Material Assets - Built Services as a result of these associated projects.

14.5 Mitigation

14.5.1 Construction Phase

In order to mitigate against the potential impacts outlined above, the following measures are proposed for the construction stage of the project:

Groundwater or run-off that collects in excavations or foundation trenches will be drained or pumped to a construction site water treatment arrangement. The water is to be directed into a proprietary settlement tank, with a proprietary ‘silt bag’ to intercept bulk silt volumes. This process entails sediment-laden water being pumped into a filter bag, which traps the solids inside and allows the filtered water to flow freely out through the Geotextile fabric to disperse into the collection point. The proposed collection point shall be a series of silt trap fences and filter drain arrangements, adjacent to constructed pond which will act as temporary settling ponds during the construction The water and silt within the pond are to be emptied into water vacuum tanker and is to be disposed of off-site toa licenced facility.

Due to the sloping nature of the existing topography, there is a risk of silt/ sediment accumulating/ discharging towards the Bluebell stream. To mitigate against unwanted silt discharge, Silt traps in the form of silt fences or hay bale structures will be adopted across lengths of the site to intercept runoff and provide a stage of treatment and runoff filtration.

Runoff filtered through the silt trap fence shall be then intercepted by a temporary filter drain which will run directly parallel to the downstream side of the silt trap fence. The collected, filtered runoff shall discharge to the constructed ponds which shall act as temporary settlement structures during the construction phase. The use of filter drains and temporary settlement ponds shall further treat any potential contaminated/ polluted runoff prior to discharge to a Silt Bag arrangement which will provide maximum treatment of surface water runoff entering the Bluebell stream.

During the construction phase of the development, all silt/ pollution removal strategy structures shall be constructed/ installed outside the extent of the riparian buffer which has been determined as 10m from the Bluebell Stream bank.

During construction, all new sewers shall be pressure tested and CCTV surveyed in accordance with the Uisce Éireann Standards to identify potential defects and such defects should they arise, shall be repaired prior to the connection

During construction, the watermains shall be tested in accordance with the requirements of Irish Water prior to connection.

During construction, the gas mains shall be tested in accordance with the requirements of GNI prior to connection. The turbines will also be tested in accordance with the manufacturer's specifications.

During construction as part of the final testing and commissioning, the overhead lines and underground cables will all be tested in accordance with the requirements of ESB and Eirgrid's standard procedures.

During construction, the ductwork for the fibre network will be CCTV surveyed to ensure no breakages has occurred during installation.

14.5.2 Operational Phase

Surface water runoff from the Project will be managed in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS), with surface water attenuation and retention included as part of the main surface water drainage system. The surface water management proposals shall serve to significantly reduce the overall impact of the Project on the existing environment and shall reduce the risk of flooding in the receiving public surface water network. The proposed SuDs strategy shall also provide cleansing of all surface water prior to the discharge to the Bluebell Stream, increasing the sustainability of the design.

The Project's management company shall carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications.

The Project's management company shall carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications.

GNI shall carry out operational inspection and maintenance regimes to carry out to ensure the system keeps operating within the design specifications.

The substation will be managed, operated and maintained by ESB who will carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications.

The Project's management company shall carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications.

14.5.3 Residual Impacts

The provision of a Sustainable Urban Drainage System (SUDS) for the Project will provide betterment of the existing scenario. Blue roofs, bio-retention areas, ponds and swales will facilitate a reduction in surface water runoff volumes discharged from the site. Collection of surface water runoff via blue roofs, pervious paving and bio-retention areas provides improvement to water quality. Provision of attenuation storage and flow control will reduce surface water runoff rates discharged from the site. The impact on surface water is a positive, significant and long-term effect.

It is considered that the residual effects on the existing foul drainage network on the L2030 network will be neutral, not significant and permanent.

It is considered that the residual effects on the watermain network on the R409 will be neutral, not significant and permanent.

It is considered that the residual effects on the gas enhancements on the R409 will be neutral, not significant and permanent.

It is considered that the residual effects on the GIS Substation will be neutral, not significant and permanent.

It is considered that the residual effects on the fibre network on the R409 will be neutral, not significant and permanent.

14.6 Interactions

Climate change has the potential to increase flood risk over time. However adequate attenuation and drainage have been provided to account for increased rainfall in future years as part of the design of the Project, and it has been concluded that the associated impact will be long-term, localised, neutral and imperceptible.

There is an inter-relationship between hydrology and built services. There will be no potential cumulative impacts with no largescale dewatering required and aquifer with little importance regionally. Surface water runoff may have the limited potential to enter soil and groundwater. Implementation of appropriate mitigation measures will eliminate the potential for the influx of surface contaminants into the underlying geology and hydrology.

15 POPULATION

Chapter 14 of the EIAR assesses the impact of the Project on the population of the general area of the Project. Specific aspects examined include population levels, impact on employment and social facilities.

The effects of any development on the environment may impose on humans directly and indirectly, positively, and negatively. Any significant impact on the status of the population that may be potentially caused by a development proposal must, be addressed as in much detail as possible.

In particular, Chapter 14:

- Presents the existing environmental baseline established from desk-based studies.
- Identifies any assumptions and limitations encountered in compiling the environmental information; and,
- Highlights any necessary monitoring and/or mitigation measures that could prevent, minimise, reduce or offset the possible impacts in the EIA process.

The KCC County Development Plan 2017 – 2023, Chapter 15 Development Management Standards states that "childcare facilities will also be required to be provided in large-scale employment centres with an excess of 100 employees". The Project shall generate more than 100 no. jobs. The provision of c. 225 no. jobs over a c.37ha site in proximity to other low density employment generators is not considered to be a "large scale employment centre". It is therefore considered that there is no requirement to provide a childcare facility at this location. However, given the absence of clear guidance on what might constitute a large-scale employment centre childcare facilities in the wider locale have been identified as part of this chapter.

The construction phase of the Project should not have any direct impact on the population of the area or the subject lands. It is expected that the work force will generally travel to the development site rather than take up residence in the immediate vicinity.

The delivery of c. 225 no. jobs in the IT sector accords with the policy vision for growth in key towns and will help provide employment opportunities for those living in the local area. The Project will deliver significant new employment at construction and operational stages and support a key sector of the economy in Kildare. As such it is considered that the Project is in accordance with the KCDP objectives regarding economic and employment growth.

The associated substation will deliver an enhanced electricity grid with the potential for importing energy from the proposed data centre and will also support the development of other SME businesses by providing spare 110kV circuits if required.

With regards to childcare facilities, as previously stated the KCC County Development Plan 2017 – 2023, Chapter 15 Development Management Standards states that "childcare facilities will also be required to be provided in large-scale employment centres with an excess of 100 employees". The Project shall generate more than 100 no. jobs. The provision of c. 225 no. jobs over a c.37ha site in proximity to other low density employment generators is not considered to be a "large scale employment centre". However, the provision of childcare facilities has been considered along with pre-schools and schools. It is concluded that the surrounding area is well served by childcare facilities, pre-schools and schools there are a large number of childcare facilities in the immediate surrounds. Therefore, it is anticipated that there will be no significant effects on childcare facilities as a result of the Project.

The Project shall generate more than 100 no. jobs. The provision of c. 225 no. jobs over a c.37ha site in proximity to other low density employment generators is not considered to be a "large scale employment centre". It is therefore considered that there is no requirement to provide a childcare facility at this location.

No other residual negative effects will arise from this development which are significant in magnitude.

16 HUMAN HEALTH

Chapter 15 of the EIAR considers the public health implications of the Project. Following guidance this assessment takes a population health approach. Population health refers to the health outcomes of a group of individuals, including the distribution of such outcomes within the group. The assessment considers the potential for likely direct, indirect and cumulative significant effects of the construction, operation and maintenance and decommissioning of the Project. Physical health, mental health and health inequalities are considered across a broad range of determinants of health.

The methods follow the health in EIA guidance set out by the Institute of Public Health and the Institute of Environmental Management and Assessment.

The health assessment looks at the potential effects on the general population and on vulnerable groups. Vulnerability relates to experiencing effects differently due to age, income level, health status, degree of social disadvantage or the ability to access services or resources. The health assessment considers localised population effects and also considers wider population effects at the regional and national and international levels.

A baseline health profile was gathered from publicly available public health evidence sources for Naas Rural, Nass Urban and Carragh electoral divisions in County Kildare, using regional (Leinster) and national (Republic of Ireland) data as comparators.

The data shows that the general health of the population in the three electoral divisions that make up the study area is generally good, and broadly consistent with county and national averages. The two electoral divisions in which the Project is situated, Naas Rural ED and Carragh ED are both classed overall as affluent and marginally above average deprivation. The presence of relevant vulnerable groups is noted, and high sensitivity has been assigned for effects to such groups.

With mitigation measures adopted as part of the Project in place, no adverse effects are anticipated to be significant for public health. In addition, there are a number of positive effects, including potential for significant public health benefits.

Physical activity – During operation and maintenance, the project extends an existing active travel route and supports access to people of all ages, including those with mobility and/or sensory needs. The effect on physical activity is minor beneficial (not significant).

Transport modes, access and connections – During all phases, the Project has the potential to result in temporary and short-to-medium-term disruptions in relation to health-related travel times and accessibility, active/sustainable travel and road safety during. The effect is assessed as being of minor adverse significance (not significant).

Community identity, culture, resilience and influence – During the operational and maintenance phase, occasional and partial views from vantage points of a transitory nature whilst passing the data centre are not expected to affect population health outcomes. The health effect of this determinant is minor adverse (not significant).

Education and training – During the operational and maintenance phase, the Project has the potential to result in upskilling and career opportunities. With training schemes and apprenticeships in place for young people in the local and regional area and for people who are Not in Education, Employment, or Training (NEET), there is the potential for a moderate beneficial (significant) population health effect.

Employment and income – During the operational and maintenance phase, there is also the potential for a moderate beneficial (significant) population health effect resulting from employment opportunities targeted to vulnerable groups.

Climate change – During the operational and maintenance phase, the Project's climate change effects are assessed to have a minor adverse (not significant) effect on population health.

Air quality – During all phases, air quality effects on population health are considered minor adverse (not significant).

Water quality – During the operational and maintenance phase, the effects of the Project on water quality would be minor adverse (not significant) for population health, reflecting the minimal risk to public drinking water supplies.

Noise and Vibration – During all phases, Noise and vibration impacts are assessed to result in a minor adverse (not significant) effect on population health.

Public understanding of electro-magnetic field risk – During the operational and maintenance phase, the Project has the potential to result in community concerns related to electrical infrastructure, and associated effects on mental health and wellbeing. Public understanding of risk will be addressed through continued communication and reassurance that actual risks are mitigated through design and adherence to relevant guidelines. The effect is assessed to be negligible (not significant).

Cumulative public health effects from the Project alongside relevant developments have been assessed. The cumulative effects for transport impacts is a minor adverse (not significant) population health effect. The interaction of the Project with other developments could result in significant beneficial impacts for local vulnerable groups associated with training and employment opportunities. The overall cumulative climate change health effects of the Project with other developments remain unchanged. The cumulative water quality health effects of the Project are also unchanged.

The Project would provide a range of minor beneficial and minor adverse effects on population health. Most effects would be experienced by the population closest to the Project in Naas Rural and Carragh electoral divisions. With appropriate mitigation in place as proposed, no significant adverse public health effects are expected. With measures to enhance access to training and employment opportunities for local vulnerable groups, it is expected that the beneficial socio-economic effects of the Project would be the dominant public health influence.

