HERBATA DATA CENTRE, NAAS

EIAR
VOLUME I MAIN TEXT – CHAPTER 4 DESCRIPTION OF THE PROJECT AND NEED FOR THE PROJECT

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4 DESCRIPTION OF THE PROJECT AND PROJECT NEED

4.1 Introduction

This chapter 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).

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

Design drawings included in Volume III are as follows:

Ref.	Drawing Number	Drawing Title
1.	22217-RKD-ZZ-ZZ-SK-A-0012	Proposed Site Context Plan – KCC and SID Boundary Comparison
2.	22217-RKD-ZZ-ZZ-DR-A-1000	Site Location Map
3.	22217-RKD-ZZ-ZZ-DR-A-1001	Overall Existing Site Plan
4.	22217-RKD-ZZ-ZZ-DR-A-1010	Overall Proposed Site Plan
5.	22217-RKD-ZZ-ZZ-DR-A-1025	Site Demolition Plan
6.	22217-RKD-ZZ-ZZ-DR-A-1030	Site Phasing Plan
7.	22217-RKD-ZZ-00-DR-A-1100	Data Centre - Overall Ground Floor Plan Type A
8.	22217-RKD-ZZ-00-DR-A-1105	Data Centre - Overall Ground Floor Plan Type B
9.	22217-RKD-ZZ-00-DR-A-1110	Data Centre - Overall Ground Floor Plan Type C
10.	22217-RKD-ZZ-01-DR-A-1101	Data Centre - Overall First Floor Plan Type A
11.	22217-RKD-ZZ-01-DR-A-1106	Data Centre - Overall First Floor Plan Type B
12.	22217-RKD-ZZ-01-DR-A-1111	Data Centre - Overall First Floor Plan Type C
13.	22217-RKD-ZZ-RF-DR-A-1102	Data Centre - Overall Roof Plan Type A
14.	22217-RKD-ZZ-RF-DR-A-1107	Data Centre - Overall Roof Plan Type B
15.	22217-RKD-ZZ-RF-DR-A-1112	Data Centre - Overall Roof Plan Type C
16.	22217-RKD-ZZ-ZZ-DR-A-1002	Existing Site Sections - Sheet 1
17.	22217-RKD-ZZ-ZZ-DR-A-1003	Existing Site Sections - Sheet 2
18.	22217-RKD-ZZ-ZZ-DR-A-1017	Proposed Site Sections - Sheet 1
19.	22217-RKD-ZZ-ZZ-DR-A-1018	Proposed Site Sections - Sheet 2
20.	22217-RKD-ZZ-ZZ-DR-A-1019	Proposed Site Boundary Sections - Sheet 1
21.	22217-RKD-ZZ-ZZ-DR-A-1020	Proposed Site Boundary Sections - Sheet 2
22.	22217-RKD-ZZ-ZZ-DR-A-1021	Proposed Site Elevations - Sheet 1
23.	22217-RKD-ZZ-ZZ-DR-A-1022	Proposed Site Elevations - Sheet 2
24.	22217-RKD-ZZ-ZZ-DR-A-1304	Proposed CGIs
25.	22217-RKD-ZZ-ZZ-DR-A-1400	Proposed Boundary And Fence Details
26.	22217-RKD-ZZ-ZZ-DR-A-1401	Entrance Plans And Elevations
27.	2232-DOB-ZZ-ZZ-DR-C-0200	Proposed Surface Water Drainage - Overall
28.	2232-DOB-ZZ-ZZ-DR-C-0220	Proposed R409 Road Surface Water Drainage Layout
29.	2232-DOB-ZZ-ZZ-DR-C-0260	SUDS DETAILS-Masterplan
30.	2232-DOB-ZZ-ZZ-DR-C-0300	Proposed Foul Water Drainage - Overall
31.	2232-DOB-ZZ-ZZ-DR-C-1600	Proposed R409 Road Realignment
32.	2232-DOB-ZZ-ZZ-DR-C-1700	Proposed Culvert Details at M7 Business Park Access
33.	2232-DOB-ZZ-ZZ-DR-C-1800	Proposed Foul Rising Main Stream Crossing
34.	22217-RKD-ZZ-ZZ-DR-A-1050	Site Location Map
35.	22217-RKD-ZZ-ZZ-DR-A-1051	Existing Site Context Plan
36.	22217-RKD-ZZ-ZZ-DR-A-1055	Proposed Site Context Plan
37.	22217-RKD-ZZ-ZZ-DR-A-1060	Existing Substation Compound Layout
38.	22217-RKD-ZZ-ZZ-DR-A-1063	Proposed Substation Compound Layout
39.	22217-RKD-ZZ-ZZ-DR-A-1065	Proposed Substation Compound Elevations
40.	22217-RKD-ZZ-ZZ-DR-A-1069	Proposed ESB Substation - Elevations (Sheet 1 of 2)
41.	22217-RKD-ZZ-ZZ-DR-A-1070	Proposed ESB Substation - Elevations (Sheet 2 of 2)
42.	2232-DOB-ZZ-ZZ-DR-C-1001	Proposed Typical Drainage Details SID Area

43.	2232-DOB-ZZ-ZZ-DR-C-0250	Proposed Surface Water Drainage - SID Area
44.	2232-DOB-ZZ-ZZ-DR-C-0350	Proposed Foul & Watermain Layout - SID Area
45.	BSM-ZZ-ZZ-DR-L-0101	Existing Tree Survey 01 of 04
46.	BSM-ZZ-ZZ-DR-L-0102	Existing Tree Survey 02 of 04
47.	BSM-ZZ-ZZ-DR-L-0103	Existing Tree Survey 03 of 04
48.	BSM-ZZ-ZZ-DR-L-0104	Existing Tree Survey 04 of 04
49.	BSM-ZZ-ZZ-DR-L-0301	Landscape Masterplan
50.	BSM-ZZ-ZZ-DR-L-0311	Landscape Boundary Treatment
51.	BSM-ZZ-ZZ-DR-L-0302	Proposed Substation Landscape Plan
52.	BSM-ZZ-ZZ-DR-L-0401	Landscape Sections 01 of 02
53.	BSM-ZZ-ZZ-DR-L-0402	Landscape Sections 02 of 02
54.	BSM-ZZ-ZZ-DR-L-0405	Landscape Elevations 01 of 02
55.	BSM-ZZ-ZZ-DR-L-0406	Landscape Elevations 02 of 02
56.	10360452-HDR-XX-XX-DR-C-112250	Campus Road Layout
57.	10360452-HDR-ZZ-02-DR-E-602003	Solar PV Layout
58.	22217-RKD-ZZ-ZZ-DR-A-1402-	Bicycle Shelter, Smoking Shelter and Bat Houses Details

As set out in Chapter 1 Introduction, 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. Figure 4.1 below illustrates the extent of both planning application boundaries and the relevant project layout as subject of assessment within the EIAR.

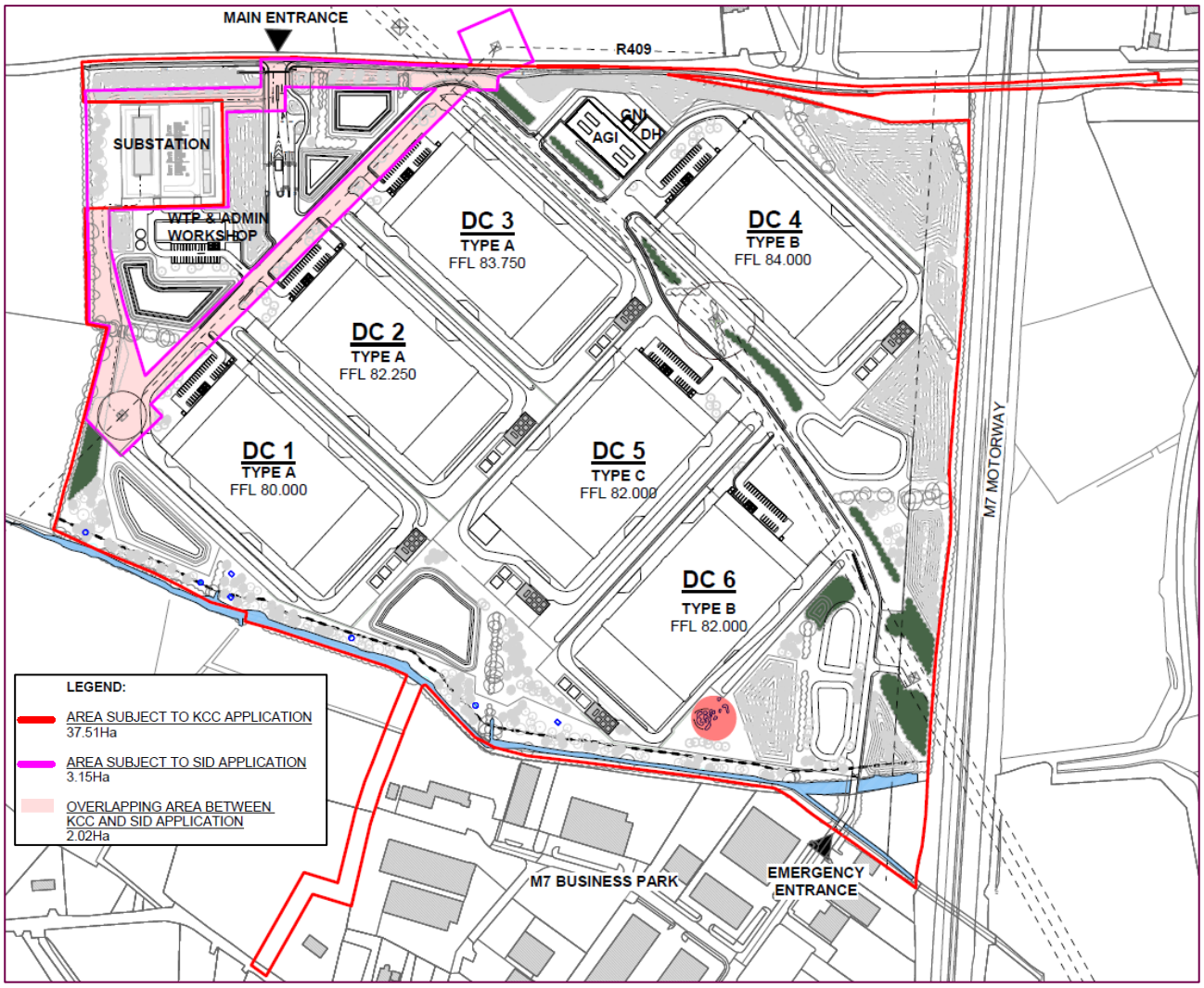

Figure 4.1: Proposed Site Context Plan Indicating both KCC (the Data Centre) Application and SID (the Substation) Application Planning Boundaries

For clarity, Figures 4.2 and 4.3 below illustrate the planning boundaries as they relate only to the KCC (the Data Centre) and SID (the Substation) applications respectively.

