Appendix B
Appropriate Assessment Screening Report

HERBATA DATA CENTRE, NAAS

Screening for Appropriate Assessment

NI2615 Herbata Data Centre, Naas
Stage 1: Screening for Appropriate Assessment
F05
November 2023

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Contents

Figures

Appendices

1. HABITATS DIRECTIVE ASSESSMENT

1.1 Introduction

This report has been prepared by RPS on behalf of Herbata Ltd and contains information to assist the competent authority in carrying out a Screening for Appropriate Assessment for the Project.

This report has been prepared by RPS on behalf of Herbata Ltd and contains information to assist the competent authority in carrying out a Screening for Appropriate Assessment for a data centre development which, as described in section 3 of this report, comprises 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".

The Data Centre Application and the Substation Application together constitute the "Project" for the purposes of Appropriate Assessment and references to the "Project", should be read as references to those two applications taken together as one project.

An appropriate assessment screening and, if required, an appropriate assessment, is required under the Habitats Directive for any plan or project likely to have significant effect on a Natura 2000 site.

With the introduction of the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) came the obligation to establish the Natura 2000 network of Sites of Community Interest (SCIs), comprising a network of areas of highest biodiversity importance for rare and threatened habitats and species across the European Union (EU).

The Natura 2000 network of sites comprises Special Areas of Conservation (SACs, including candidate SACs) designated under legislation transposing the obligations under Directive 92/43/EEC, and Special Protection Areas (SPAs, including proposed SPAs) classified under the Birds Directive (Directive 2009/147/EC on the conservation of wild birds) and designated under Irish legislation. SACs and SPAs make up the pan-European network of Natura 2000 sites in Ireland and they are referred to as European sites.

SACs are designated for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are designated for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is designated correspond to the Qualifying Interests (QIs) of the sites in the case of SACs and Special Conservation Interests (SCIs) of the sites in the case of SPAs. From these qualifying features, the site-specific Conservation Objectives (SSCOs) of the site are derived.

1.2 Legislation and the HRA procedure

1.2.1 The Habitats Directive

Article 6(3) of the Habitats Directive requires that–

> "Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's SSCOs. In the light of the conclusions of the assessment of the

implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate, after having obtained the opinion of the general public."

Thus, Article 6(3) provides a two-stage process:

- The first stage involves a screening for appropriate assessment; and
- The second stage arises where, having screened the Project, the competent authority determines that an appropriate assessment is required, in which case it must then carry out that appropriate assessment.

1.2.2 Irish Legislation

For the purposes of applications for planning permission, under section 34 of the Planning and Development Act 2000 (as amended) ("the PDA"), and applications for approval under Section 182A of the PDA, the obligations under Article 6(3) of the Habitats Directive have been transposed into Irish law by part XAB of the PDA. In relation to other consent regimes, the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended ("the 2011 Regulations"), transpose those obligations.

This report has been prepared to assist the Competent Authority in carrying out Screening for Appropriate Assessment in respect of the Project, which is the subject of (i) an application for planning permission under section 34 of the PDA and (ii) an application for approval under section 182A of the PDA, and as such the provisions of the PDA apply.

1.2.3 Screening for Appropriate Assessment

Section 177U of the PDA requires inter alia that a screening for appropriate assessment of an application for consent for Project shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Project, individually or in combination with other plans or projects is likely to have a significant effect on a European site.

While the provisions of section 177U adopt the terminology used in Article 6(3) of the Habitats Directive in terms of the test for screening, section 177U expands on this in light of the interpretation given in decisions of the Court of Justice of the European Union. Thus, section 177U gives effect to the requirement to screen an application for development consent for appropriate assessment by assessing whether the Project is likely to have a significant effect on a European site by considering whether such a significant effect can or cannot be excluded.

1.2.4 Appropriate Assessment (AA)

Where the result of the Screening for Appropriate Assessment under section 177U of the 2000 Act is that that likely significant effects on a European Site cannot be excluded, then an Appropriate Assessment must be carried out by the competent authority before development consent can be given.

1.2.5 Step-wise Procedure

According to European Commission guidance documents 'Assessment of plans and projects significantly affecting Natura 2000 sites' (EC, 2001) and the 'Managing Natura 2000 sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (EC, 2019), the obligations arising under Article 6 establish a step-wise procedure for Habitats Directive Assessment as follows, and as illustrated in Figure 1.1.

The first part of this procedure consists of a pre-assessment stage ('screening') to determine whether, firstly, a plan or project is directly connected with or necessary to the management of the site, and

secondly, whether it is likely to have a significant effect on the site either alone or in combination with other plans or projects; it is governed by the first sentence of Article 6(3).

The second part of the procedure, governed by the second sentence of Article 6(3), relates to the appropriate assessment and the decision of the competent national authorities.

A third part of the procedure (governed by Article 6(4)) comes into play if, despite a negative assessment, it is proposed not to reject a plan or project but to give it further consideration. In this case Article 6(4) allows for derogations from Article 6(3) under certain conditions.

The extent to which the sequential steps of Article 6(3) apply to a given plan or project depends on several factors, and in the sequence of steps, each step is influenced by the previous step. The order in which the steps are followed is therefore essential for the correct application of Article 6(3).

Each step determines whether a further step in the process is required. If, for example, the conclusion at the end of a Stage 1 screening assessment is that significant effects on European sites can be excluded, there is no requirement to proceed to the next step.

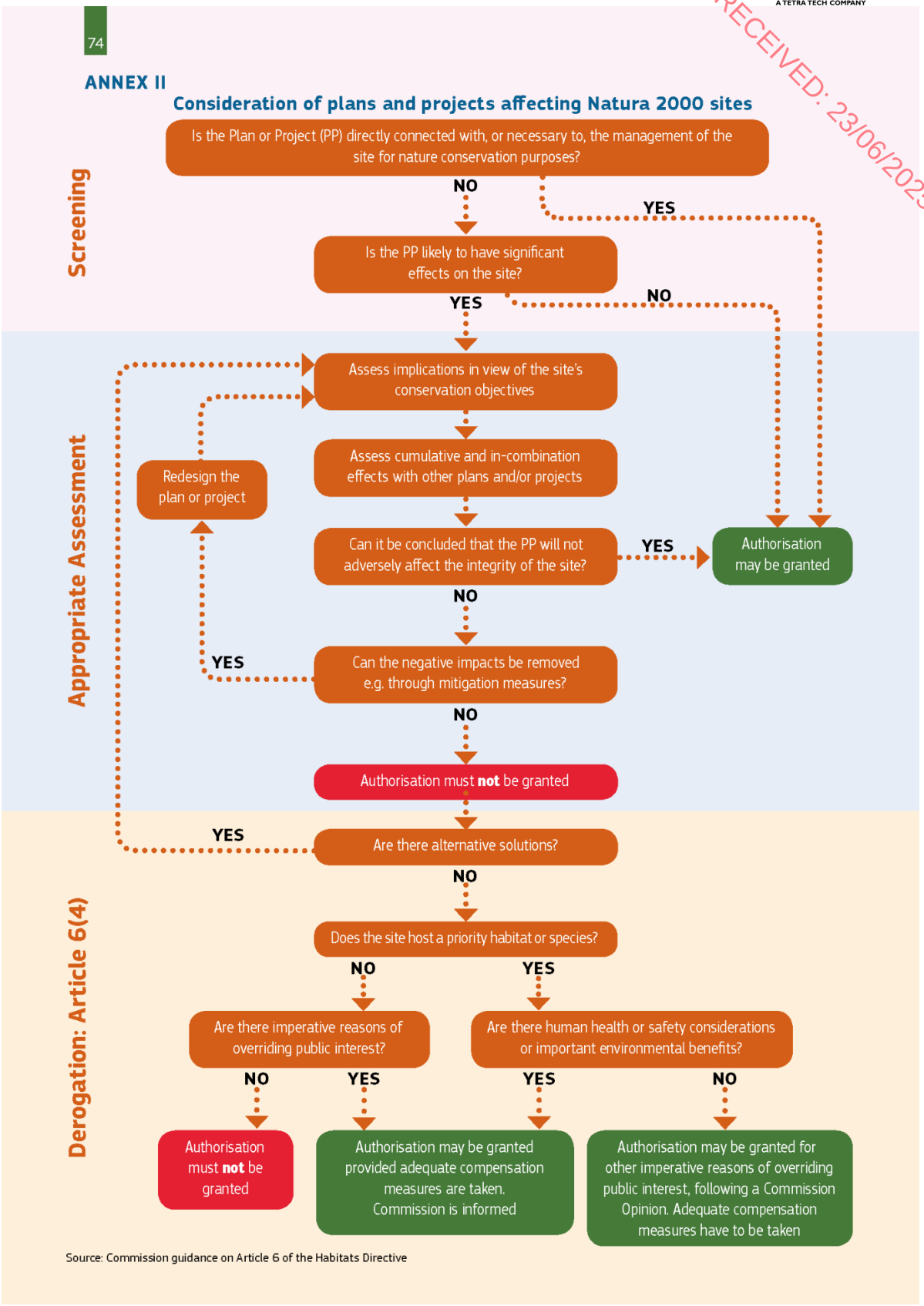

Figure 1.1: Step-wise procedure of Article 6 of the Habitats Directive (EC 2019)

1.3 Document Structure

This report is structured as follows:

- Section 2: Methodology and Guidance - This section sets out the methodology followed and guidance documents used in conducting an Appropriate Assessment Screening of the implications of the Project on European sites;
- Section 3: the Project - This section describes the Project, and is the basis of the subsequent Stage 1 Appropriate Assessment Screening that follows; and
- Section 4: Stage 1 Screening Assessment - This section contains an examination and analysis to understand whether or not the Project is likely to have a significant effect on any European site. This is the Stage 1 screening assessment. It has been undertaken in view of best scientific knowledge, in light of the SSCOs of the sites concerned and considers the Project individually and in combination with other plans and projects. Measures intended to avoid or reduce the harmful effects of the Project on European sites (i.e. “mitigation measures”) have not been taken into account in the screening stage assessment and should not be taken into account by the competent authority in conducting its screening exercise.

1.4 Details of Competent Experts

The author, Samuel O’Hara, is an Associate Ecologist with RPS and holds a BSc (Hons) in Ecology and has over nine years of experience in the field of ecology consultancy. Samuel has extensive experience of ecological field survey including habitat, mammal and bird survey and is a protected species license holder. Samuel has authored Appropriate Assessment documentation in support of a large number of schemes throughout Ireland. Samuel is a full member of the CIEEM.

James McCrory, who supervised preparation of this report, is a Technical Director of Ecology within RPS and holds a BA (Hons) in Natural Sciences (Mod) Botany and a MSc in Habitat Creation and Management. James is a Chartered Environmentalist (CEnv), a Chartered Ecologist (CEcol) and a Chartered Biologist (CBiol). James is part of the CIEEM Policy Review Group in Ireland and is a member of the CIEEM technical committee updating the seminal Guidelines for Ecological Impact Assessment in the United Kingdom.

The professional judgement expressed herein is the true and bona fide opinion of our professional ecologists. The information prepared and provided is accurate at the time of issue of this report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM 2022).

2. METHODOLOGY

2.1 Published Guidance on Appropriate Assessment

Appropriate Assessment Guidelines for Planning Authorities have been published by the Department of the Environment, Heritage and Local Government (DEHLG, 2010a). In addition to the advice available from the Department, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of Appropriate Assessment, most notably including, 'Assessment of Plans and Projects Significantly Affecting Natura 2000 sites - Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC' (EC, 2021), which sets out the principles of how to approach decision making during the process.

These principal national and European guidelines have been followed in the preparation of this report. The following list identifies these and other pertinent guidance documents:

- Communication from the Commission on the Precautionary Principle., Office for Official Publications of the European Communities, Luxembourg (EC, 2000);
- Estuaries and Coastal Zones within the Context of the Birds and Habitats Directives - Technical Supporting Document on their Dual Roles as Natura 2000 Sites and as Waterways and Locations for Ports. European Commission (EC, 2009);
- Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, Dublin (DEHLG, 2010a);
- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities (DEHLG, 2010b);
- Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging. European Commission (EC, 2011a);
- European Commission Staff Working Document 'Integrating biodiversity and nature protection into port development' (EC, 2011b);
- European Commission Notice C(2018) 7621 'Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg (EC, 2019);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2021).

2.2 Likely Significant Effect

The Commission's 2018 Notice (EC, 2019) advises that the appropriate assessment procedure under Article 6(3) is triggered not by the certainty but by the likelihood of significant effects, arising from plans or projects regardless of their location inside or outside a protected site. Such likelihood exists if significant effects on the site cannot be excluded. The significance of effects should be determined in relation to the specific features and environmental conditions of the site concerned by the plan or project, taking particular account of the site's SSCOs and ecological characteristics.

The requirement that the effect in question be 'significant' exists in order to lay down a *de minimis* threshold – thus, plans or projects that have no appreciable effect on the site are thereby excluded. A likely significant effect is triggered when:

- there is a probability or a risk of a plan or project having a significant effect on a European site; or

- a significant effect cannot be excluded on the basis of objective information.

EC (2021) advises that an assessment of significance must apply the principle of proportionality, be compatible with the precautionary principle and take into account:

- the nature, size and complexity of the plan or project;
- the expected effects, and
- the vulnerability and irreplaceability of the affected EU-protected habitats and species.

2.3 Mitigation Measures

In determining whether or not likely significant effects will occur or can be excluded in the Stage 1 assessment, measures intended to avoid or reduce the harmful effects of the Project on European sites, (i.e. "mitigation measures") have not been taken into account in this screening stage assessment. This approach is consistent with EU guidance and the case law of the Court of Justice of the European Union (CJEU):

EC (2001) states that "project and plan proponents are often encouraged to design mitigation measures into their proposals at the outset. However, it is important to recognise that the screening assessment should be carried out in the absence of any consideration of mitigation measures that form part of a project or plan and are designed to avoid or reduce the impact of a project or plan on a Natura 2000 site". This direction in the European Commission's guidance document is unambiguous in that it does not permit the inclusion of mitigation at screening stage.

In April 2018, the Court of Justice of the European Union issued a ruling in case C-323/17 People Over Wind & Peter Sweetman v Coillte Teoranta ("People Over Wind") that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

In April 2018, the Court of Justice of the European Union issued a ruling in case C-323/17 that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that –

> *"in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site".*

Measures intended to avoid or reduce the harmful effects of the Project on European sites have not been proposed in respect of the Project. Design aspects of the Project such as an appropriate and site-specific drainage strategy, including SuDs features, is an integral part of the design of the project to deal with surface water and foul water. This does not comprise measures intended to avoid or reduce the harmful effects of the Project on any European site and is in accordance with the judgment of the CJEU in case C-323/17.

More recently, the decision of the CJEU in case C-721/21 (Eco Advocacy CLG v An Bord Pleanála), delivered in June 2023, found that Article 6(3) of Directive 92/43 must be interpreted as meaning that:

"*in order to determine whether it is necessary to carry out an appropriate assessment of the implications of a plan or project for a site, account may be taken of the features of that plan or project which involve the removal of contaminants and which therefore may have the effect of reducing the harmful effects of the plan or project on that site, where those features have been incorporated into that plan or project as standard features, inherent in such a plan or project, irrespective of any effect on the site."* (Para. 53(3) of the Judgement).

This recent judgement therefore clarifies that features which have been incorporated into a project as standard features, inherent in that project, and irrespective of any effect on any European site may be

taken into account for the purposes of a Stage 1 Screening for Appropriate Assessment under Article 6(3) of the directive.

Measures intended to avoid or reduce the harmful effects of the Project on European sites have not been proposed in respect of the Project. As set out in section 3.3 below, design aspects of the Project such as an appropriate and site-specific drainage strategy, including SuDs features, are an integral part of the design of the project to deal with surface water and foul water and have been incorporated into the Project as standard features, inherent in the Project, and irrespective of any effect on any European site."

2.4 Consideration of Ex-situ Effects

EC (2019) advises that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures, including those which are external to European sites but which are likely to have significant effects on any of them.

The CJEU developed this point when it issued a ruling in case C-461/17 ("Brian Holohan and Others v An Bord Pleanála") that determined *inter alia* that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that an appropriate assessment must on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the SSCOs of the site.

In that regard, consideration has been given in this Habitats Directive assessment to implications for habitats and species located both inside and outside of the European sites considered in the screening assessment with reference to those sites' Conservation Objectives where effects upon those habitats and/or species are liable to affect the SSCOs of the sites concerned.

2.5 Conservation Objectives

The site-specific conservation objectives ("SSCOs") for each European site are to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the site has been selected.

The favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing;
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- the conservation status of its typical species is favourable.

The favourable conservation status (or condition, at a site level) of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The most up-to-date COs for the European sites being considered have been used in this assessment. Details in relation to the Qualifying Interests ("QIs") of SACs and SCI bird populations is based on publicly available data sourced from the National Parks and Wildlife Service (NPWS) website in October 2023.

2.6 In-combination Effects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are also considered. As set out in the Commission's 2018 Notice (EC, 2019), significance will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned.

In addition, other plans or projects which are completed, approved but uncompleted, or proposed have been considered. EC (2019) specifically advises that "as regards other proposed plans or projects (i.e. other projects not proposed by the Applicant), on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced".

This report also considers and assesses, as discussed in section 4.4 below, the potential for in combination effects with the future Gas Networks Ireland (GNI) infrastructure upgrade works required to construct a new high-pressure gas distribution pipeline from the existing GNI Above Ground Installation (AGI) at Glebe West, Co. Kildare to the proposed Herbata Data Centre development.

3. THE PROJECT

3.1 Summary of the Project

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 Appropriate Assessment and references to the "Project", should be read as references to those two applications taken together as one project.

3.2 Site Location

The subject site of the Project is 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 (of the planning boundary) of the Data Centre Application is 37.51 ha.

The site area (of the planning boundary) of the Substation Application is 3.15 ha.

The total site area of the subject site of the Project is 38.64 ha. It should be noted that the aforementioned application boundaries, have a partial overlap 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 two application sites sit jointly on lands bound to the north by the R409 road. The subject site comprises predominantly of lands in agricultural grass and smaller elements of residential and agricultural buildings. The site location is illustrated on Figure 3.1.

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 the south of, and largely forms the southern boundary of, the site.

3.3 Overview of the Project

The Project comprises 6 no. two storey data centre buildings, an admin workshop building, car parking, landscaping, energy infrastructure and other associated works. Plate 1, below, illustrates the layout of the Project with corresponding planning boundaries for both the full planning application and SID application illustrated.

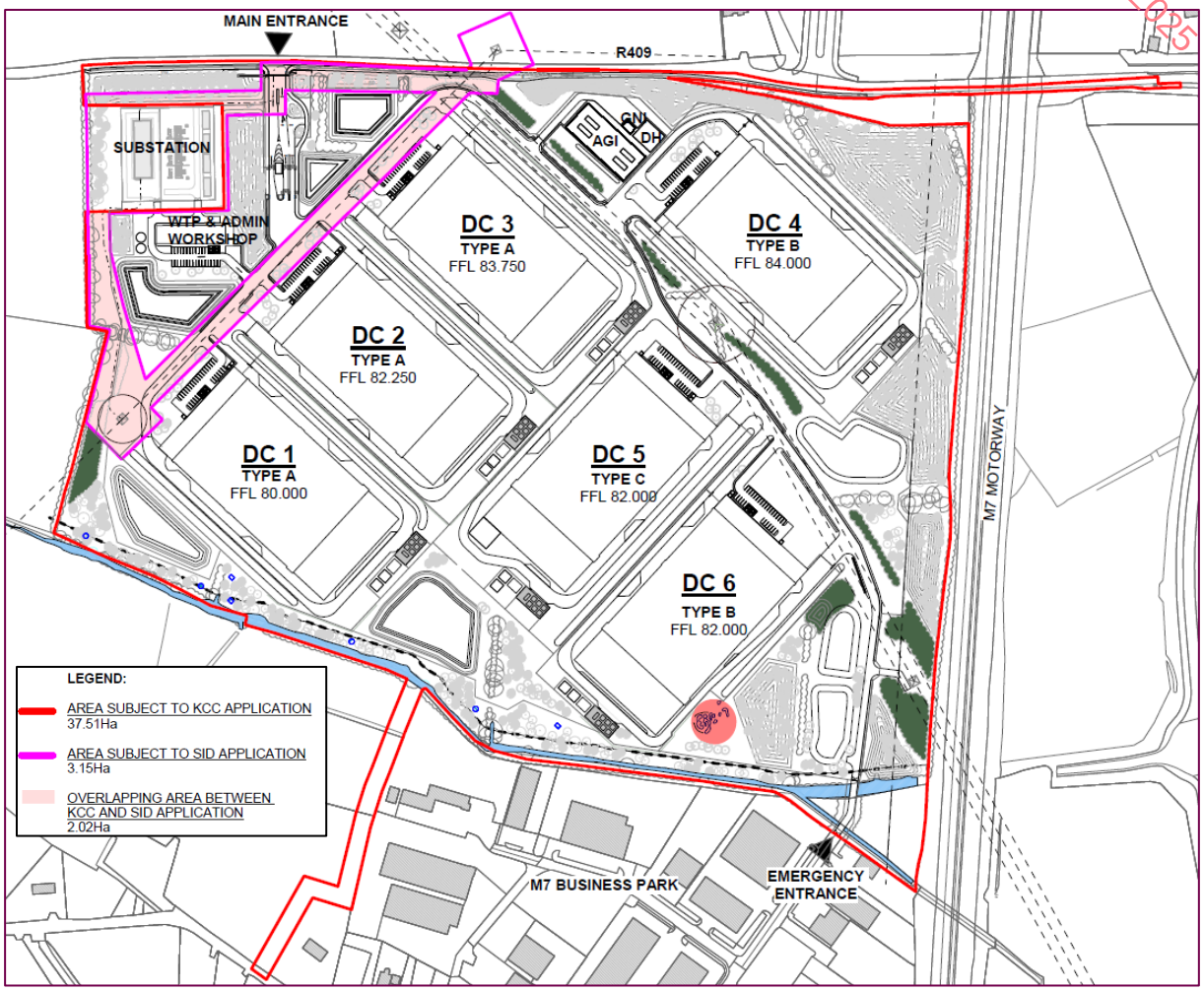

Plate 1: Project Layout

The key elements of the Project are set out below:

- Total site area of the subject site of the Project (comprising of *both* the Data Centre and Substation Applications) is 38.64 ha, comprising of the following:
    - Site area of planning application to KCC – 37.51 ha;
    - site area of the SID application to An Bord Pleanala - 3.15 ha.
- 6no. data centre buildings following a template design, each with a total internal area and height as follows:
    - Total gross floor area – 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) of 818.9 m^2;
- Site security hut of 42.1m^2;
- District Heating (DH) building of 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 DC buildings will have 30 car parking spaces (total) and the administration building will also have 30 car parking spaces;
- Total number of 104 bicycle spaces (16 per each of the 6 DC buildings and 8 for the admin 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.