17 CLIMATE CHANGE

This chapter of the NTS presents the findings of the environmental impact assessment (EIA) concerning the potential environmental effects of the Data Centre Application and the Substation Application (which together constitute the 'Project') on and from climate change.

Climate change can be considered broadly in two parts:

- The impact of greenhouse gas (GHG) emissions due to the Project, resulting in an effect on the global atmospheric GHG concentration that contributes to climate change; and
- The potential risks to the Project from a changing climate.

The manufacturing of associated materials and construction of the Project would result in GHG emissions. The majority of emissions arising from the construction phase result from the extraction of raw materials and the manufacture of construction materials. Such emissions have been calculated for the proposed buildings, solar PV panels, gas turbines, battery storage systems, and substation, informed by published benchmarks and available life-cycle assessments. An estimation of such emissions arising from the likely server fit-out has also been calculated.

Construction phase emissions total circa 13,390,000 tCO_2e. This can be divided into those associated with the applicant-controlled elements (circa 212,000 tCO_2e, comprising 0.06% and 1.18% of Ireland's carbon budgets[1] and Sectoral Emissions Ceiling for the commercial built environment over the relevant budget periods, respectively), and the tenant server fit-out (circa 13,178,000 tCO_2e, comprising 3.18% and 42.24% of Ireland's carbon budgets and Sectoral Emissions Ceiling for the commercial built environment over the relevant budget periods, respectively). Such emissions associated with the applicant-controlled elements will be reduced where possible through the use of recycled and re-used materials, and preferential procurement of goods, services, or works with a reduced GHG impact. Thereby, the Project is assessed as being compliant with Ireland's national legislation and policy, and net zero trajectory. As such, the construction phase emissions associated with the applicant-controlled elements of the Project have been assessed to have a **minor adverse** effect, which is **not significant** in EIA terms. The construction phase emissions associated with the server fit-out have been assessed to have a **moderate to major adverse** effect, which is **significant** in EIA terms. This range has been given due to the uncertainty arising from the emissions estimates.

The use of the Project post-completion would result in indirect GHG emissions due to the use of electricity within the buildings. This electricity demand can be split into that arising from the offices and other fixed building services (such as space heating, hot water, ventilation and lighting), and emissions arising from the servers. Design measures enable such emissions to be reduced by 66% and 57%, respectively. Such measures include the use of gas turbines in place of grid electricity, the commitment to meet 30% of energy demand from renewable sources (both on- and off-site), and energy efficiency measures. The use of gas turbines will enable emissions resultant from the Project to reduce over its lifetime as the gas network will increasingly be made up of biomethane and hydrogen, gases with lower carbon intensity and reduced resultant emissions.

Emissions associated with the offices and other fixed building services total circa 88,000 tCO_2e over the Project's operational lifetime. Emissions associated with the server energy demand total circa 14,933,000 tCO_2e over the Project's operational lifetime. Emissions arising from the battery energy storage systems are anticipated to lie between circa 236,000 tCO_2e and -530,000 tCO_2e over the operational lifetime of the Project (the range accounts for the energy sources used to charge the system, the true emissions will likely lie within this range). Within the context of Ireland's carbon budgets from 2026 to 2035, total operational emissions within this time period would comprise a maximum of 0.61% of the budget. In the context of the Sectoral Emissions Ceilings for the commercial built environment, operational emissions comprise 14.24% over the period from 2026 to 2030. Due to the mitigation measures proposed to reduce operational emissions, the Project is assessed as being compliant with Ireland's national legislation and policy, and net zero trajectory. Therefore, the operational emissions arising from the Project have been assessed to have a **not significant minor adverse** effect.

Emissions over the Project's lifetime (i.e. including all construction and operational stage emissions) total a maximum of circa 28,647,000 tCO_2e, contributing 3.85% and 49.35% of emissions within the context of

[1] A carbon budget places restrictions on the amount of GHGs that can be emitted. The budget balances the input of CO_2 to the atmosphere by emissions from human activities, and by the storage of carbon.

Ireland's carbon budgets from 2021 to 2035, and the Sectoral Emissions Ceiling for the commercial built environment to 2030. Given the inclusion of the above-described emissions mitigation measures during both the construction and operational stages, whole life emissions have been assessed to have a **minor adverse** effect, that is **not significant**.

With regards to the risks to the Project from changing climate, a climate change risk assessment has been prepared which identifies the greatest risks to the Project due to climate change. Of the nine potential risks identified, two of these risks – high temperatures and extreme weather events – were considered to have a potentially significant effect. Owing to the good practice design measures that will be incorporated into the Project (including building orientation to minimise unwanted sunlight and resultant heating within buildings, flexible cooling system designed to accommodate higher temperatures if necessary, reflective finish to roofs to improve solar reflectivity), these effects were determined to be negligible and not significant.

18 CUMULATIVE EFFECTS AND INTERACTIONS

The EIA Directive and its transposing Regulations requires that in addition to assessing impacts on human beings, fauna, flora, soil, water, air, climate, landscape, material assets and cultural heritage, the interrelationship between these factors in-combination must be taken into account as part of the environmental impact assessment process.

EIAR Chapter 17 draws on the assessment of impacts provided in Chapters of this EIAR, and information in the public domain relating to other known developments within the Study Area.

This EIAR is provided in accordance with the EU EIA Directive 2011/92/EU1 and EIA Directive 2014/52/EU and the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, in order to inform the consideration of the Application and provide the planning authority with the environmental information that must be taken into account when determining the Application.

The requirement for cumulative and combined impact assessments is stated in the relevant European Directive and domestic legislation.

Table 17.1 is a matrix table indicating the significant inter-relationships that are likely to occur between the various environmental disciplines with regard to the proposed development. Where a cross exists in a box in the table, this indicates that a relationship exists between the two environmental areas.

The purpose of the table is to allow interaction between various disciplines to be recognised, although the level of interaction and in-combination effect will vary in each case. It is assumed in presenting this table that an environmental discipline has a potential inter-relationship both during the construction and operational phases of the development.

18.1 Cumulative Effects

Cumulative effects are those that accrue over time and space from a number of development activities – the impact of the Project is considered in conjunction with the potential impacts from other projects or activities which are both reasonably foreseeable in terms of delivery (i.e. have planning consent or relevant applications which have been submitted and are in the planning system) and are located within a realistic geographical scope where environmental impacts could act together with the Project to create a more significant overall effect.

As identified in Chapter 1 of the EIAR (Section 1.4), there are a number of other projects which have been identified for consideration in terms of their potential for cumulative effects. A number of planning applications (permitted, submitted but undetermined and under construction) have been identified within the locale of the Project site. While a range of applications have been submitted or approved within proximity to the Project, namely within the Osberstown Business Park and M7 Business Park. It is not considered that such proposals, which will take place within areas of existing development would have potential to act cumulatively with the Project.

18.1.1.1 GNI Infrastructure Upgrade

As identified in Chapter 1 of the EIAR (Section 1.4.4), the Project will require a physical connection to the gas network to supply the on-site gas turbines. The GNI Infrastructure Upgrade Outline Report, identifying the specification and most likely route for the connection and a description of the works required to provide same, is included in Volume II, Appendix 1.2. The report provides sufficient detail and information to allow a robust cumulative impact assessment to be conducted.

The GNI Infrastructure Upgrade Outline Report notes that the proposed works will likely include the construction of a new circa 300mm dia. high pressure gas pipeline which is likely to follow the existing pipeline route from the Glebe West AGI to the Naas Town AGI. From there it will most likely closely follow the existing low-pressure distribution network around the Southern Link Road to the junction with the R445 Newbridge Road, cross the Grand canal and follow the existing public foul sewer network wayleave across agricultural lands in a north-westerly direction towards the Project site.

18.1.1.2 Biodiversity

As identified in Chapter 1 of the EIAR (Section 1.4.4), the Project will require a physical connection to the gas network to supply the on-site gas turbines.

The construction works for the for the gas pipeline will likely comprise of a 14m working corridor within areas of agricultural land, in addition to works within the verge of public roads and watercourse crossings at three watercourses and a large number of minor drainage ditches and field drains. The method of constructing this crossing (and other watercourses along the likely route) will typically consist of either open excavation (from smaller watercourses and ditches) or directional drilling / pipe jacking as appropriate.

On this basis it is considered that the proposed gas pipeline connection to the project will have no potential to give rise to any cumulative effects upon ecological receptors when considered alongside the Project.

Given the nature of the impacts upon biodiversity which are predicted to arise in association with the Project, in addition to the mitigation measures which are set out in Section 5.5 below, it is not envisaged that the Project would have potential to give rise to any further potential significant effects when considered cumulatively with the nearby assessed projects.

18.1.1.3 Lands and Soils

The GNI Infrastructure Upgrade Outline Report notes that the proposed works will likely include the construction of a new circa 300mm dia. high pressure gas pipeline which is likely to follow the existing pipeline route from the Glebe West AGI to the Naas Town AGI. From there it will most likely closely follow the existing low-pressure distribution network around the Southern Link Road to the junction with the R445 Newbridge Road, cross the Grand canal and follow the existing public foul sewer network wayleave across agricultural lands in a north-westerly direction towards the Project site.

A desktop review of the proposed high pressure gas pipeline route was undertaken to assess potential impacts on lands and soils along the most likely route.

The works associated with the proposed new pipeline involve the excavation of a trench to install the new pipe, circa 1.2m deep for approximately 10.5km through agricultural lands, road crossings and along footpaths and verges. The excavated materials will be removed from site and disposed of at appropriately licenced waste facilities. Additionally, works through agricultural lands will also require excavation of topsoils and construction of temporary haul roads and hardcore working platforms in a corridor circa 14m in width along the route of the pipe. The topsoils will be stockpiled and reinstated along the route as the works progress, following removal of the temporary haul roads and working areas. The impact of these works on Lands and Soils will be Slightly Negative, localised to the works short term and Temporary in nature and are reversible with reinstatement works.

In conclusion, much of the likely pipeline route will follow existing gas pipelines and other services. There are no predicted negative significant cumulative effects on Lands and Soils as a result of these associated projects.

18.1.1.4 Water and Hydrology

As identified in Chapter 1 of the EIAR, there are a number of other projects which have been identified for consideration in terms of their potential for cumulative effects. Table 7.12 in EIAR Chapter 7 provides an assessment of the potential cumulative effects of these developments (set out in Section 1.4 of Chapter 1) with the Project by establishing their location, hydrologically connective to the Project site and the assessments undertaken for each individual application. Based on the assessment in Table 7.12 it can be concluded that there is no potential for cumulative effects with the Project and these developments.

The likely route of the new pipeline will require crossing a number of watercourses within the Liffey_050, Liffey_100 and Liffey_110 river water bodies, including the Grand Canal, Naas River, Bluebell Stream and numerous land drainage ditches. The method of constructing this crossing (and other watercourses along the likely route) will typically consist of either open excavation (from smaller watercourses and ditches) or directional drilling / pipe jacking as appropriate. GNI will determine the best crossing method for all watercourses as part of their environmental assessment. The final design will be subject to consultations with Waterways Ireland / Inland Fisheries Ireland and Kildare Co. Council Water Services and Environment departments.

GNI will use the standard construction corridor for pipelines on agricultural lands which will usually require a working width that will be fenced off and stripped of topsoil to allow the installation of the pipeline in a trench. The excavated subsoil will be stored separately from the topsoil in the working width to ensure there is no cross contamination.