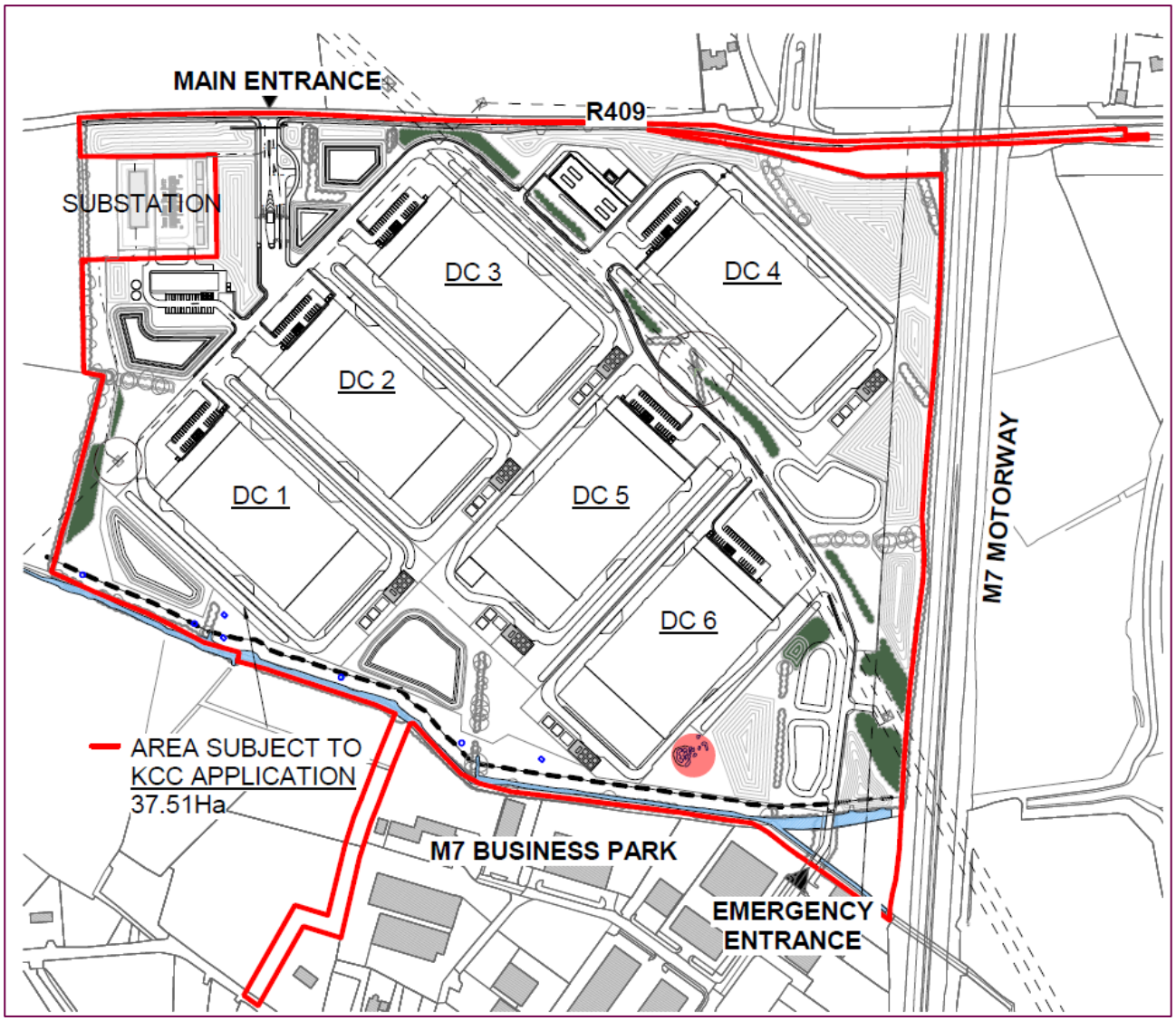

Figure 4.2: The Data Centre Application Planning Boundary

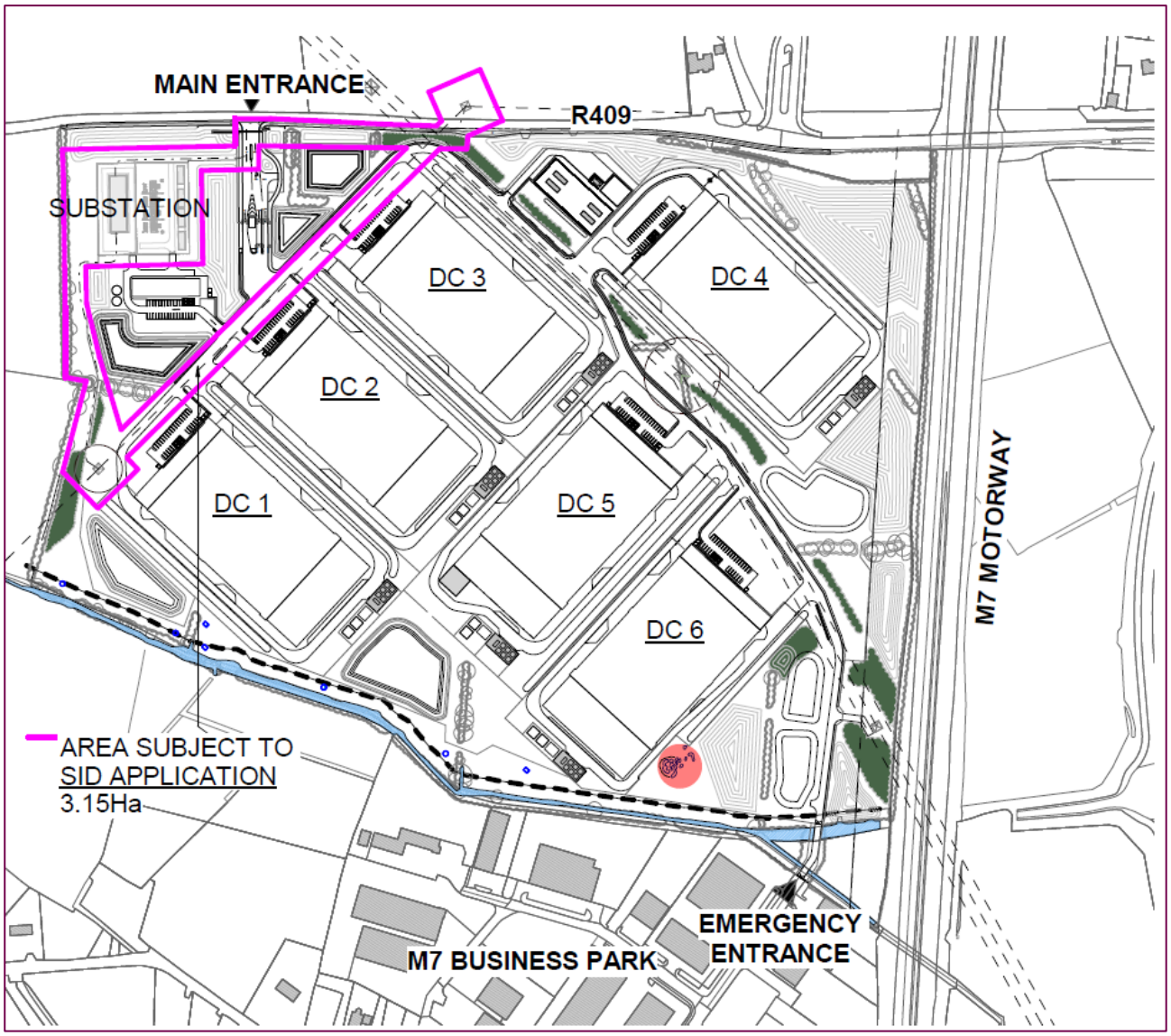

Figure 4.3: The Substation Application Planning Boundary

For the avoidance of doubt, it should be noted that the EIAR considers all the above elements in their entirety.

Reference to the Project from this point forward, should be taken as meaning *all* the above elements unless stated otherwise.