The Project will involve the requirement for some limited works to a single minor watercourse, the Bluebell Stream, which forms the southern boundary of the Project site. These works are required in order to facilitate a proposed culvert for secondary site access to the south and the installation of proposed foul water and fibre connection along the central southern boundary of the site. It is proposed that this work will be undertaken in dry conditions and will utilising an open-cut methodology with temporary damming and fluming of the relevant lengths of watercourse.

Drainage

The operational phase of the Project will include the management of runoff from parking areas and other hard standing areas, which will be collected and discharged via a mixture of traditional and Sustainable Urban Drainage Systems (SuDS) via attenuation tanks with restricted flow to ensure greenfield run-off rates are achieved. The SuDS features include wetland habitats, soft landscaping, and retention ponds.

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 river a tributary of the Liffey.

All storm water collected on site will be discharged into the current water course following treatment via SuDS measures which include green/blue roofs, permeable surfaces, grass lined bioswales, bioretention areas/ponds, bioretention tree pits and petrol interceptors.

These measures are proposed in order to ensure that the Project is in-keeping with the requirement of the Flood Directive (Directive 2007/60/EC) and associated domestic legislation and are standard measures for all developments which involve the creation of areas of hardstanding and other impermeable surfaces with potential to increase the site run-off rate and represent measures implemented as part of industry standards and best practice. Such measures have therefore been incorporated into the Project as standard features, inherent in the Project, and irrespective of any effect on any European site and are not incorporated into the proposal for the purposes of mitigation.

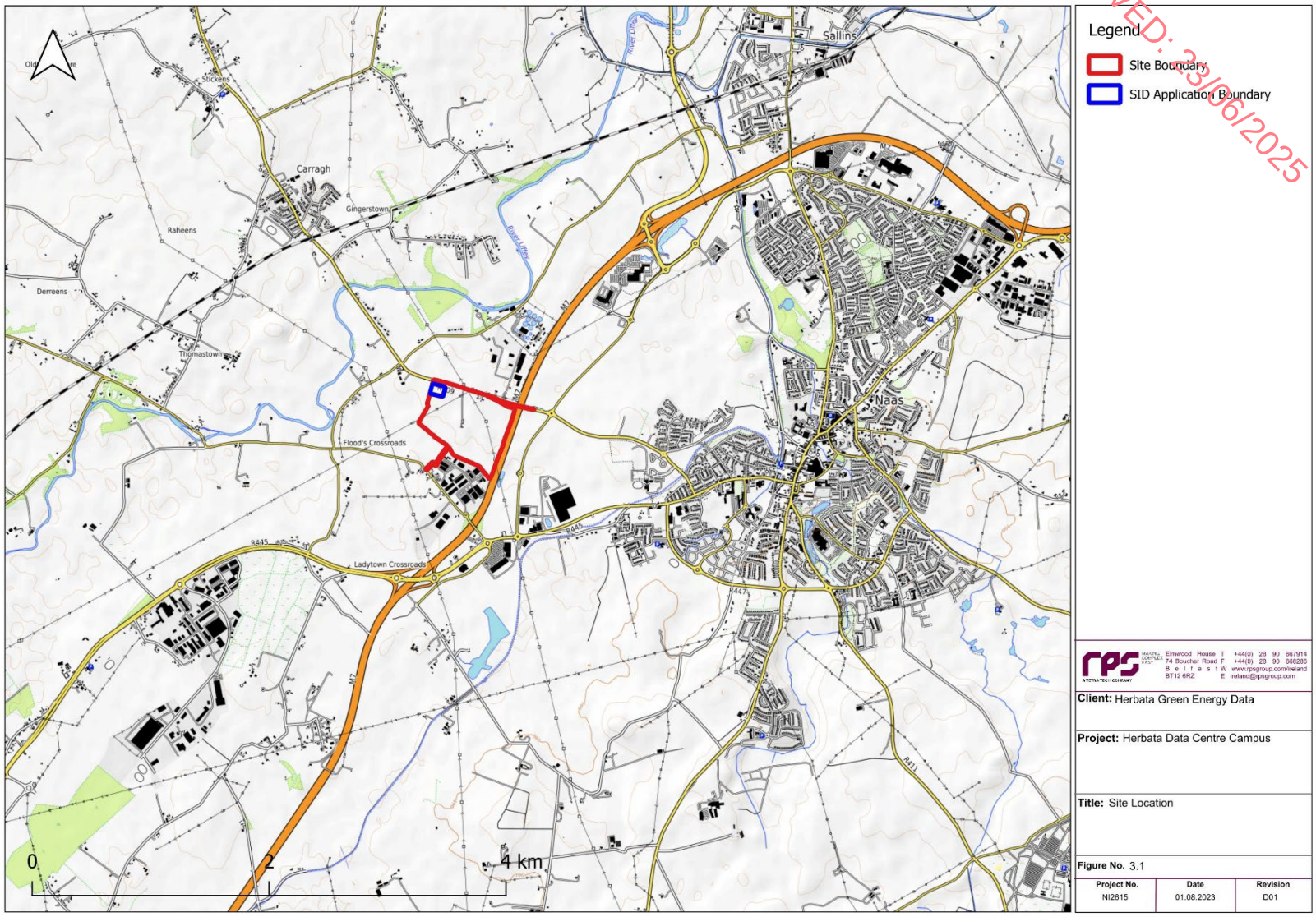

Figure 3.1: Site Location

4. STAGE 1 SCREENING ASSESSMENT

4.1 Directly connected with or necessary to the management of the site

The proposals are for the development of a new data centre campus. The project is therefore not directly connected with or necessary to the management of any European Site and is subject to the provisions of the Article 6(3) procedure laid down by the Habitats Directive and its national implementing legislation.

4.2 European Sites

A Stage 1 screening assessment must be undertaken by the competent authority to determine whether, firstly, the proposed works are directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site.

In addition, the provisions of national legislation make clear that a Stage 1 screening for appropriate assessment shall be carried out to assess, in view of best scientific knowledge, if the proposed works, individually or in combination with other plans or projects are likely to have a significant effect on a European site.

Given the location and nature of the project, a distance of 15 km radius has been selected to ensure that features of European sites that can potentially be affected at this distance are not automatically excluded by selecting a narrower range of sites to scope. The radius of 15 km is the distance currently recommended in NPWS guidance (NPWS, 2010). In addition sites which are otherwise linked to the Project such as those hydrologically linked to the site boundary but located at distances greater than 15km from the site, are included.

In total, six European sites, five SACs and one SPA were located within 15km of the Project, in addition to a further two SACs and three SPAs within Dublin Bay which are hydrologically linked to the Project. European Sites within the 15km potential zone of influence are illustrated at Figures 4.1 and 4.2 European Sites.

Having firstly determined that the Project is not directly connected with or necessary to the management of any European sites (refer to section 4.1 above), the identified European sites will be screened against the activities of the proposed works in order to appraise whether or not its construction, operation or decommissioning is likely to have a significant effect on any of those European sites.

Details in relation to the QIs and SCIs of these European sites and their SSCOs are provided in Table 4.1.

The information contained in these tables is based on publicly available data on these European sites, which along with the most up-to-date COs for the European sites under consideration, have been sourced from the NPWS website in October 2023.

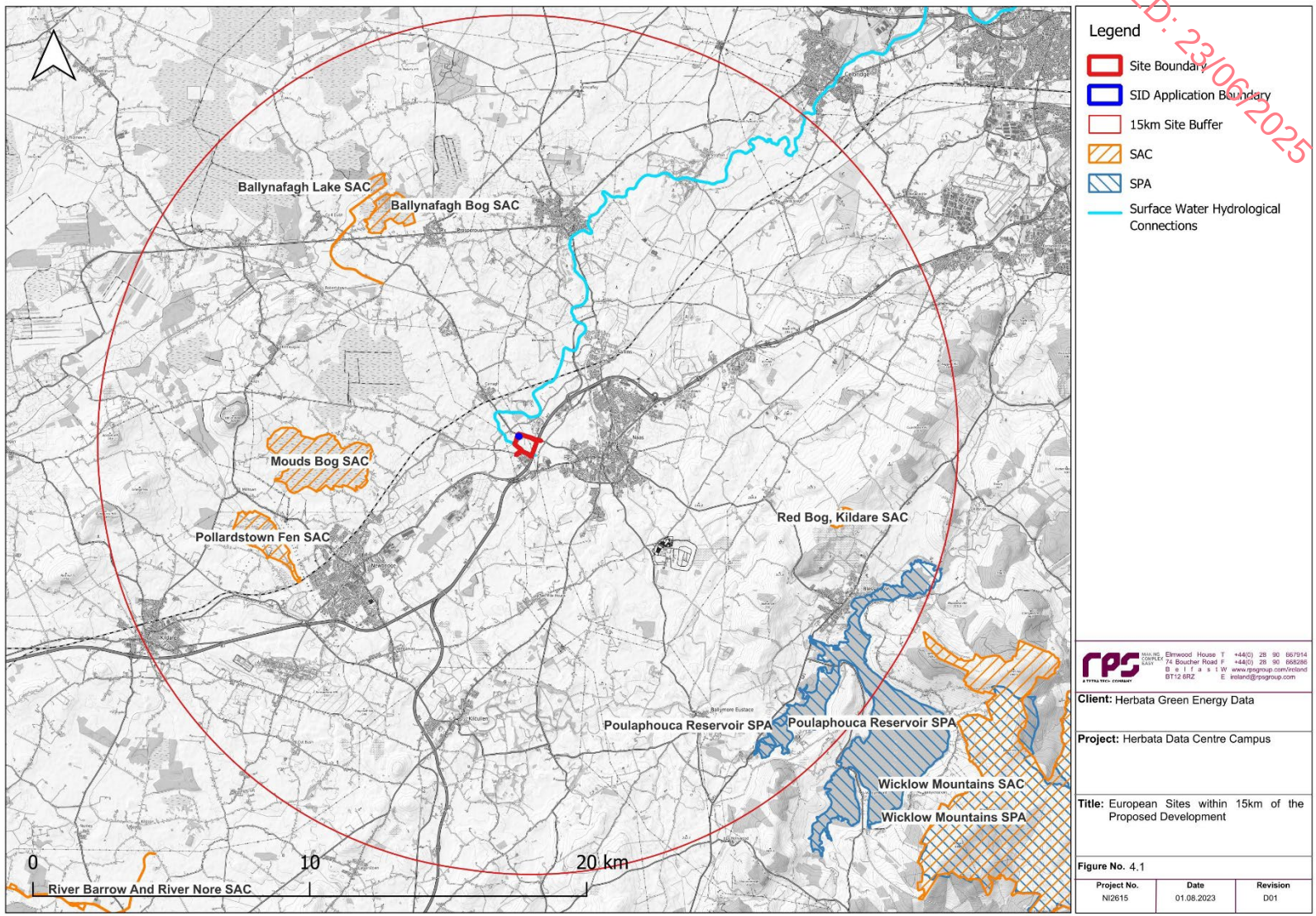

Figure 4.1: European Sites within the anticipated 15km Zone of Influence of the Project

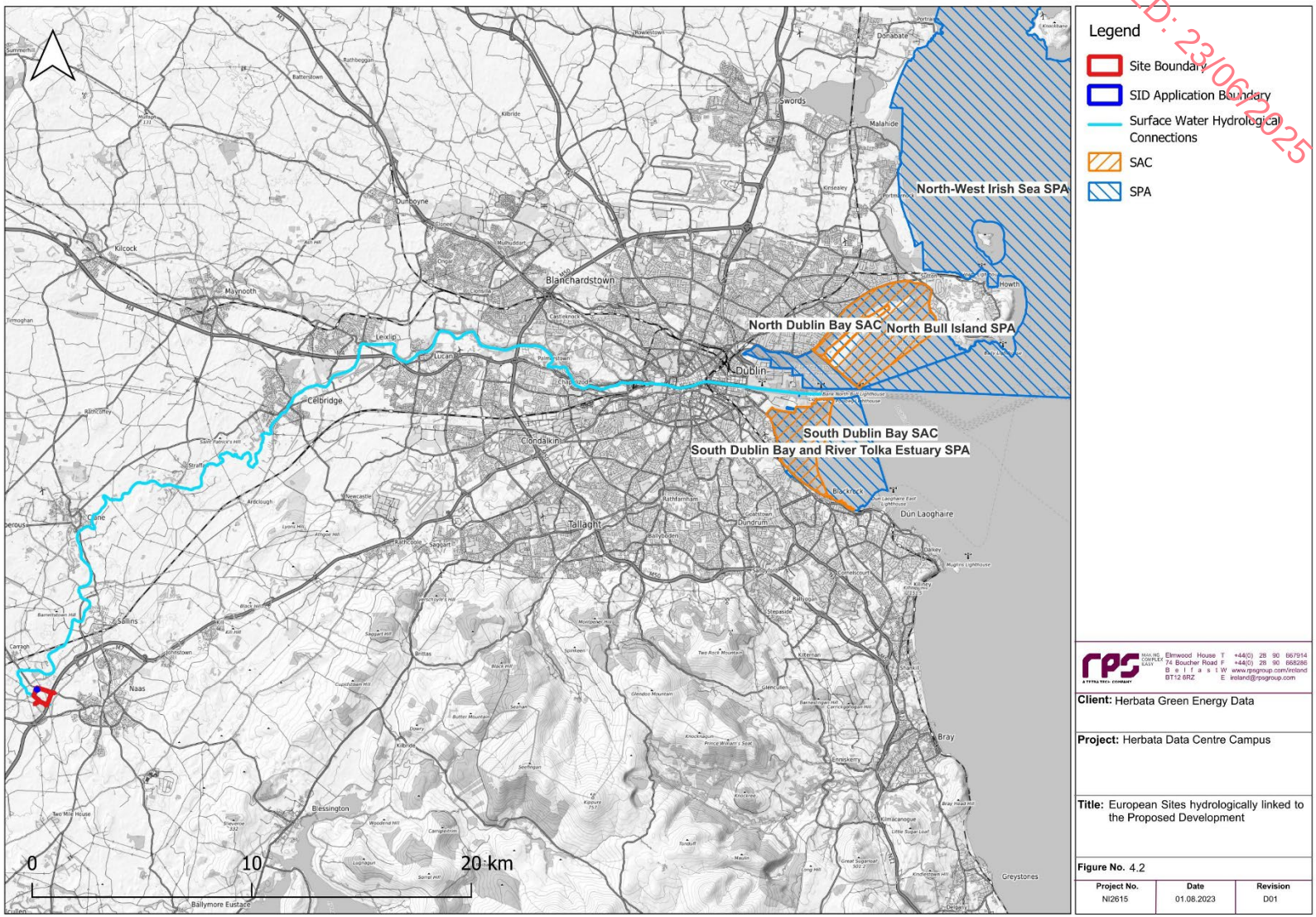

Figure 4.2: European Sites hydrologically linked to the Project

Table 4-1: Natura 2000 sites within the anticipated Zone of Influence of the Proposed Works

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
SACs			
Mouds Bog SAC [IE002331]	• [7110] Active raised bogs • [7120] Degraded raised bogs still capable of natural regeneration • [7150] Depressions on peat substrates of the Rhynchosporion	Conservation Objectives Specific Version 1.0 (20/11/15) To restore the favourable conservation condition of the supported Active raised bog in Mouds Bog SAC as defined by a range of attributes and targets: • **Habitat area**: Restore area of active raised bog to 105.8ha, subject to natural processes; • **Habitat distribution**: Restore the distribution and variability of active raised bog across the SAC; • **High bog area**: No decline in extent of high bog necessary to support the development and maintenance of active raised bog; • **Hydrological regime: water levels**: Restore appropriate water levels throughout the site; • **Hydrological regime: flow patterns**: Restore, where possible, appropriate high bog topography, flow directions and slopes; • **Transitional areas between high bog and adjacent mineral soils (including cutover areas):** Restore adequate transitional areas to support/protect active raised bog and the services it provides; • **Vegetation quality: central ecotope, active flush, soaks, bog woodland**: Restore 52.9ha of central ecotope/active flush/soaks/bog woodland as appropriate; • **Vegetation quality: microtopographical features**: Restore adequate cover of high quality microtopographical features; • **Vegetation quality: bog moss (Sphagnum)** species: Restore adequate cover of bog moss (Sphagnum) species to ensure peat-forming capacity; • **Typical ARB species: flora**: Restore, where appropriate, typical active raised bog flora; • **Typical ARB species: fauna**: Restore, where appropriate, typical active raised bog fauna; • **Elements of local distinctiveness**: Maintain features of local distinctiveness, subject to natural processes; • **Negative physical indicators**: Negative physical features absent or insignificant; • **Vegetation composition: native negative indicator species:** Native negative indicator species at insignificant levels; • **Vegetation composition: non-native invasive species:** Non-native invasive species at insignificant levels and not more than 1% cover;	5.1km W

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Air quality: nitrogen deposition**: Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr; • **Water quality**: Water quality on the high bog and in transitional areas close to natural reference conditions. The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Mouds Bog SAC. Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Mouds Bog SAC.	
Ballynafagh Lake SAC [IE001387]	• [7230] Alkaline fens • [1016] Vertigo moulinsiana (Desmoulin's Whorl Snail) • [1065] Euphydryas aurinia (Marsh Fritillary)	Conservation Objectives Specific Version 1.0 (10/12/21) To restore the favourable conservation condition of the Alkaline fens in Pollardstown Fen SAC as defined by a range of attributes and targets: • **Habitat area**: Area stable or increasing, subject to natural processes; • **Habitat distribution**: No decline, subject to natural processes; • Ecosystem function: soil nutrients: Maintain soil pH and nutrient status within natural ranges; • **Ecosystem function: peat formation**: Maintain active peat formation, where appropriate; • **Ecosystem function: hydrology - groundwater levels**: Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat; • **Ecosystem function: hydrology - surface water flow:** Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions; • **Ecosystem function: water quality**: Maintain, or where necessary restore, appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat; • **Vegetation composition: community diversity**: Maintain variety of vegetation communities, subject to natural processes; • **Vegetation composition: typical brown mosses**; Maintain adequate cover of typical brown moss species; • **Vegetation composition: typical vascular plants**: Maintain adequate cover of typical vascular plant species;	7.3 km NW

