DOCUMENT FACEPLATE

CLIENT:	Gas Networks Ireland
PROJECT:	Grange Castle Power Station
PROJECT NO.:	1269
TITLE:	Planning Report
DOCUMENT NO.:	1269-TC-0206

APPROVALS FOR THIS ISSUE

REVISION NO.: 0	**PURPOSE: Planning Permission**		
Name	**Position**	**Signature**	**Date**
John Lennon **Author**	**Design Engineer**		***07/12/2021***
Noel Maher **Approver**	**Senior Design Engineer**		***07/12/2021***

HISTORY OF ISSUES / APPROVALS

REV	DATE	DESCRIPTION OF CHANGES	FILE NUMBER
0	07/12/21	Original Issue	1269-TC-0206-R0

Table of Contents

1.0 INTRODUCTION

1.1 General

Gas Networks Ireland are applying for planning permission for the extension to an existing Above Ground Installation at Grange Castle Business Park, Nangor, Dublin 22, Co. Dublin. The development will include a regulator/meter kiosk, boiler/generator kiosk, electrical/instrumentation kiosk, underground and aboveground pipework, 2.4m high chain-link and palisade fencing, light/CCTV columns and all ancillary services and associated site works.

Fingleton White (FW) have been appointed by Gas Networks Ireland (GNI) as project engineers to provide consultation on the planning application, design and project management of the proposed development.

1.2 Background

GNI is responsible for the construction, operation, maintenance and developing commercial arrangements for use on the natural gas network in the Republic of Ireland. The network consists of 2,000km of high-pressure steel transmission pipelines and over 10,000km of distribution pipelines.

GNI intend to install equipment at Nangor Above Ground Installation (AGI) to provide a gas supply which will feed a proposed power station located within Grange Castle Business Park. This power station will act as a peaking plant using natural gas as its main fuel source. The planned extension at Nangor AGI will facilitate the gas supply to the power station.

1.3 Objective/Purpose of this Document

The purpose of this document will be to provide an overall description of the proposed works and conditions considered for the planning application.

2.0 DESCRIPTION OF THE DEVELOPMENT

2.1 Location

Nangor AGI is located within Grange Castle Business Park, Dublin 22. The AGI is adjacent to but not visible from R134 New Nangor Road, and R136, Outer Ring Road. Refer to drawing no. GNI/9001/07/040 Planning Drawing - Site Location Map.

2.2 Design Basis

The general design requirement is for the installation of 3 no. new buildings and replacement of fencing. The 3 no. buildings will be prefabricated elsewhere and then delivered to the site. The 3 no. buildings will be placed on 3 no. newly constructed 250mm thick reinforced concrete bases and bolted into place.

The regulator/meter kiosk shall house the gas pressure reduction equipment, including filters, meters, and heat exchangers. The boiler/generator kiosk shall house boilers to pre-heat the gas in the heat exchangers, and a generator for site back up electricity supply. The electrical and instrumentation kiosk shall house all required electrical switchboards and instrumentation devices.

The existing internal access road shall be extended to provide access to the 3 no. new buildings, with additional path added around each building also. 2 no. light/CCTV columns will be installed at new corners of the site.

All structural design for the buildings will be in accordance with the relevant Eurocodes and Technical Guidance Documents.

2.3 Building Dimensions

The plan dimensions for the 3 no. new buildings shall be as follows:

- Regulator/meter kiosk: 11.7m x 2.9m with internal floor area of 30.4m^2.
- Boiler/generator kiosk: 7m x 3.7m with internal floor area of 23.9m^2.
- Electrical/instrumentation kiosk: 4m x 4m with internal floor area of 14.1m^2.

See drawings GNI/9001/07/042, GNI/9001/07/043 and GNI/9001/07/044 for further details.

2.4 Structure

The regulator/meter kiosk and electrical/instrumentation kiosk will be of Glass Reinforced Plastic (GRP) construction. The boiler/generator kiosk will be constructed using composite insulated Kingspan panels. Typical structures for each of the proposed buildings are shown below in Figure 1, Figure 2 and Figure 3.

The existing buildings on site will not be modified.

Figure 1 - Typical Regulator/Meter Kiosk

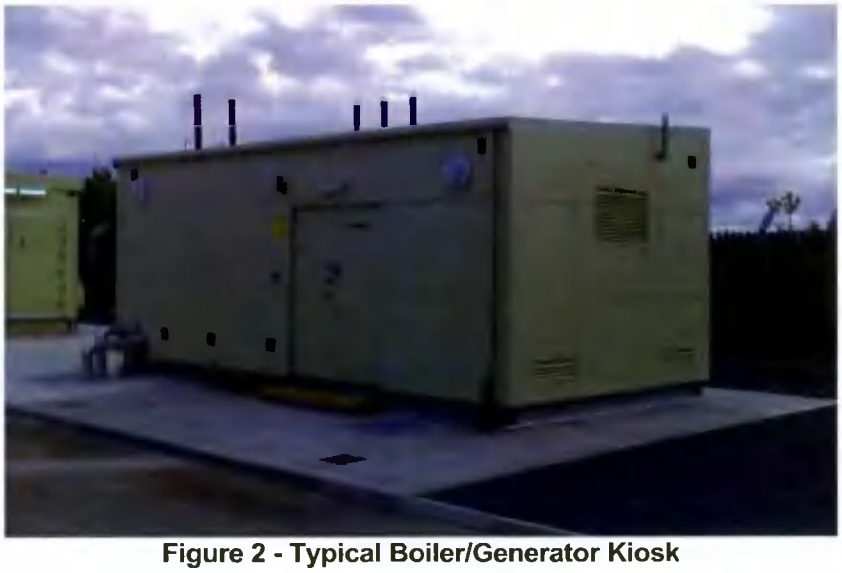

Figure 2 - Typical Boiler/Generator Kiosk

Figure 3 - Typical Electrical/Instrumentation Kiosk

2.5 External Appearance

The 3 no. proposed buildings will all be Green Mist / Willow green (BS 4800 12 B 17) in colour to match the existing buildings on site.