An GNI Infrastructure Upgrade Outline Report has been used to assess the potential for cumulative effects with the Project.

In terms of water and hydrology, there is the potential for elevated suspended solids in the surface water run-off from the working areas, however pre-construction drainage and a dedicated haul route will ensure that the run off generated will be reduced to a minimum by ensuring on rainfall incident on the working area will have the potential to generate run-off. In addition the best practice measures for pipeline construction as outlined in the CIRIA guidance document C648, Control of water pollution from linear construction projects will be followed by the GNI contractors who will be contractually required to ensure pollution form the working area and the water course crossings do not impact on the water bodies and water courses traversed by the pipeline.

On the basis of the likely route of the pipeline and the minor nature of the water courses traversed, including the selection of the most appropriate crossing technique in consultation with the relevant statutory authorities and the application on best practice it is reasonable to assume that the cumulative effects of the main Project with the GNI gas transmission line connection will not be significant and will not compromise the environmental objectives of the water bodies affected.

18.1.1.5 Air Quality

During construction, dust emissions to air from other committed developments and cumulative emissions sources in the area around the site are not close enough or significant enough to generate cumulative impacts should they occur at the same time, aside from the GNI gas connections project.

In essence, cumulative impacts are those which result from incremental changes caused by other past, present or reasonably foreseeable developments, together with those generated by the planned development. Therefore, the potential impacts of the Project cannot be considered in isolation but must be considered in addition to impacts already arising from existing or planned future development.

After an assessment of potential adverse effects produced by the development, it was concluded that there would be no significant adverse air quality effects for both human and ecological receptors which cumulatively would not hinder the developments proceeding (the Project and the GNI gas connection).

Overall, the effects of the GNI gas connection on air quality are considered to be not significant after the implementation of mitigation measures. For example, as detailed in the IAQM guidance, there may be a provision to hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.

18.1.1.6 Noise and Vibration

An GNI Infrastructure Upgrade Outline Report has been used to assess the potential for cumulative effects with the Project.

The construction works associated with the proposed gas pipeline will take place during Phase 1 of the construction programme for the Project, as the gas connection will be required in order to bring Data Centres online.

The cumulative construction noise impact of the Project construction programme and the GNI Gas Connection has been reviewed, considering the concurrent Phase 1 construction and Gas Connection construction at the relevant noise-sensitive receptors.

As noted in the GNI Infrastructure Upgrade Outline Report, a large portion of the construction works for the GNI Gas Connection will likely take place across agricultural lands. Works will likely involve a construction corridor of 14m width, centred on the pipeline.

Access to the works on agricultural lands will typically be provided at public road crossing locations. It is not expected that construction traffic for the Gas Connection will be significant in the context of existing traffic flows.

The predicted sound pressure levels, assuming operation of single items of plant and equipment, are at least 60 dBA in all phases/stages of construction. The combination of multiple construction noise sources and

concurrent construction activities, stages and phases is likely to give rise to an increase of 5 dB at receptors, therefore exceeding the criterion level of 65 dBA at time during construction.

Significant cumulative construction effects could arise from combinations of noise sources throughout the construction programmes, if works take place concurrently, however these are expected to impact receptors in the short-term only. Combined construction noise effects should be taken into consideration when developing the construction noise management plan for both the Project and the GNI Gas Connection, with mitigation employed as necessary.

18.1.1.7 Cultural Heritage

A desktop review of the likely high pressure gas pipeline route was undertaken to assess potential impacts on recorded archaeology and built heritage. Much of the proposed pipeline route will follow existing gas and other service. All existing services will have a zone of disturbance associated with previous construction works in the areas immediately adjacent to the services. However, any undisturbed areas across the proposed pipeline working area that will be impacted by the proposed pipeline construction have the potential to contain previously unrecorded archaeology sub-surface and as such will require archaeological mitigation. The proposed pipeline route as currently understood will run close to a small number of recorded archaeological and built heritage sites, including Hilltop enclosure (KD024-271----) at Tipperkevin. Jigginstown House and associated features (KD019-033001- (Protected Structure NS19-058), KD019-033002-, KD019-033003-, KD019-033004-, KD019-033005-) and Jigginstown Bridge (Protected Structure NS19-060, NIAH11901906). Careful design and micro-routing of the proposed pipeline will ensure that these sites are not directly impacted.

There is no predicted negative significant cumulative effects on cultural heritage as a result of these two associated projects.

18.1.1.8 Landscape and Visual

The methodology for assessment of cumulative impacts has been derived from Guidelines for Landscape and Visual Impact Assessment, Third Edition (The Landscape Institute and Institute of Environmental Management & Assessment, 2013) (GLVIA3).

The significance of any identified cumulative landscape and visual effect has been assessed as per the main LVIA methodology. These categories have been based on the same combination of receptor sensitivity and predicted magnitude of impact in order to identify the residual significance of effects.

As identified in Chapter 1 of the EIAR (Section 1.4), there are a number of other projects which have been identified for consideration in terms of their potential for cumulative effects. These projects with which the Project may possibly have cumulative effects have been considered in order to identify the likely cumulative landscape and visual effects, if any.

These projects, that include Solar Farms, Battery Storage projects and a Data Centre, has established that the nearest project to the Project site is a solar farm located approx. 5km. At these large distances and with substantial buildings and strong vegetation located between the Project sites there is no potential for any cumulative landscape and visual effects. The potential cumulative projects are all to remote from the Project to have any potential for cumulative landscape and visual effects.

Overall, when potential construction and operational stage cumulative landscape and visual effects are considered for the Project in combination with permitted and planned projects they will not result in any significant cumulative landscape and visual effects due to a combination of separation distance, intervening development and the nature and setting of the proposals. Construction stage activities involve an increase in construction traffic for all cumulative projects. HGV traffic is frequent feature of this landscape, and the existing wider Dublin road network consists of very busy roads with low potential for significant cumulative visual impacts as a result. The operational stage activities as part of the Project are sufficiently separated from any permitted or planned projects in the area surrounding the Project to avoid potential cumulative effects while permitted or planned developments within the surrounding area or so similar in character that they are difficult to discern from the existing busy context.

The GNI Infrastructure Upgrade Outline Report, identifying the specification and most likely route for the connection and a description of the works required to provide same, is included in Volume II, Appendix 1.2. The report provides sufficient detail and information to allow a robust cumulative impact assessment to be conducted.

The GNI Infrastructure Upgrade Outline Report indicates that the most likely route for the new high-pressure gas distribution pipeline will be from the location of the existing GNI above ground installations (AGIs) at Glebe West and Naas Town to the Project site following a combination of the existing road network and the route of existing utilities. A large portion of the gas pipeline will likely cross agricultural / open lands will likely require a construction corridor for the works that consists of a 14m wide strip that is normally reinstated to the existing land use. Once constructed and with reinstatement complete a pipeline of this nature will have no cumulative landscape and visual effects as it is below ground. The construction stage will result in activities that will be noticeable but temporary. Construction traffic while visible will blend with existing traffic on the busy road network found in the local landscape with no significant effect. Pipeline work along roads is a common feature in this landscape and temporary and transient in nature and no significant cumulative landscape and visual effects are predicted. Pipeline works on agricultural lands will result in temporary disturbance but will all be reinstated. Overall, when the potential for cumulative landscape and visual impacts are considered there will be no significant cumulative effects for the Project and the GNI Gas Connection.

18.1.1.9 Traffic and Transportation

Overall, when potential construction and operational stage cumulative landscape and visual effects are considered for the Project in combination with permitted and planned projects they will not result in any significant cumulative landscape and visual effects due to a combination of separation distance, intervening development and the nature and setting of the proposals. Construction stage activities involve an increase in construction traffic for all cumulative projects. HGV traffic is frequent feature of this landscape, and the existing wider Dublin road network consists of very busy roads with low potential for significant cumulative visual impacts as a result. The operational stage activities as part of the Project are sufficiently separated from any permitted or planned projects in the area surrounding the Project to avoid potential cumulative effects while permitted or planned developments within the surrounding area or so similar in character that they are difficult to discern from the existing busy context

Many of these projects are associated with the commercial and industrial complexes located to the north and south of the Project site. It is not likely that the Project will result in any negative significant cumulative effects on cultural heritage in combination with these external plans/projects.

The GNI Infrastructure Upgrade Outline Report, identifying the specification and most likely route for the connection and a description of the works required to provide same, is included in Volume II, Appendix 1.2. The report provides sufficient detail and information to allow a robust cumulative impact assessment to be conducted.

In terms of the construction impacts of the proposed gas pipeline.

a. Works within the agricultural land will not result in any significant impacts upon traffic progression on the sounding road network. Access to the works on the agricultural lands will be taken from the public road network in the general location of where the pipeline will cross the public road. During the construction phase a Traffic Management Plan will be agreed with the Council's Roads Department.

b. Works within / along public roads are likely to result in a short term low impact upon existing traffic progression, prior to commencement of the construction phase Traffic Management Plans will be agreed with the Council's Roads Department to identify traffic management proposals including safety and signage requirements.

c. Construction period is likely to be 7-12 months, however, a considerable portion of the construction period will be working within existing agricultural lands, which will not result in any significant impact upon existing traffic progression.

18.1.1.10 Material Assets – Built Services

The GNI Infrastructure Upgrade Outline Report notes that the proposed works will likely include the construction of a new circa 300mm dia. high pressure gas pipeline which is likely to follow the existing pipeline route from the Glebe West AGI to the Naas Town AGI. From there it will most likely closely follow the existing low-pressure distribution network around the Southern Link Road to the junction with the R445 Newbridge Road, cross the Grand canal and follow the existing public foul sewer network wayleave across agricultural lands in a north-westerly direction towards the Project site.

A desktop review of the likely pipeline route was undertaken to assess potential impacts on existing built services along the route. This included a review of known public drainage and utility services via service provider online mapping systems. There are extensive drainage and utility services located along the most likely route of the pipeline. Normal best practice techniques for avoiding danger from underground and overhead services and extensive planning and survey works will be required to ensure the proposed pipe avoids clashing with local infrastructure and that adequate separation distances from adjacent and proximate services are maintained. The following key items of services infrastructure have been identified along the most likely route of the new pipeline:

- Running alongside existing 150mm dia. high-pressure gas pipeline from Glebe West AGI to Naas Town AGI.
- Crossing 1270mm dia. watermain in agricultural lands west of Glebe West
- Crossing beneath High Voltage Electrical services in agricultural lands west of glebe west
- Crossing 1600mm dia. watermain in agricultural lands west of Glebe West and south of Punchestown racecourse
- Crossing 450mm dia. watermain along L2023 West of Punchestown Racecourse
- Crossing 1200mm surface water sewer at Ballymore Eustace Road Roundabout
- Running adjacent to existing low pressure gas pipeline in verge of Naas Southern Ring Road from Ballymore Eustace Road Roundabout to Newbridge Road.
- Running adjacent to 600mm dia. foul sewer in verge of Naas Southern Ring Road from Ballymore Eustace Road Roundabout to Newbridge Road.
- Running adjacent to 900mm dia. foul sewer in through agricultural lands from Grand Canal to Caragh Road Roundabout

In conclusion, much of the likely pipeline route will follow existing gas pipelines and other services. It is considered that the new pipeline can be delivered along this route without the need to divert or relocate significant existing infrastructure.

There are no predicted negative significant cumulative effects on Material Assets - Built Services as a result of these associated projects.