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Vegetation composition: native negative indicator species:** Cover of native negative indicator species at insignificant levels; • **Vegetation composition: non-native species**: Cover of non-native species less than 1%; • **Vegetation composition: native trees and shrubs:** Cover of scattered native trees and shrubs less than 10%; • **Vegetation composition: algal cover**: Cover of algae less than 2%; • **Vegetation structure: vegetation height**: At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type; • **Physical structure: disturbed bare ground:** Cover of disturbed bare ground not more than 10%; • **Physical structure: tufa formations**: Disturbed proportion of vegetation cover where tufa is present is less than 1%; • **Indicators of local distinctiveness**: No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes; • **Transitional areas between fen and adjacent habitats**: Restore adequate transitional areas to support/protect the alkaline fen habitat and the services it provides. To maintain the favourable conservation condition of Desmoulin's Whorl Snail (Vertigo moulinsiana) in Ballynafagh Lake SAC as defined by a range of attributes and targets: • **Distribution**: No decline, subject to natural processes. There is one known site for this species in the SAC within the 1km grid squares N8125, N8025, N7927, N8027, N8028, N8128 and N8129; • **Occurrence in suitable habitat**: No decline, subject to natural processes. A baseline figure of 50% positive samples is set; • **Habitat area**: Area of suitable habitat stable or increasing, subject to natural processes; no less than 10ha of at least suboptimal habitat; • **Habitat quality: occupied patches in at least sub-optimal condition**: No decline, subject to natural processes. A baseline of 50% is set; • **Habitat quality: soil wetness**: No decline, subject to natural processes. To maintain the favourable conservation condition of Marsh Fritillary (Euphydryas aurinia) in Ballynafagh Lake SAC as defined by a range of attributes and targets: • **Distribution: occupied 1km grid squares**: No decline, subject to natural processes; • **Proof of breeding: larval webs**: Proof of breeding, confirmed by detection of webs;	

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Potential habitat: area**: Area of potential habitat, stable or increasing, subject to natural processes.	
Ballynafagh Bog SAC [IE000391]	• [7110] Active raised bogs • [7120] Degraded raised bogs still capable of natural regeneration • [7150] Depressions on peat substrates of the Rhynchosporion	Conservation Objectives Specific Version 1.0 (10/11/15) To restore the favourable conservation condition of the supported Active raised bog in Ballynafagh Bog SAC as defined by a range of attributes and targets: • **Habitat area**: Restore area of active raised bog to 26.6ha, subject to natural processes; • **Habitat distribution**: Restore the distribution and variability of active raised bog across the SAC; • **High bog area**: No decline in extent of high bog necessary to support the development and maintenance of active raised bog; • **Hydrological regime: water levels**: Restore appropriate water levels throughout the site; • **Hydrological regime: flow patterns**: Restore, where possible, appropriate high bog topography, flow directions and slopes; • **Transitional areas between high bog and adjacent mineral soils (including cutover areas):** Restore adequate transitional areas to support/protect active raised bog and the services it provides; • **Vegetation quality: central ecotope, active flush, soaks, bog woodland**: Restore 13.3ha of central ecotope/active flush/soaks/bog woodland as appropriate; • **Vegetation quality: microtopographical features**: Restore adequate cover of high quality microtopographical features; • **Vegetation quality: bog moss (Sphagnum)** species: Restore adequate cover of bog moss (Sphagnum) species to ensure peat-forming capacity; • **Typical ARB species: flora**: Restore, where appropriate, typical active raised bog flora; • **Typical ARB species: fauna**: Restore, where appropriate, typical active raised bog fauna; • **Elements of local distinctiveness**: Maintain features of local distinctiveness, subject to natural processes; • **Negative physical indicators**: Negative physical features absent or insignificant; • **Vegetation composition: native negative indicator species:** Native negative indicator species at insignificant levels; • **Vegetation composition: non-native invasive species:** Non-native invasive species at insignificant levels and not more than 1% cover; • **Air quality: nitrogen deposition**: Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr;	8.5km NW

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Water quality**: Water quality on the high bog and in transitional areas close to natural reference conditions. The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Ballynafagh Bog SAC. Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Ballynafagh Bog SAC.	
Pollardstown Fen SAC [IE000396]	• [7210] Calcareous fens with Cladium mariscus and species of the Caricion davallianae • [7220] Petrifying springs with tufa formation (Cratoneurion) • [7230] Alkaline fens • [1013] Vertigo geyeri (Geyer's Whorl Snail) • [1014] Vertigo angustior (Narrow-mouthed Whorl Snail) • [1016] Vertigo moulinsiana (Desmoulin's Whorl Snail)	Conservation Objectives Specific Version 1.0 (14/01/22) To restore the favourable conservation condition of the supported Calcareous fens with Cladium mariscus and species of the Caricion davallianae* in Pollardstown Fen SAC as defined by a range of attributes and targets: • **Habitat area**: Area stable or increasing, subject to natural processes; • **Habitat distribution**: No decline, subject to natural processes; • **Ecosystem function: soil nutrients**: Maintain soil pH and nutrient status within natural ranges; • **Ecosystem function: peat formation**: Maintain active peat formation, where appropriate; • **Ecosystem function: hydrology - groundwater levels**: Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat; • **Ecosystem function: hydrology - surface water flow**: Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions; • **Ecosystem function: water quality**: Maintain, or where necessary restore, appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat; • **Vegetation composition: cover of Cladium mariscus**: Cover of Cladium mariscus at least 25%; • **Vegetation composition: typical vascular plants**: Maintain adequate cover of typical vascular plant species; • **Vegetation composition: native negative indicator species:** Cover of native negative indicator species at insignificant levels; • **Vegetation composition: non-native species**: Cover of non-native species less than 1%;	8.9km SW

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Vegetation composition: native trees and shrubs**: Cover of scattered native trees and shrubs less than 10%; • **Vegetation composition: algal cover**: Cover of algae less than 2%; • **Vegetation structure: vegetation height**: At least 10% of live shoots more than 1m high; • **Physical structure: disturbed bare ground**: Cover of disturbed bare ground not more than 10%; • **Physical structure: tufa formations**: Disturbed proportion of vegetation cover where tufa is present is less than 1%; • **Indicators of local distinctiveness**: No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes; • **Transitional areas between fen and adjacent habitats**: Maintain/restore adequate transitional areas to support/protect the Cladium fen habitat and the services it provides. To restore the favourable conservation condition of the supported Petrifying springs with tufa formation (Cratoneurion)* in Pollardstown Fen SAC as defined by a range of attributes and targets: • **Habitat area**: Area stable or increasing, subject to natural processes; • **Habitat distribution**: No decline, subject to natural processes; • **Hydrological regime: height of water table**; water flow: Maintain appropriate hydrological regimes; • **Physical structure: tufa formations**: Maintain appropriate levels of tufa formation; • **Ecosystem function: water quality - nitrate level**: Maintain/restore nitrate levels to less than 10mg/l; • **Ecosystem function: water quality - phosphate level**: Maintain/restore phosphate levels to less than 15µg/l; • **Vegetation composition: community diversity**: Maintain/restore variety of vegetation communities, subject to natural processes; • **Vegetation composition: positive indicator species**: At least three positive/high quality indicator species as listed in Lyons and Kelly (2016) and no loss from baseline number; • **Vegetation composition: negative indicator species**: Potentially negative indicator species should not be Dominant or Abundant; woody species should be absent in unwooded springs; invasive species should be absent; • **Vegetation composition: algal cover**: Cover of algae less than 2%;	

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Vegetation structure: sward height**: Field layer height between 10cm and 50cm (except for bryophyte-dominated ground <10cm); • Physical structure: trampling/dung: Cover should not be Dominant or Abundant; • **Indicators of local distinctiveness**: No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes. To restore the favourable conservation condition of the Alkaline fens in Pollardstown Fen SAC as defined by a range of attributes and targets: • **Habitat area**: Area stable or increasing, subject to natural processes; • **Habitat distribution**: No decline, subject to natural processes; • Ecosystem function: soil nutrients: Maintain soil pH and nutrient status within natural ranges; • **Ecosystem function: peat formation**: Maintain active peat formation, where appropriate; • **Ecosystem function: hydrology - groundwater levels**: Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat; • **Ecosystem function: hydrology - surface water flow:** Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions; • **Ecosystem function: water quality**: Maintain, or where necessary restore, appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat; • **Vegetation composition: community diversity**: Maintain variety of vegetation communities, subject to natural processes; • **Vegetation composition: typical brown mosses**; Maintain adequate cover of typical brown moss species; • **Vegetation composition: typical vascular plants**: Maintain adequate cover of typical vascular plant species; • **Vegetation composition: native negative indicator species:** Cover of native negative indicator species at insignificant levels; • **Vegetation composition: non-native species**: Cover of non-native species less than 1%; • **Vegetation composition: native trees and shrubs:** Cover of scattered native trees and shrubs less than 10%; • **Vegetation composition: algal cover**: Cover of algae less than 2%;	

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Vegetation structure: vegetation height**: At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type; • **Physical structure: disturbed bare ground:** Cover of disturbed bare ground not more than 10%; • **Physical structure: tufa formations**: Disturbed proportion of vegetation cover where tufa is present is less than 1%; • **Indicators of local distinctiveness**: No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes; • **Transitional areas between fen and adjacent habitats**: Restore adequate transitional areas to support/protect the alkaline fen habitat and the services it provides. To maintain the favourable conservation condition of Geyer's Whorl Snail (Vertigo geyeri) in Pollardstown Fen SAC as defined by a range of attributes and targets: • **Distributio**n: No decline, subject to natural processes. There is one known site for this species in the SAC within the 1km grid squares N7615, N7616, N7715, and N7716; • **Occurrence in suitable habitat**: No decline, subject to natural processes. A baseline figure of 50% positive samples is set; • **Habitat area**: Area of suitable habitat stable or increasing, subject to natural processes; no less than 2ha of at least suboptimal habitat, with at least 50% in optimal condition; • **Habitat quality**: No decline, subject to natural processes; • **Habitat quality:** soil wetness: No decline, subject to natural processes. To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail (Vertigo angustior) in Pollardstown Fen SAC as defined by a range of attributes and targets: • **Distribution**: No decline, subject to natural processes. There is one known site for this species in the SAC within the 1km grid squares N7615 and N7715; • **Occurrence in suitable habitat**: No decline, subject to natural processes. A baseline figure of 50% positive samples is set; • **Habitat area**: Area of suitable habitat stable or increasing, subject to natural processes; no less than 2ha of optimal habitat; • **Habitat quality: soil wetness**: No decline, subject to natural processes. • To maintain the favourable conservation condition of Desmoulin's Whorl Snail (Vertigo moulinsiana) in Pollardstown Fen SAC as defined by a range of attributes and targets:	

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Distribution**: No decline, subject to natural processes. There is one known site for this species in the SAC within the 1km grid squares N7615, N7616, N7715 and N7716; • **Occurrence in suitable habitat**: No decline, subject to natural processes. A baseline figure of 75% positive samples is set; • **Density within habitat**: No decline, subject to natural processes; at least 50% of samples should have at least 20 individuals; • **Habitat area**: Area of suitable habitat stable or increasing, subject to natural processes; no less than 10ha of at least suboptimal habitat; • **Habitat quality**: No decline, subject to natural processes; • **Habitat quality: soil wetness**: No decline, subject to natural processes.	
Red Bog, Kildare SAC [IE000397]	• [7140] Transition mires and quaking bogs	Conservation Objectives Specific Version 1.0 (17/07/19) To maintain the favourable conservation condition of Transition mires and quaking bogs in Red Bog, Kildare SAC, as defined by the following list of attributes and targets: • **Habitat area**: Area stable or increasing, subject to natural processes; • **Habitat distribution**: No decline, subject to natural processes; • **Ecosystem function: soil nutrients**: Maintain soil pH and nutrient status within natural ranges; • **Ecosystem function: peat formation**: Maintain active peat formation, where appropriate; • **Ecosystem function: hydrology - water levels:** Maintain appropriate water levels necessary to support the natural structure and functioning of the habitat; • **Ecosystem function: hydrology - flow patterns:** Maintain appropriate topography and water movement regime necessary to support the natural structure and functioning of the habitat; • **Ecosystem function: water quality**: Maintain appropriate water quality to support the natural structure and functioning of the habitat; • **Community diversity:** Maintain variety of vegetation communities, subject to natural processes; • **Vegetation composition: typical vascular plants and bryophytes**: Maintain adequate cover of typical vascular plant and bryophyte species; • **Vegetation composition: native negative indicator species:** Native negative indicator species at insignificant levels; • **Vegetation composition: non-native species**: Cover of non-native species less than 1%; • **Physical structure: drainage**: Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%;	10.9km E

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Physical structure: disturbed bare ground:** Cover of disturbed bare ground less than 10%; • **Indicators of local distinctiveness:** No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes.	
South Dublin Bay SAC [IE000210]	• [1140] Mudflats and sandflats not covered by seawater at low tide • [1210] Annual vegetation of drift lines • [1310] Salicornia and other annuals colonising mud and sand • [2110] Embryonic shifting dunes	Conservation Objectives Specific Version 1.0 (22/08/13) To maintain the favourable conservation condition of the supported Mudflats and sandflats not covered by seawater at low tide of the North Dublin Bay SAC, as defined by a range of attributes and targets: • **Habitat area**: The permanent habitat area is stable or increasing, subject to natural processes; • **Community extent**: Maintain the extent of the Zostera-dominated community, subject to natural processes; • **Community structure: Zostera density: C**onserve the high quality of the Zostera-dominated community, subject to natural processes; • **Community distribution**: Conserve the following community types in a natural condition: Fine sands with Angulus tenuis community complex.	34.7km NE 58km by hydrological connection
North Dublin Bay SAC [IE000206]	• [1140] Mudflats and sandflats not covered by seawater at low tide • [1210] Annual vegetation of drift lines • [1310] Salicornia and other annuals colonising mud and sand • [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) • [1410] Mediterranean salt meadows (*Juncetalia maritimi*) • [2110] Embryonic shifting dunes • [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) • [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)	Conservation Objectives Specific Version 1.0 (06/11/13) To maintain the favourable conservation condition of the supported Mudflats and sandflats not covered by seawater at low tide of the North Dublin Bay SAC, as defined by a range of attributes and targets: • **Habitat area**: The permanent habitat area is stable or increasing, subject to natural processes; • **Community extent**: Maintain the extent of the Mytilus edulis-dominated community, subject to natural processes; • **Community structure: Mytilus edulis density: C**onserve the high quality of the Mytilus edulis-dominated community, subject to natural processes; • **Community distribution**: Conserve the following community types in a natural condition: Fine sand to sandy mud with Pygospio elegans and Crangon crangon community complex; Fine sand with Spio martinensis community complex. To restore the favourable conservation condition of the supported Annual vegetation of drift lines of the North Dublin Bay SAC, as defined by a range of attributes and targets:	34.8km NE 58.5km by hydrological connection

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
	• [2190] Humid dune slacks • [1395] Petalophyllum ralfsii (Petalwort)	• **Habitat area**: The permanent habitat area increasing, subject to natural processes including erosion and succession; • **Habitat distribution**: No decline, or change in habitat distribution, subject to natural processes; • **Physical structure: functionality and sediment supply**: Maintain the natural circulation of sediment and organic matter, without any physical obstructions; • **Vegetation structure: zonation**: Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession; • **Vegetation composition: typical species and sub-communities:** Maintain the presence of species-poor communities with typical species: sea rocket (Cakile maritima), sea sandwort (Honckenya peploides), prickly saltwort (Salsola kali) and oraches (Atriplex spp.); • **Vegetation composition: negative indicator species:** Negative indicator species (including non-natives) to represent less than 5% cover. To restore the favourable conservation condition of the supported Salicornia and other annuals colonising mud and sand of the North Dublin Bay SAC, as defined by a range of attributes and targets: • **Habitat area**: The permanent habitat area increasing, subject to natural processes including erosion and succession; • **Habitat distribution**: No decline, or change in habitat distribution, subject to natural processes; • **Physical structure: sediment supply**: Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions; • **Physical structure: creeks and pans**: Maintain creek and pan structure, subject to natural processes, including erosion and succession; • **Physical structure: flooding regime**: Maintain natural tidal regime; • **Vegetation structure: zonation**: Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession; • **Vegetation structure: vegetation height:** Maintain structural variation within sward; • **Vegetation structure: vegetation cover**: Maintain more than 90% of area outside creeks vegetated; • **Vegetation composition: typical species and sub-communities:** Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009); • **Vegetation structure: negative indicator species** - Spartina anglica: No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1%.	

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		To maintain the favourable conservation condition of the supported Atlantic salt meadows (Glauco-Puccinellietalia maritimae) of the North Dublin Bay SAC, as defined by a range of attributes and targets: • **Habitat area**: The permanent habitat area increasing, subject to natural processes including erosion and succession; • **Habitat distribution**: No decline, or change in habitat distribution, subject to natural processes; • **Physical structure: sediment supply**: Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions; • **Physical structure: creeks and pans**: Maintain creek and pan structure, subject to natural processes, including erosion and succession; • **Physical structure: flooding regime**: Maintain natural tidal regime; • **Vegetation structure: zonation**: Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession; • **Vegetation structure: vegetation height:** Maintain structural variation within sward; • **Vegetation structure: vegetation cover**: Maintain more than 90% of area outside creeks vegetated; • **Vegetation composition: typical species and sub-communities:** sub-communities with typical species listed in SMP (McCorry and Ryle, 2009); • **Vegetation structure: negative indicator species - Spartina anglica**: No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1%. To maintain the favourable conservation condition of the supported Mediterranean salt meadows (Juncetalia maritimi) of the North Dublin Bay SAC, as defined by a range of attributes and targets: • **Habitat area**: The permanent habitat area increasing, subject to natural processes including erosion and succession; • **Habitat distribution**: No decline, or change in habitat distribution, subject to natural processes; • **Physical structure: sediment supply**: Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions; • **Physical structure: creeks and pans**: Maintain creek and pan structure, subject to natural processes, including erosion and succession; • **Physical structure: flooding regime**: Maintain natural tidal regime; • **Vegetation structure: zonation**: Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession;	

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Vegetation structure: vegetation height:** Maintain structural variation within sward; • **Vegetation structure: vegetation cover**: Maintain more than 90% of area outside creeks vegetated; • **Vegetation composition: typical species and sub-communities:** sub-communities with typical species listed in SMP (McCorry and Ryle, 2009); • **Vegetation structure: negative indicator species** - Spartina anglica: No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1%. To restore the favourable conservation condition of the supported Embryonic shifting dunes of the North Dublin Bay SAC, as defined by a range of attributes and targets**:** • **Habitat area**: The permanent habitat area increasing, subject to natural processes including erosion and succession; • **Habitat distribution**: No decline, or change in habitat distribution, subject to natural processes; • **Physical structure: functionality and sediment supply**: Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions; • **Vegetation structure: zonation**: Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession; • **Vegetation composition: plant health of foredune grasses**: More than 95% of sand couch (Elytrigia juncea) and/or lyme-grass (Leymus arenarius) should be healthy (i.e. green plant parts above ground and flowering heads present; • **Vegetation composition: typical species and sub-communities**: Maintain the presence of species-poor communities with typical species: sand couch (Elytrigia juncea) and/or lyme-grass (Leymus arenarius) • **Vegetation composition: negative indicator species**: Negative indicator species (including non-native species) to represent less than 5% cover. To restore the favourable conservation condition of the supported Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) of the North Dublin Bay SAC, as defined by a range of attributes and targets**:** • **Habitat area**: The permanent habitat area increasing, subject to natural processes including erosion and succession; • **Habitat distribution**: No decline, or change in habitat distribution, subject to natural processes;	

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Physical structure: functionality and sediment supply**: Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions; • **Vegetation structure: zonation**: Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession; • **Vegetation composition: plant health of dune grasses**: 95% of marram grass (Ammophila arenaria) and/or lyme-grass (Leymus arenarius) should be healthy (i.e. green plant parts above ground and flowering heads present); • **Vegetation composition: typical species and sub-communities:** Maintain the presence of species-poor communities dominated by marram grass (Ammophila arenaria) and/or lyme-grass (Leymus arenarius); • **Vegetation composition: negative indicator species:** Negative indicator species (including non-natives) to represent less than 5% cover. To restore the favourable conservation condition of the supported Fixed coastal dunes with herbaceous vegetation (grey dunes) of the North Dublin Bay SAC, as defined by a range of attributes and targets**:** • **Habitat area**: The permanent habitat area increasing, subject to natural processes including erosion and succession; • **Habitat distribution**: No decline, or change in habitat distribution, subject to natural processes; • **Physical structure: functionality and sediment supply**: Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions; • **Vegetation structure: zonation**: Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession; • **Vegetation structure: bare ground**: Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes; • **Vegetation structure: sward height**: Maintain structural variation within sward; • **Vegetation composition: typical species and sub-communities:** Maintain range of sub-communities with typical species listed in Delaney et al. (2013); • **Vegetation composition: negative indicator species (including Hippophae rhamnoides):** Negative indicator species (including non-natives) to represent less than 5% cover; • **Vegetation composition: scrub/trees**: No more than 5% cover or under control. To restore the favourable conservation condition of the supported Humid dune slacks of the North Dublin Bay SAC, as defined by a range of attributes and targets**:**	

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works

- **Habitat area**: The permanent habitat area increasing, subject to natural processes including erosion and succession;
- **Habitat distribution**: No decline, or change in habitat distribution, subject to natural processes;
- **Physical structure: functionality and sediment supply**: Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions;
- **Physical structure: hydrological and flooding** regime: Maintain natural hydrological regime;
- **Vegetation structure: zonation**: Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession;
- **Vegetation structure: bare ground**: Bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer slacks which can have up to 20% bare ground;
- **Vegetation structure: Vegetation height**: Maintain structural variation within sward;
- **Vegetation composition: typical species and sub-communities:** Maintain range of sub-communities with typical species listed in Delaney et al. (2013);
- **Vegetation composition: cover of Salix repens**: Maintain less than 40% cover of creeping willow (Salix repens);
- **Vegetation composition: negative indicator species**: Negative indicator species (including non-natives) to represent less than 5% cover;
- **Vegetation composition: scrub/trees**: No more than 5% cover or under control.