The new external palisade fencing will be an extension of the existing fencing on site and will be RAL Colour 6005 Dark Green in accordance with GNIs standard palisade fence detail.

2.6 Drainage

The proposed buildings will create a minor increase in surface water collection on site. The buildings shall direct the rainwater to the stone chippings on site for natural percolation.

Minor road extension to connect to existing site soakway drainage system.

2.7 Waste Water

There are no welfare facilities required on this site as the site is generally unmanned.

2.8 Services

Services such as lighting and power will be installed as required and designed during the detailed design stage. All relevant standards will apply during design and installation.

3.0 ENVIRONMENTAL CONSIDERATIONS

3.1 Landscaping

A landscape scheme for the proposed development site has been produced, refer to drawing no. 05421_LP_01 Rev C in Appendix 1 for details on the landscape plan.

3.2 Archaeology

There is a recorded archaeological monument south of Nangor AGI, DU017-037----. The monument is recorded as a castle – unclassified (Nangor Castle). There is no evidence of any above ground unrecorded archaeological sites or features within the site. See Figure 4 below showing the extent of the Zone of Notification (ZoN) and the proposed extension to Nangor AGI.

DU017-037---- is not recorded under section 12 of the National Monuments (Amendment) Act, 1994, nor is it the subject of a preservation order.

Figure 4 - Aerial photograph, dated 04/04/2021, of Nangor AGI along with the proposed extension in green and archaeological monument DU-017-037---- located south of the existing AGI

As shown above, the proposed development will have a slight impact on the ZoN of Nangor Castle (DU017-037----) however it will have no direct impact on any recorded physical remains relating to archaeological or architectural heritage within the subject site. There remains a slight possibility for sub-surface remains to survive within the boundaries of the proposed AGI extension. Considering the substantial level of modern ground disturbance, and comprehensive archaeological investigations previously undertaken within the footprint of the subject site, it can be deemed to have a low archaeological potential despite its proximity to DU017-037----.

Nonetheless, and as recommended in the archaeological and cultural heritage assessment appended to the EIA Screening Assessment submitted, a qualified archaeologist shall be employed to carry out archaeological monitoring of all sub-surface works within the proposed

development site in red above. This will include the archaeological monitoring of the removal of topsoil and the excavation of trenches for foundations, services, access roadways etc. associated with the proposed development.

The National Monuments Service have been consulted in relation to the works and stated that monitoring of groundworks for the compound will suffice, see email correspondence in Appendix 4.

Should archaeological material be discovered during the planned works, the employed archaeologist shall record such material.

The employed archaeologist will prepare and submit a report to the Local Authority and the Development Application Unit of the Department of Culture, Heritage and the Gaeltacht describing results from the archaeological monitoring within six weeks of such monitoring.

Please refer to the archaeological and cultural heritage assessment appended in P20-009_Nangor AGI_EIA Screening for further information.

3.3 Environmental Screening

EIA and AA screenings were carried out for the proposed development and can be found in Appendix 2 and 3 of this document respectively.

4.0 OPERATION OF THE SITE

4.1 General

Nangor AGI will continue to operate as usual once the proposed buildings and fencing are installed. The site is generally unmanned and remotely monitored by GNI with personnel travelling to site to carry out routine checks and maintenance.

4.2 Noise

The proposed development will not have any noise impact on surrounding environments. All new equipment specified for the site will have a noise limit of 80 dBA at a distance of 1m from the building.

4.3 Traffic Management

The proposed development will not add any additional operational traffic to the facility as a whole.

4.4 Air Quality

As standard across all GNI operated AGIs, occasionally there may be small quantities of natural gas vented to atmosphere. Boiler stacks are also installed on the boiler/generator kiosk. These emissions will be minimal and will not give rise to malodours, dust, fumes, or noise which may be of annoyance to person or public place in the vicinity.

5.0 CONSTRUCTION METHODOLOGY AND MANAGEMENT

5.1 General

The construction methods that will be required to install the proposed buildings will be standard.

Before any works commence, a detailed RAMS will be generated by the contractor. The contractor will carry out the works and prove competency of installation to the engineer responsible for the works.

The following will be the general sequence for carrying out the works on this project:

- Site establishment
  - Removal of existing site fence.
  - Set out and pour the concrete for the 3no. new concrete bases.
- Installation of Buildings
  - Buildings will be delivered to site and placed in position on their concrete bases.
  - Buildings will bolted in place on the concrete bases.
- Installation of above and below ground pipework.
- Installation of new palisade fencing.

5.2 Construction Hours

To control, limit and prevent the generation of unacceptable levels of environmental noise pollution during construction, no equipment or machinery that could give rise to unacceptable levels of noise pollution shall be operated by the contractor on site outside the following hours:

- Weekdays: 7.00am to 7.00pm
- Saturdays: 9.00am to 1.00pm
- Sundays: no work shall be permitted on Sundays

Construction shall comply with B.S. 5228 Noise Control on Construction and Open sites.

5.3 Air Blown Dust

During construction best practicable means will be employed by the contractor to minimise air blown dust being emitting from site.

Appendix 1: Landscape Plan

Appendix 2: EIA Screening Assessment

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

ASSESSMENT OF THE EXTENSION OF NANGOR AGI AND CONSTRUCTION OF A NEW 1.7KM NATURAL GAS PIPELINE AT THE EXISTING NANGOR ABOVE GROUND INSTALLATION (AGI)

ENVIRONMENTAL IMPACT ASSESSMENT SCREENING REPORT

Prepared for: GNI/Fingleton White

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ENVIRONMENTAL IMPACT ASSESSMENT SCREENING REPORT – ASSESSMENT OF THE EXTENSION OF NANGOR AGI AND CONSTRUCTION OF A NEW 1.7KM NATURAL GAS PIPELINE AT THE EXISTING NANGOR ABOVE GROUND INSTALLATION (AGI)

REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT
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Client: Gas Networks Ireland

Keywords: Environmental, impact, assessment, Directive, increase, capacity

Abstract: This report comprises an Environmental Impact Assessment Screening an extension of Nangor AGI and construction of a PRS pipeline at the existing Nangor Above Ground Installation (AGI)

TABLE OF CONTENTS

Appendices

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

Fehily Timoney and Company (FT) have been engaged by Gas Networks Ireland (GNI) to undertake an Environmental Impact Assessment (EIA) Screening Report of an extension of the existing Nangor AGI and the construction of a new PRS pipeline at the existing Nangor Above Ground Installation (AGI) in Grange Business Park, Dublin 22.