18.1.1.11 Population

The GNI Infrastructure Upgrade Outline Report, identifying the specification and most likely route for the connection and a description of the works required to provide same, is included in Volume II, Appendix 1.2. The report provides sufficient detail and information to allow a robust cumulative impact assessment to be conducted.

The GNI Infrastructure Upgrade Outline Report indicates that the most likely route for the new high-pressure gas distribution pipeline will be from the location of the existing GNI above ground installations (AGIs) at Glebe West and Naas Town to the Project site following a combination of the existing road network and the route of existing utilities. The nature and extent of the required works indicate a likely construction programme of 7-12 months, during which there will be an increase in employment opportunities.

Once operational, there will no requirement for additional employment associated with the gas connection, therefore there will be no impacts associated with the gas connection. Due to the nature of the development, it is not anticipated that there will be any impacts on the social or demographic characteristics of the Population as a result.

18.1.1.12 Human Health

Cumulative health assessment extends the analysis of potential population health effects. This means a professional judgement is made as to the combined level of effect with other relevant projects and its implications for public health. Following IEMA 2022 guidance for human health, sensitivity of the relevant populations is unchanged from the main assessment in section 15.5, EIAR Chapter 15. Magnitude is however appraised in light of the combined effect of multiple projects.

As set out in IEMA 2022 guidance, a combined public health effect is most likely where a population is affected by multiple determinants of health and a large proportion of the same individuals within that population experience the combination of effects. Chapter 15 Human Health is informed by cumulative assessment conclusions set out in other chapters. The health assessment does not duplicate detail set out in those chapters. Of the chapters listed in section 15.1 and which inform the human health assessment, Chapter 7: Water and Hydrology; Chapter 12: Traffic and Transportation, Chapter 14: Population and Chapter 16: Climate Change provide an assessment of cumulative effects.

The conclusion are not repeated here rather in the subsection detailed with section 17.3 of this chapter.

18.1.1.13 Climate

As stated within the relevant guidance on assessing GHG emissions (IEMA, 2022), the consideration of cumulative effects for GHGs differs from that for many EIA topics where only projects within a geographically bounded study area would be included. This is because the atmospheric concentration of GHGs and their resulting effect on climate change is affected by all sources and sinks globally, not simply those in close proximity to the Project. All developments that emit GHGs have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a cumulative impact on climate change. Therefore, the effects of GHG emissions from specific cumulative projects should not be individually assessed, as there is no basis for selecting any particular cumulative project that has GHG emissions for assessment over any other.

Consequently, cumulative effects due to other specific local development projects are not individually predicted but are taken into account when considering the impact of the Project by defining the atmospheric mass of GHGs as a high sensitivity receptor, in line with relevant guidance.

However, in order for the Project to receive the gas required to power its generators, a high-pressure gas pipeline will be constructed. Emissions arising from the construction of the gas pipeline are likely to be minimal, given the relatively limited extent of the infrastructure proposed (i.e. carbon associated with the pipeline materials). By way of comparison to the emissions arising from the Project, which are extensive due to the scale of the proposed buildings, plant, and likely server capacity, emissions arising from the gas pipeline are likely to be negligible.

The provision of such a pipeline ensures the supply of gas to the Project, enabling operational emissions reductions through avoiding the use of grid electricity only to power the Project. The gas connection would also enable the Project to benefit from GNI's decarbonisation targets (through the increasing provision of biomethane, abated natural gas, and hydrogen), in turn resulting in the reduction of operational emissions resulting from the Project over its lifetime. Emissions avoided over the Project's lifetime as a result of this (when compared to a scenario where the Project would be powered by grid electricity) will likely outweigh those emissions resulting from the construction of the pipeline, resulting in a payback.

As such, it is likely that the installation of a new gas pipeline by GNI will result in a minor adverse effect during the construction phase, which is not significant.

Table 17.1: Inter-relationship Matrix – Potential Interaction between Environmental Disciplines

	Biodiversity	Land and Soils	Water and Hydrology	Air Quality	Noise and Vibration	Cultural Heritage	Landscape and Visual	Traffic and Transportation	Material Assets – Built Services	Population	Human Health	Climate Change
Biodiversity		X	X		X		X					
Land and Soils	X		X	X	X							
Water and Hydrology	X	X										
Air Quality		X						X		X	X	
Noise and Vibration	X	X					X	X		X	X	
Cultural Heritage							X					X
Landscape and Visual	X	X			X	X			X			X
Traffic and Transportation										X	X	
Material Assets – Built Services		X					X					
Population				X	X			X				X
Human Health				X	X			X				X
Climate Change	X										X	

19 SUMMARY OF MITIGATION

The design of the Project has been progressed taking account of identified environmental constraints and considerations, enabling avoidance or reduction of potential environmental impacts where practicable. Chapter 18 of the EIAR summarises the additional mitigation measures identified in the EIAR, which are considered necessary to avoid; reduce; or offset potential impacts.

The timing of mitigation varies and may be a design requirement, or implemented prior to construction, during construction and/or during operation of the proposed scheme. The stated mitigation measures have been identified through the EIA process, and whilst some of these are also necessary to achieve separate legislative compliance (e.g. protected species licences), they are included as they still encompass mitigation commitments of this EIAR.

19.1 Biodiversity

The Project is considered to have negligible potential to give rise to significant effects upon designated sites of conservation significance. As such no specific mitigation measures are proposed in respect of designated sites.

Mitigation measures set out below in respect of freshwater aquatic habitats will also act to prevent any effects upon downstream European sites which are nonetheless deemed to be below a *de minimis* threshold.

The Project will incorporate measures, as set out within the accompanying Landscape Statement and associated plans for the protection of retained habitats in addition to the delivery of proposed compensatory planting.

Proposed SuDS features, which will comprise a significant area of the Project site, will be subject to a range of wetland planting, including wet grasslands, marginals and aquatic species which are designed to provide a mosaic of habitats which are either temporarily or permanently wet and will provide significant floral diversity including a range of species of high value for pollinators.

Of the areas proposed for SuDS planting, including dry grassland swales and the margins of wetland ponds, a total of 2.6ha of species rich wet grasslands and wetland planting are proposed within the development. It is considered that this wet grassland planting will fully compensate for losses to areas of wet grassland and tall sedge swamps which will occur at construction phase of the Project as these existing habitats are relatively species poor. In addition, the proposals will also incorporate 1.38ha of biofiltration planting, comprised of a range of non-native species which nonetheless provide some opportunities for pollinators and other native invertebrates.

Proposed SuDS features themselves, which will support variable depths of open water, depending on weather conditions, will provide pond habitat which is not currently present on site and offer potential opportunities for a wide range of aquatic fauna including a wide range of invertebrates, in addition to associated benefits for foraging birds and bats. These features, which are likely to hold some water year-round will fully mitigate for any adverse effects associated with the loss of seasonally dry drainage ditches within the site and represent a significant ecological enhancement of the site post-development.

The Project will give rise to the loss of around 2.9km of hedgerows and treelines in addition to 0.22ha of orchard, comprised of a former kitchen garden, and 0.46ha of scrub largely dominated by bramble. In order to compensate for these losses, the Project is to incorporate large areas of woodland, scrub and hedgerow planting. In total 5.4ha of woodland planting is to be delivered within the scheme, described as native mixed structural screen planting and comprised of a range of native species including a proportion of standard trees. A further 0.9ha of native scrub/hedge mix is also proposed for areas where full height woodland is not appropriate, such as in proximity to overhead lines, and will be managed to a maximum of 3m in height. This planting is to be located around the margins of the site, to provide screening of the development from adjacent areas and also providing continuous habitat corridors linking SuDS features and other proposed landscape planting with semi-natural habitats off-site to the south-west.

In addition to woodland and scrub planting the proposals will incorporate 0.639km of native hedgerows planted throughout the site and managed to a maximum height of 3m.

It is considered that proposed woodland, scrub and hedgerow planting will fully mitigate for proposed losses to hedgerows, scrub and orchard habitats within the site over the long term. Some residual short term adverse

effects (minor adverse) are nonetheless predicted associated with the loss of mature hedgerows and treelines and the associated delay in the establishment of compensatory habitats.

The Project will also incorporate significant areas of species-rich grassland planting including 3.1ha of short-cut floral lawns, comprising a range of native species tolerant to regular mowing to a relatively short height, and 3.4ha of long wildflower meadows which are to be managed through an annual hay cut regime. These habitats will be inclusive of a range of native flora species of value for invertebrates and will, it is considered, fully mitigate for losses of semi-improved neutral agricultural grasslands and dry meadows/grassy verges habitat which will arise as a result of the Proposed Development. Furthermore, it is considered that these areas of species-rich meadow will represent a significant enhancement of the site over the current situation.

In addition to proposed native planting a proportion of the proposed buildings will incorporate a total of 0.9ha of green roofs which are to be planted with a non-native sedum blanket and subsequently managed to ensure this habitat is maintained. These areas will provide some opportunities for a range of pollinator species.

Subject to the implementation of this compensatory planting it is envisaged that adverse ecological impacts associated with the loss of various habitats on site required to facilitate the Proposed Development, will be largely mitigated. Furthermore, the scheme is predicted to deliver biodiversity net gain over the current situation through the provision of a range of species-rich habitats of value for pollinators in addition to wetland habitats, woodland and scrub.

Indirect effects associated with construction phase of the Project were limited to those associated with water quality and habitat deterioration effects arising to lowland river habitat (the Bluebell Stream) through sedimentation and pollution effects associated with nearby earthworks and other construction activities.

In order to mitigate these potential effects upon the freshwater environment a range of mitigation measures are to be implemented within the Proposed Development, and are set out within Chapter 7: Water and Hydrology of the EIAR and within the accompanying Construction and Environmental Management Plan (CEMP). Subject to the implementation of these construction phase mitigation measures it is considered that any potential significant adverse effects upon freshwater habitats within the Bluebell Stream, and any downstream watercourses, would be fully mitigated.

In addition to the above construction phase mitigation measures, the proposals will also incorporate a range of design measures to ensure that surface water run-off of the site is maintained consistent with the greenfield run-off rates including a range of SuDS features which will include petrol interceptors. Furthermore, proposals will incorporate the discharging of foul water to the existing Irish Water foul sewer for treatment at Osberstown WwTW. These features will ensure that any potential operational phase effects upon lowland river habitats (the Bluebell Stream) are fully mitigated.

While proposed mitigation measures will fully mitigate for impacts which are predicted to arise to habitats, some residual minor adverse and significant effects remain in relation to the loss of mature hedgerows and treelines within the site. While proposed compensatory planting will fully mitigate for such losses in the long term, residual short-term adverse effects are associated with the time required for establishment of compensatory planting following loss of mature hedgerow and treeline habitats.

Demolition of any building with a known bat roost must take place between March - mid- May or September - October inclusive, of any given year, to avoid the bat maternity and hibernation seasons and minimise the impact on bats. A NPWS bat roost derogation/roost exclusion licence will be obtained prior to the commencement of demolition of Structure 1.

Prior to the demolition of the confirmed bat roost, Structure 1 (S1), and the other structures on site which have roosting suitability (S2-S6), the licenced ecologist will thoroughly search for the presence of roosting bats using an endoscope and torch. If bats are found to be present during demolition, species rescue and translocation will be carried out using gloves, and the bat(s) carefully transported to a nearby artificial bat roost. If a bat(s) is found roosting where it cannot be safely removed by hand, or where there are features with potential to conceal a roosting bat which cannot be sufficiently searched to confidently confirm that roosting bats are absent from the cavity, a bespoke designed bat exclusion device will be fitted around the roost entrance. Details of such measures will be included in the NPWS bat roost derogation licence method statement, as required.