4.2 Characteristics of the Project

4.2.1 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 4.4 below (the corresponding drawing, number 22217-RKD-ZZ-ZZ-DR-A-1010 is also provided in Volume III of the EIAR):

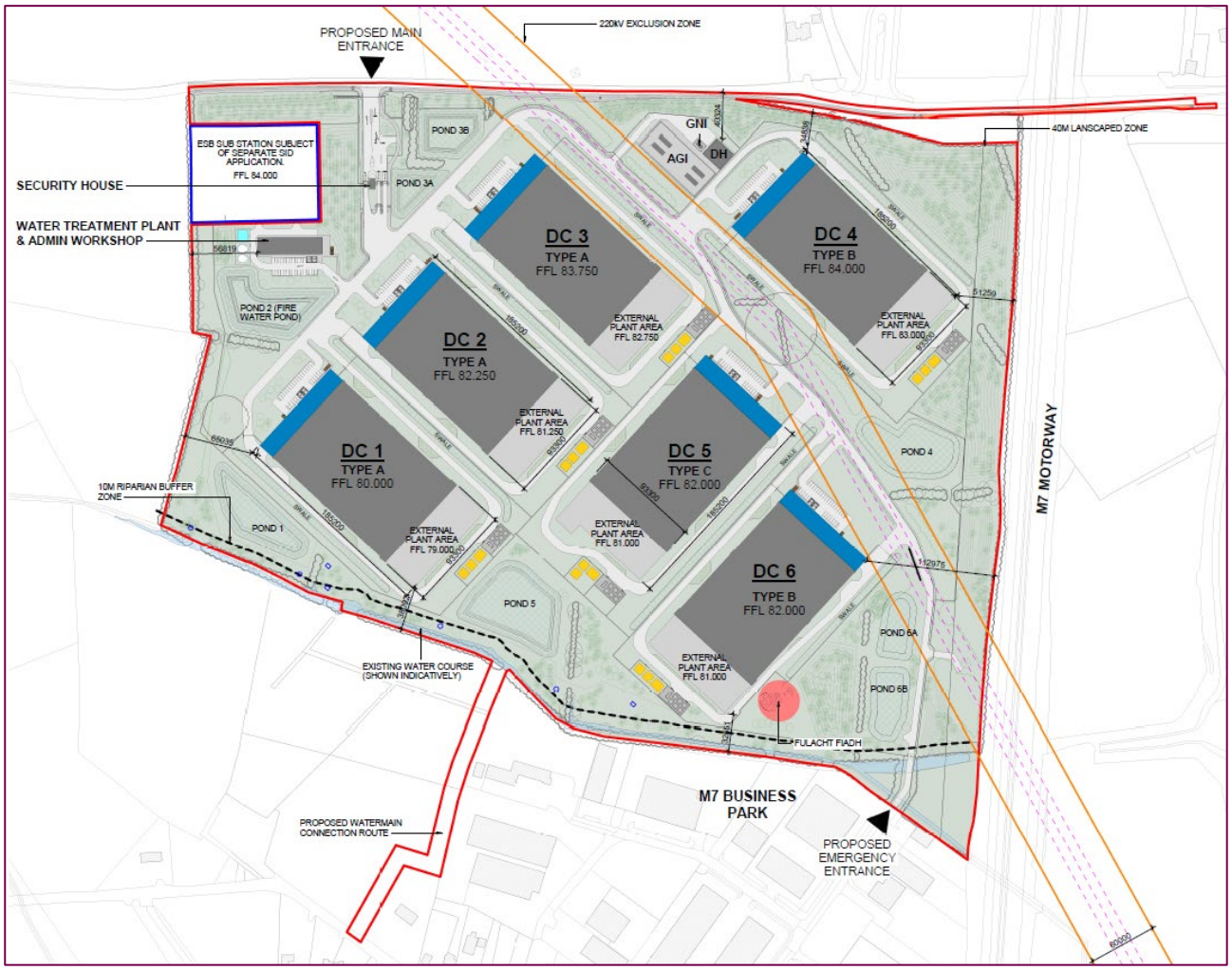

Figure 4.4: Data Centre Application Layout and Planning Boundary

The site area (planning boundary) of the Substation Application is 3.15 ha. The layout of the Substation Application, is illustrated in Figure 4.5 below (the corresponding drawing, number 22217-RKD-ZZ-ZZ-DR-A-1063 is also provided in Volume III of the EIAR):

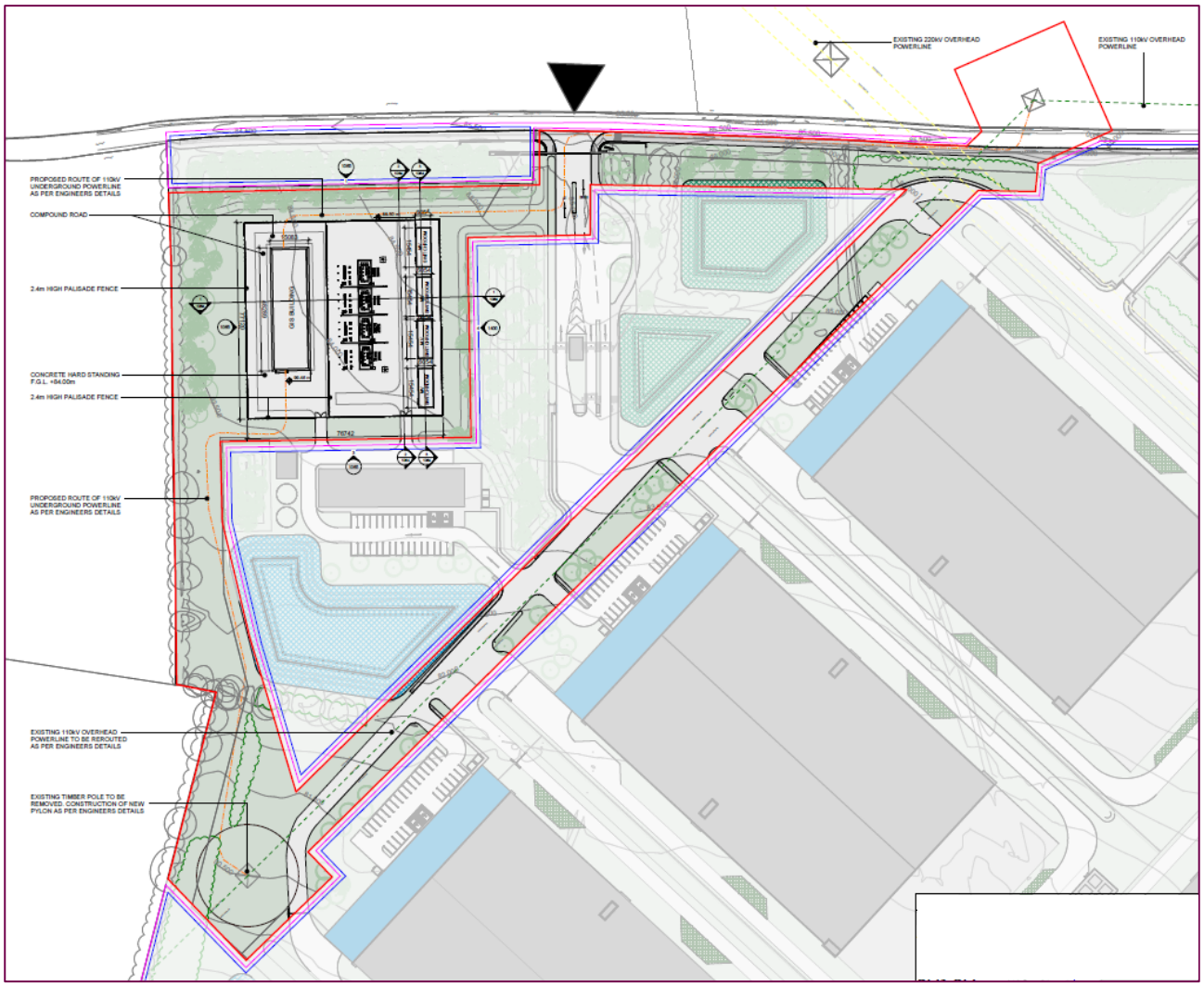

Figure 4.5: Substation Application Layout and Planning Boundary

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*).

4.2.2 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.

4.2.3 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.

Figure 4.6 below (extract from Volume II, Appendix 4.1 Data Centre Application - Architectural Design Statement) illustrates the separate elements the Data Centre building and relative heights.

Figure 4.6: Data Centre Building Height (Volume II, Appendix 4.1, Data Centre Application - Architectural Design Statement)

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.

Figures 4.7 and 4.8 below provide computer generated imagery (CGI) of the external facades of the Data Centre buildings.

Figure 4.7: CGI Example of Data Centre External Façade (Volume II, Appendix 4.1, Data Centre Application - Architectural Design Statement)

Figure 4.8: CGI Example of Data Centre External Façade (Volume II, Appendix 4.1, Data Centre Application - Architectural Design Statement)

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.

4.2.4 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 a key objective of the applicant and reflective of the energy strategy as set out within The *Energy Efficiency and Climate Change Adaptation Design Statement* and *Energy Policy Compliance Report*, Volume II, Appendices 4.2 K and 4.9 respectively. 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.

4.2.4.1 Gas Turbines

Mains (Gas Networks Ireland [GNI]) 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.

4.2.4.2 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. 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. 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 is included in Volume II, Appendix 1.2 and 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:

4.2.4.2.1 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.

4.2.4.2.2 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.

4.2.4.2.3 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.

4.2.4.2.4 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.

4.2.4.2.5 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.

4.2.4.3 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.

4.2.4.4 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.