Gas Networks Ireland is planning to construct a new 70 to 19 barg PRS at the existing Nangor AGI to facilitate the supply of 19 barg natural gas to the power station which will require an extension to the existing facility. The proposed 19 barg pipeline from the AGI to the power station is approximately 1.7 km to the north, terminating at a greenfield site in Grange Business Park, Dublin 22. This pipeline will facilitate a new 19 barg natural gas connection to a new power station to be located in Grange Business Park.

The proposed development will be designed, located, constructed, operated and maintained taking into consideration the safety and environmental requirements of all applicable legislation.

FT has been engaged to assess whether the construction and continued operation of the extension to the Nangor AGI and new pipeline from Nangor AGI to a consented power station would have a significant effect on the environment and therefore require a full Environmental Impact Assessment Report (EIAR).

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Proposed Development

The proposed development comprises underground and above ground works to an existing Above Ground Installation (AGI) and the construction of a new outflow pipeline (250mm diameter, c. 1.7km in length) located at Nangor AGI, Grange Business Park, Dublin 22. The proposed works are to take place within the adjacent grounds of the current AGI facility, and within the business park roadway.

Grange Backup Power Ltd are constructing a 96 MW dual fuel fired power plant on a greenfield site in Grange Castle Business Park, Clondalkin, Dublin 22. The power plant, known as 'Grange,' will be a fast flexible plant which is a power plant designed to run at times when electricity demand is high and to support high levels of intermittent wind generation on the national grid. The power plant will consist of 6 no. dual fuel engines. The power plant is designed to use natural gas as the main fuel, with low sulphur distillate fuel oil being used as a backup fuel only. The natural gas demand will be 283,000 kWh MHQ (maximum hourly quantity – net assumed), which corresponds to a gas flowrate requirement of 28 kSCMH.

A new 70 to 19 barg PRS will be installed at Nangor AGI to facilitate the supply of 19 barg natural gas to the power station. Nangor AGI is located to the south of Grange Castle Business Park. The proposed 19 barg pipeline from the AGI to the power station is approximately 1.7 km.

To facilitate the new PRS pipeline, the existing Nangor AGI will be extended and will include a new 70/19 barg PRS, 4 no. 140 kW boilers, a 4 barg to mbarg fuel gas PRS, and a new E&I kiosk.

Potential works to be considered for the proposed development include:

1) Installation of sufficiently sized pipework to facilitate the required flow capacity (283,000 kWh)
2) Construction of a new outlet pipework (250mm pipe, c.1.7 km length)
3) Installation of required plant in the AGI extension, including 4 no. boilers, E&I Kiosk and 4 barg to mbarg fuel gas PRS
4) Earthworks to level the area between the proposed AGI extension and the existing AGI
5) Earthworks to facilitate the construction of the new outlet pipework.

The location of the existing AGI Facility is shown in Figure 2-1. The proposed AGI extension is shown in Figure 2-2 and the proposed pipeline route is shown in Figure 2-3.