To maintain the favourable conservation condition of the supported Petalwort *Petalophyllum ralfsii* of the North Dublin Bay SAC, as defined by a range of attributes and targets:

- **Distribution of populations**: No decline;
- **Population size:** No decline. Population at Bull Island estimated at a maximum of 5,824 thalli. Actual population is more likely to be 5% of this, or c. 300 thalli;
- **Area of suitable habitat**: No decline. Area of suitable habitat at Bull Island is estimated at c. 0.04ha ;
- **Hydrological conditions: soil moisture**: Maintain hydrological conditions so that substrate is kept moist and damp throughout the year, but not subject to prolonged inundation by flooding in winter;
- **Vegetation structure: height and cover:** Maintain open, low vegetation with a high percentage of bryophytes (small acrocarps and liverwort turf) and bare ground.

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
SPA			
Poulaphouca Reservoir SPA [IE004063]	• Greylag Goose (*Anser anser*) [A043] • Lesser Black-backed Gull (*Larus fuscus*) [A183]	First Order Site-specific Conservation Objectives Version 1.0 (12/10/22) To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. In order to fully consider and assess any potential effects of the Project on this site, the authors of this report have also had regard to the site-specific conservation objectives for other SPAs which feature the relevant SCI species,including the following objectives which are used here as approximate examples: <u>Greylag Goose *Anser anser*</u> (Taken from Dundalk Bay SPA (NPWS 2011a)) To restore the favourable conservation condition of greylag goose as defined by a range of attributes and targets: • **Winter population trend**: Long term winter population trend within the SPA is stable or increasing; • **Winter spatial distribution**: Sufficient area and availability (in terms of timing and intensity of use) of suitable habitat to support the population target; • **Disturbance at wintering site**: The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution; • **Barriers to connectivity and site use**: The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA; • **Forage spatial distribution, extent and abundance**: Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target; • **Roost spatial distribution and extent:** Sufficient number of locations, area and availability of suitable roosting habitat to support the population target; • **Supporting habitat: area and quality**: Sufficient area of utilisable habitat available in ecologically important sites outside the SPA. <u>Lesser Black-backed Gull *Larus fuscus*</u> (Taken from Saltee Islands SPA (NPWS 2011b)) To maintain the favourable conservation condition of Lesser Black-backed Gull as defined by a range of attributes and targets:	11.2km SE

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
		• **Population trend:** Long term population trend stable or increasing; • **Distribution**: No significant decrease in the range, timing or intensity of use of areas by lesser black-backed gull, other than that occurring from natural patterns of variation.	
South Dublin Bay and River Tolka Estuary SPA [IE004024]	• Light-Bellied Brent Goose (*Branta bernicla hrota*) [A046] • Oystercatcher (*Haemotopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Knot (Calidris canutus) [A143] • Sanderling (*Calidris alba*] [A144] • Dunlin (*Calidris alpina*) [A149] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Redshank (*Tringa totanus*) [A162] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Roseate Tern (*Sterna dougallii*) [A192] • Common Tern (*Sterna hirundo*) [A193] • Arctic Tern (*Sterna paradisaea*) [A194] • Wetland and Waterbirds [A999]	Conservation Objectives Specific Version 1.0 (09/03/15) To maintain the favourable conservation condition of the supported populations of wintering SCI bird species of the South Dublin Bay and River Tolka Estuary SPA, as defined by a range of attributes and targets: • **Population trend**: Long term population trend stable or increasing; • **Distribution**: No significant decrease in the range, timing or intensity of use of areas by the SCI species, other than that occurring from natural patterns of variation. To maintain the favourable conservation condition of the supported populations of breeding SCI tern species of the South Dublin Bay and River Tolka Estuary SPA, as defined by a range of attributes and targets: • **Passage population: individuals**: No significant decline. • **Distribution: roosting areas**: No significant decline. • **Prey biomass available**: No significant decline. • **Barriers to connectivity**: No significant increase. • **Disturbance at roosting site:** Human activities should occur at levels that do not adversely affect the numbers of terns among the post-breeding aggregation of terns. • **Breeding population abundance: apparently occupied nests (AONs)**: No significant decline. (Common Tern only); • **Productivity rate: fledged young per breeding pair:** No significant decline. (Common Tern only); • **Distribution: breeding colonies:** No significant decline. (Common Tern only); • **Disturbance at breeding site:** Human activities should occur at levels that do not adversely affect the breeding common tern population. (Common Tern only). To maintain the favourable conservation condition of the wetland habitat in South Dublin bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target: • **Habitat area**: The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 hectares, other than that occurring from natural patterns of variation.	34.7km NE 58km by hydrological connection

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
North Bull Island SPA [IE004006]	• Light-Bellied Brent Goose (*Branta bernicla hrota*) [A046] • Shelduck (*Tadorna tadorna*) [A048] • Teal (*Anas crecca*) [A052] • Pintail (*Anas acuta*) [A054] • Shoveler (*Anas clypeata*) [A056] • Oystercatcher (*Haematopus ostralegus*) [A130] • Golden Plover (*Pluvialis apricaria*) [A140] • Grey Plover (*Pluvialis squatarola*) [A141] • Knot (Calidris canutus) [A143] • Sanderling (*Calidris alba*) [A144] • Dunlin (*Calidris alpina*) [A149] • Black-tailed Godwit (*Limosa limosa*) [A156] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Turnstone (*Arenaria interpres*) [A169] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Wetland and Waterbirds [A999]	Conservation Objectives Specific Version 1.0 (09/03/15) To maintain the favourable conservation condition of the supported populations of SCI bird species of the North Bull Island SPA, as defined by a range of attributes and targets. • **Population trend**: Long term population trend stable or increasing; • **Distribution**: No significant decrease in the range, timing or intensity of use of areas by the SCI species, other than that occurring from natural patterns of variation. To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target: • **Habitat area**: The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1,713 hectares, other than that occurring from natural patterns of variation.	36.7km NE 58.5km by hydrological connection
North-West Irish Sea cSPA [IE004236]	• Common Scoter (*Melanitta nigra*) [A065] • Red-throated Diver (*Gavia stellata*) [A001] • Great Northern Diver (*Gavia immer*) [A003] • Fulmar (*Fulmarus glacialis*) [A009] • Manx Shearwater (*Puffinus puffinus*) [A013] • Shag (*Phalacrocorax aristotelis*) [A018] • Cormorant (*Phalacrocorax carbo*) [A017]	Conservation Objectives Specific Version 1.0 (19/09/23) To maintain or restore the favourable conservation condition of the supported populations of SCI bird species of the North-west Irish Sea cSPA, as defined by a range of attributes and targets. For each of the SCI species the following attributes and targets are published in respect of their conservation objectives: • **Breeding population size**: No significant decline;	36.7km NE 58.5km by hydrological connection

Site name	Qualifying Interest (QI)	Conservation Objectives	Distance and direction of European site from the Proposed Works
	• Little Gull (*Larus minutus*) [A177] • Kittiwake (*Rissa tridactyla*) [A188] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Lesser Black-backed Gull (*Larus fuscus*) [A183] • Herring Gull (*Larus argentatus*) [A184] • Great Black-backed Gull (*Larus marinus*) [A187] • Little Tern (*Sterna albifrons*) [A195] • Roseate Tern (*Sterna dougallii*) [A192] • Common Tern (*Sterna hirundo*) [A193] • Arctic Tern (*Sterna paradisaea*) [A194] • Puffin (*Fratercula arctica*) [A204] • Razorbill (*Alca torda*) [A200] • Guillemot (*Uria aalge*) [A199]	• **Spatial distribution:** Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population; • **Forage spatial distribution, extent, abundance and availability:** Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target; • **Disturbance across the site**: The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution; and • **Barriers to connectivity**: The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA.	

4.3 Potential Effects

4.3.1 Ascertaining whether or not Pathways of Effect exist

The possibility of significant effects is considered using a source-pathway-receptor model. 'Source' is defined as the individual elements of the proposed works that have the potential to affect the identified ecological receptors both within the European site and outside of it in accordance with the 'Holohan' judgment (refer section 2.4 above). 'Pathway' is defined as the means or route by which a source can affect the ecological receptor. 'Ecological receptor' is defined as the SCI (of SPAs) or QI (of SACs) for which COs have been set for the European sites under consideration. Each element can exist independently however an effect is created when there is a linkage between the source, pathway and receptor.

Possible direct and indirect effects arising as a result of activities undertaken as part of the project are as follows:

- Direct Effects:
  - Habitat loss;
  - Aerial noise and/or visual disturbance or displacement of Annex II qualifying species or Special Conservation Interest (SCI) bird species; and
  - Underwater noise and vibration.
- Indirect Effects
  - Reduction in water quality and habitat deterioration of Annex I habitats in SACs, wetland habitats in SPAs and non-annex habitats resulting in impacts to Annex Ii species, as result of suspended sediments or pollution incidents.

Given the sites location, which is isolated from any nearby European sites, in addition to the nature of the Project which will not give rise to operational phase recreational disturbance or operational phase collision risk, among other potential effect pathways, no further pathways for effect upon European sites will arise as a result of the Project.

4.3.2 Habitat Loss

The Project will not take place within any European site. There will be no direct habitat loss from any European site as a result of the proposed works.

Likely significant effects will not occur as a result of direct habitat loss.

The site is hydrologically connected to a number of European sites supporting coastal and marine habitats. Consideration is then given as to whether or not the Proposed Works could indirectly affect the qualifying habitats of any of those European sites.

4.3.3 Aerial Noise and Visual Disturbance

The proposed works will give rise to no works within proximity to any European sites. Annex II species populations and Annex I SCI bird populatiosn of nearby SACs or SPAs respectively are highly unlikley to be present within the site and it is known that the site is not used as supporting habitat by any such populations.

Likely significant effects will therefore not occur as a result of aerial noise and visual disturbance.

4.3.4 Underwater Noise and Vibration

The proposed works will involve relatively limited works in relative proximity to a single minor watercourse, the Bluebell Stream, which is hydrologically linked to the South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA and North-West Irish Sea cSPA.

The site is distant (at least 58km) from any hydrologically linked European sites, which are additionally not designated on account of Annex II species which are sensitive to the effects of underwater noise or vibration. No Annex II species known to be sensitive to effects associated with underwater noise or vibration is likely to be subject to any adverse effects as a result of the Project, given their absence from the affected areas.

There is no possibility of a likely significant effect as a consequence of underwater noise emissions or vibration arising as a result of the proposed works.

4.3.5 Water Quality and Habitat Deterioration

Aspects of the Project, inclusive of works within proximity to the Bluebell stream, a minor watercourse, including proposed watercourse crossings utilising an open-cut methodology in addition to general construction activities and earthworks across the site in proximity to field drains, have potential to give rise to elevated concentrations of suspended sediments within the freshwater environment.

Potential operational phase impacts to the aquatic environment are limited to those associated with pollution and sedimentation arising as a result of contaminated surface water run-off in addition to the inappropriate discharge of foul water into the aquatic environment.

As set out above the site is hydrologically connected to a number of European sites within Dublin Bay, via the Bluebell Stream and subsequently the River Liffey, including the South Dublin Bay SAC and North Dublin Bay SAC and the South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA and North-West Irish Sea cSPA. The Project is located at a minimum distance of 34.7km from each of these European sites (straight-line distance) and is linked to them by a hydrological pathway at least 58km in length.

There is no potential for the Project to give rise to any impacts through water quality and habitat deterioration effects upon other European sites which are not hydologically connected to the site. This is inclusive of all other European sites included at Table 4.1 including Poulaphouca Reservoir SPA, Mouds Bog SAC, Ballynafagh Lake SAC, Ballynafagh Bog SAC, Pollardstown Fen SAC or Red Bog, Kildare SAC.

Proposed works which will take place within 10m of the Bluebell Stream, with potential to result in run-off of sediments and pollutants and thus linked to the sites via an identifiable impact pathway, will be limited to the proposed temporary open cut watercourse crossing required in order to facilitate the delivery of the foul sewer and fibre cable connection in addition to the installation of a culvert to facilitate delivery of the secondary site access and any associated works. These works, with potential to directly impact upon the watercourse, are extremely limited and small-scale in nature and will be undertaken over an extremely limited time period and in line with best practice measures, in dry conditions following damming and fluming of the relevant lengths of watercourse.

The construction phase will also involve significant earth works to facilitate site levelling and the creation of Sustainable Drainage Systems (SuDS). Such works have potential to result in adverse impacts upon the aquatic environment through the inadvertent release of such sediment materials into the Bluebell Stream. Given that the stream is in places more akin to a large field drain, it is considered highly likely that such released sediments would be deposited quickly and not borne downstream in suspension as the stream support generally weak flows. Over the 58km pathway separating the site and downstream European sites any sediments or pollutants arising as a result of the Project would be subject to deposition or dilution within the extremely large volumes of water within the River Liffey prior

to discharge to Dublin Bay itself. It is noted that the River Liffey drains a catchment of 1,256km^2 with associated existing agricultural sediment loads and diffuse inputs.

Significant mixing of seawater occurs in Dublin Bay with freshwater flowing in from the surrounding river catchments. The mixing and dilution of any polluting materials that nonetheless escape to the marine environment as a result of the proposed works will be further aided by the tidal currents, wind and wave climate which transport and continue to mix the seawater and freshwater (and any polluting substances) both into and out of the Liffey Estuary, and help it disperse widely and dilute to much lower concentrations throughout Dublin Bay to the point where it cannot be detected above background levels. On this basis any potential minor inputs arising as a result of the proposed works are highly likely to be undetectable at the point at which any such materials reach any European sites which lie at distances greater than 58km downstream of the proposed works.

Furthermore, it is noted that Annex I habitats, Annex II species and SPA bird populations which comprise the qualifying interests of the relevant downstream SACs and SPAs are not particularly sensitive to the effects of sedimentation. The transportation and deposition of sediments within Dublin Bay are part of a natural ongoing process which has contributed to the favourable conservation status of the relevant SACs and SPAs and their qualifying interests. Water qualitfy is not specifically listed as an attribute within the conservation objecties for any of the relevant qualifying features of the SACs and SPAs within Dublin Bay.

Therefore, potential construction and operational phase effects associated with sedimentation, pollution, surface water runoff, and foul water have no potential to give rise to a measurable effect upon the downstream European sites within Dublin Bay. This conclusion is drawn in light of the relatively small-scale nature of such potential inputs, the length of the hydrological pathway, the nature of the Liffey catchment which is already subject to significant input of sediments and other materials which , in addition to the nature of the relevant European sites which are not designated on account of qualifying interests which are known to be sensitive to impacts associated with sedimentation or minute changes in water quality, effects which are nonetheless not anticipated to occur as a result of the operational phase of the Project.

Further to the above information, it is noted that the proposals will incorporate a range of standard water quality and flood protection measures including the implementation of industry standard best practice measures for the protection of surface waterbodies at construction phase and the construction of extensive SuDS features and associated interceptors and drainage swales which will function at operational phase. As set out above, at Section 3.3 and in line with the legal considerations set out within Section 2.3, these measures have been incorporated into the Project as standard features, inherent in the Project, and irrespective of any effect on any European site. They are industry standard best practice measures which would be implemented regardless of the presence or absence of linked European sites.

On the basis of the above, likely significant water quality or habitat deterioration effects upon the South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA and North-West Irish Sea cSPA or any further European sites is excluded at the screening stage.

4.4 In-Combination Effects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are also considered. As set out in the Commission's 2018 Notice (EC, 2019), significance of effect will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned. The significance of any identified combined effects of the Proposed works alongside other past, present or reasonably foreseeable future plans or projects must be evaluated.

In that context, plans or projects which are completed, approved but uncompleted, or proposed have been considered. EC (2019) specifically advises that "as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those

which have been actually proposed, i.e. for which an application for approval or consent has been introduced".

Future Gas Networks Ireland Infrastructure Upgrade Works

As set out in Chapter 3 of the EIAR, 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 GNI gas network is required to provide the supply to the gas turbines.

A high-pressure gas pipe is expected to be made available by GNI at the proposed Data Centre site boundary on the R409. This will then feed into an AGI gas infrastructure compound, to be constructed as part of the Data Centre development, to reduce the pressure to 24 Bar. This supply is required to feed the on-site power generation solution for the Data Centres.

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 in-combination effects of the Project with the GNI Gas Connection have been considered and assessed in this Appropriate Assessment Screening Report.

A report has been prepared by Donnachadh O'Brien & Associates Consulting Engineers Ltd. in order to inform this consideration and assessment of the in-combination effects of the Project with the GNI Gas Connection, which identifies the most likely route for the new high-pressure gas distribution pipeline and describes the works that are required to provide same, and which provides sufficient detail and information to allow a robust in combination effects assessment to be conducted. That report is included at Appendix I to this Appropriate Assessment Screening Report.

The proposed construction methodology for the gas pipeline, as set out in the report of Donnachadh O'Brien & Associates Consulting Engineers Ltd. (see Appendix I), will include for 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. Such watercourse crossings will utilise either an open excavation for drainage ditches and drains and the use of directional drilling / pipe-jacking as appropriate.

The European Sites that may fall within the zone of influence of the future GNI Connection Works are limited to those which also lie downstream of the Herbata project, as discussed above, including the various SACs and SPAs within Dublin Bay. No further European sites are considered relevant to the GNI connection works due to the lack of supported pathways for effect, including the lach of surface water hydrological connections.

Having considered and assessed the most likely route of the new high-pressure gas distribution pipeline, the European Sites within the zone of influence of the future works, and the nature and extent of the works required, as set out in the report of Donnachadh O'Brien & Associates Consulting Engineers Ltd. (see Appendix I), it is the professional opinion of the authors of this report that the future gas pipeline connection to the Project, in combination with the Project, will have no potential to give rise to any likely significant effects on any European Sites, and that there is no doubt in relation to this conclusion.

Furthermore, any future GNI connection application will be undertaken following its own environmental assessment procedure and as such will be subject to the same obligations as the Project in respect of the extent of mitigation measures and standard good practice at construction, with a minimal footprint.

While a range of applications have been submitted or approved within proximity to the Proposed Development, 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 in-combination with the Proposed Development.

Further Plans and Projects

The Kildare County Council Planning Portal in addition to the An Bord Pleanala case database, were consulted to establish whether there are additional projects which will be considered for their potential in-combination effects. Table 4-2, identifies all those projects which have been assessment with regards to cumulative impacts. These projects were also assessed in respect of the accompanying EIAR.