4.2.4.5 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 (provided in Volume II, Appendix 1.3). 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*, Volume II, Appendices 4.2 K and 4.9 respectively.

4.2.4.6 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. Appendix 4.13 (Volume II) 110KV *Grid Substation and Transmission Line Report* which 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*). A copy of the An Bord Pleanála Section 182A Determination is provided in Volume II, Appendix 1.1.

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. Figure 4.9 below illustrates the proposed GIS arrangement in principle.

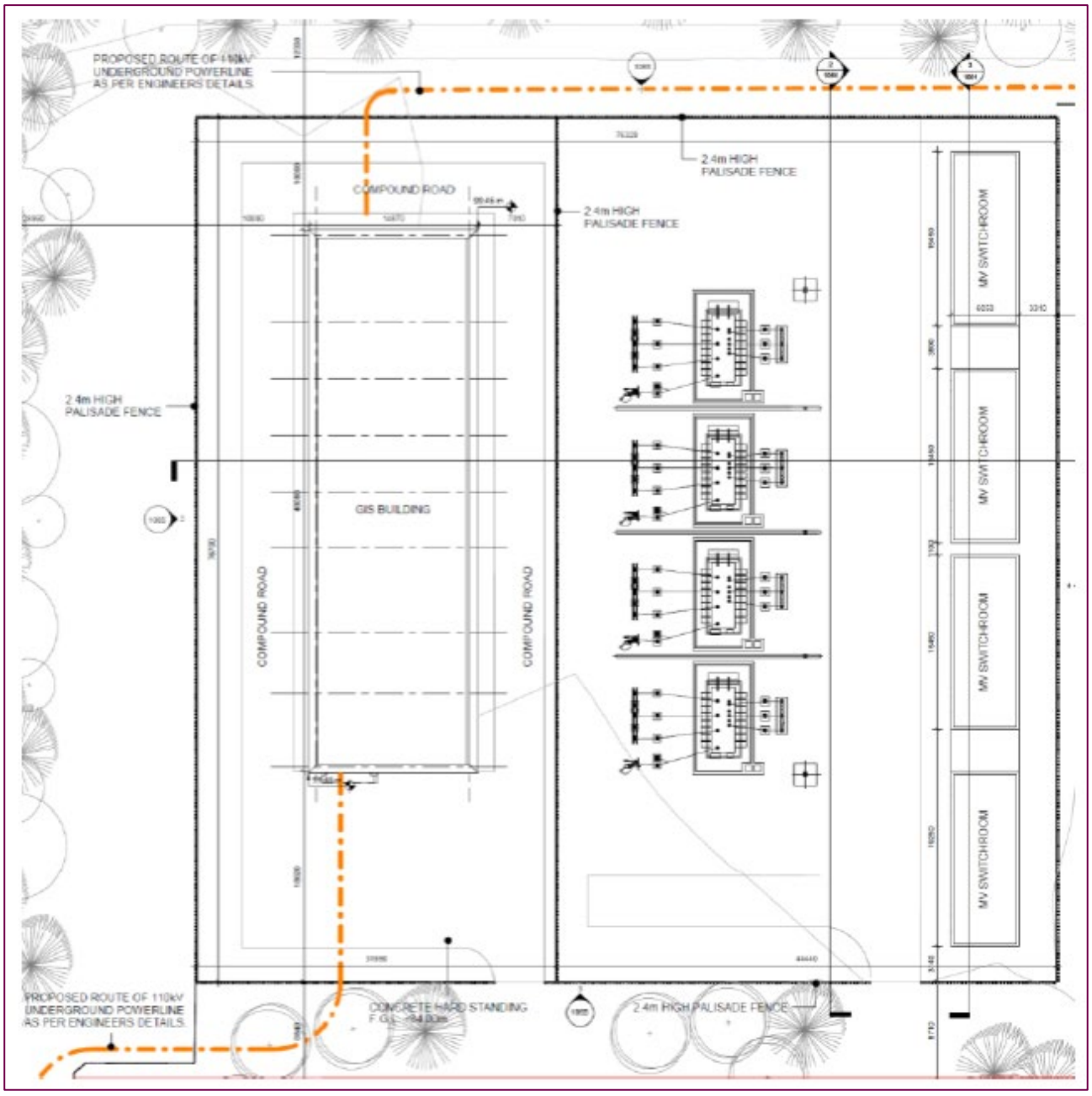

Figure 4.9: Proposed GIS Layout (Volume II, Appendix 4.13, 110KV Grid Substation and Transmission Line Report)

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; the use of comparable materials and finishes is proposed as illustrated in Figure 4.10 below (extract of Volume II, Appendix 4.11 Substation Application – Architectural Design Statement)

Figure 4.10: CGI Example of GIS Buildings

Termination of the existing 110kV overhead lines will be delivered by new single circuit line/cable (L/C) interface towers, as illustrated in Figure 4.11 below.

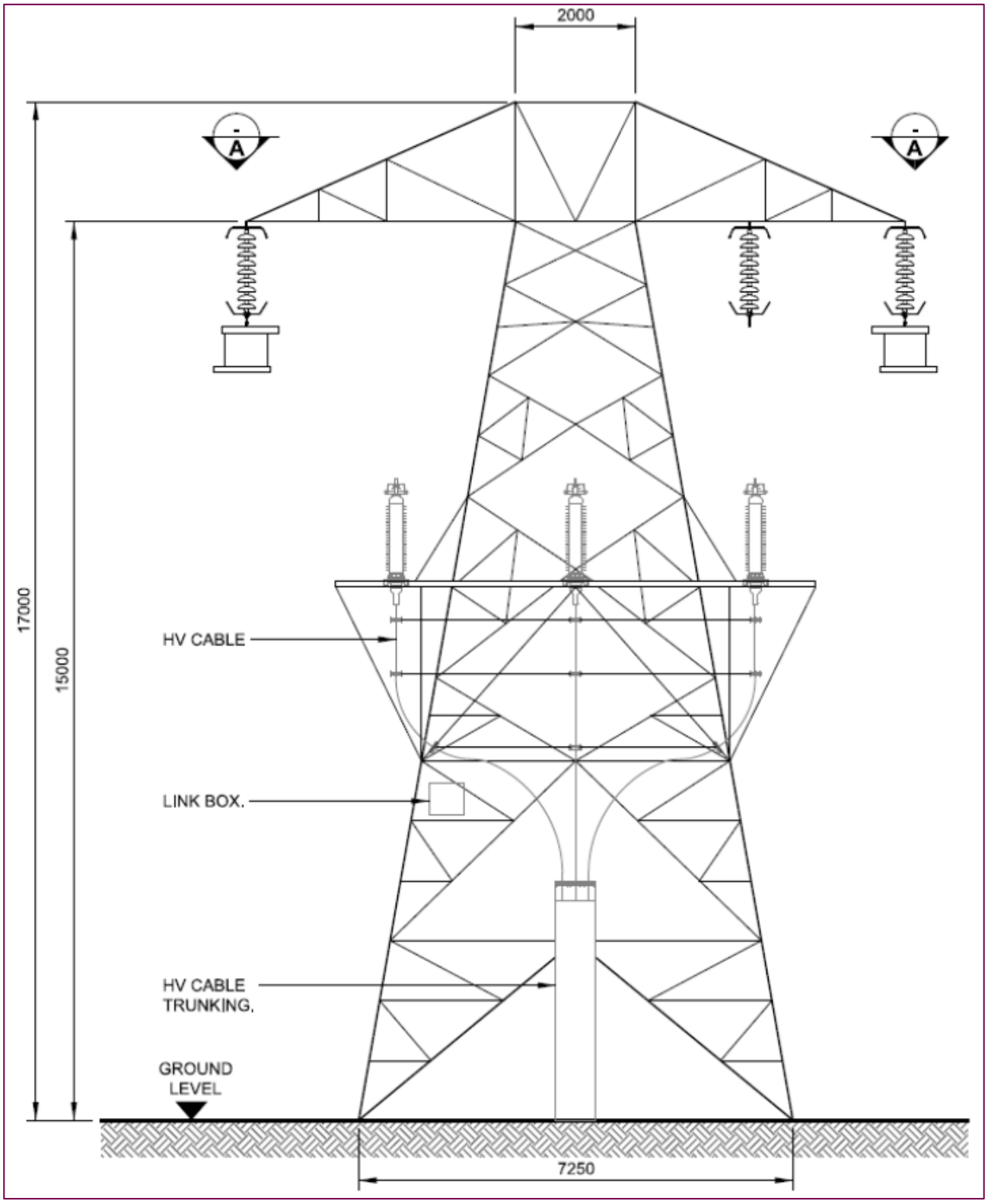

Figure 4.11: Example Single Circuit L/C Interface Tower (ESB Networks standard version) (Volume II, Appendix 4.13, 110KV Grid Substation and Transmission Line Report)

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.

4.2.4.7 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.

4.2.4.8 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 (Volume II, Appendix 4.10) 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.

4.2.5 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.

Figures 4.12 – 4.14 provide CGIs of these ancillary buildings.

Figure 4.12: CGI of Security Hut

Figure 4.13: CGI of District Heating Building and AGI Compound

Figure 4.14: CGI of Administration Workshop and Water Treatment Plant

4.2.6 Drainage and Water Supply

4.2.6.1 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.

Figure 4.15 below is an extract from drawing number 2232-DOB-ZZ-ZZ-DR-C-0200 Proposed Surface Water Drainage (provided in Volume III), illustrating the proposed surface water drainage as relative to Data Centre 5; surface water drainage extends across the entire Project site.