Figure 2-1: Site Location

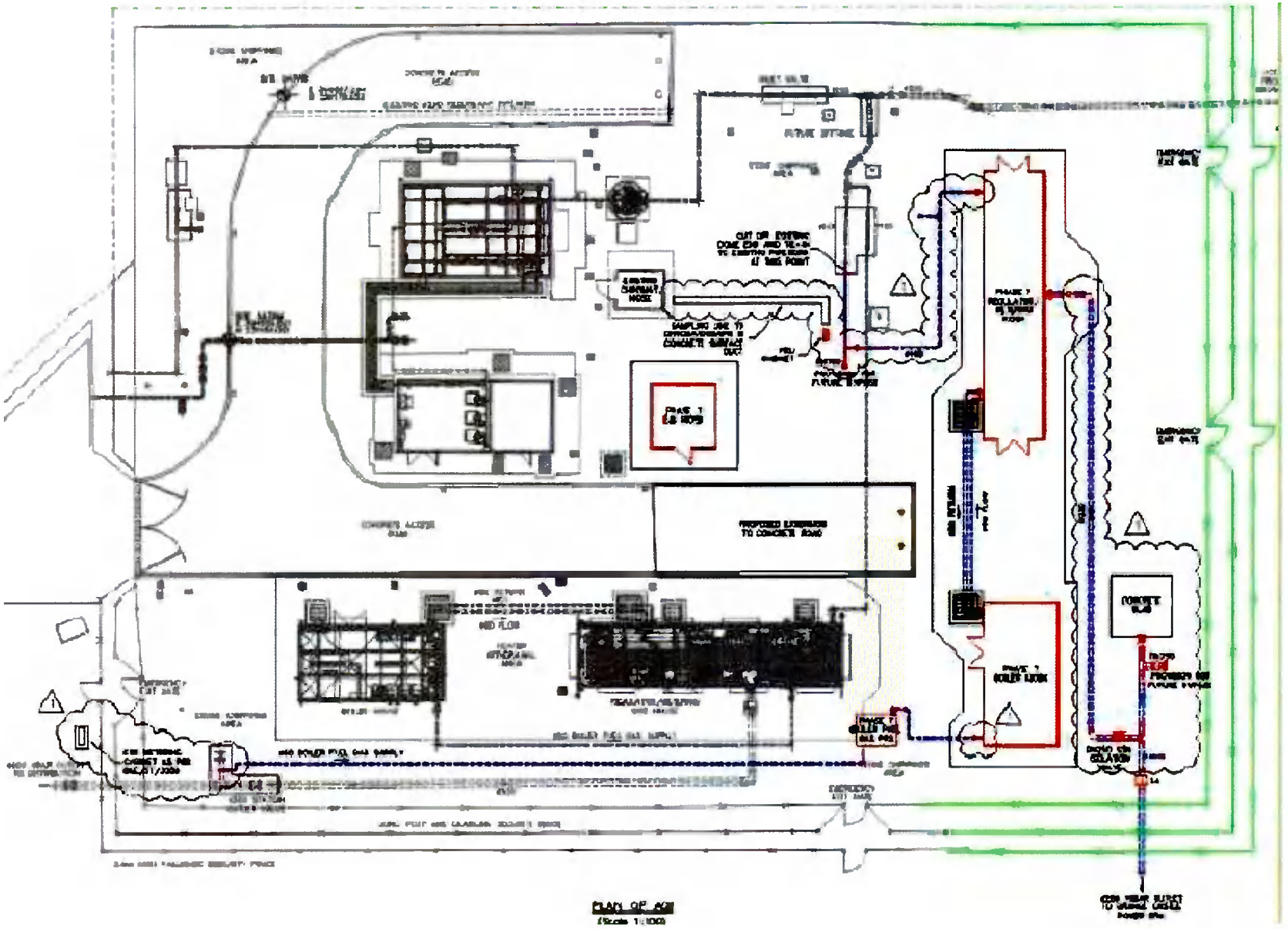

Figure 2-2: Proposed Mechanical Arrangement

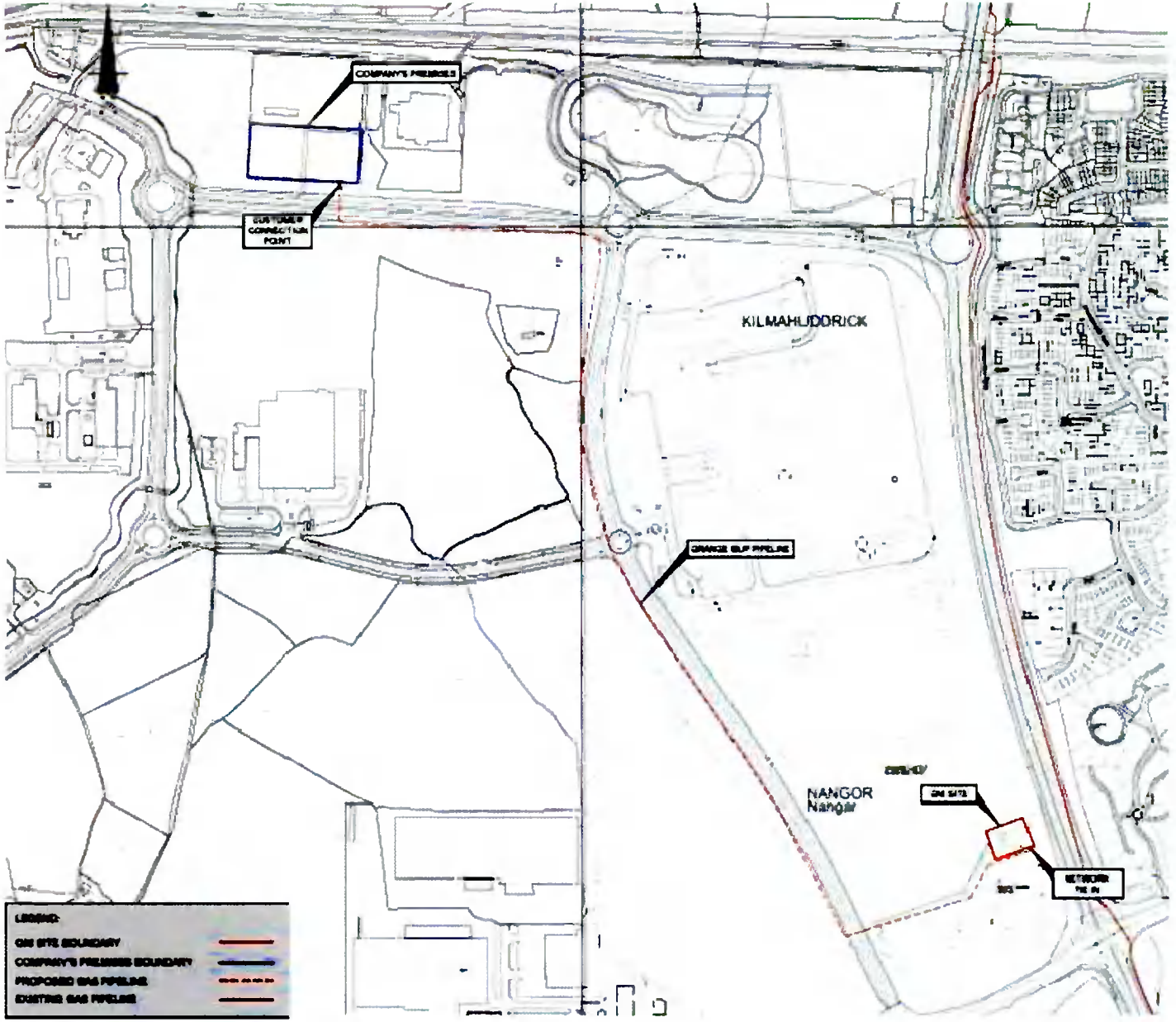

Figure 2-3: Proposed Pipline Route

2.2 Site Location

The site of the proposed development is an existing AGI facility in Grange, Dublin 22. The Corine landcover classification for the site is 121 'Artificial surfaces'. Based on a review of aerial photography, the lands surrounding the existing AGI facility are brownfield consisting of mainly industrial structures and small areas of grassland, with some hedgerows and treelines. The surrounding lands to the north and west are industrial in nature, while the lands to the east are mainly residential development. Lands to the south are dominated by the Grange Castle Golf Course. The R136 / Grange Castle Road runs along the eastern boundary, c. 40 metres from the existing AGI, while the R134 / New Nangor Road separates the golf course from the industrial lands, c. 165m south of the existing AGI.

According to South Dublin County Council Development Plan 2016-2022, the proposed works are located within land use zone EE with the specific objective: "*to provide for enterprise and employment related issues*".