Table 4-2: Projects Assessed for Cumulative Impacts

Planning Reference	Address	Description	Status	Determination Date	AA Screening or NIS Completed (Yes or No)	Assessment of Potential In-combination Effects
201418	Kerdiffstown and Monread North,Naas,Co. Kildare	A proposed solar farm on an area of approximately 10.8 hectares, comprising photovoltaic panels on ground mounted frames, 4 no. single storey inverter/transformer stations, 1 No. onsite terminal station, storage containers and temporary site compound, security fencing, new and upgraded internal access tracks, CCTV and all associated ancillary development works. Elgin Energy Services Limited are applying for the proposed solar farm to have planning permission that is effective for 10 years (and an operational period of 40 years)	Granted	05/05/2021	No	While the site also lies upstream of the Dublin Bay Natura 2000 sites, the proposals do not involve significant works within proximity to a watercourse. Furthermore the proposed development will incorporate a range of measures intended to protect the natural environment, (see Condition 9 of the Schedule of Conditions for the approved scheme). No in-combination effects are predicted.
PL09.305953	Townlands of Drehid, Mulgeeth,Ballynamullagh, Mucklon, Kilmurray (Carbury By),Killyon and Timahoe East, Co. Kildare	A ten-year planning permission to develop a renewable energy development. The proposed renewable energy development will comprise of (a) the construction and operation of 2 areas of solar photovoltaic arrays mounted on metal frames over an area of approximately 200ha, and having a maximum overall height of 3 metres over ground level; (b) Internal solar farm underground cabling; (c) 2 no. temporary construction compounds; (d) recreation and amenity works, including looped walk (upgrade of existing tracks and provision of new tracks, car parking and vehicular access); (e) 1 no. Battery Storage compound; (f) upgrade of existing tracks and provision of new site access roads; (g) site drainage; (h) forestry felling and replanting; (i) permanent signage; and (j) all associated site development and ancillary works. The proposed renewable energy development will have an operational life of 35 years from the date of commissioning. The overall renewable energy project also includes the provision of a 110kV substation with associated electrical plant, welfare facilities, waste water holding	Granted	29/07/2020	Yes	No LSEs were predicted to arise to any Natura 2000 sites identified as relevant to this assessment due to it's location, the nature of the works and the lack of hydrological connectivity to downstream sites. No in-combination effects are predicted to arise.

		tank, security fencing, upgrade of existing tracks and provision of new site access roads, 110kV overhead line grid connection cabling with associated angle lattice masts and supporting polesets and all ancillary works				
18969	Brownstown and Carnalaway, Kilcullen, Co. Kildare	A solar farm to be installed over restored landfill with an export capacity of approximately 3MW comprising photovoltaic panels on ground mounted frames, connection to existing single-storey ESB Sub- Station / switch room building, installation of 3 No. transformers, ducting and underground electrical cabling and all associated ancillary works and services. Revised by significant further information consisting of; construction management plan detailing construction techniques	Granted	21/08/2019	No	This proposal lies significantly distant from the proposed development and does not lie within the Liffey catchment, it does however lie within the catchment of the River Dodder, which also discharges to Dublin Bay. KCC determined that no AA Screening was required in respect of this project which will not give rise to likely significant downstream effects. No in-combination effects are predicted to arise.
18250	Killeenlea, Ardrass Lower & Killadoon, Celbridge, Co. Kildare	A 10 year permission (to construct development) for a solar farm comprising: the installation of photovoltaic panels on ground mounted frames in rows on a site of C.47.44 hectares, a single storey onsite 38kV substation with compound, with 2 no single storey storage containers, 25 no. invertor stations , ducting & underground electrical cabling, perimeter fencing, 23.no mounted CCTV Cameras, provision of a new access from the L5066/Killadoon Road, provision of internal access tracks, and all associated site development and landscaping works	Granted	12/01/2019	No	This proposal lies significantly distant from the proposed development. No likley significant effects upon downstream Natura 2000 sites are predicted to arise as a result of the proposal. No in-combination effects are predicted to arise.
12577	Bord na Mona, Main Street, Newbridge, Co. Kildare.	Construction of a new I.T. data centre building, concrete slab to facilitate a 550 Kva back-up generator and a concrete fuel storage bund to hold a 3000L fuel tank	Granted	03/09/2012	No	This proposal lies significantly distant from the proposed development, within the River Liffey Catchment. This project was not deemed to have any potential to give rise to any downstream effects upon Natura 200 sites. No in-combination effects are predicted to arise.
18247	Porterstown and Kilteel Lower, Kill, Co. Kildare	Development of a grid system services facility within a total site area of up to 1.95 hectares, to include 1no. TSO compound including 1no. single storey TSO	Granted	11/06/2018	Yes	This development, which is located significantly separated from the project, was subject to AA Screenign which

		electrical substation building and 1no. single storey customer substation, 1no. customer switchgear, electrical inverter /transformer station modules, containerised battery storage modules on concrete support structures, heating, ventilation and air conditioning units (HVAC units), access tracks and upgraded site entrance, associated electrical cabling and ducting, security gates, perimeter security fencing, CCTV security monitoring system, culverts and landscaping works and all associated ancillary infrastructure				determined no likley significant effects to any Natura 200o sites would arise. No in-combination effects are predicted to arise.
20745	Porterstown, Kill, Co. Kildare.	The development of a new electrical substation and additional equipment in the existing ESB Kilteel 110kV Substation to facilitate the connection of the Porterstown Battery Storage Facility (Planning Ref 18/247) The total site area is 1.2 hectares. The new electrical substation will include 1 control building (GRP Containerised Substation), a 110kV transformer, surge arresters, instrument transformers, a 110kV busbar connecting to the ESB substation, a lightning mast and other electrical equipment to be installed on concrete support structures. Additional features will include palisade fencing, security gates, access tracks, external lighting, drainage, associated electrical cabling and ducting, CCTV security monitoring system, landscaping and all associated ancillary infrastructure. The additional equipment to be installed in the ESB substation to facilitate the connection of the new substation will include a 110kV busbar extension, a 110kV transformer bay, a 110kV coupler bay, a 110kV busbar connecting to the new substation, an interface kiosk, palisade fencing, a lightning mast and all associated ancillary infrastructure required for the connection	Granted	05/10/2020	Yes	This proposed development, which is significantly spatially separated from the proposals, was subject to AA Screening, concluding that no LSE would occur to any Natura 2000 sites. No in-combination effects are predicted to arise.
PL09.310841	Dunnstown, Co. Kildare	A 10 year planning permission for the construction of: 1. An enclosed battery energy storage system compound on c. 4.089 ha with 76 no. battery storage units (each with associated containerised step-up transformer), 1 no. containerised control room and 1 no. containerised switch room, 1 no. containerised switchgear unit and CCTV cameras; 2. new site entrance off the L6044 and	Granted with Conditions after Appeal	30/09/2022	Yes	This proposal was subject to screening for appropriate assessment. This AA Screening was then reviewed by the ABP inspector who further clarified its validity and that no LSEs would arise to any Natura 2000 sites as a result of the development.

		site access road; 3. site access road extension to a proposed substation site (proposed substation currently subject of a Strategic Infrastructure Development Pre-Application Consultation with An Bord Pleanála); and 4. all associated ancillary development works. The operational lifespan of the battery energy storage system will be 35 years.				No in-combination effects are predicted to arise.

Having consulted the Kildare County Council Planning Portal in addition to any further An Bord Pleanala case database, there are no additional projects which will be considered for their potential in-combination effects, with all recent applications in the vicinity of the proposed works being small-scale developments including proposals for single dwellings, outbuildings, and domestic conversions which have no potential to act in-combination with the project.

While a range of applications have been submitted or approved within proximity to the Proposed Development, 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 in-combination with the Proposed Development.

On this basis of the above it is considered that the assessed projects will have no potential to give rise to any in-combination effects upon ecological receptors when considered alongside the Proposed Development.

The only plan considered to have relevance to this in-combination assessment is the Kildare County Development Plan (2023-2029). This plan was subject to Appropriate Assessment which concluded that the Plan would, subject to the implementation of a range of mitigation measures, not give rise to any adverse impacts upon any Natura 2000 sites. Furthermore the project site is zoned within this local plan for the construction of a data centre. On this basis it is not considered that the Kildare Development Plan would have potential to give rise to likley significant in-combination effects upon any Natura 2000 sites when considered alongside the project.

5. CONCLUSIONS OF THE STAGE 1 SCREENING ASSESSMENT

This Appropriate Assessment Screening Report has been prepared in accordance with EU and Irish law and relevant European Commission and national guidelines to determine whether or not the Project is likely to have a significant effect upon any European site.

The project is not directly connected with or necessary to the management of any European site.

Following an examination, analysis and evaluation of all relevant information, on the basis of objective information and in light of the best scientific knowledge and applying the precautionary principle, it can be concluded that the project, either individually or in combination with other plans or projects, and in the absence of mitigation, is not likely to have a significant effect on any European site(s) in view of their site-specific conservation objectives. It is considered that there is no reasonable scientific doubt as to the absence of such effects.

This conclusion is drawn in light of the nature of the project, its proximity and linkages to European sites, the lack of identifiable pathways for effect and the nature of the qualifying interests of those European sites.

In reaching this conclusion, the nature of the Project and its relationship with all European Sites within the zone of influence, and their site-specific conservation objectives, has been fully considered.

Therefore it is the professional opinion of the author of this report that the proposed Project does not require a Stage 2 Appropriate Assessment.

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A.1 Appendix I: Gas Networks Ireland Infrastructure Upgrade Outline Report (Donnachadh O'Brien & Associates Consulting Engineers Ltd)

DONNACHADH O'BRIEN
& ASSOCIATES CONSULTING ENGINEERS

HERBATA
GREEN ENERGY DATA

Herbata Data Centre

Naas, Co. Kildare

Gas Networks Ireland Infrastructure Upgrade

Outline Report

(Planning Submission)

2232-DOB-XX-XX-RP-C-0003

December 2023

DONNACHADH O'BRIEN
& ASSOCIATES CONSULTING ENGINEERS

Document Control

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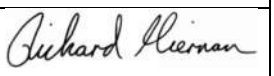
Author:		Richard Kiernan		Signed:	
Issue	Date	Status	Issued to	Copies	Checked for Issue
S3 – P01	05/12/2023	Final for Planning	Client / RPS / HDR	1E	

Contents

1 Introduction

Donnachadh O'Brien & Associates Consulting Engineers Ltd. (DOBA) have been instructed by Herbata Limited to prepare a report in relation to the future Gas Networks Ireland (GNI) infrastructure upgrade works required to construct a new high-pressure gas distribution pipeline from the existing GNI Above Ground Installation (AGI) at Glebe West, Co. Kildare to the proposed Herbata Data Centre development at Halverstown, Naas, Co. Kildare, circa 9.5km northwest.

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 AGI to regulate the supply to the turbines, a physical connection to the GNI gas network is required to provide the supply to the gas turbines.

A high-pressure gas pipe is expected to be made available by GNI at the proposed Data Centre site boundary on the R409. This will then feed into an AGI gas infrastructure compound, to be constructed as part of the Data Centre development, to reduce the pressure to 24 Bar. This supply is required to feed the on-site power generation solution for the Data Centres.

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 have been considered and assessed in the related Appropriate Assessment Screening Report.

This Report has been prepared in order to inform this consideration and assessment of the cumulative impacts of the Project with the GNI Gas Connection, and provides sufficient detail and information to allow a robust cumulative impacts assessment to be conducted.

While, as noted above, the final design of the upgrade works is subject to GNI design specifications and the works will be undertaken by GNI, this report identifies the most likely route for the new high-pressure gas distribution pipeline and describes the works that are required to provide same.

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 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 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 based on expert knowledge of the existing road and service infrastructure networks in the Naas area and with reference to the GNI publications "Guidelines for Designers and Builders - Industrial and Commercial (non-Domestic) Sites" and "Safety Advice for working in the vicinity of Gas pipes 2021".

This report comprises a review of the required works under the following headings:

- Most Likely Route
- Description of the Works

2 Most Likely Route

2.1 Existing GNI Infrastructure

From a review of the available GNI infrastructure maps we note that there is an existing 150mm dia. 70 Bar transmission pipe running from the AGI at Glebe West to the Naas Town AGI on the Ballymore Eustace Road.

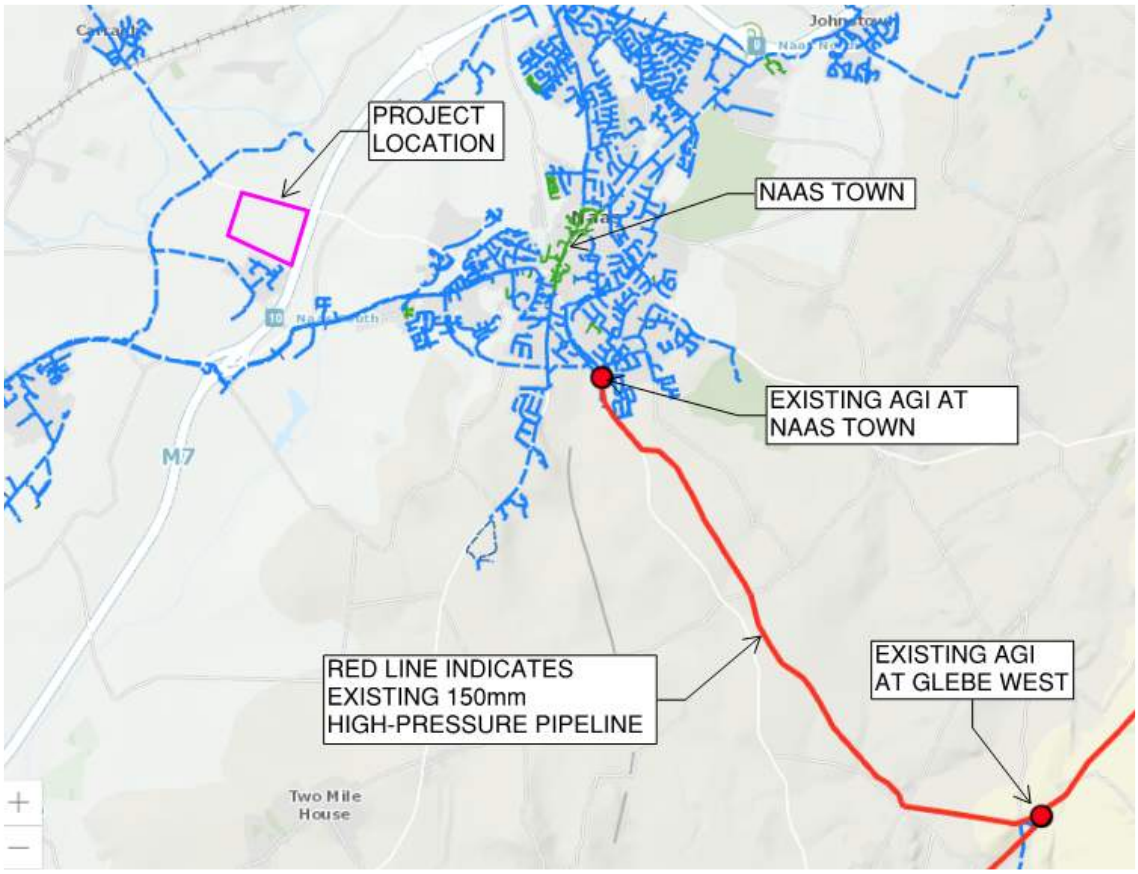


Figure 2-1 - Extract from GNI mapping indicating high pressure transmission pipe route from Glebe West AGI to Naas Town AGI

This transmission pipe runs primarily across agricultural land before crossing the public park at Oak Park and terminating at the Naas Town AGI.

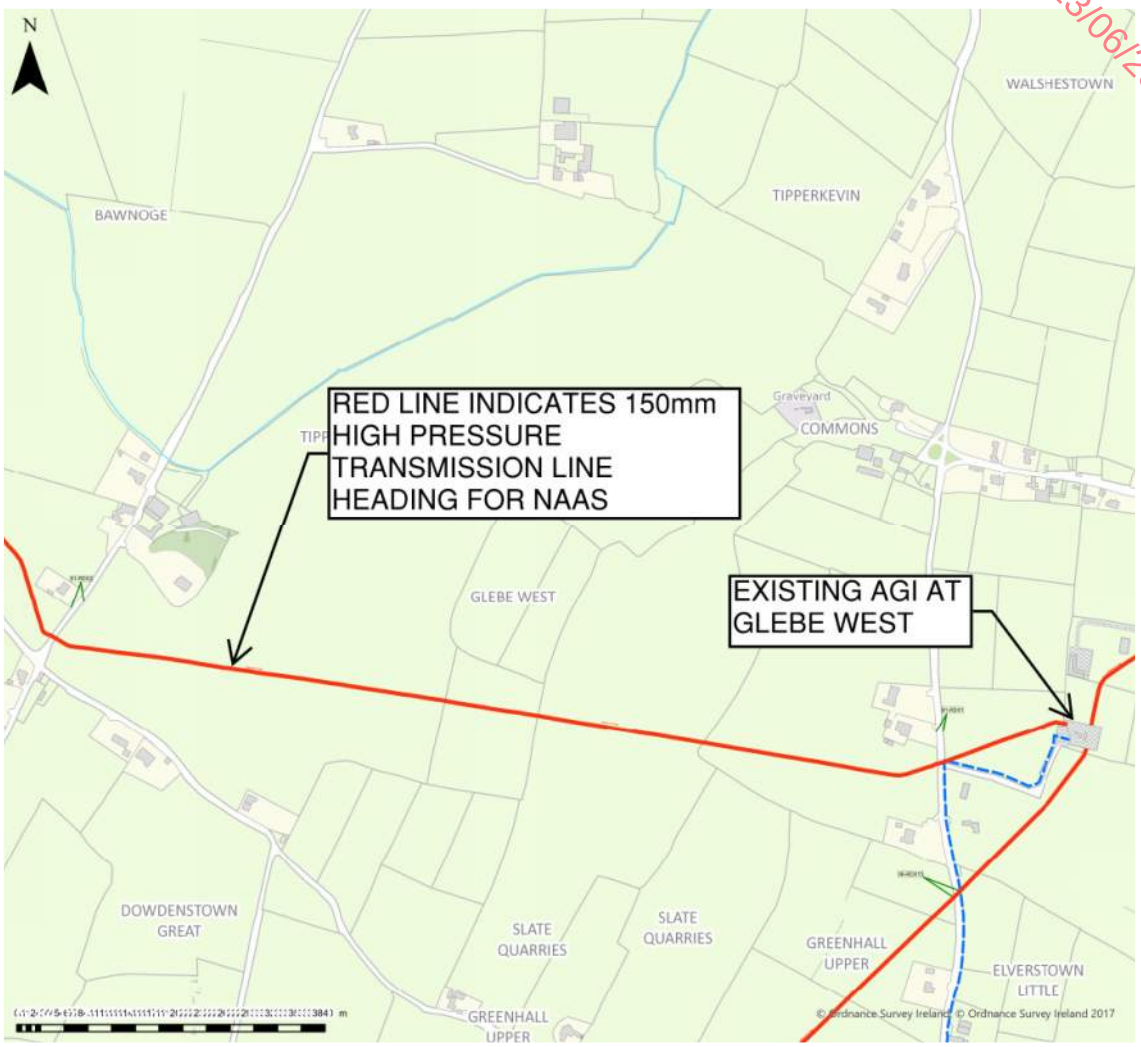


Figure 2-2 - Extract from GNI mapping indicating high pressure transmission pipe at Glebe West AGI

Following termination of the high-pressure pipe at Naas Town AGI there is no further high-pressure transmission line serving the greater Naas area. The available GNI mapping of the existing high-pressure transmission pipe

route and the remaining low-pressure network between Naas Town AGI and the proposed Herbata Data Centre Site are included in Appendix A of this report.

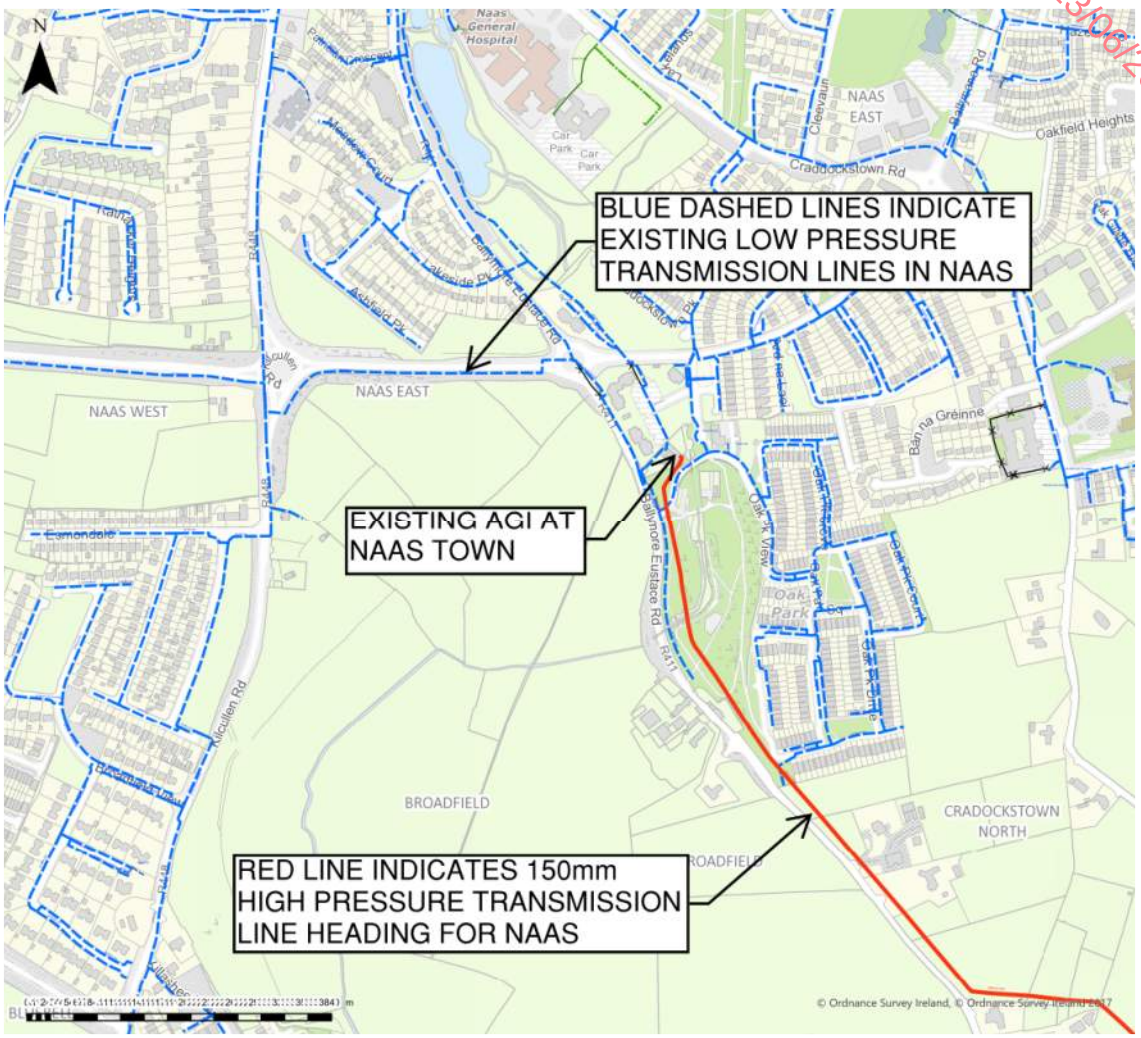


Figure 2-3 - Extract from GNI mapping indicating high pressure transmission pipe at Naas Town AGI

2.2 Most Likely Route for New Network Upgrade

The proposed upgrade works will include the construction of a new circa 300mm dia. high pressure gas pipeline in addition to the existing 150mm dia. pipe indicated on the GNI mapping. Based on a review of the existing GNI network it is considered that the most likely route for the upgraded transmission pipe is to follow the existing pipeline route from the Glebe West AGI to the Naas Town AGI. While alternatives to the most likely route were considered, they were considered not feasible/likely as GNI hold a wayleave agreement over the existing high-pressure route from Glebe West to Naas Town AGI and the existing route represents the most direct route, from the nearest available AGI on a high pressure pipeline in 27km of the site.