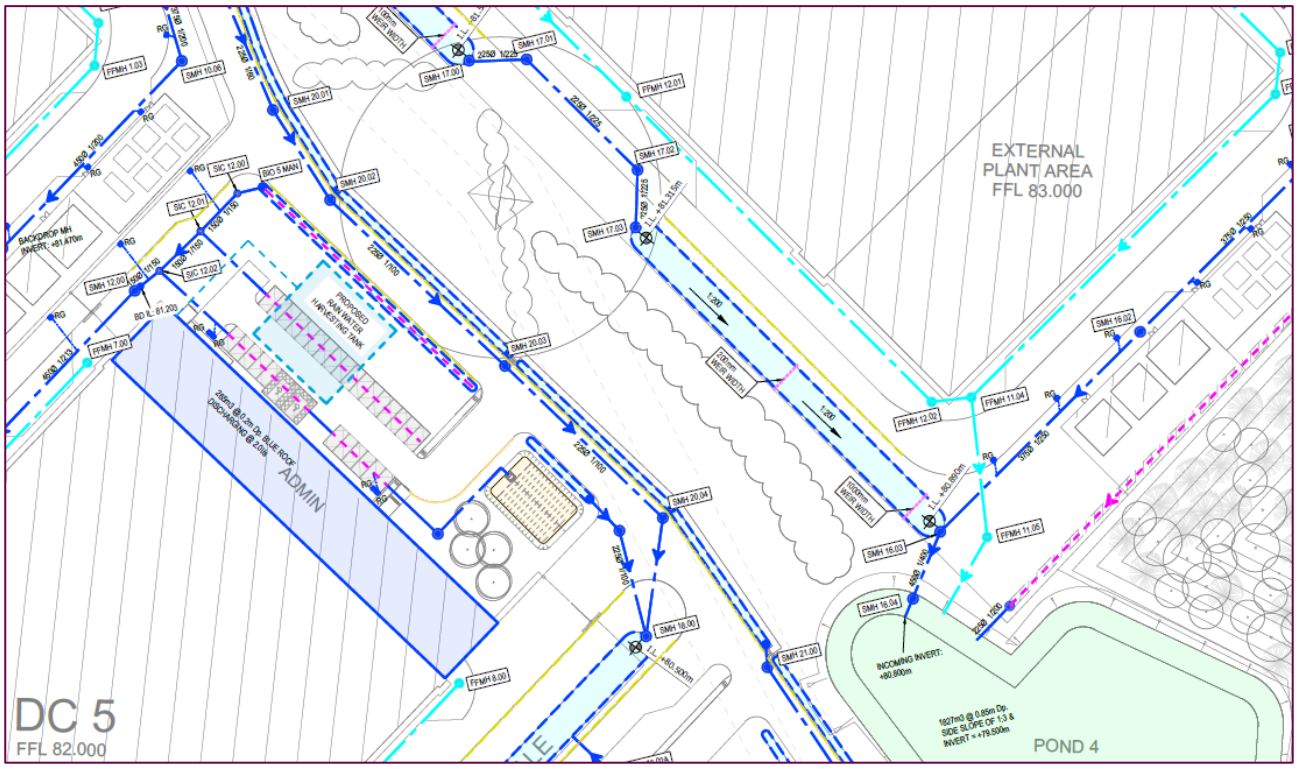

Figure 4.15: Proposed Surface Water Drainage

Detailed proposed surface water drainage design drawings for the Project site are included in Volume III.

4.2.6.2 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).

4.2.6.3 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.

4.2.7 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.

4.2.8 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. Figure 4.16 below illustrates the proposed access arrangement on the R409 road.

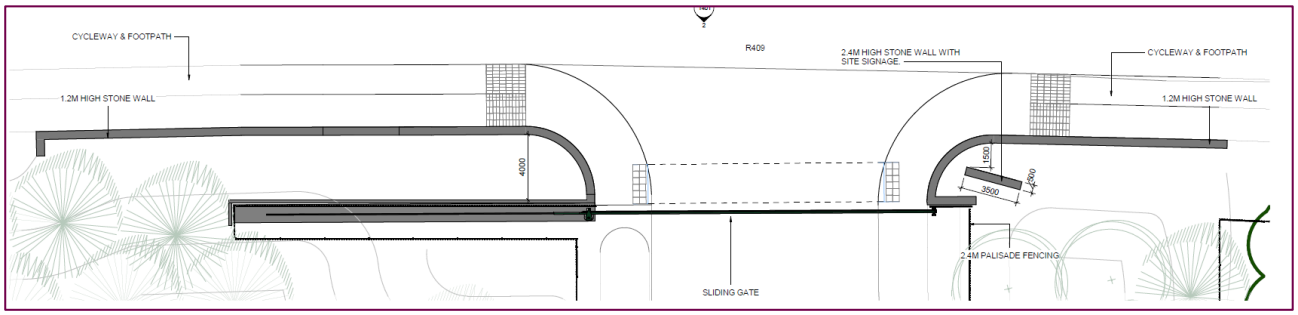

Figure 4.16: Proposed Site Access onto R409

4.2.8.1 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; these works comprised of the following

- Transition of the existing cycle path and footpath to a single 2.0m wide ‘off-road’ shared surface

- The 2.0m shared surface crossing the bridge structure shall transition to a separated 1.8m off road cycle path and 2.0m footpath on the west side of the bridge once clear of the existing traffic barrier restrictions. This arrangement shall continue along the R409 for the extent of the Project boundary.
- Allowance for a 3.0m wide bus stop carriageway where the proposed cycle track shall transition to a 1.8m 'on-road' arrangement for the extent of the bus stop as indicated below.
- Shared surface shall be proposed at the main site entrance to facilitate all Vulnerable Road Users (VRU's) travelling to and from the site.
- Public lighting.
- New roadside drainage to be provided along the southern section of the road where new kerbs are to be installed.

Figures 4.18 – 4.20 illustrate the extent of the proposed R409 works.