The plan states that this zoning objective permits the following developments:

> "*Abattoir, Advertisements and Advertising Structures, Boarding Kennels, Enterprise Centre, Fuel Depot, Heavy Vehicle Park, Home Based Economic Activities, Industry-General, Industry-Light, Industry-Special, Office-Based Industry, Office less than 100 sq.m, Open Space, Petrol Station, Public Services, Recycling Facility, Refuse Transfer Station, Science and Technology Based Enterprises, Scrap Yard, Service Garage, Shop-Local, Transport Depot, Traveller Accommodation, Warehousing, Wholesale Outlet.*"

The bedrock[1] of the project area is Lucan Formation, consisting of dark limestone and shale. The soil types[2] at and in the vicinity of the site are classified as Limestone Till (Carboniferous).

There are no waterbodies on site. The closest waterbody[3] is the Griffeen River (EPA code: 09G01) which is 150 m west of the proposed development and separated by roads and open space. The River runs along the western edge of the Grange Castle Business Park and has a WFD Status of 'Good'.

The Baldonnell Stream (EPA code: 09B09) also flows through the western portion of the Grange Castle Business Park in a northerly direction and is located 270 m from the proposed pipeline route. This waterbody has a Water Framework Directive status[4] of 'Good'. The Baldonnell Stream merges with the Griffeen River south west of the site.

The proposed development is located in the Liffey_SC_090[5], which is part of the Liffey and Dublin Bay catchment[6].

[1] Bedrock Geology 100k. Map viewer from www.data.go.ie website. https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0. Accessed 02/02/2021.

[2] Subsoils. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

[3] WFD river name. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

[4] WFD river status 2013-2018. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

[5] Sub-catchment name. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

[6] Catchment name. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

A Stage 1 Screening for Appropriate Assessment was conducted by Fehily Timoney and found that there will be no likelihood for significant effects on any European sites, during the construction or operation of the proposed development in isolation and in combination with other plans or projects and that an Appropriate Assessment is not required.

3. EIA SCREENING

3.1 EIA Project Types

The European Union Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment, requires member states to ensure that a competent authority carries out an assessment of the environmental impacts of certain types of project, as listed in the Directive, prior to development consent being given for the project.

The EIA Directive requires that, *"in order to ensure a high level of protection of the environment and human health, screening procedures and EIA assessments should take account of the impact of the whole project in question, including where relevant, its subsurface and underground, during the construction, operational and, where relevant demolition phases".*

The Requirement for the EIA of various types of development are transposed into Irish legislation under the Planning and Development Act and the Planning and Development (Amendment) Regulations 2001-2018. Schedule 5, Part 1 of the Planning Regulations includes a list of projects which are subject to EIA based on their type. Part 2 of the same schedule includes a list of projects which by reason of scale also fall into the EIA category for example, wind farms with more than 5 no. turbines or having a total output greater than 5 megawatts or waste handling facilities that handle in excess of 25,000 tonnes of waste per annum all fall into Part 2. Schedule 5 also includes a section on extensions or changes to developments for example, any change or extension to existing projects which would result in the development being of a class listed in Schedule 5 or result in an increase in size greater than 25% or 50% of the appropriate thresholds would fall into Schedule 5 and thus require an EIA.

The EIA criteria above is quite clear and prescriptive however in addition to the above Schedule 5 also includes a section relating to 'sub threshold' (discretionary) EIA. This is where any project listed in Schedule 5 Part 2 which does not exceed a quantity, area or other limit specified in respect of the relevant class of development (e.g. waste facility handling 20,000 tonnes per year or two turbines having an output less than 5 megawatts) should be subject to EIA where the project would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7 of the Regulations.

The proposed development falls into a class of development set out in Schedule 5, Part 1 but falls short of the qualifying criteria for mandatory EIA:

> *16. Pipelines with a diameter of more than 800mm and a length of more than 40km:*
> *— for the transport of gas, oil, chemicals,*

The pipe diameter of the proposed development is 250 mm and the overall length of pipeline is c. 1.7 km. The proposed development does not fall under any class of development in Schedule 5, Part 2. Therefore, the requirements for a mandatory EIA can be screened out.

The Draft EPA 2017 *Guidelines on Information to be contained in an Environmental Impact Assessment Reports* notes that even where a proposed project is not a type that is included in the statutory EIA project list, the determination of sub-threshold EIA Screening is an increasingly complex issue and should not be decided on without full consideration of the 2014 EIA Directives 'wide scope and broad purpose', as set out in the EU Documents of Interpretation of definitions of project categories of Annex I and Annex II of the EIA Directive 2008.

3.2 Sub-Threshold EIA Screening

This section of this report screens the project in the context of the criteria set out in Schedule 7 and Annex III of the EIA Directive. The screening demonstrates that there will be no significant impacts associated with the proposed development on the receiving environment in isolation or cumulatively with other projects or proposals in the area. This EIA Screening considers the 'whole project' including all secondary ancillary/subsidiary elements essential to the construction and operation of the main project.

Annex III of the EIA Directive details the criteria to be used to determine whether a project should be subject to EIA and Schedule 7 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 implements this Directive in Ireland.

The requirements are as follows:

1. Characteristics of the proposed development

The characteristics of proposed development, in particular:

- *The size and design of the whole of the proposed development*
- *Cumulation with other existing and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment.*
- *The nature of any associated demolition works*
- *The use of natural resources in particular land, soil, water and biodiversity;*
- *The production of waste;*
- *Pollution and nuisances;*
- *The risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge; and*
- *The risks to human health (for example due to water contamination or air pollution).*

2. Location of Projects

The environmental sensitivity of geographical areas likely to be affected by proposed development, having regard in particular to:

- *The existing and approved land use;*
- *The relative abundance, quality and regeneration capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground;*
- *The absorption capacity of the natural environment, paying particular attention to the following area:*
    - *Wetlands, riparian areas, river mouths;*
    - *Coastal zones and marine environment;*
    - *Mountain and forest area;*
    - *Nature reserves and parks;*
    - *Areas classified or protected under legislation, including Natura 2000 areas designated pursuant to the Habitats Directive and the Birds Directive*