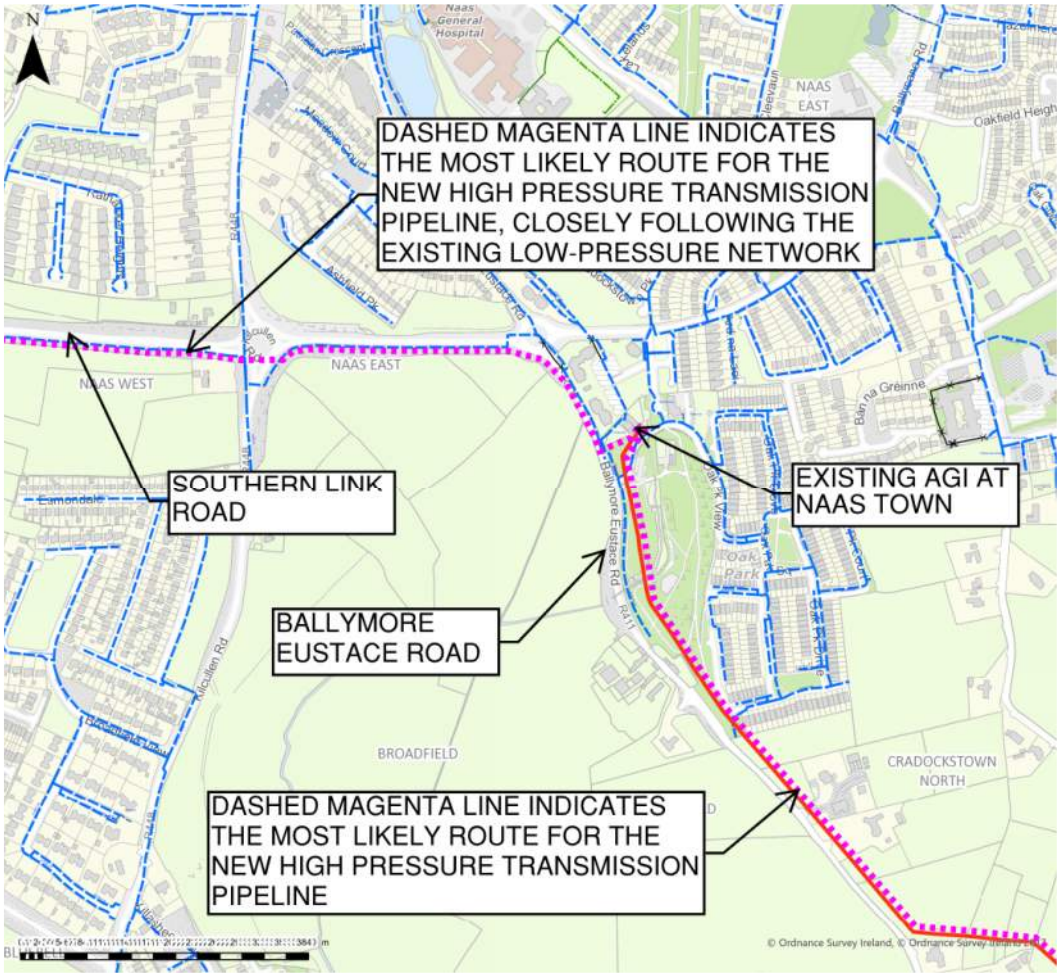


Figure 2-4 - Extract from GNI network map with most likely route for upgraded high-pressure transmission pipeline indicated from Naas Town AGI

It is considered that the new pipe will be constructed immediately adjacent to the existing pipeline, allowing for minimum separation requirements. The route from Glebe West AGI to Naas Town AGI is circa 6.5 km mostly across agricultural lands.

Subsequent to reaching the Naas Town AGI it is considered that the most likely route for the new pipeline will be to closely 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 (for which there is a wayleave in place) which crosses agricultural lands, heading northwest.

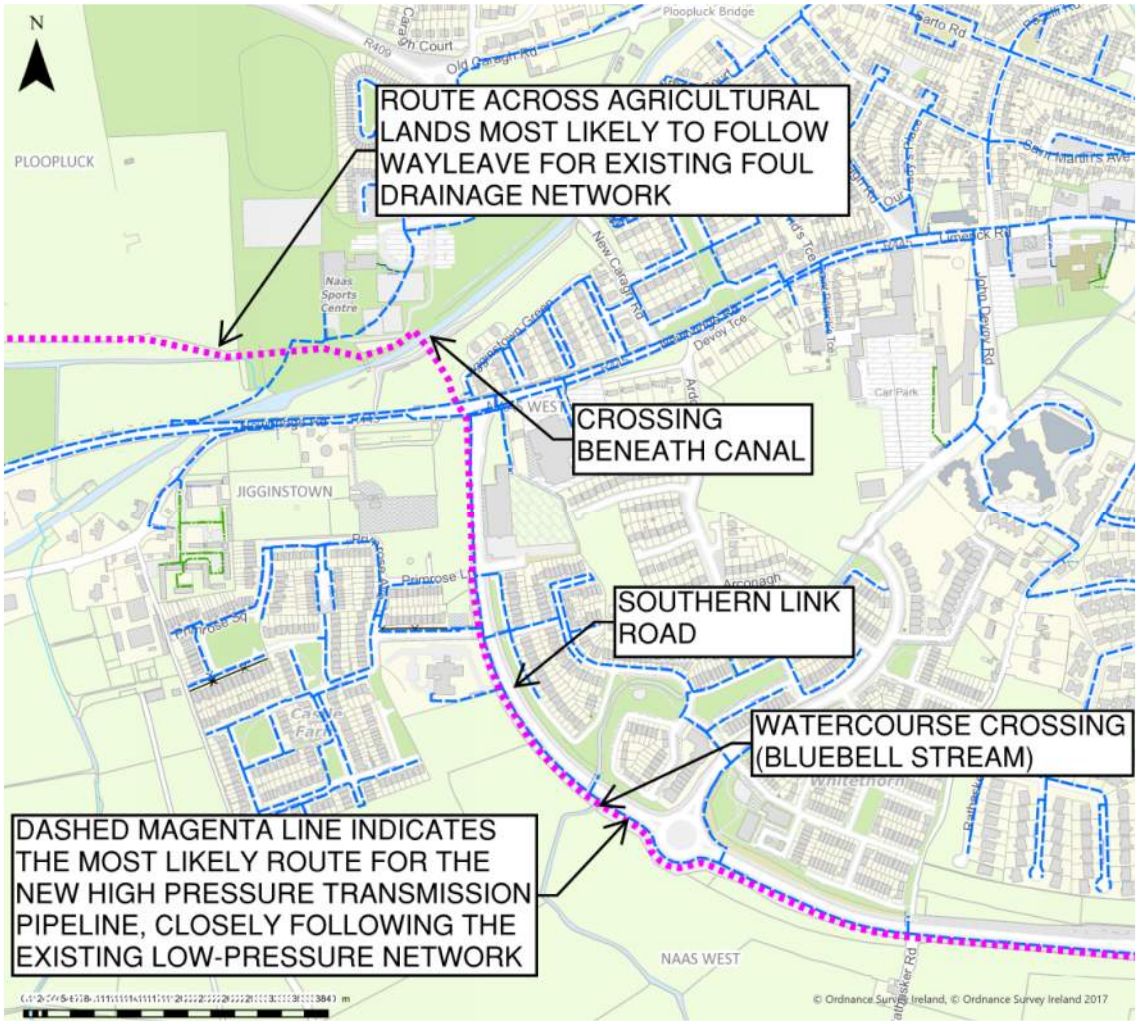


Figure 2-5 - Extract from GNI network map with most likely route for upgraded high-pressure transmission pipeline indicated from Newbridge Road

The pipeline will then most likely cross under the M7 motorway, most likely by horizontal directional drilling to reach the west side of the M7, emerging onto the R409 Caragh Road, whereupon it will enter the proposed Herbata Data Centre development site. The pipe route from Naas Town AGI to the project site is circa 4km-12km 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. 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 (circa 0.5km). It is understood that similar crossings, below the M7 have previously been implemented in order to deliver comparable service infrastructure.

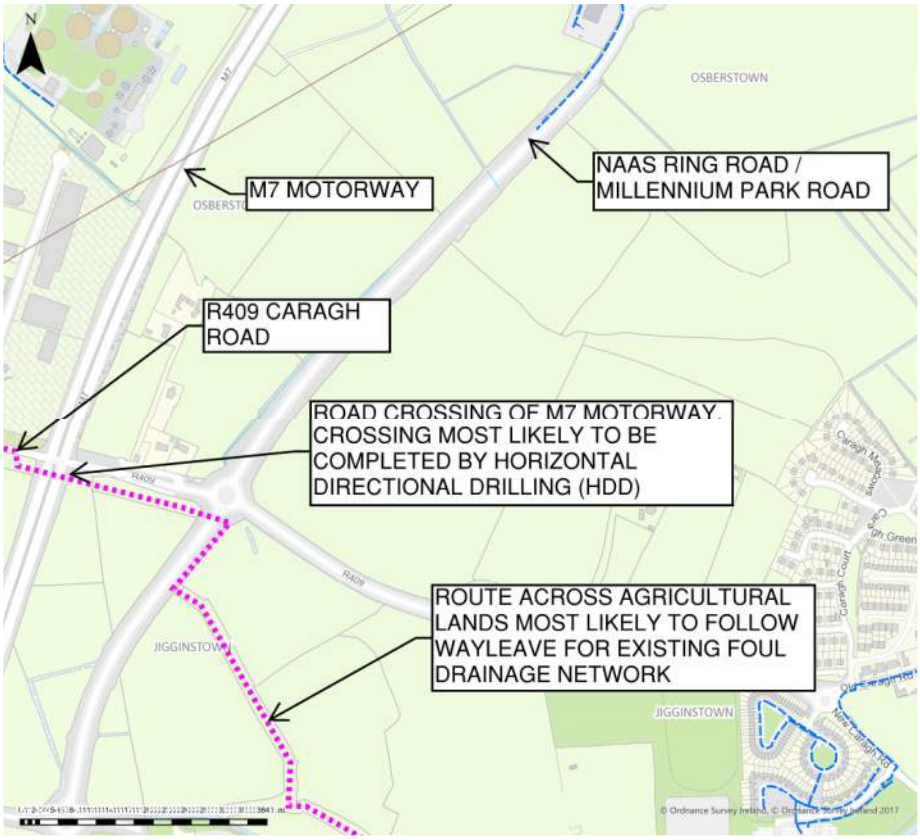


Figure 2-6 - Extract from GNI network map with most likely route for upgraded high-pressure transmission pipeline indicated to Caragh Road

The full mark-up of the most likely route is included in Appendix B of this report. As noted above the route indicated is based on consideration of the most likely route from available public services mapping information, existing GNI infrastructure locations and our understanding of the roads and infrastructure in the surrounding Naas area.

3 Description of the Works

This section describes the works that will be required to provide the new high-pressure gas distribution pipeline, based on the most likely route for the pipeline as identified in Section 2 above.

3.1 Crossing Agricultural/Open Land

A large portion of the works will consist of crossing 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. This 14m wide strip will become a permanent wayleave across the lands in question following completion of the works to allow future access to the infrastructure by GNI.

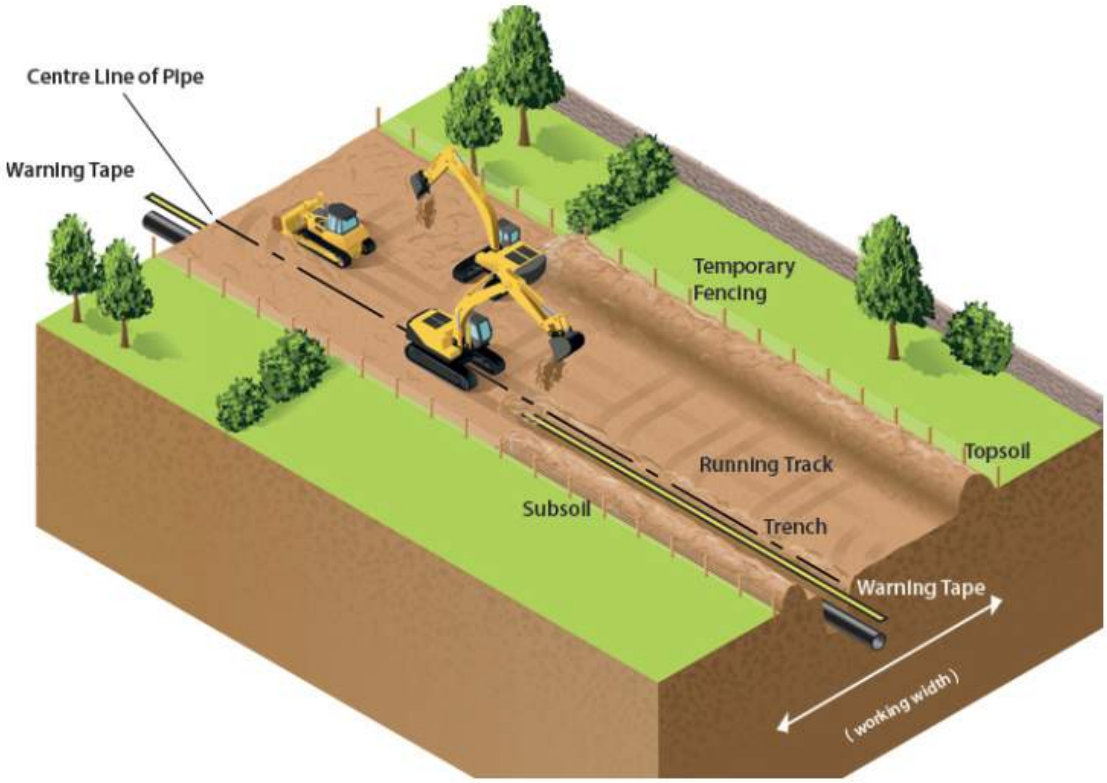


Figure 3-1 - Typical pipeline installation working arrangement across agricultural lands

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.

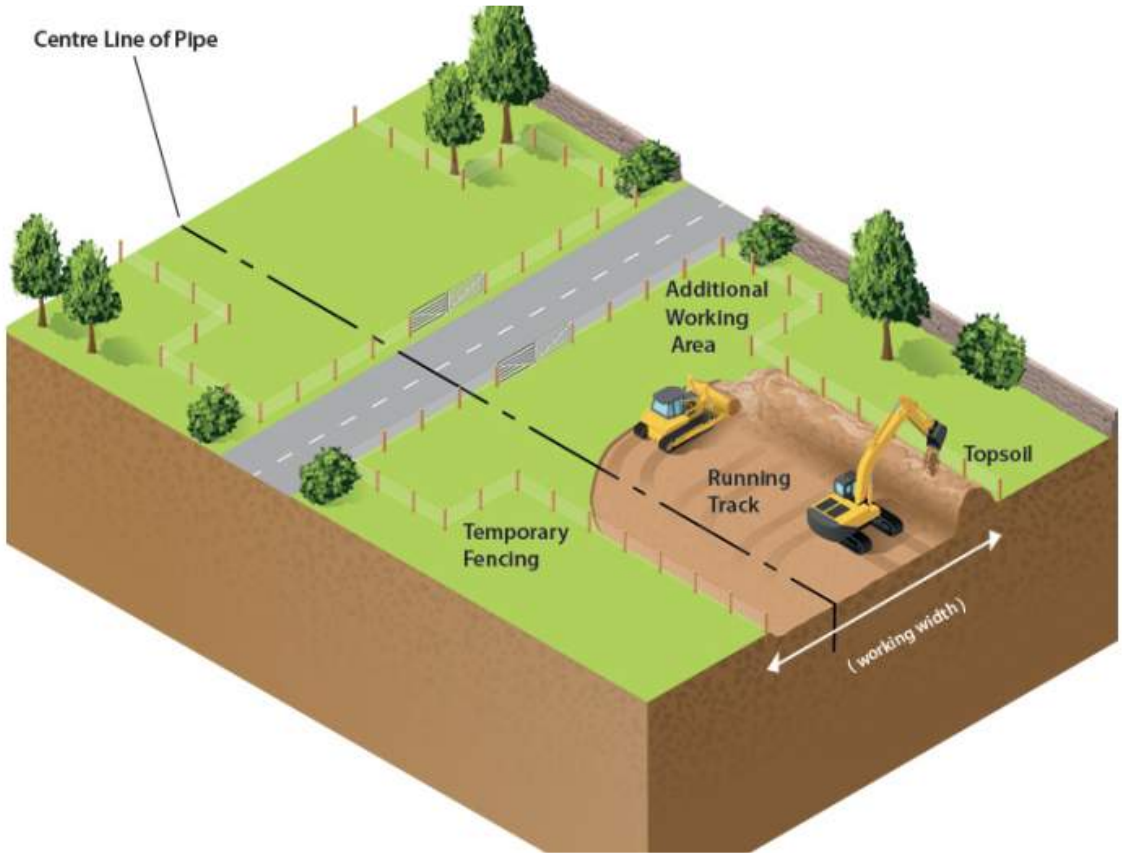


Figure 3-2 - Typical pipeline installation access arrangement to working area

3.2 Works Along Public Roads

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.

3.3 Typical Pipeline Installation Detail

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. Final details of the trench installation will be subject to GNI design. The new pipeline will likely be installed at a pressure of 19 bar. All excavations shall be carried out in accordance with the guidance set out in the HSA Code of Practice for Avoiding Danger from Underground Services.

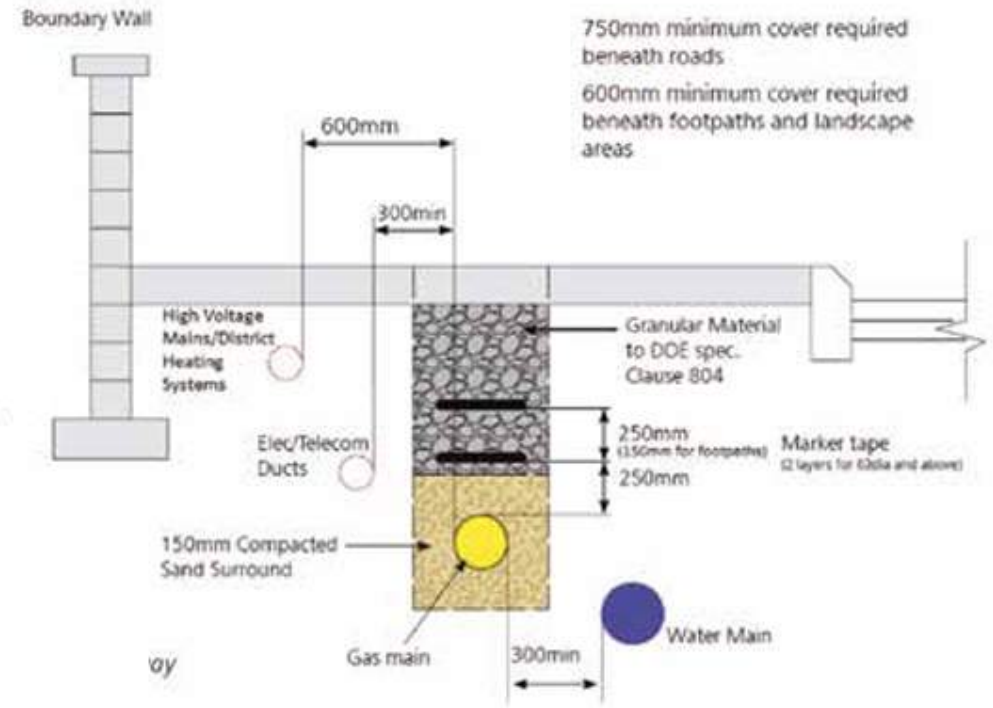


Figure 6: *Recommended gas main layout in a footpath/roadway*

Figure 3-3 - Extract from GNI Guidelines for Designers and Builders - Industrial and Commercial (non-Domestic) Sites

3.4 Watercourse Crossings

The most likely 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 be subject to detailed design by GNI and 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. The key watercourse crossings have been identified on the proposed route drawings in Appendix B of this report.