All trees which have been confirmed to have Moderate or High bat roosting suitability will either have a dawn re-entry survey carried out or be inspected using an endoscope by a licenced ecologist immediately prior to felling. If any bats are found and cannot be safely removed by hand, the same measures stated above for structures will be applied.

4no. bat roost box locations are proposed within the site. These will comprise pole-mounted bat boxes, with two individual bat boxes proposed per location. Poles will be set in concrete or alternatively driven to a depth of at least 1m. Boxes themselves will be manufactured by Greenwood Ecohabitats[2] or similar, and will be erected, two per pole and fastened to the pole with metal straps or banding at a height of 3.5m or higher. These boxes are intended to compensate for the loss of numerous trees with bat roost potential which were not recorded to support bat roosts and to provide additional roosting resources for the local bat population. Greenwood Eco-Habitat artificial bat roost boxes are constructed from Ecostyrocrete and have a high bat uptake rate.

In addition to proposed bat box locations the proposals will incorporate three bat house structures. It is proposed that one will be a blockwork structure with floor dimensions of three-by-three metres, with a pitched slate/slate tile roof with 1F felt underlay, bat-access slates and gaps in soffits and facia to facilitate access. The interior of this structure will include layers of spaced plywood or OSB between rafters to provide interior crevices ("squeeze boxes") which will ensure that the structure is suitable for a variety of bat species. A door into this structure will be provided to facilitate access for monitoring and maintenance, as required.

The remaining two bat house structures will utilise a timber design with floor dimensions of approximately 2.5 x 2.5m and significantly raised off the ground. Such structures will utilise interior "squeeze box" features in addition to appropriate access points, including for monitoring. Further details on the design of these structures will be provided in respect of the NPWS derogation license application for the scheme and/or in respect of any relevant planning conditions.

An ECoW will provide advice on the exact design and location of artificial bat roosts however the initially proposed locations are shown on the project Landscape Masterplan (BSM-ZZ-ZZ-DR-L-0301) which accompanies the EIAR submissions. Proposed artificial bat roost boxes and bat houses are to be located along the southern site boundary to utilise the connectivity of the bluebell stream to the River Liffey, in addition to providing close access to proposed mitigation planting and SUDs features for foraging.

The Lighting Strategy for the Project has been designed in accordance with the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (ILP 2011) and Bats and Artificial Lighting in the UK (ILP 2018).

Artificial lighting will only be installed where and when necessary, i.e. when it is needed for safety reasons or to comply with statutory guidelines. There will be no direct illumination of any artificial bat roosts. Lighting will be avoided in areas where existing trees are to be retained and in areas proposed for native woodland buffer planting. Lighting design will aim to use narrow spectrum lights with no UV content; directional downlights illuminating below the horizontal plane; bollard or low level downward directional luminaries; external security lighting should be set on motion-sensors and short (1 minute) timers; and use accessories such as baffles, shields, louvres or adjusting the angle of the lamp where necessary (ILP 2018).

Proposed bat box and house locations will be located within areas of the site which will not be subject to lighting levels greater than 0.1lux associated with the proposed development. Proposed mitigation planting will in the medium term, provide further attenuation of artificial lighting from off-site sources.

The Project will incorporate significant areas of compensatory planting including areas of woodland, scrub, species rich grassland, hedgerows and SUDs features which are likely to fully mitigate for the loss of foraging habitats currently supported on the site for bats. The site was not considered likely to act as a significant commuting route for local bat populations given its location between areas of existing development and the M7 road. Connectivity of the site and the wider area will be maintained through the proposed landscape planting regime.

It is considered that the provision of these measures will fully mitigate for the loss of roosts and potential roosts which will occur as a result of the proposed development. Furthermore these proposals will represent a significant enhancement of the site for roosting bats and will provide opportunities for maternity colonies and individual roosting bats which are not currently supported on the site.

The Project has potential to give rise to significant effects upon nesting bird's species which are likely to utilise habitats including scrub, orchard, scattered trees, hedgerows, amenity planting and buildings within the Application Site.

In order to avoid any significant impacts upon birds all site clearance, in addition to demolition of buildings, will take place during the period 1st September to 28th February which is outside the breeding season for those

[2] https://www.greenwoodsecohabitats.co.uk/shop

bird species that are likely to breed on the site. This will avoid any direct impacts of the Project on breeding birds.

Proposed mitigation planting and SUDs features within the scheme design are likely to provide significant opportunities for breeding birds during the operational phase of the proposed development.

19.2 Lands and Soil

The design of the pond structures and foundations will be such that the depths are of a minimum in relation to fluvial flood levels, thus maintaining the excavations required at a minimum also. This, in addition to a design that has tried to balance the cut and fill required for the development shall serve to reduce the volume of soils to be exported off-site and therefore reduce the quantity of imported materials. The Contractor shall seek to export waste arising from the Construction Phase to licensed facilities as close to the site as possible to minimise the carbon footprint associated with handling of the material.

The proposed works shall incorporate, as identified in the Construction Environmental Management Plan , the reduce, reuse and recycle approach in relation to the excavation of soil on site. All excavation arisings shall be, where possible, reused on site. Stockpiles have the potential to cause negative impacts on air and water quality, therefore, the effects of soil stripping and stockpiling shall be mitigated through the implementation of an appropriate earthworks handling protocol implemented by the Contractor during the Construction Phases. Stockpiles shall be formed within the boundary of the excavation zone and there shall be no direct link or pathway from this zone to any surface water body. Only local/low level of stockpiling shall occur as the bulk of the material to be excavated shall be paced directly into haulage vehicles for transport off site to an appropriately licensed facility or, where possible, will be reused in other areas of the site as fill. The Contractor shall implement dust suppression measures, vehicle wheel washes, road sweeping and general housekeeping to ensure that the surrounding environment is free of nuisance dirt and dust dirt on roads.

Where demolition and construction material, such as excavated material, cannot be reused on site it shall be transported for recovery/disposal at an appropriately licenced facility as outlined in the Construction Environmental Management Plan. Following the geo-environmental sampling and associated laboratory testing, the waste classification completed on the soils has found that all results indicate that the materials are free from asbestos and are classified as a non-hazardous soil waste suitable for disposal at an inert landfill facility. Additional Soil Classification shall be carried out as part of the Construction Phases and waste shall be delivered by the Contractor to licensed Waste facilities which are authorised under the Waste Management Act 1996, as amended, and which hold the appropriate certificate of registration, Waste facility permit or EPA licence.

The Contractor shall carry out the earthwork and excavation activities 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 silts. The Contractor shall exercise care to ensure that exposed soil surfaces are stable in order to minimise erosion and that all exposed soil surfaces shall be within the main excavation site thus limiting the potential for any offsite impacts. All surface water run-off shall be prevented from directly entering into any water courses whatsoever in accordance with the Construction Environmental Management Plan. During the excavation of the existing site for the pond structures and foundation excavations, surface water shall pond in the excavations. The Contractor shall implement pre-treatment and silt reduction measures on site and shall include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks) and hydrocarbon interceptors (as outlined in the Construction Environmental Management Plan). Qualitative and quantitative monitoring shall be implemented, with the client's Environmental Consultant auditing the Contractor's regular sampling and analysis results.

The Contractor shall source all imported fill and aggregate for the Project from reputable suppliers and shall ensure the following

- Aggregate Declarations of Performance for the classes of material specified,
- Environmental Management status and the Regulatory and Legal Compliance status of the proposed suppliers.

The Contractor may consider recycled or recovered materials as aggregates for the Project where appropriate.

The Contractor shall implement the following mitigation measures on site in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts:

- Dedicated bunded refuelling areas,

- Provision of spill kits for hazardous substances,
- Diesel/ petrol powered equipment to be placed on suitable drip trays.

The Project Construction Environmental Management Plan sets out the minimum requirements which will be adhered to during the construction phase of the Project to help ensure that construction activities are planned and managed in accordance with the environmental requirements identified within and the relevant guidance and legislation.

The Construction Environmental Management Plan will form part of the Contract Documents for the construction stage to ensure that the Contractor undertakes the works required to implement mitigation measures.

As noted above there is limited impact on the geological environment of the area expected during the operational phase of the development. The site has been designed to mitigate any soil contamination which may occur during the operational phase of the Project. This includes bunding of all chemical and fuel containers, the discharge of waste process water to the foul drainage network, the containment of firefighting water run-off in detention ponds and the provision of oil and fuel interceptors on drainage networks.

19.3 Water and Hydrology

Wastewater generated on-site particularly during the operational phase of the development will be piped and discharged to the existing Irish Water foul sewer which flows along the L2030 Newhall Road to the Newhall Wastewater Pumping Station located (west of the site), and is ultimately pumped to Osberstown WWTP (north of the site). Irish water has provided agreement in principle for the connection of the development associated with the development to their assets and have confirmed that the connection is feasible without the need to upgrade Irish Water infrastructure. The Project will include a private rising mains from the site to the existing 300mm wastewater gravity network along Newbridge Road. Provided the sewer network is installed using industry standard best practice, including the installation of the sewer under the Bluebell Stream by trenchless techniques, and routinely checked there is likely to be no impact from wastewater from the development and therefore no further mitigation required. Drainage pipelines will be inspected by CCTV at completion of the construction project and any damage will be repaired.

There is no existing surface water infrastructure on the site, drainage runoff is collected via overland flows to agricultural ditches connected to Bluebell Stream. Consultation has taken place with Inland Fisheries Ireland (IFI) and the IFI document “Planning for Watercourses in the Urban Environment” has been incorporated into the design. The development has incorporated a variety of Sustainable Drainage Systems (SuDS) techniques to counteract the potential increased runoff as a result of increased hardstanding. It is proposed to collect all surface water as far as practically possible at surface level with ponds and swales. Surface water will therefore be utilised at peak times, as well as hydrant and sprinkle back supply. The excess water will be discharged back into Bluebell Stream. While all storm water collected on site will be discharged into the current water course following treatment via SuDS measures which include permeable surfaces, grass lined swales, bioretention ponds and oil interceptors at critical locations within the drainage network, e.g. on the surface water drainage form the GIS substation. The SuDS processes decrease the impact of the development on the receiving environment by providing amenity and biodiversity in many cases.

Adequately specified oil interceptors will be incorporated into the proposed drainage network for the substation, parking areas and access roads.

Mitigation measures will be implemented by the contractors who will construct the development in accordance with the requirements listed within the Construction Environmental Management Plan which will be submitted as part of the planning applications for the development. Furthermore, once appointed, the contractors will submit a detailed Construction Management Plan based on the requirements of these submitted planning documents for approval by the Planning Authority. The mitigation measures implemented by the contractor will refer to the construction management procedures for best practice regarding the following recognised international guidelines:

- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA, 2001);
- Control of Water Pollution from construction sites, Guidance for consultants and contractors (C532);
- Environmental Good Practice on Site (3rd edition) (C692); and
- Guidelines on Protection of Fisheries During Construction Works and Adjacent to Waters (2016).

Preventing run-off is an effective method of preventing sediment pollution in the water environment. Therefore, adoption of appropriate erosion and sediment controls to manage run-off during construction is essential to prevent sediment pollution.