- *Areas in which there has already been a failure to meet the environmental quality standards, laid down in legislation of the European Union and relevant to the project, or in which it is considered that there is such a failure;*
- *Densely populated areas;*
- *Landscapes and sites of historical, cultural or archaeological significance.*

3. Characteristics of potential impacts

The potential significant effects on the environments of proposed development in relation to criteria set out under paragraphs 1 and 2, with regard to the impact of the project on the factors specified in the definition of 'environmental impact assessment report' and taking into account-

- *The magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);*
- *The nature of the impact;*
- *The transboundary nature of the impact;*
- *The intensity and complexity of the impact;*
- *The probability of the impact;*
- *The expected onset, duration, frequency and reversibility of the impact;*
- *The cumulation of the impact with the impact of other existing and/or approved projects;*
- *The possibility of effectively reducing the impact.*

This assessment utilises the Screening Checklist as detailed in the EU Guidelines to screen the proposed development with regard to EIA requirements and this checklist encompasses the details required under Annex III of the EIA Directive and in Schedule 7 of the 2018 EIA Regulations – refer to Table 3.1. Any potential impacts are then assessed with regard to their characteristics.

Table 3-1: EIA Screening Checklist

Checklist Questions	Yes/No/Briefly describe	Is this likely to result in a significant impact? Yes/No/Why?
1. Will construction, operation, decommissioning or demolition works of the Project involve actions that will cause physical changes in the locality (topography, land use, changes in waterbodies, etc.)?	There will be temporary excavations.	It is intended to route the pipeline in the existing road. The works area will be reinstated upon completion of the works.
2. Will construction or the operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or are in short supply?	Natural resources will be used in the form of materials for construction. Energy will be used to power construction machinery. The operation of the AGI and pipeline will allow the transfer of natural gas.	No, this is not likely to result in a significant impact and is in line with existing and emerging trends in terms of development.
3. Will the Project involve the use, storage, transport, handling or production of substances or materials which could be harmful to human health, to the environment or raise concerns about actual or perceived risks to human health?	The project is concerned with the dissemination of pressurised gas from the transmission network to a new customer.	No, this is not likely to result in significant impacts on human health or the environment. There are numerous AGIs on the network operating in line with Health and Safety standards. A full Design Risk Assessment will be completed by the Contractor to ensure minimal risk in terms of human health and the environment.
4. Will the Project produce solid wastes during construction or operation or decommissioning?	There will be some material waste during construction phase and the decommissioning phase.	No. The waste will be removed by a licenced waste operator and disposed of appropriately.
5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air or lead to exceeding Ambient Air Quality standards in Directives 2008/50/EC and 2004/107/EC?	There are generally no emissions from AGIs. There is a heating system that contains condensing boilers within the PBU. There are relief vents on the PRS in the AGI, venting of gas will be intermittent and is not envisaged under normal operation of the AGI.	No. There are generally no emissions from AGIs, with the exception of rare venting of gas.
6. Will the Project cause noise and vibration or the releasing of light, heat energy or electromagnetic radiation?	During construction noise emissions will occur from construction plant. The AGI is located 40m from the R136 / Grange Castle Road which has typical noise	No. Noise emissions during construction will be temporary and it is unlikely that the TII noise limits will be exceeded. During operation, the noise level is estimated to be 45dBa at 1m from the boundary and

Checklist Questions	Yes/No/Briefly describe	Is this likely to result in a significant impact? Yes/No/Why?
	levels of 55-59dBa at night and 60-69dBa during the day.	the GRP is to be enclosed to ensure this noise limit is met. Significant impacts are not likely from the AGI.
7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal waters or the sea?	There will be no release of pollutants from the Project.	No. There is no likely significant impact as a result of contamination as there are no emissions from the Project.
8. Will there be any risk of accidents during construction or operation of the Project that could affect human health or the environment?	The works will be conducted safely and in accordance with the Safety, Health and Welfare at Work Act and associated Regulations.	No. There is a very low risk of accidents during the construction and operation of the Project.
9. Will the Project result in environmentally related social changes, for example, in demography, traditional lifestyles, employment?	No, there will be no additional employment, no change to traditional lifestyle or demography as a result of the Project once operational.	No, no significant impacts are likely.
10. Are there any other factors that should be considered such as consequential development which could lead to environmental impacts or the potential for cumulative impacts with other existing or planned activities in the locality?	There is one project in the vicinity which is or will be under construction once works at Nangor AGI and associated pipeline are commencing. SHD 305267-19 is for the provision of 1089 residential units.	No, the project will not result in significant impacts with other projects due to the minor construction and demolition impacts of the AGI extension and associated pipeline construction in the surrounding area.
11. Is the Project located within or close to any areas which are protected under international, EU or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the Project?	There are no international, EU or nationally designated areas in the vicinity of the Project. There are 7 European sites within 15km of the facility. The closest of these is 6.2km northwest. There are no hydrological links.	There are no likely significant impacts to international, EU or nationally designated sites as a result of the Project.
12. Are there any other areas on or around the location that are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other waterbodies, the coastal zone, mountains, forests or woodlands, that could be affected by the Project	There are no habitats within the study area that conform to those listed under Annex I of the EU Habitats Directive.	No. There are no habitats within the study area that conform to those listed under Annex I of the EU Habitats Directive.
13. Are there any areas on or around the location that are used by protected, important or sensitive	No there are no protected, important or sensitive species of flora or fauna at the AGI facility.	No, the works are confined to the existing AGI at Nanor and the existing road corridor.