Description of Typical Horizontal Directional Drilling Process:

The drilling contractor prepares a site area up to 40m2, accommodated within the greed site area. If areas are overgrown with thick vegetation, it would be removed sympathetically and disposed of via a licensed waste contractor. The area is then levelled where required by using the front bucket of an 180^0 excavator; however, there is no requirement for the working area to be stripped of topsoil. Instead, it may be overlain with a suitable geotextile material and 200mm of appropriate stone. The boundaries of the rig up area and exit area would both be defined with security fencing positioned to ensure adequate access is maintained.

The drilling rig and fluid handling units may be placed on bunded 0.5mm PVC to contain any fluid spills and storm water run-off. Entry and exit pits (1m x 1m x 2m) are excavated using a 180^0 excavator and the resultant spoil bunded in 0.5mm PVC liner within the designated working areas. A 1m x 1m x 2m steel box is placed in the ground to control drilling fluid returns from the borehole. Drilling fluid is pumped down the drill string and through the down hole motor, which converts the fluids hydraulic power to mechanical power and rotates the drill bit. The drill bit is oriented by the surveyor, and the driller pushes the drill string into the ground maintaining the bore path. The drilled cuttings are flushed back by the drill fluid flowing via nozzles in the bit, up the annulus to surface, where they are separated from the fluid fraction for disposal. A comprehensive closed-loop drilling fluid mixing and circulation system with recycling capability is utilised to minimise the volume of fluids required on site. Constant monitoring of fluid volume, pressure, pH, weight and viscosity is undertaken. Constant attention is given to number of cuttings produced so that no over cutting takes place and that hole cleaning is maintained. The mud returns are pumped to the circulation system trailer by means of a bunded centrifugal pump.

A steering system, guided by tri-axial magnetometers and accelerometers that provide real time directional information to the surveyor at the driller's console, is used to navigate the bores. Once the first pilot hole has

been completed a hole-opener or back reamer is fitted at the exit side and pulled back through the bore to the entry side. A drill pipe is added at the exit side to ensure that a mechanical presence is always present within the bore.

On completion of the hole-opening phase a towing assembly consisting of tow heads, a swivel and a reamer will be used to pull the ducts into the bore. Close attention is paid to modelled drag forces during pullback with constant monitoring of load stress undertaken to ensure that modelled tensile stress, collapse pressures, hoop stress and buckling stress are not exceeded.

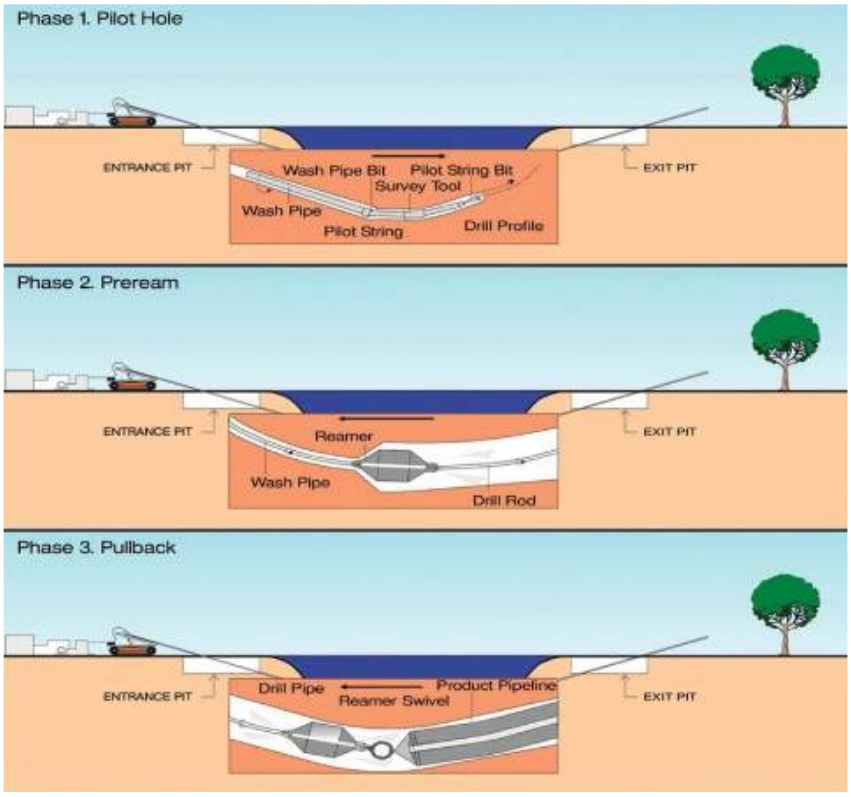


Figure 3-4 - Horizontal Directional Drilling Process

On completion of the works, the stone and geo-membrane are carefully removed using a backhoe or 360^0 excavator and transported to a licensed disposal unit. The site area is reinstated as per the landowner and statutory requirements. The ducts are tested and proved and the duct bundles are also gyro-surveyed to provide an accurate as constructed record.

3.5 Timeline for Construction

The nature and extent of the required works dictate an approximate construction programme of 7-12 months, subject to final design and route. The construction of the AGI within the Herbata Data Centre project planning application and boundary will take approx. 7-8 months.

Appendix A – GNI Existing Infrastructure Maps

Important Safety Notice: Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1800 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health and Safety Authority publication, 'Code of Practice For Avoiding Danger From Underground Services' which is available from the Health and Safety Authority (0818 289 389) or can be downloaded at www.hsa.ie.

Legal Notice: Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the"Information"). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation,direct, indirect or consequential loss arising out of or in connection with the use or re-use of the Information.

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- Aurora Telecom Duct
- Aurora Telecom Sub Duct
- Aurora Telecom Inserted Gas Pipe

Aurora TELECOM

Aurora Telecom Queries - 01-8926166 (Office Hours)
Aurora_Network_Queries@gasnetworks.ie
Aurora Telecom Emergency Only 1800 427399 / 01 2030120

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

** Please contact GNI on 1800-427747 for specific information

DIAL BEFORE YOU DIG 1800 42 77 47
In Emergency call 1800 20 50 50 Gas Networks Ireland

Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 1

Location: 693142,714243

Plot Date: 25/10/2023 14:59	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023145910*

Important Safety Notice: Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

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- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

** Please contact GNI on 1800-427747 for specific information

DIAL BEFORE YOU DIG 1800 42 77 47
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Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 2

Location: 691806,714701

Plot Date: 25/10/2023 15:09	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023150915*

Important Safety Notice: Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

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- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

** Please contact GNI on 1800-427747 for specific information

DIAL BEFORE YOU DIG 1800 42 77 47
In Emergency call 1800 20 50 50 Gas Networks Ireland

Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 2

Location: 691018,715881

Plot Date: 25/10/2023 15:21	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023152120*

Important Safety Notice: Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

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- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

** Please contact GNI on 1800-427747 for specific information

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In Emergency call 1800 20 50 50 Gas Networks Ireland

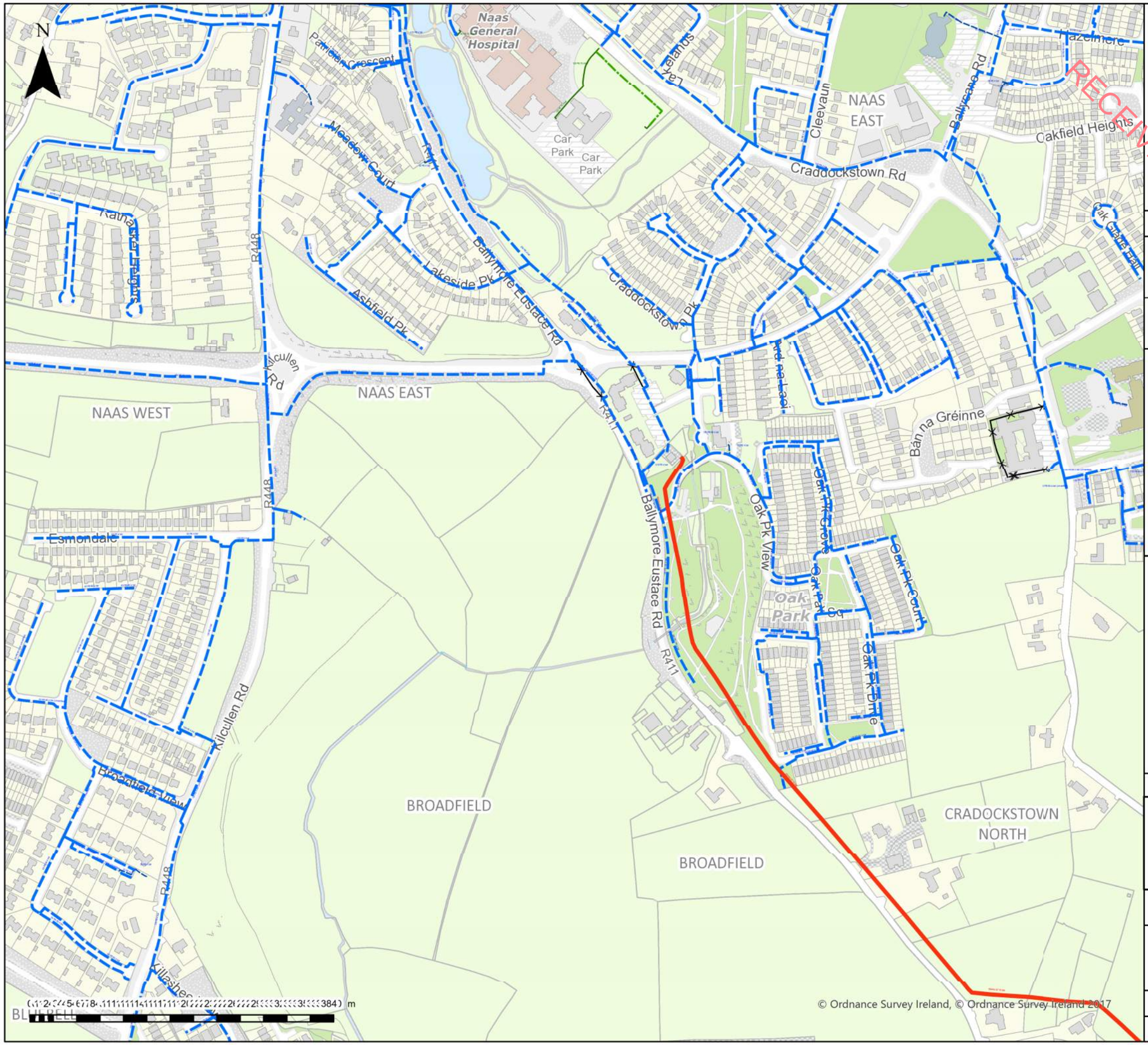
Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 2

Location: 690166,716982

Plot Date: 25/10/2023 15:25	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023152555*



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- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

** Please contact GNI on 1800-427747 for specific information

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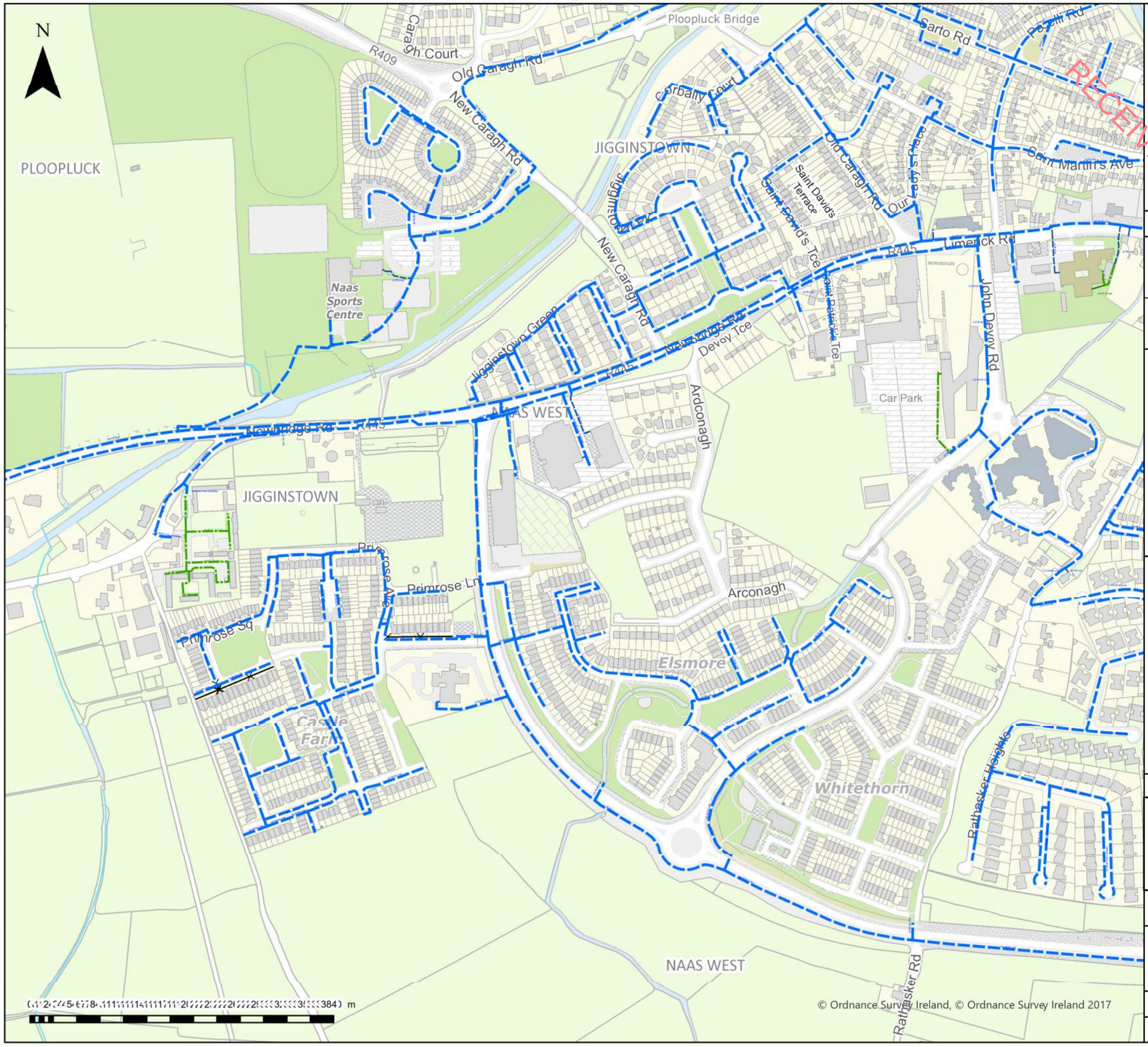
GAS NETWORK INFORMATION

Description: 2

Location: 689467,718117

Plot Date: 25/10/2023 15:43	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023154323*



RECEIVED: 13/06/2025

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- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

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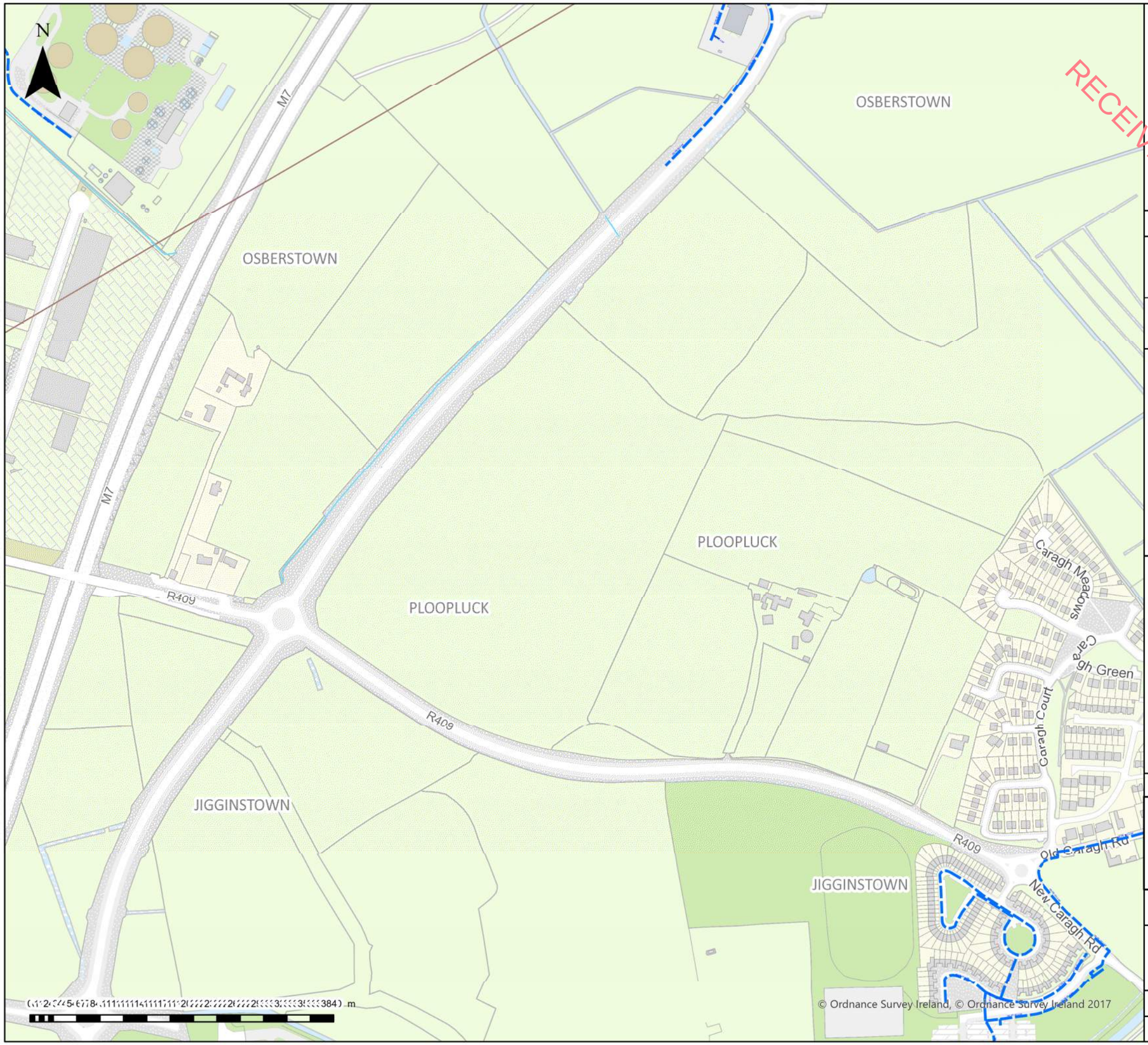
GAS NETWORK INFORMATION

Description: 2

Location: 688216,718865

Plot Date: 25/10/2023 15:46	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023154656*



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- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