Mitigation measures to address the potential impact from suspended solids will be carried out in accordance with a site specific CEMP. The measures will be employed prior to the commencement and during construction and will include such measures as:

- Drainage and measures to control run-off will be employed to manage sediments prior to any works to be undertaken at the site, i.e., arrangements for the treatment of dirty groundwater ingress from any excavations will be in place in advance of the dewatering to ensure it can be adequately managed on site;
- If possible, earthworks operations should be limited to the summer months.
- The site shall be surveyed to identify all existing drainage features and waterbodies.
- It is proposed that this work on the culverts to facilitate the secondary access through the M7 Business Park will be undertaken in dry conditions and will utilising an open-cut methodology with temporary damming and fluming of the relevant lengths of watercourse.
- Works within the channel of a watercourse with sensitive fish present (i.e. salmon, lamprey, trout and eels) requires appropriate timing of the works. Therefore, IFI's document entitled 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016) will be consulted for additional information on timing of works. In salmonid rivers such as the Liffey_100, downstream of the Project, the guidelines require that all in-stream works should be carried out during the period July to September; any requirement for works to be conducted earlier will seek approval from IFI.
- In order to ensure that the biological elements of the ecological status are not impacted the risk of the potential loss or crushing of sensitive fish in the vicinity of the culvert crossings should be mitigated before in-channel works commence by their capture and translocation distantly away from the works area. Authorisation via Section 14 of the Fisheries Act will be required from IFI and should be conducted using a competent fisheries expert, with the application made at least 12 weeks prior to works commencement.
- A minimum Buffer of 10 metres is proposed from the proposed works to the Bluebell Stream to protect the aquatic environment.
- Silt fencing will be installed at strategic locations around the perimeter of the site. The indicative location of the silt fencing has been determined in the Construction Phase Surface Water Management Plan within the in the construction stage CEMP and will be subject to confirmation for phase to be developed. The purpose of the silt fencing is to prevent silt laden water leaving the site and entering neighbouring land with the potential to impact nearby watercourses.
- Filter drains be cut to intercept surface water where there is a risk of significant water flow into excavations or on to adjoining lands. There will also be a requirement to periodically pump water from excavations. All collected and pumped water will have to be treated prior to discharge. The run-off will be directed through appropriately sized propriety settlement tanks, with a proprietary silt bag to intercept bulk silt volumes, to remove suspended solids. Details are provided in the Surface Water Management Plan included in the construction phase CEMP.
- The use of filter drains and temporary settlement ponds shall further treat any potential contaminated/ polluted runoff prior to discharge to a Silt Bag arrangement which will provide maximum treatment of surface water runoff entering the Bluebell stream.
- During the construction phase of the development, all silt/ pollution removal strategy structures shall be constructed/ installed outside the extent of the riparian buffer which has been determined as 10m from the Bluebell Stream bank
- Retention and utilisation of subsoil and topsoil for the creation of landscape mounding, up to 6.5m high, to the site boundary with the M7 and for reinstatement of disturbed landscape areas
- Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident;

- Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same;
- The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained;
- Any temporary storage of soil, hardcore, crushed concrete or similar material will be stored as far as possible from any surface water drains. There can be no direct pumping of silty water from the works directly to any watercourse. All water from excavations must be treated by infiltration over land or via settlement areas, silt busters etc;
- 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 material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust;
    - Any hard surface site 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;
    - A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate;
    - Road sweepers will be employed to clean the site access route as required.

The incorporation of these mitigation measures during the construction phase means the potential impact to receiving water environment will be reduced to negligible thus reducing the significance of the environmental effect to imperceptible, based on the very high sensitivity of the receiving environment.

The impacts in relation to cement and concrete for the development are, for the most part (but not limited to) the installation of the concrete areas (to be poured in-situ) and construction works of buildings. The principal risks are:

The use of concrete in close proximity to water bodies requires a great deal of care. Fresh concrete and cement are very alkaline and corrosive and can cause serious pollution in water bodies. It is essential to ensure that the use of wet concrete and cement in or close to any water course is carefully controlled so as to minimise the risk of any material entering the water, particularly from shuttered structures or the washing of equipment. The following measures will be undertaken to mitigate against possible pollution:

- A concrete washdown area will be provided on site for trucks to use after delivery of concrete or on return to the batching plant. This area will be adequately bunded to mitigate the risk of contaminated runoff discharge to the Liffey_100 water body. Concrete trucks are to be washed down within the concrete truck washdown area after delivery of concrete, prior to exiting the site. Washdown runoff will be appropriately treated prior to discharge;
- Wash-out areas on site will be properly designed with an impermeable line to contain all cement laden water. No wash-out of ready-mix concrete vehicles shall be located within 10 metres of any temporary or permanent drainage features. Signage shall be erected to clearly identify the wash-out areas. Sufficient wash-out areas shall be provided to cater for all vehicles at peak delivery times;
- The installation of the box and pipe culverts, including the concrete required for the binding will be undertaken in dry conditions through the damming and fluming of the minor water course, to prevent wet concrete from entering the aquatic environment.

In circumstances where the mitigation measures are employed during construction operations, the potential impact to receiving water environment will be reduced to negligible thus reducing the significance of environmental effect to imperceptible.

The risk of water quality impacts associated with works machinery, infrastructure and on-land operations (for example leakages/spillages of fuels, oils, other chemicals and waste water) will be controlled through good site management and the adherence to codes and practices which limit the risk to within acceptable levels. The following measures will be implemented during construction:

- A works specific Construction Environmental Management Plan has been prepared as part of the planning submission and will be developed and implemented by the contractor and will include detail in respect of every aspect of the works in order to minimise potential impacts and maximise potential benefits associated with the works;

- Management and auditing procedures, including tool box talks to personnel, will be put in place to ensure that any works which have the potential to impact on the aquatic environment are being carried out in accordance with the contactors environmental controls, which will be consistent with an approved CEMP and any planning conditions;
- Existing and proposed surface water drainage and discharge points will be mapped on the Drainage layout. These will be noted on construction site plans and protected accordingly to ensure water bodies are not impacted from sediment and other pollutants using measures to intercept the pathway for such pollutants;
- Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the Project. The offices and site amenities will initially need to have their own foul water collection until connections are made to the mains networks.

The use of oils and chemicals on-site requires significant care and attention. The following procedures will be followed to reduce the potential risk from oils and chemicals:

- New metal gerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site. Metal gerry cans and any other items of fuel containers will be stored in certified metal bunded cabinets.
- Drip trays will be used under items of small plant at all times. Any waste oils etc. contained in the drip trays or the bunded area will be emptied into a waste oil drum, which will be stored within the bund.
- Any gas bottles will be stored in a caged area at a secure location on the site. All will be properly secured at point of work.
- No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks may be kept in the material storage area in suitable containers and will be stored on appropriately bunded spill pallets as required. Any fuel and oil stored onsite shall be stored on bunded spill pallets approved under BS EN 1992-3:2006). All bunds will be impermeable and capable of retaining a volume of equal to or greater than 1.1 times (>10%) capacity of the containers stored on them. In the event of a filling spillage excess oil or fuel will be collected in the bund;
- Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will be undertaken offsite where possible. Where this is not possible, filling and maintenance will take place in a designated material storage compound, which is located at least 10 metres from any temporary or permanent drainage features. Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release. Training will be given to appropriate site workers in how to manage a spill event. A certified double skinned metal fuel tank will be situated in this secure bunded area on the construction site if applicable. This tank will be certified for lifting when full.
- Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release during refuelling. Training will be given to appropriate site workers in how to manage a spill event. A hazardous bin will also be available to contain any spent sand or soak pads.
- Contingency Planning: A project specific Pollution Incident Response Plan will be prepared by the contractor and will refer to PPG 21 Pollution Incident Response Planning. The contractor's Environmental Manager will be notified in a timely manner of all incidents where there has been a breach in agreed environmental management procedures. Suitable training will be provided by the contractor to relevant personnel detailed within the Pollution Incident Response Plan to ensure that appropriate and timely actions is taken.

The following mitigation measures will be taken at the construction site in order to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- Refuelling will be undertaken off site where possible;
- Where mobile fuel bowsers are used the following measures will be taken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - All bowsers to carry a spill kit and operatives must have spill response training; and

- Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

Provided these mitigation measures are employed during construction operations, the potential impact to receiving water environment will be reduced to negligible thus reducing the significance of environmental effect will be reduced to imperceptible.

The risk to water quality impacts associated with demolition works during the construction phase will be controlled through good site management conforming to health and safety, while adhering to codes and practices which limit the risk of demolition related contamination. PPG 6: Working at construction and demolition sites, shall be adhered to particularly in relation to safe and secure on site storage and minimising storage time, wheel washing, placing of concrete and dealing with silty water for the construction and demolition industry (Environmental Agency, 2012).

A Method Statement for the demolition of the building shall be prepared showing the sequence of demolition and the method of demolition to be employed. A health and safety plan showing all the measures for the protection of the public including hoardings shall also be prepared.

In circumstances where the above mitigation measures are employed during the construction phase operations, the potential magnitude of the impact on the receiving waters will be reduced to negligible thus reducing the significance of the environmental effect to imperceptible during demolition works.

Foul wastewater generated on-site particularly during the operational phase of the development will be piped and discharged to the existing Irish Water foul sewer. Agreement in principal to discharge to the existing foul network and Osberstown WWTP will be secured with Irish Water and will ensure the wastewater discharge authorisation for the existing agglomeration will not be adversely affected.

Furthermore, each data centre building is serviced by its own local foul drainage network which conveys flows to one of two onsite pumping stations, located west and east of the site. Each pumping station will have sufficient capacity to accommodate wastewater generated by a sprinkler discharge event by a data centre (max 440m^3). This is sufficient to accommodate 24 hour storage for domestic and process wastewater generation.

Both the surface water and foul system are to be entirely separate developments.

Where the mitigation measures listed above are employed, the potential impact to receiving water environment will be reduced to negligible thus reducing the significance of environmental effect will be reduced to Imperceptible.

The development has incorporated a variety of Sustainable Drainage Systems (SuDS) techniques to counteract the potential increased need for supply. SuDS, supplemented by bypass separators on the piped storm water network, will include green roofs, permeable paving, rain gardens, attenuation tanks, bioretention pods, as well as, grassed and open space landscape portions of the site.

To reduce the water demand on the Local Authority water supplies and to reduce the requirement of the facility to use mains connection, water conservation measures will be incorporated throughout the development. Surface waters will be collected as far as practically possible at surface level via ponds and swales, to be used for peak hours and hydrant and sprinkler back up supply. Rainwater will be collected for use in the cooling operations of the plant to decrease reliance on public supply.

During the operational phase, there is potential for storm water run-off to be impacted by pollutants arising within the car parking areas and roadways. This runoff has the potential to provide pathways for a wide range of contaminants arising from general operations to the aquatic environment. The main potential pollutants from surface water drainage or direct run-off are sediment, hydrocarbons, and trace contaminants including metals and organics.

The attenuation tanks and pervious pavements have proposed dual purpose and whilst they are flow attenuation features they also mitigate against potential water quality issues associated with storm water run-off.

All surface water run-off from roof areas and hardstanding areas are designed to be collected by a gravity pipe network. The collected stormwater will be diverted through a petrol interceptor prior to an underground attenuation storage tank.

Provided the best-practice techniques illustrated in CIRIA's guidance document (C768 – Guidance on the Construction of SuDS) are followed, no further mitigation is required. Where the measures listed above are employed, the potential impact to receiving water environment will be reduced to negligible thus reducing the significance of environmental effect will be reduced to imperceptible.