Checklist Questions	Yes/No/Briefly describe	Is this likely to result in a significant impact? Yes/No/Why?
species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the Project?		
14. Are there any inland, coastal, marine or underground waters (or features of the marine environment) on or around the location that could be affected by the Project?	The Project will entail underground pipework.	No. A method statement will be prepared and measures to prevent pollution of groundwater will be implemented in the event that groundwater is encountered. This will be the responsibility of the appointed contractor. Any pumped water will be directed through a silt trap prior to discharge or collected in an adequately sized tank.
15. Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the Project?	The AGI is adjacent to areas of high landscape or scenic value that could be affected (Liffey Valley).	No, the relatively small scale of the development is temporary in nature and is unlikely to have a significant impact on the landscape. All excavation works will be fully reinstated.
16. Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the Project?	The locations of the works are located in an area zoned for open space and recreational amenities.	There are no likely significant impacts.
17. Are there any transport routes on or around the location that are susceptible to congestion or which cause environmental problems, which could be affected by the Project?	The proposed project will slightly affect transportation routes. The R136 / Grange Castle Road is located to the east of the proposed AGI site (40m) and the pipeline will run along the Grange Castle Business Park Roads	There are no likely significant impacts.
18. Is the Project in a location in which it is likely to be highly visible to many people?	The temporary construction works may be visible from the R136 / Grange Castle Road; however, an existing perimeter wall and landscaping boundary exists.	There are no likely significant impacts.
19. Are there any areas or features of historic or cultural importance on or around the location that could be affected by the Project?	yes. Following a review of the available datasets and consulted sources, there is evidence of potential recorded archaeological features within the proposed work areas. An Archaeological and	No, given previous excavations for the provision of the original AGI facility, it is unlikely that unrecorded features will be found. There are no undisturbed

Checklist Questions	Yes/No/Briefly describe	Is this likely to result in a significant impact? Yes/No/Why?
	Cultural Heritage Assessment was undertaken as part of this EIA Screening process. There are no recorded archaeological or architectural heritage sites within the lands comprising the subject site (red line boundary) or pipeline route, the proposed development will, therefore, have no likely significant adverse impacts on the known archaeological resource.	greenfield sites where the AGI extension or pipeline will be placed.
20. Is the Project located in a previously undeveloped area where there will be a loss of greenfield land?	The majority of the works at Nangor AGI will take place within the footprint of the existing facility. The placement of pipeline will require a small quantum of excavation; however, the land will be backfilled and reinstated.	Due to the small scale of the Project, this will not have a significant effect.
21. Are there existing land uses within or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying that could be affected by the Project?	Existing land uses around the works areas are existing residential, existing industrial and an existing golf course. Impacts would be localised to temporary excavation works.	Due to the small scale of the Project, this will not have a significant effect.
22. Are there any plans for future land uses within or around the location that could be affected by the Project?	The works will not affect future land use.	No effects on land use will arise, the works are temporary and underground, and the site will be fully reinstated.
23. Are there areas within or around the location which are densely populated or built-up, that could be affected by the Project?	Yes. There is an existing housing estate to the east of the proposed works.	No effects on the local population will arise, the works are temporary and underground, and the site will be fully reinstated.
24. Are there any areas within or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities, that could be affected by the Project?	The Project will not affect any community facilities.	There are no community facilities within the vicinity of the Project that could be affected.
25. Are there any areas within or around the location which contain important, high quality or scarce	There are no areas within or in the vicinity of high quality or scarce natural resources	No. There will be no impacts to high quality or scarce natural resources.

Checklist Questions	Yes/No/Briefly describe	Is this likely to result in a significant impact? Yes/No/Why?
resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, that could be Affected by the Project?		
26. Are there any areas within or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, that could be affected by the Project?	The Project has no emissions which could cause pollution and so would not act cumulatively with other projects.	The project will not result in emissions which could cause pollution.
27. Is the Project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the Project to present environmental problems?	The project is not susceptible to natural disasters.	The project is not susceptible to natural disasters or extreme weather events.

3.3 Impact Characterisation

As detailed in Table 3.1, there are no potential negative impacts identified.

All impacts will be temporary in nature, and are limited to construction level noise, and potential groundwater impacts during the construction of the underground pipeline trench.

In terms of impacts to groundwater, a method statement will be prepared by the contractor to ensure that pollution of groundwater does not occur. If pumping of groundwater is required, the pumped water should be directed into a silt trap before discharge to prevent any sediment pollution or collected in a suitably sized tank.

In terms of Health and Safety, the Health and Safety at Work Act and its associated Regulations will be implemented. The Contractor will act as PSCS and will be required to prepare a Designer's Risk Assessment for all elements of the work. These measures will minimise the risk of impacts to human health.

4. CONCLUSION

The proposed works relates to the extension of an existing AGI and the placement of a 1.7km section of pipeline which connect the AGI to a new power plant. These works will facilitate the operation of the power plant.

The Requirement for the EIA of various types of development are transposed into Irish legislation under the Planning and Development Act and the Planning and Development (Amendment) Regulations 2001-2018. Schedule 5 lists the different project types, and this is not a project type that mandatorily requires an EIA.

A sub-threshold EIA screening has been carried out to assess if the proposed project has the potential for significant environmental effects. The screening was based on the requirements detailed in Schedule 7 of the Planning & Development Regulations 2001 – 2018, Annex III of the EIA Directive and the screening checklist provided in the EC guidance document for EIA Screening.

The proposed works to the existing Nangor AGI and provision of new PRS pipeline are not likely to have significant effects on the environment. Potential effects will be minimized following the measures detailed in relation to groundwater and human health so that no significant effects occur.

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 1

Archaeological and Cultural Heritage Assessment

JOHN CRONIN & ASSOCIATES
ARCHAEOLOGY | CONSERVATION | HERITAGE | PLANNING

Proposed extension to Nangor AGI, County Dublin

Archaeological and Cultural Heritage Assessment

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Document Control Sheet

Client	Fehily Timoney and Company on behalf of Bord Gas Networks				
Project Title	Proposed extension to Nangor AGI, County Dublin				
Document Title	Archaeological & Cultural Heritage Assessment				
Document No.	001				
Document Comprises	DCS	NTS	TOC	Pages	47
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01	Final	CB	MMG	MMG	Buncrana	03/02/2021

Contents

1. Introduction

John Cronin & Associates have been commissioned by **Fehily Timoney and Company** on behalf of **Gas Networks Ireland** to undertake an archaeological assessment of a proposed extension to Nangor AGI to facilitate a new natural gas connection to a new power station located in Grange Castle Business Park, Nangor, Clondalkin, Dublin 22. The proposed development area is located in the townland of Nangor and comprises a greenfield site which has been subject to significant ground disturbance in recent years.