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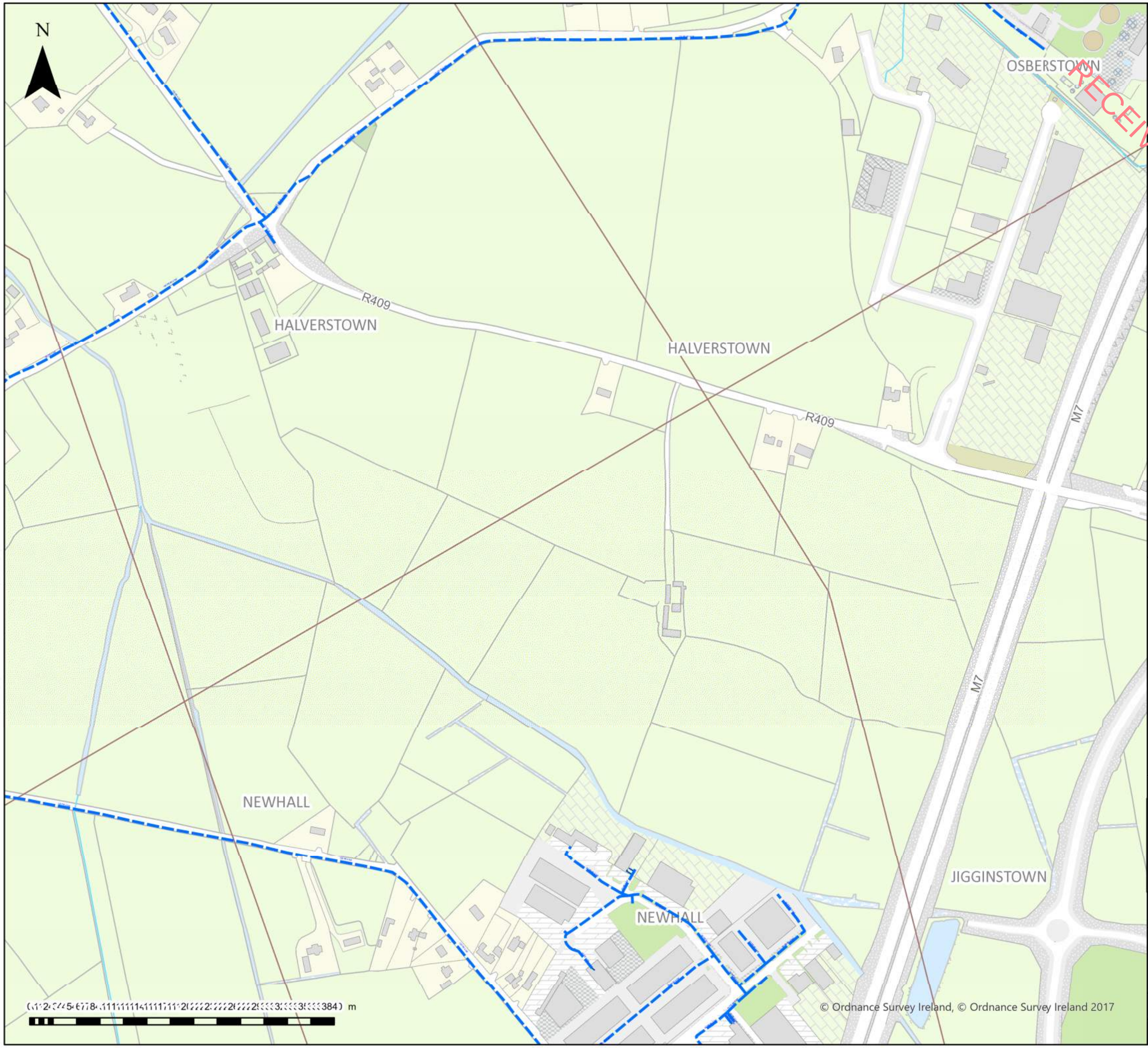
GAS NETWORK INFORMATION

Description: test

Location: 687476,719873

Plot Date: 25/10/2023 16:00	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023160008*



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Transmission Pipe (High Pressure)
Transmission Pipe (Construction Issue)
Distribution Pipe (Medium Pressure)
Distribution Pipe (Low Pressure)
Service Pipe (Medium Pressure)
Service Pipe (Low Pressure)
Strategic Pipe (Medium Pressure)
Strategic Pipe (Low Pressure)
Inserted
Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

**** Please contact GNI on 1800-427747 for specific information**

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In Emergency call 1800 20 50 50

Gas Networks Ireland

GAS NETWORK INFORMATION

Description: test

Location: 686230,719760

Plot Date: 25/10/2023 16:08	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023160824*

Appendix B – GNI Infrastructure Maps with Potential Route of New High-Pressure Pipeline Indicated

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- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

** Please contact GNI on 1800-427747 for specific information

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Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 1

Location: 693142,714243

Plot Date: 25/10/2023 14:59	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023145910*

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- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

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In Emergency call 1800 20 50 50 Gas Networks Ireland

Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 2

Location: 691806,714701

Plot Date: 25/10/2023 15:09	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023150915*

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- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

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DIAL BEFORE YOU DIG 1800 42 77 47
In Emergency call 1800 20 50 50 Gas Networks Ireland

Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 2

Location: 691018,715881

Plot Date: 25/10/2023 15:21	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023152120*

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- Aurora Telecom Duct
- Aurora Telecom Sub Duct
- Aurora Telecom Inserted Gas Pipe

Aurora TELECOM

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Aurora_Network_Queries@gasnetworks.ie
Aurora Telecom Emergency Only 1800 427399 / 01 2030120

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

** Please contact GNI on 1800-427747 for specific information

DIAL BEFORE YOU DIG 1800 42 77 47
In Emergency call 1800 20 50 50 Gas Networks Ireland

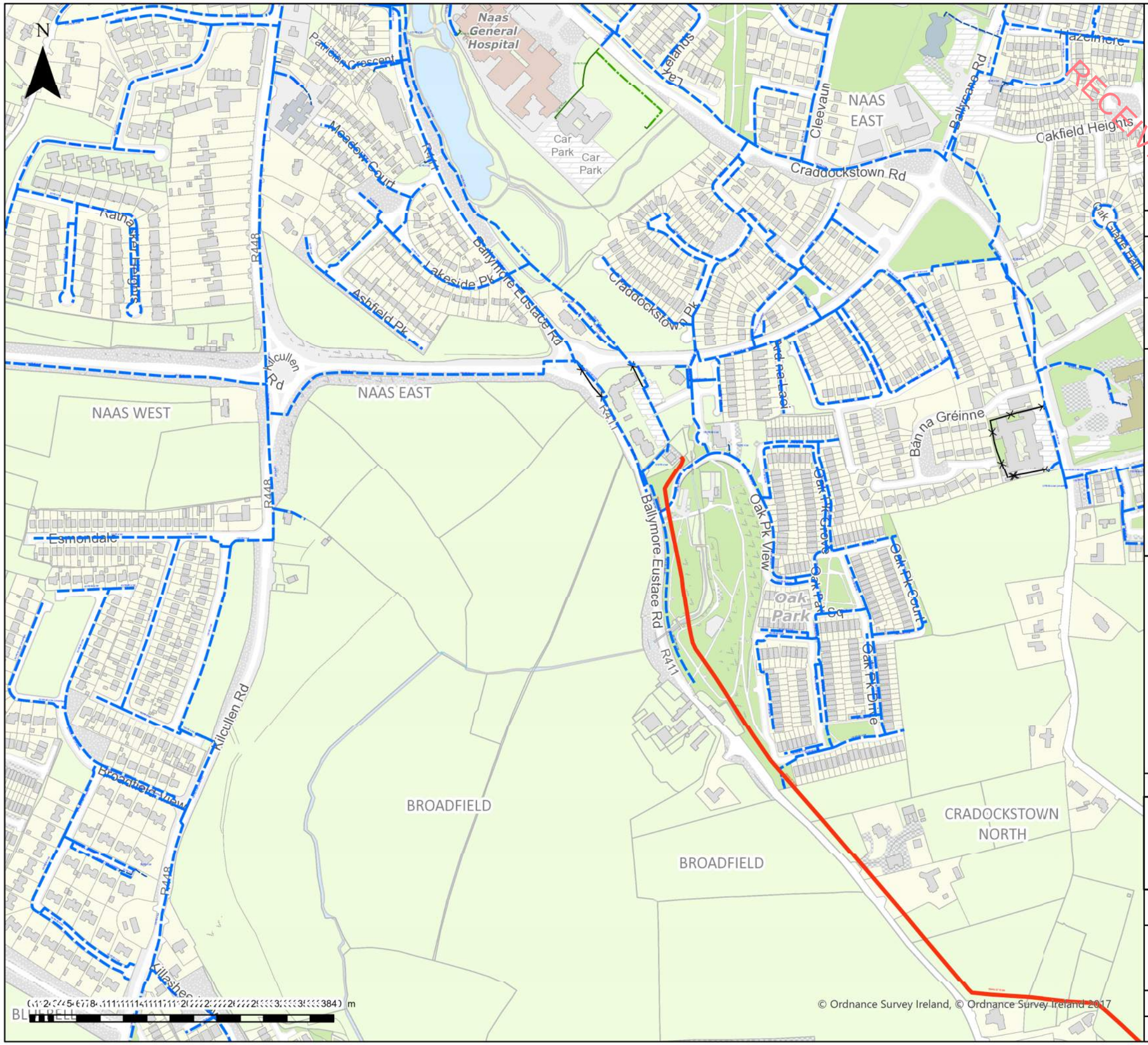
Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 2

Location: 690166,716982

Plot Date: 25/10/2023 15:25	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023152555*



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	Mains Verification**		Transition

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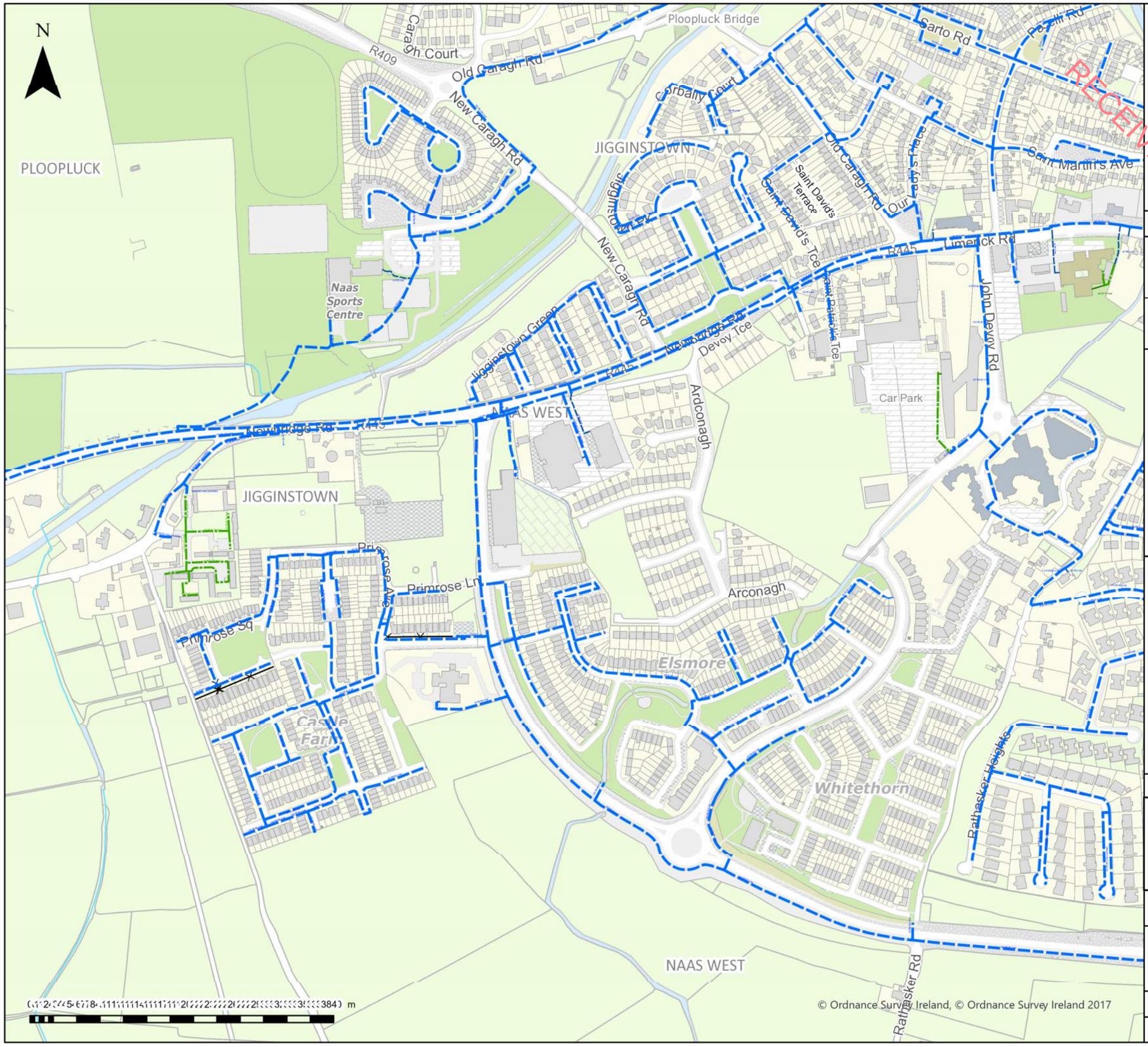
Gas Networks Ireland

GAS NETWORK INFORMATION

Description: 2

Location: 689467,718117

Plot Date: 25/10/2023 15:43	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023154323*



RECEIVED: 13/06/2025

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	Valve		Tee
	Mains Verification**		Transition

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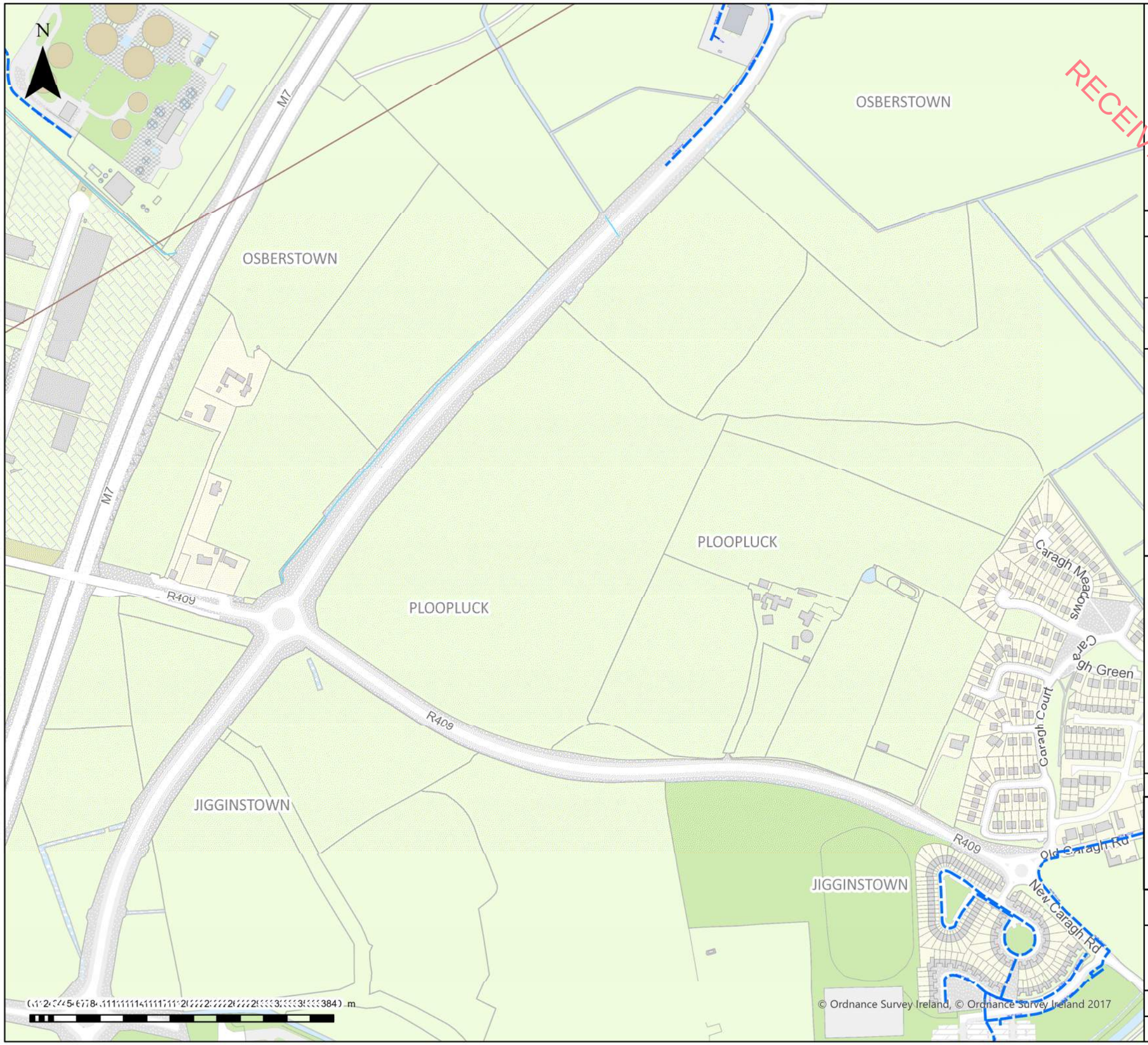
GAS NETWORK INFORMATION

Description: 2

Location: 688216,718865

Plot Date: 25/10/2023 15:46	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023154656*



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	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

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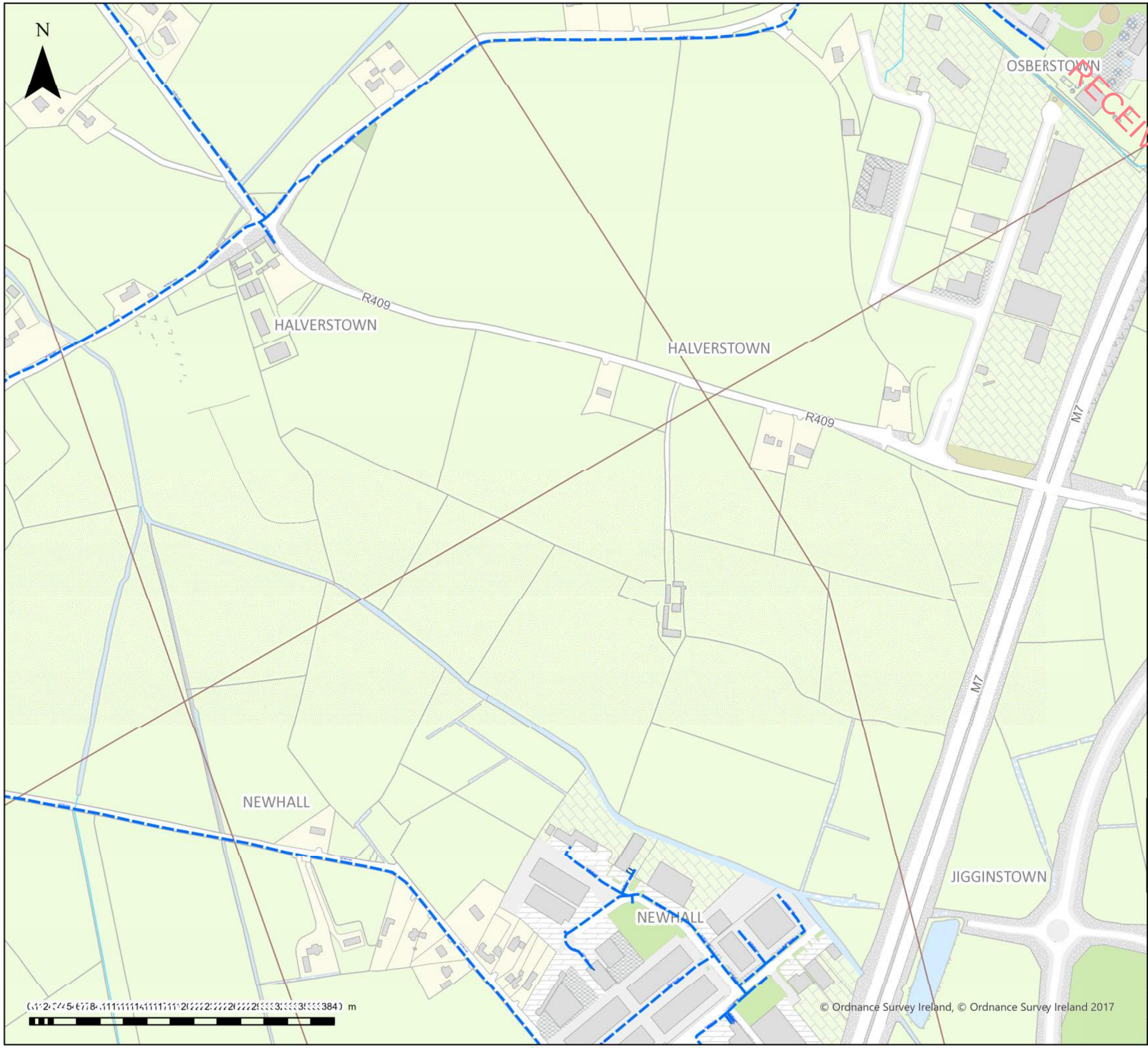
GAS NETWORK INFORMATION

Description: test

Location: 687476,719873

Plot Date: 25/10/2023 16:00	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023160008*



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	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

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GAS NETWORK INFORMATION

Description: test

Location: 686230,719760

Plot Date: 25/10/2023 16:08	Scale: 5000 @ A3
Plotted By: 4632	Ref ID: *4632_25102023160824*