In terms of the culvert installation the condition of the Bluebell Stream the existing stream bed shall be excavated to the design formation levels as set by the engineer. If suitable, all existing bed material will be stockpiled on site for re-use along the culverted stream channel. Where the measures listed above are employed, the potential impact to receiving water environment will be reduced to negligible thus reducing the significance of environmental effect will be reduced to imperceptible.

19.4 Air Quality

Mitigation measures are divided into general measures applicable to the entire and measures applicable specifically to the defined construction activities (i.e. demolition, earthworks, construction and track-out). As the risk of dust impact on receptors from soiling has been identified to range from medium to high during the demolition stage specifically, the highest risk category should be applied when considering general mitigation measures (IAQM, 2023).

A Dust Management Plan (DMP) will be prepared by the appointed contractor for the Site and submitted to the Council for written agreement prior to commencement of construction. The DMP will at a minimum include the following mitigation measures listed below to minimise and manage potential dust emissions:

With respect to communications, the following will be implemented:

- Develop and implement a stakeholder communications plan that includes community engagement;
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the Site Manager;
- Appropriate training will be provided to all staff to ensure that they are aware of and understand the dust control and other environmental control measures; and,
- Display the head or regional office contact information.

To be implemented before works commence on site and training given as appropriate by the appointed contractor.

With respect to site management, the following will be implemented:

- Daily visual inspections of the site and site boundary for evidence of dust depositions will be made. A dust inspection of the site will be undertaken by a suitable person, trained and nominated by the site manager. Increase frequency of site inspections will be undertaken when activities with a high potential to produce dust are being carried out, such as earthworks activities, power tool use and during prolonged windy or dry condition;
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints record available to the relevant regulatory authorities when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on or offsite, and the action taken to resolve the situation in an environmental log book;
- Avoid site runoff of water or mud;
- Use covered skips;
- No bonfires and burning of waste materials on site;
- It is recommended that passive monitoring at three - site boundary locations shall be completed for the duration earthworks (Bergerhoff method);
- Keep surfaces such as Site fencing and barriers clean using wet methods.

To be implemented during works as required by the appointed contractor.

Earthworks are planned as part of the Project including foundations (and associated excavation of soils and materials), creation of stockpiling and cut and fill areas. With respect to earthworks, the following will be implemented:

- Disturbance of the ground will be kept to a minimum wherever possible;

- Soil handling should be restricted during adverse weather conditions such as high winds or exceptionally dry spells – depending on outcome of walk over survey identifying any potential issues ;
- Minimise drop heights from loading or handling equipment/materials and use fine water sprays on such equipment wherever appropriate;
- Dampening methods will be used where necessary; and,
- Methods and equipment will be in place for immediate clean-up of spillages of dusty or potentially dusty materials.

To be implemented during earthworks by the appointed contractor.

With respect to construction, the following will be implemented:

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed;
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust;
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems; and,
- Cleaning of hard stand areas by personnel only or if required mechanical road sweepers (with water suppressant fitted) to clean any site hard stand area.

To be implemented during construction period by the appointed contractor.

As with any construction site, there are associated vehicle movement, emissions and plant use. With respect to vehicle movement and vehicle emissions, the following will be implemented:

- Implement a wheel washing system until earthworks are completed. Wheel wash system should have an adequate amount of hard surface between it and the Site exit;
- Transportation of dusty/fine materials will be conducted in enclosed or sheeted vehicles;
- An onsite speed limit (to be displayed) will be implemented by the main contractor that will be appropriate to the types of construction plant utilised;
- Regular cleaning and maintenance of site roads as appropriate. Hard surface roads should be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only;
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary;
- Ensure all vehicles switch off engines when stationary and not in immediate use - no idling vehicles (emissions to air controlled);
- All plant utilised should be regularly inspected (emissions to air controlled);
- Visual monitoring of plant will include: Ensuring no black smoke is emitted other than during ignition (emissions to air controlled);
- Ensuring exhaust emissions are maintained to comply with the appropriate manufacturers limits (emissions to air controlled); and,
- Vehicle exhausts will be directed away from the ground and other surfaces and preferably upwards to avoid road dust being re-suspended to the air.
- Avoid the use of diesel or petrol powered generators where possible, using mains electricity or battery powered items where practicable;
- Impose and signpost a speed limit of 20 km/hr on sealed surfaces and 15 km/hr on unsealed surfaces.

To be implemented throughout by the appointed contractor.

The proposed facility incorporates the following good design and best practice measures, which have been accounted for in the assessment as far as is possible:

- Reuse/recycling of material on-site where possible reducing emissions related to production of virgin materials;
- Solar photovoltaic (PV) arrays are located on the roof top of each of the six DC buildings. The solar PV arrays will provide a minimum 500kW peak per building provided as part of 30% renewable energy target for operational energy target;
- LED lighting, which is proven to use 75% less energy when compared to traditional incandescent bulbs will contribute to further reduce already minimal indirect emissions due to electricity use; and,
- Planting of trees contribute to carbon sequestration and improved air quality.

19.5 Noise and Vibration

Worst case construction noise predictions can be reduced through use of appropriate mitigations as detailed below in Section Construction Mitigation. The target for mitigation measures is a reduction in daytime construction noise to achieve the daytime Category A threshold limit (i.e. 65dBA).

BS 5228-1 states that:

> "…*if the site noise level exceeds the appropriate category value, then a potential significant effect is indicated. The assessor then needs to consider other project specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect*."

These factors have therefore been considered to determine the effect significance.

As a summary of proposed construction works:

1. Construction works will be temporary and limited in duration;
2. Construction plant and machinery have been assessed as operating for the full working period of the day, i.e. 100% duty cycle. Due to natural pauses in activity and rest breaks equipment will not be fully operational during the working day; and
3. Construction works are not proposed to occur during night-time or on Sundays, unless for emergency works. Therefore, there will be no associated construction noise impact during these times at construction noise receptors.
4. Temporary construction noise barriers will be used to achieve attenuation of noise levels between ground based construction plant and the nearest noise-sensitive properties.

Construction mitigation measures will be put in place to ensure construction noise levels are attenuated and reduced where necessary.

Best practice measures will be employed to ensure that construction phase noise levels are reduced to the lowest possible levels.

BS5228:2009+A1:2014 – Noise and vibration control on construction and open sites outlines a range of measures that can be used to reduce the impact of construction phase noise on the nearest noise sensitive receptors. These measures will be applied by the contractor where appropriate during the construction phase of the Proposed Scheme. Construction best practice measures which will be implemented included below:

1. Ensuring that mechanical plant and equipment used for the purpose of the works are fitted with effective exhaust silencers and are maintained in good working order;
2. Careful selection of quiet plant and machinery to undertake the required work where available;
3. Machines in intermittent use will be shut down in the intervening periods between work;
4. Ancillary plant such as generators, compressors and pumps will be placed behind existing physical barriers, and the direction of noise emissions from plant including exhausts or engines will be placed away from sensitive locations, in order to cause minimum noise disturbance. Where possible, in potentially sensitive areas, temporary construction barriers or enclosures will be utilised around noisy plant and equipment;

5. Handling of all materials will take place in a manner which minimises noise emissions; and
6. Audible warning systems will be switched to the minimum setting required by the Health & Safety Executive.

The use of the proposed construction noise mitigation measures will ensure that construction noise levels are controlled to the lowest levels practicable.

Construction traffic noise will be controlled through management of parking, loading and traffic arrangements. These will be managed by the contractor to reduce traffic volumes and in and around the site prevent congestion.

Particular attention should be paid to piling noise when piling strategy is developed, in terms of location, scheduling and pile type. It is understood that rotary bored piling will be employed. Although this piling technique tends to generate lower levels of vibration than pile driving, transient vibrations can also occur when the auger strikes the base of the borehole. If it is necessary to insert an appreciable length of temporary casing to support the boring, a casing dolly can be used and, as with the impact bored piling method, this will give rise to intermittent vibrations. The use of special tools, such as chisels, will also result in intermittent vibrations.

Occupants of residential properties should be advised of likely piling and demolition schedules; awareness of when and where these works will be taking place can help residents and businesses to prepare for potential impacts.

Further details of all environmental mitigation measures are included in the Construction Environmental Management Plan (CEMP), which accompanies the planning application(s) for the Project.

Once further details of construction methodology and schedule are finalised, a specific Noise Management Plan will be produced and implemented by the final appointed contractor of the project The CEMP and subsequent noise management plan will set out the mitigation measures that will be employed to reduce the noise and vibration impacts of the development during the construction phase.

Mitigation measures have been considered and implemented in the design and engineering of the Project, including factors such as selection of plant and equipment, noise control at source, selection of construction materials, orientation of buildings and site layout.

Operational conditions have been carefully considered to ensure that operational requirements are fulfilled in terms of power generation and cooling, whilst minimising noise impact. This is particularly important for the night-time period. There will be controlled use of gas turbines/gas engines during the night, with the number of gas turbines or engines online minimised where possible. The number of gas turbines or engines online should not exceed the ‘worst-case’ scenarios for daytime and night-time which have been assessed in this chapter. Routine maintenance works, such as testing and servicing will be limited to daytime periods where there is potential for increased noise outputs.

19.6 Cultural Heritage

The fulacht fia (KD019-028----) located within the Project area will be preserved *in situ* as an undeveloped greenspace. The project design has been altered to avoid a direct impact on this feature whose extent has been identified from the geophysical survey. A minimum 5m buffer from the outer edge of the archaeological site will be established prior to any construction works commencing within the site.

The c.5m buffer around fulacht fia (KD019-028----) will be fenced-off prior to the commencement of construction in order to protect the site during the course of works. This fence shall remain in place until all development works have been completed. The fencing will be erected under archaeological supervision and no construction related activities, such as machine movements, dumping of spoil or storage of materials will occur within the fenced-off area.

Archaeological investigations have identified the existence of several previously unrecorded features of potential archaeological origin within the development area. With the exception of the recorded monument (fulacht fia KD019-028----) preservation *in situ* of the identified features of archaeological potential is not a viable option within the Project site. Therefore, they will be preserved by record through a programme of archaeological excavation and recording under licence from the National Monuments Service (NMS) in the Department of Housing, Local Government and Heritage.

The archaeological excavations will involve the stripping of topsoil from appropriate areas around the identified archaeological features within the development site and this will be carried out under the constant supervision of a suitably qualified archaeologist. The stripped area will include at least 10m of clearance from the edge of the archaeological feature to the edge of the excavation. The supervised topsoil stripping will be undertaken using a mechanical excavator fitted with a toothless bucket which will remove the topsoil down to the uppermost archaeological layer or the surface of natural subsoil in areas where no archaeological material is present. A systematic programme of manual archaeological excavation of all revealed features of archaeological potential will then be carried out in accordance with the method statement submitted to the NMS as part of the licence application process. This will include the manual excavation of all identified archaeological features, the compilation of written, drawn and photographic records, the retrieval of archaeological objects and a programme of environmental sampling.

The archaeological excavations will be undertaken in advance of the main construction works in the relevant areas in order to allocate adequate time to appropriately excavate and record the archaeological deposits/features.

Following the completion of excavations, a post-excavation phase of works, involving analysis, reporting and dissemination to the relevant authorities will be undertaken off site. The level of the post-excavation analysis and reporting will be commensurate with the level of archaeology excavated on site.