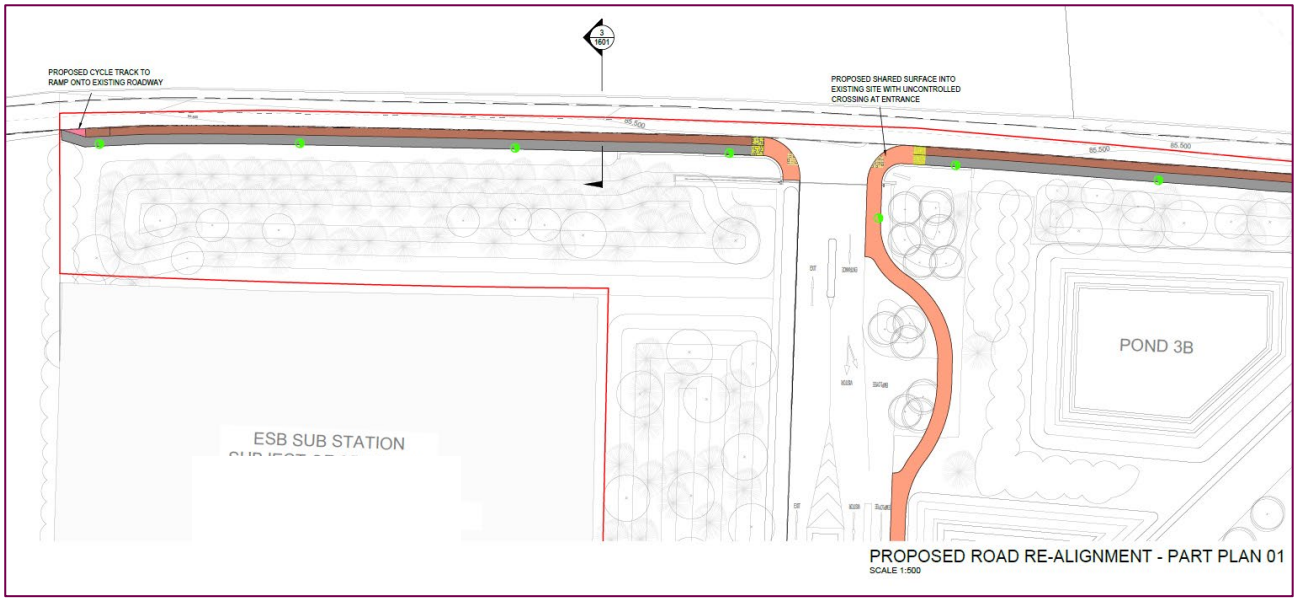

Figure 4.17: Extent of Proposed R409 Works

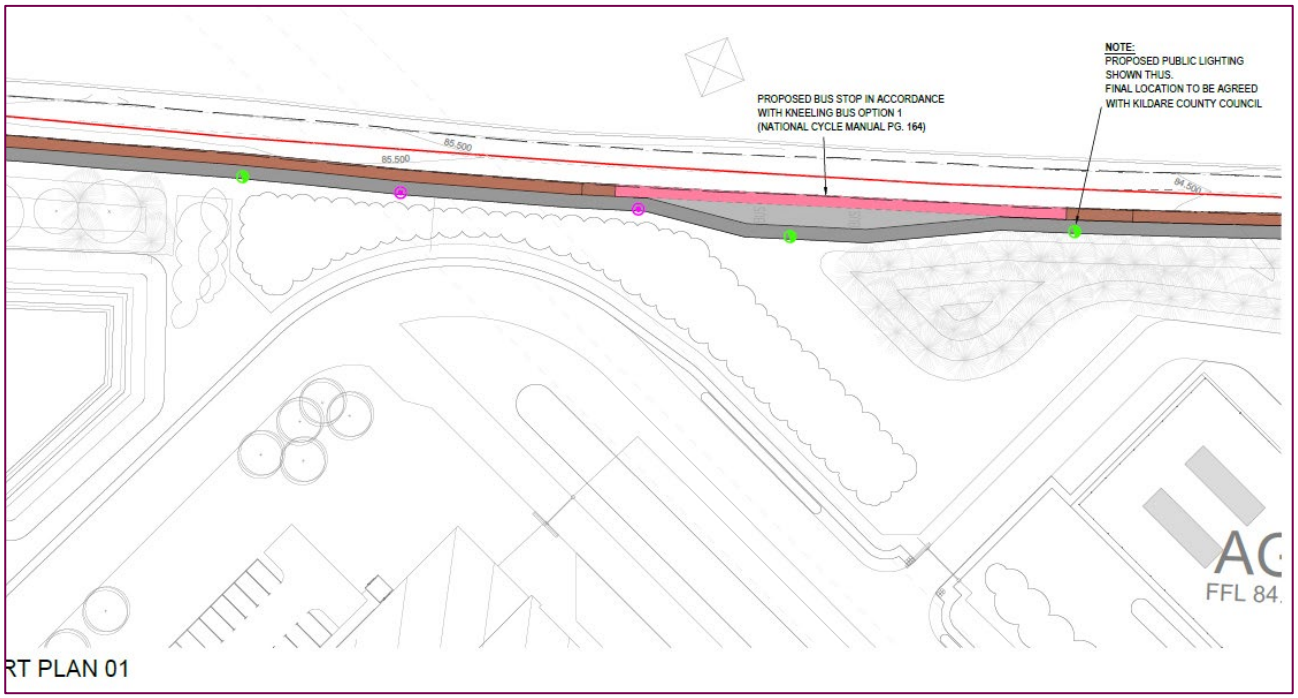

Figure 4.18: Extent of Proposed R409 Works

Figure 4.19: Extent of Proposed R409 Works

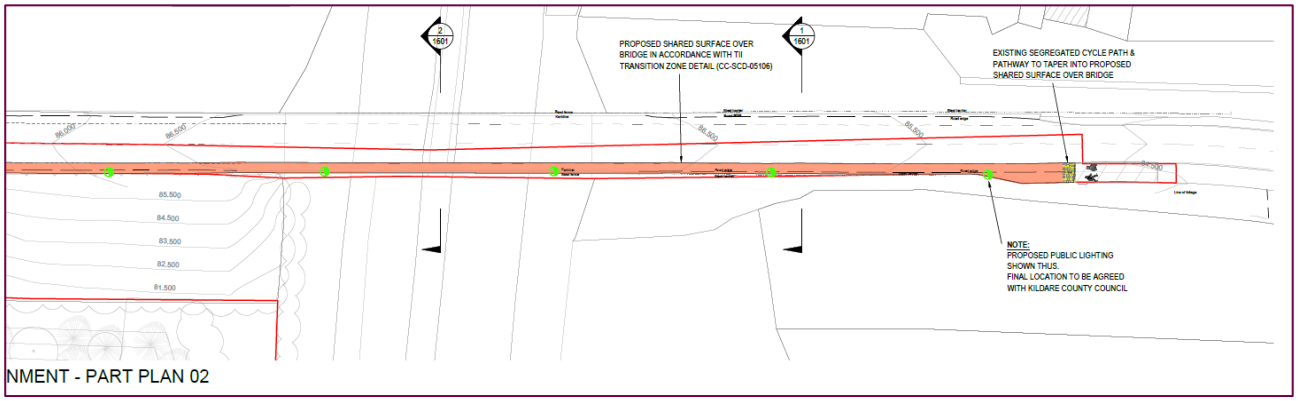

Figure 4.20: Extent of Proposed R409 Works

4.2.8.2 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.

4.2.8.3 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.

Figure 4.21 below illustrates the proposed car parking arrangements for Data Centre 1 as an example; this is replicated for each of the remaining Data Centres.

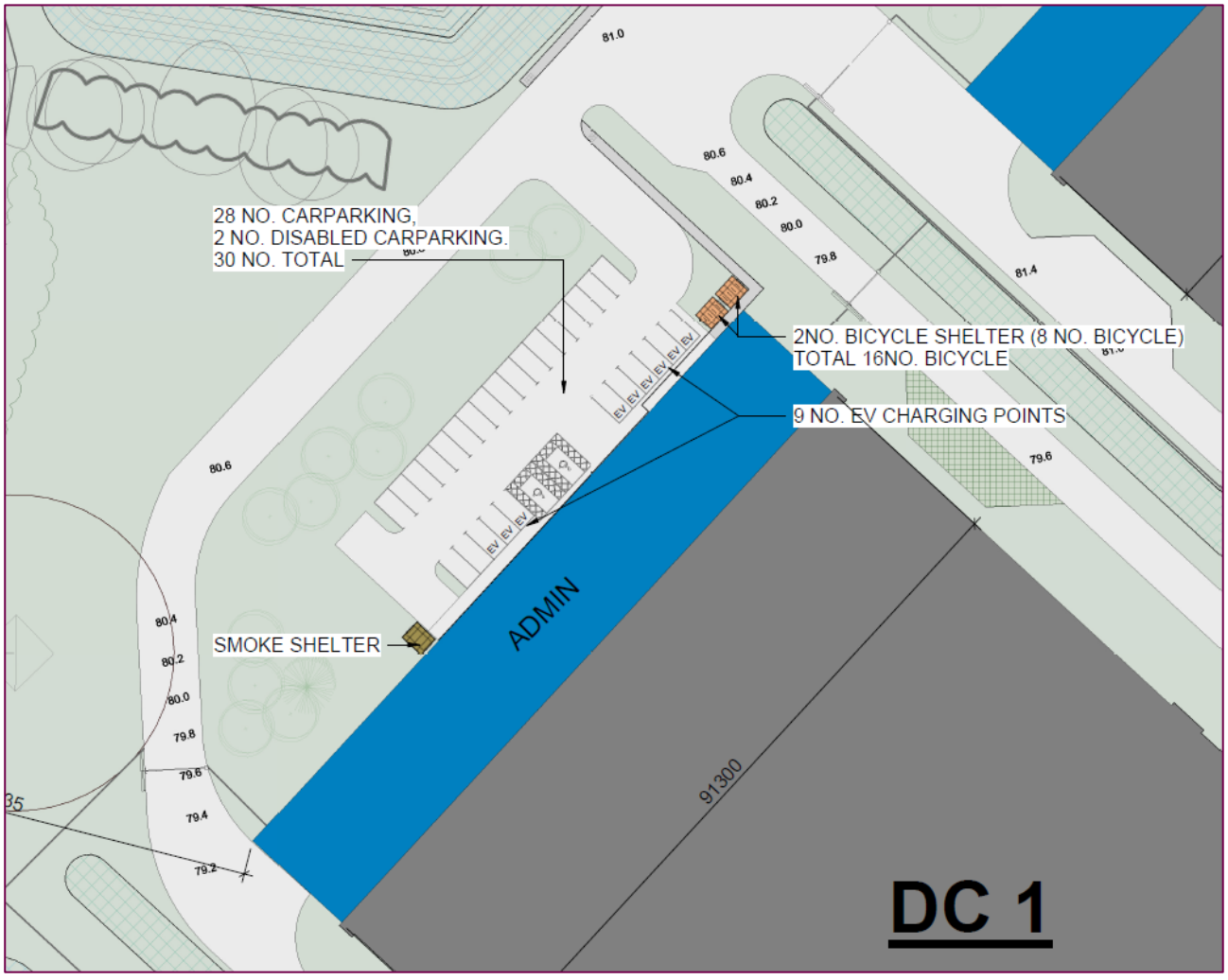

Figure 4.21: Proposed Car Parking Arrangement

4.2.8.4 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

A Mobility Management Plan (MMP) and Transport Assessment have been prepared in support of the Project and are provided in Volume II, Appendix 4.2 L and 12.1 respectively.

4.2.8.5 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.

A Construction Traffic Management Plan is provided in Volume II, Appendix 4.6.

4.2.9 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.

A Lighting Assessment Report is provided in Volume II, Appendix 4.4. A separate lighting assessment, relevant to proposed works on the R409, as outlined in section 4.2.8.1, is provided in Sabre Electrical Lighting Design for R409, Volume II, Appendix 4.2 I.

4.3 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. The principal elements of the landscape design approach will include the following measures:

- Provision of temporary fencing during construction in accordance with BS5837: 2012 for the protection of all trees, hedgerows and vegetation to the perimeter of the site;
- 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;
- Provision of security fencing, approx. 2.4m high with native hedge planting to boundaries;
- Provision of mixed, native woodland planting, including evergreen and deciduous tree species, planted to the perimeter landscape buffer and mounding

- Internal landscape areas will include SuDS features include detention/attenuation basins, swales, biofiltration planters and permeable paving integrated with suitable landscape planting and seeding including native grassland meadows; and,
- Planting and grassland management will follow the All-Ireland Pollinator Plan and Guidance documents, helping to increase site biodiversity, with a maintenance programme for the woodland screen planting to ensure establishment.

Figure 4.22 below provides an example of the landscape treatment for eastern portion and (part of) the eastern site boundary with the M7, adjacent to Data Centres 4 and 6.