There are a number of obligatory processes to be undertaken as part of applications to the National Monuments Service for licences to carry out archaeological excavations and these will allow for monitoring of the successful implementation of mitigation measures. A detailed method statement stating the proposed strategy for the pre-construction archaeological excavations will accompany the submitted licence application which will clearly detail the extent of the archaeological works and outline the processes to be enacted to excavate and record all identified archaeological materials. A preliminary report on the archaeological excavations will then be submitted to the National Monuments Service, the National Museum of Ireland and the Planning Authority which will clearly describe the results of all archaeological works in written, mapped and photographic formats. Following the completion of all required post-excavation analyses, including environmental, artefact studies and dating, a final report on the excavations will be submitted to the above bodies.

It is also proposed to carry out a photographic survey of the vernacular buildings located at the centre of the site prior to their demolition to allow for their preservation by record.

A photographic survey of the portions of townland boundary to be removed should be undertaken prior to their removal and other groundworks on site. Sections through the townland boundaries should be archaeologically recorded during the archaeological excavations outlined above.

19.7 Landscape and Visual

The clearance of the existing site and subsequent construction works will be restricted to land within the site boundary. A site compound, including site accommodation, together with hoarding, scaffolding, cranes, and other associated temporary works will be required during the construction phase. These features will be visible during the construction phase from areas immediately adjacent to the Project site. Cranes and scaffolding may be visible at a greater distance, though this will be dependent upon view direction and intervening built form. These temporary features will be viewed as a feature of construction in the urban setting. All construction impacts are limited to the construction period and therefore of temporary duration.

The Landscape Masterplan for the proposed Project design incorporates the following key principles:

- Retention, protection and enhancement of the boundary hedgerows and tree lines
- Development of new areas of open space, for amenity use as well as for biodiversity
- Increase and enhance biodiversity
- Creation of quality landscaped network and boundary settings for the development
- Provision of exercise opportunities for staff wellbeing at the site
- Good quality, low maintenance hard and soft landscape measures throughout the site
- Integrated sustainable water management.

- Green roof proposals.

Only those trees which require removal to facilitate the development will be replaced. All other trees which can be maintained within the scheme shall be retained and protected from damage in accordance with BS 5837:2012 (Trees in relation to design, demolition, and construction).

It is important that a landscape management plan is prepared to ensure the healthy establishment of all trees within the Project and the replacement of any dead or dying plants in subsequent years.

19.8 Traffic and Transportation

There is no proposed mitigation upon the surrounding highway network as part of this proposal. The Project is served by existing motorways and regional roads which can accommodate the predicted levels of traffic during the construction and operational phases.

19.9 Material Assets

Groundwater or run-off that collects in excavations or foundation trenches will be drained or pumped to a construction site water treatment arrangement. The water is to be directed into a proprietary settlement tank, with a proprietary 'silt bag' to intercept bulk silt volumes. This process entails sediment-laden water being pumped into a filter bag, which traps the solids inside and allows the filtered water to flow freely out through the Geotextile fabric to disperse into the collection point. The proposed collection point shall be a series of silt trap fences and filter drain arrangements, adjacent to constructed pond which will act as temporary settling ponds during the construction The water and silt within the pond are to be emptied into water vacuum tanker and is to be disposed of off-site toa licenced facility.

Due to the sloping nature of the existing topography, there is a risk of silt/ sediment accumulating/ discharging towards the Bluebell stream. To mitigate against unwanted silt discharge, Silt traps in the form of silt fences or hay bale structures will be adopted across lengths of the site to intercept runoff and provide a stage of treatment and runoff filtration.

Runoff filtered through the silt trap fence shall be then intercepted by a temporary filter drain which will run directly parallel to the downstream side of the silt trap fence. The collected, filtered runoff shall discharge to the constructed ponds which shall act as temporary settlement structures during the construction phase. The use of filter drains and temporary settlement ponds shall further treat any potential contaminated/ polluted runoff prior to discharge to a Silt Bag arrangement which will provide maximum treatment of surface water runoff entering the Bluebell stream.

During the construction phase of the development, all silt/ pollution removal strategy structures shall be constructed/ installed outside the extent of the riparian buffer which has been determined as 10m from the Bluebell Stream bank.

During construction, all new sewers shall be pressure tested and CCTV surveyed in accordance with the Uisce Éireann Standards to identify potential defects and such defects should they arise, shall be repaired prior to the connection

During construction, the watermains shall be tested in accordance with the requirements of Irish Water prior to connection.

During construction, the gas mains shall be tested in accordance with the requirements of GNI prior to connection. The turbines will also be tested in accordance with the manufacturer's specifications.

During construction as part of the final testing and commissioning, the overhead lines and underground cables will all be tested in accordance with the requirements of ESB and Eirgrid's standard procedures.

During construction, the ductwork for the fibre network will be CCTV surveyed to ensure no breakages has occurred during installation.

Surface water runoff from the Project will be managed in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS), with surface water attenuation and retention included as part of the main surface water drainage system. The surface water management proposals shall serve to significantly reduce the overall impact of the Project on the existing environment and shall reduce the risk of flooding in the

receiving public surface water network. The proposed SuDs strategy shall also provide cleansing of all surface water prior to the discharge to the Bluebell Stream, increasing the sustainability of the design.

The proposed development's management company shall carry out operational inspection and maintenance regimes to carry out to ensure the system keeps operating within the design specifications.

The Project's management company shall carry out operational inspection and maintenance regimes to carry out to ensure the system keeps operating within the design specifications.

GNI shall carry out operational inspection and maintenance regimes to carry out to ensure the system keeps operating within the design specifications.

The substation will be managed, operated and maintained by ESB who will carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications .

The Project's management company shall carry out operational inspection and maintenance regimes to carry out to ensure the system keeps operating within the design specifications.

19.10 Population

The Project will generate more than 100 no. jobs. The provision of c. 225 no. jobs over a c.37ha site in proximity to other low density employment generators is not considered to be a "large scale employment centre". It is therefore considered that there is no requirement to provide a childcare facility at this location. The surrounding area is well served by childcare facilities, pre-schools and schools there are a large number of childcare facilities in the immediate surrounds. No further mitigation measures are proposed.

19.11 Human Health

During the operation and maintenance phase new routes to include access that supports people of all ages, including those with mobility and/or sensory needs. This includes: suitable width and surface to new routes for children's buggies, mobility aids and wheelchairs; appropriate route access points (including to parking); signs in formats that respond to visual impairments; connecting to existing routes and trail networks, including appropriate road crossings. This measure would be secured by a Mobility Management Plan.

During construction and decommissioning advertise lane closures in advance so road users are forewarned and can manage commute to work effectively. Ensure that early and ongoing sharing with emergency and healthcare services with regard to any temporary road closures, diversions or lane closures. This measure would be secured by a Construction Travel Management Plan.

Ensure suitable pedestrian access is maintained for diversions of any temporary route closures and provide appropriate wayfinding information for temporary diversions during construction and decommissioning, such as being advertised online and signposting, including approximate journey times on the routes. Wayfinding for circular walks or to destinations should be clearly signposted. This measure would be secured by a Construction Travel Management Plan.

As far as reasonably practicable (e.g. subject to standards and security checks) provide a targeted scheme of access to operation and maintenance training schemes and apprenticeships for young people in the local and regional area for people who are Not in Education, Employment, or Training (NEET). This would be secured through a workforce management plan.

Monitoring of the proportion of NEETs taking up, and completing, training opportunities with the Project in order to confirm the expected benefit and further tailor the targeting of local vulnerable groups.

Based on the efficacy of such strategies there is the potential for a moderate beneficial (significant) population health residual effect for education and training. This reflects the potential to achieve long-term benefits from a targeted training intervention at a critical stage in the life course of this group.

As far as reasonably practicable (e.g. subject to standards and security checks) provide a targeted scheme of access to operation and maintenance employment opportunities in the local and regional area for people who are Not in Education, Employment, or Training (NEET). This would be secured through a workforce management plan.

Monitoring of the proportion of local people with long-term unemployment, high job instability or low income who enter good quality stable employment with the Project in order to confirm the expected benefit and further tailor the targeting of local vulnerable groups. This would be secured through a workforce management plan.

If a high proportion of good quality operation and maintenance employment opportunities were targeted to vulnerable groups, notably people who are unemployed, on low incomes, or who have high job instability, including young adults early in their careers, then there is the potential locally for a moderate beneficial (significant) population health residual effect. This reflects the potential to achieve long-term benefits though avoiding adverse physical and mental health effects (including to dependants) associated with long-term unemployment, high job instability or low income.

Continued community consultation and sharing of non-technical information relating to the project (e.g. explaining compliance with public exposure guidelines, actual risks associated with the project), to allow people to express concerns and gain awareness of actual health effects. This will partially be met through the application process, including the EIAR NTS. Non-technical information and a point of contact for community liaison to be provided on the project website.

19.12 Climate Change

While the Project already includes extensive embodied carbon mitigation within its design and material procurement commitments within the Applicant's control, the following further mitigation measures should be considered:

- The Applicant should seek to obtain product EPDs for required MEP and building services during product procurement, with the aim to procure lower carbon products where available. Through close engagement with the supply chain and greater transparency into the GHG impacts of products being specified, it can be ensured that products used in the construction of the Proposed Development are manufactured in conditions with minimal GHG impacts (e.g. via the use of renewable energy and efficient resource consumption);
- Increase commitments with regards to the recycled content of the construction materials, where supply is available; and
- The Applicant should seek to understand and influence where possible the approach taken by future tenants with regards to server procurement processes, including whether product EPDs are obtained and lower carbon servers are preferentially specified, and what practices the tenant has in place for re-using, repairing or recycling servers (as required of signatories of the Climate Neutral Data Centre Pact).

The following embedded mitigation measures are incorporated into the Project's design, reducing the significant adverse effect to a negligible effect, which is not significant in EIA terms:

- Passive design measures will minimise excessive solar gain, such as admin areas housing office spaces and reception areas being north-west and north-east facing to minimise unwanted solar gains;
- Adiabatic cooling system will be designed to allow for further water storage adjacent to each building, to accommodate higher temperatures if needed, and
- The roof of each building will be provided with a reflective finish to improve solar reflectivity.

While the Project already includes extensive embodied carbon mitigation within its design and material procurement commitments, the following further mitigation measures should be considered to further reduce energy consumption and resultant emissions:

- While design measures to reduce unregulated energy consumption from the data halls lie within the scope of the tenant during the fit out of the building, the below measures are included for tenant consideration as methods by which such unregulated energy may be reduced:
    - Reduce energy losses from power distribution units by using more efficient units, and look to install those which can also monitor power usage where relevant.
    - Implement efficient air flow management measures to improve cooling efficiency. Examples may include using a hot aisle / cold aisle layout, reducing the number of aisles requiring cooling; and using curtains or panels to avoid cold air from mixing with hot exhaust air.
    - Optimise airflow management within server units to ensure air leakage and recirculation are minimised, and cool air is guided exclusively through the IT equipment.

Waste heat produced by the data centres has the potential to be used as part of a local district heating network providing low carbon heat, avoiding the use of fuels with higher carbon intensities. The development of district

heating networks is supported within both national and local policy, which expect data centre developments to aid in such development of heating infrastructure. Given no heat network yet exists in the locality of the site, the Project will ensure it is ready to export heat should demand for such infrastructure grow in the future. A number of the proposed gas turbines will be linked to waste heat boilers, with waste heat pumped via heat exchangers to the perimeter of the site, enabling future nearby developments to connect on and receive heat for a range of uses.

NON-TECHNICAL SUMMARY

Herbata Data Centre, Naas

June 2024

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