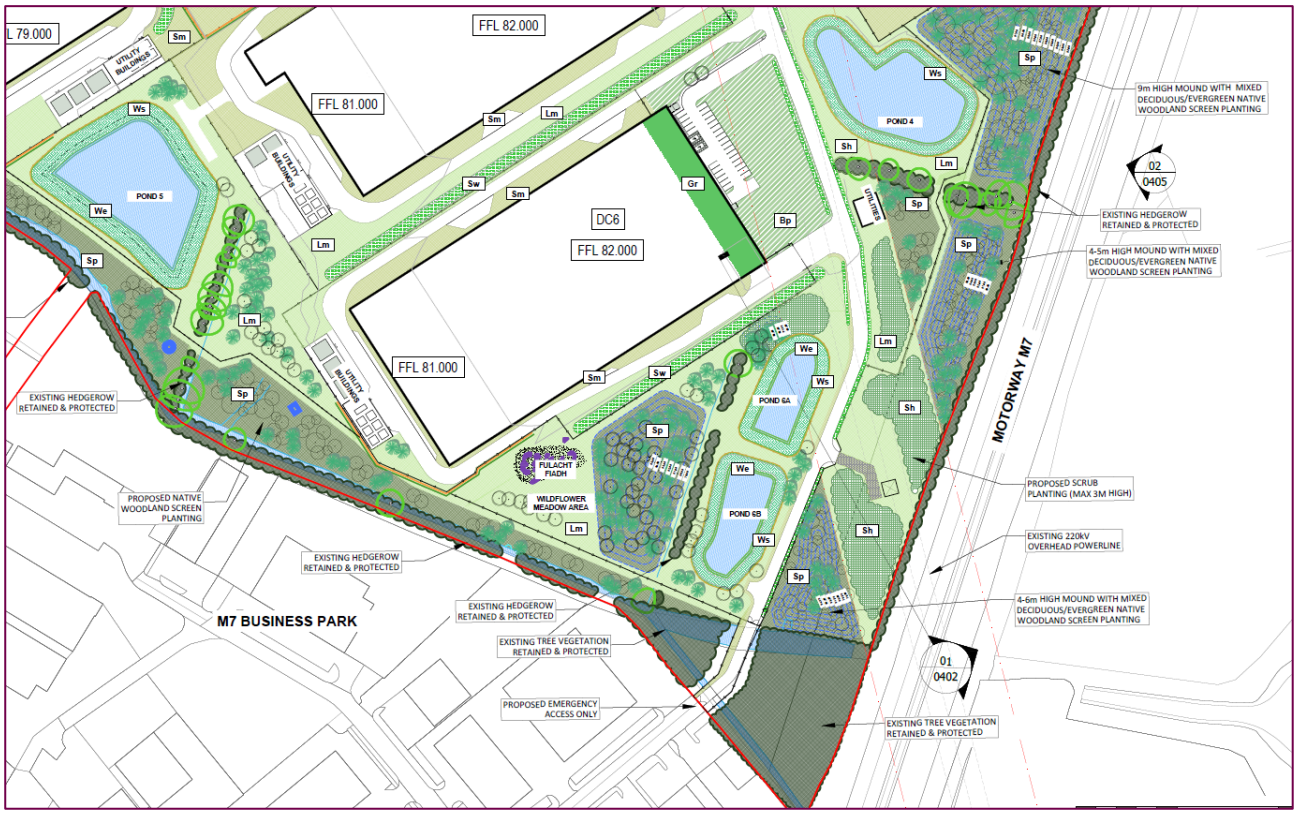

Figure 4.22: Landscape Treatment Within Eastern Portion of the Site

Figure 4.23 below illustrates a cross section of the proposed landscape treatment, including earth mound and structural screen woodland planting, relative to the eastern boundary with the M7.

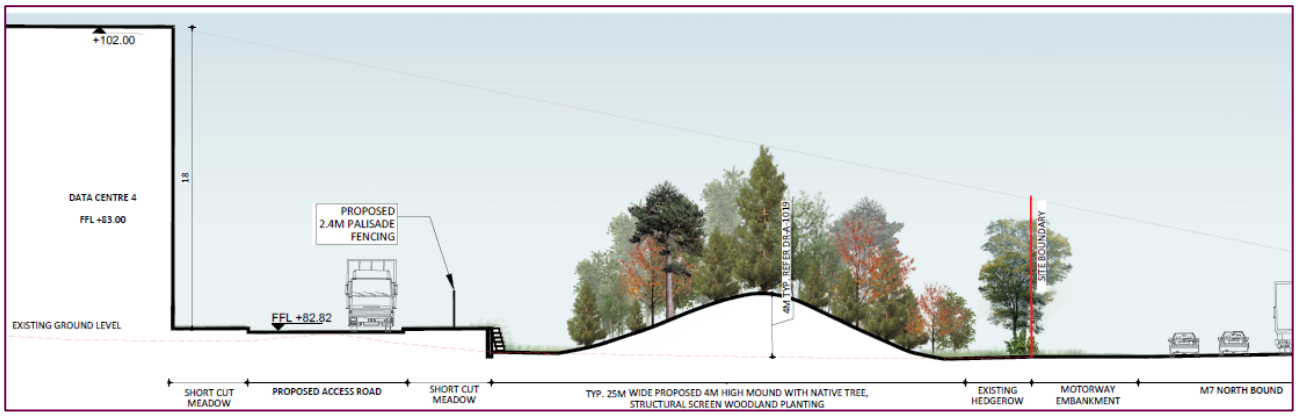

Figure 4.23: Cross Section of Landscape Treatment to Eastern Boundary

Figure 4.24 provides an elevational view of the proposed landscape treatment, looking westwards from outside of the site, from the M7.

Figure 4.24: Elevational View of Eastern Boundary Landscape Treatment

A Landscape Statement and Tree Survey and Arboricultural Impact Assessment Report are provided in Volume II, Appendix 11.1 and 11.2 respectively.

4.4 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

4.4.1 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 4.25 illustrates the relevant construction phases of the Project.

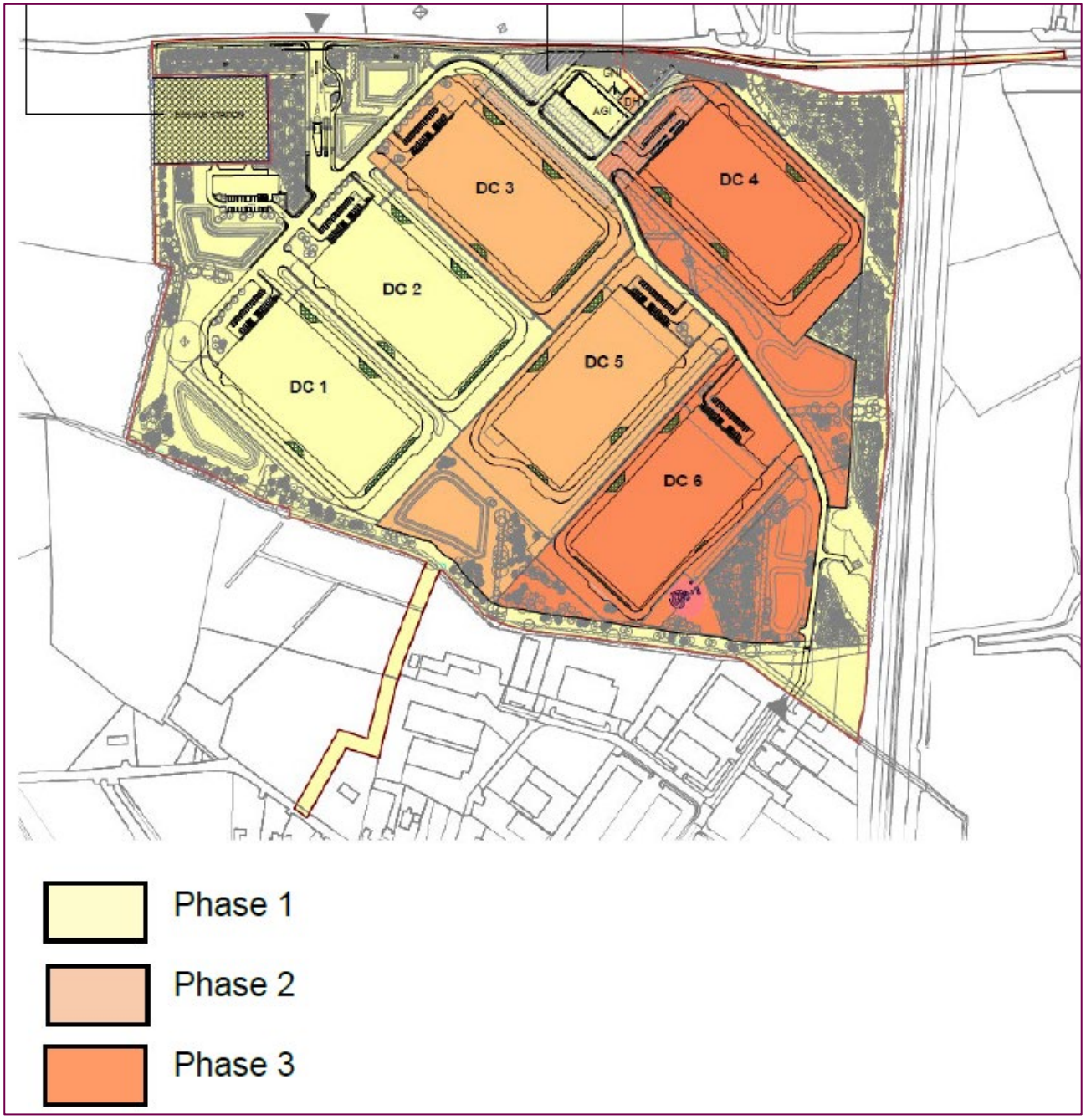

Figure 4.25: Project Construction Phasing

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 4.1: 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

4.4.2 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.

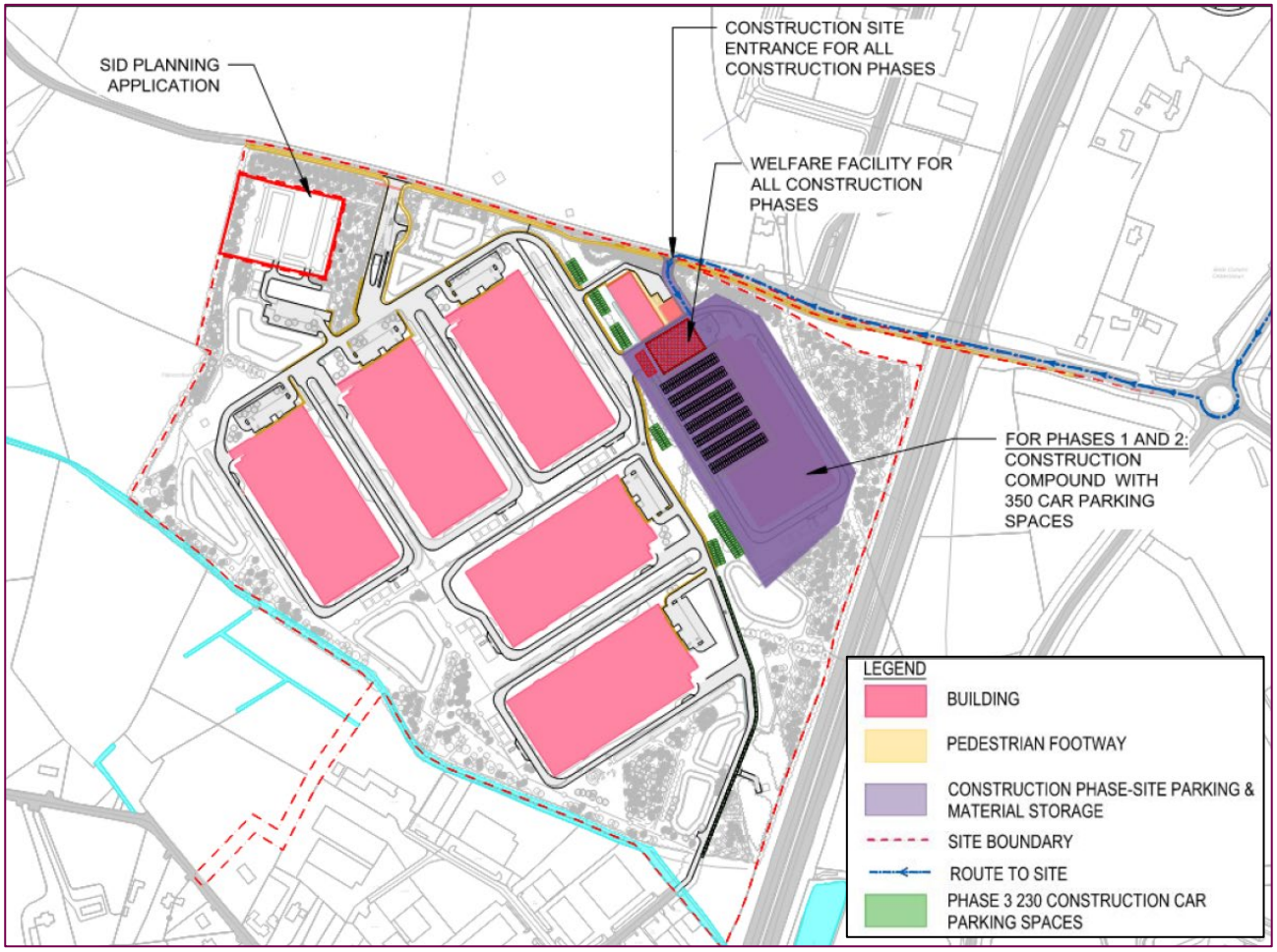

Figure 4.26: Construction Phase Layout

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.

4.4.3 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.

4.4.4 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).

4.4.5 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.

4.4.6 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.

A Construction Traffic Management Plan is provided in Volume II, Appendix 4.6.

4.5 Data Centre Block Construction Overview

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

4.5.1 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.

4.5.2 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.

4.5.3 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.

4.5.4 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.

4.5.5 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.

4.5.6 Electrical Supply

As detailed in Section 4.2.4, 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.

4.6 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 as set out in Section 4.4.3 and in line with mitigation measures as set out in Chapter 5 of the EIAR. Typical bat house designs are illustrated in Figure 4.27 below.

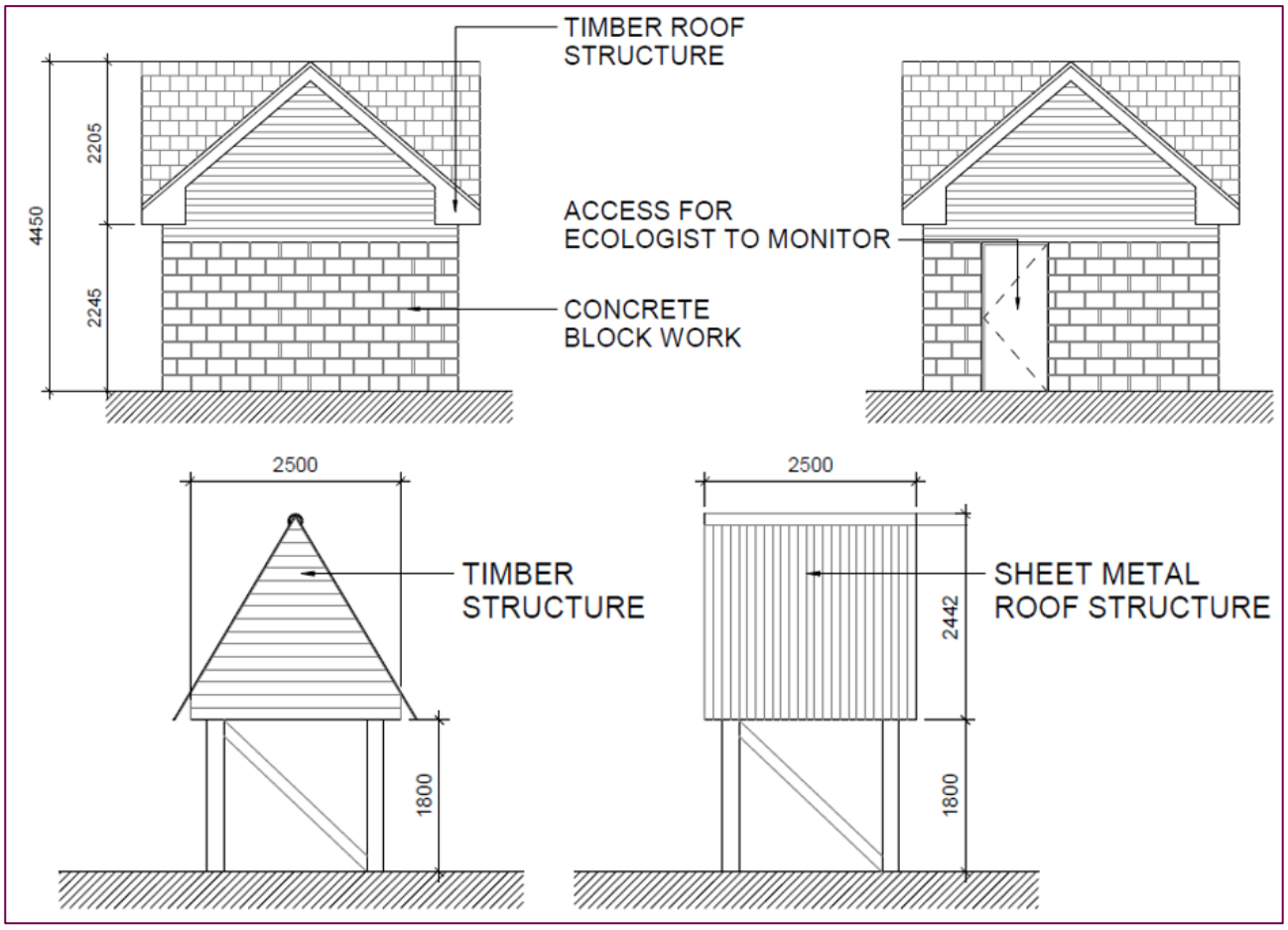

Figure 4.27: Typical Bat House Designs (Elevations) (Extract from Drawing 22217-RKD-ZZ-ZZ-DR-A-1402, Volume III)

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. A Lighting Assessment Report is provided in Volume II, Appendix 4.4. A separate lighting assessment, relevant to proposed works on the R409, as outlined in section 4.2.8.1, is provided in Volume II, Appendix 4.2 I.

4.7 Decommissioning

Planning consent for the Project is being sought on the basis that the development will be permanent. In the event that the Project would be required to be decommissioned, all associated structures and materials would be recovered and items recycled with the site returned to its original use as far as conceivably possible. Decommissioning impacts will be the same or lesser than the impact of construction as assessed within the EIAR.

4.8 Need for the Project

4.8.1 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.

4.8.2 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.'*

4.8.3 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.

4.8.4 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.

4.8.5 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.

4.8.6 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.

4.9 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.

4.10 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.