This report presents summary details on the locations of recorded elements of the archaeological and cultural heritage resource within the environs of the subject site and aims to identify any previously unknown archaeological constraints. The study area for this assessment comprised the internal area of the proposed development site combined with the lands extending for approximately 500m from the site's outer boundary. There are five recorded archaeological monuments and seven architectural heritage sites within the study area (see further below).

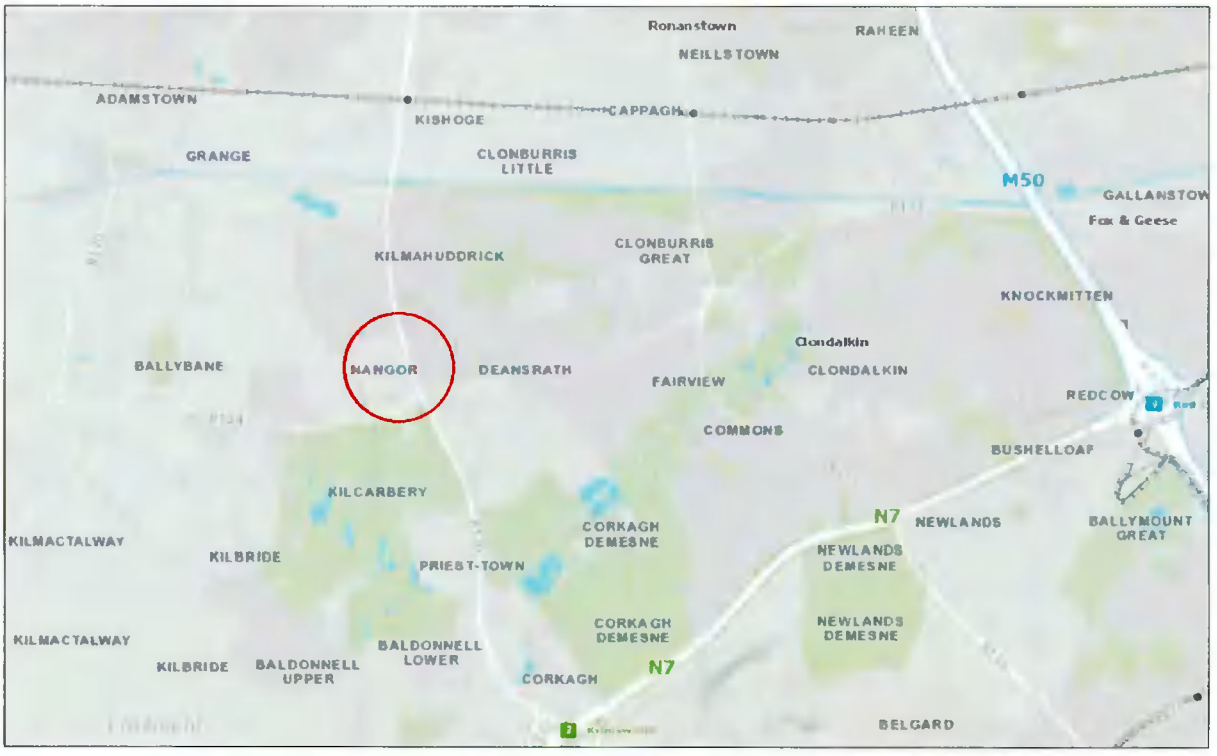

***Figure 1**: General location of subject site (red outline) at Nangor, Clondalkin, Dublin 22 (Reproduced under Ordnance Survey Ireland Licence No. SU 0003320 (© Ordnance Survey Ireland/Government of Ireland))*

2. Methodology

This report is based on a combined programme of desktop research and site inspection carried out by a qualified and experienced archaeologist.

Desktop study

A desktop study assessment was carried out in order to identify all known archaeological sites, designated architectural heritage structures and other undesignated cultural heritage assets within the study area. The principal sources reviewed for this assessment of the known archaeological resource are the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP). Between 1984 and 1992, the Archaeological Survey of Ireland (ASI) issued a series of county SMRs which lists known archaeological sites and places and this record formed the basis for the statutory RMP established under Section 12 of the National Monuments (Amendment) Act 1994. Similar in format to the SMRs (comprising a list and set of maps), the RMPs were issued for each county in the State between 1995 and 1998. Archaeological monuments included in the statutory RMP are legally protected and are generally referred to as 'Recorded Monuments'.

The ASI has continued to record and add entries to the SMR and has developed an online database and web viewer known as 'Historic Environment Viewer'. This has been developed to enhance the user's experience by facilitating access to the database of the National Monuments Service's Sites and Monuments Record (SMR) and the National Inventory of Architectural Heritage (NIAH) in a seamless one stop point of access for both data resources (Source: www.archaeology.ie).

In addition, the following sources were consulted as part of the desktop study:

- *Cartographic Sources* - The detail on cartographic sources can indicate past settlement and land use patterns in recent centuries and can also highlight the impact of modern developments and agricultural practices. This information can aid in the identification of the location and extent of unrecorded, or partially levelled, features of archaeological or architectural heritage interest. The cartographic sources examined for the study areas include the Down Survey (c.1655), Rocque's map of County Dublin (1760), William Duncan's map of County Dublin (1821), the first edition of the 6-inch Ordnance Survey (OS) maps (surveyed and published in the 1830s-40s) and the 25-inch OS maps (surveyed and published 1887-1913).

- *Aerial photography* – In parallel with the cartographic study, a review publicly-accessible aerial photographic sources from the Ordnance Survey, Google and Bing Maps was undertaken.

- *Development Plans* - The local authority development plans relevant to the study area was consulted as part of this assessment. These plans outline the local authorities' policies for the conservation of the archaeological and architectural heritage resource and include the Record of Protected Structures (RPS) and any designated Architectural Conservation Areas (ACAs). The relevant development plan for the study area is the *South Dublin County Council Development Plan 2016 – 2022.*

- *Database of Irish Excavation Reports* - The Database of Irish Excavation Reports contains summary accounts of all archaeological excavations carried out in Ireland from 1970 to present.

- *Placenames Database of Ireland* - The Placenames Branch (Department of Culture, Heritage and the Gaeltacht) provides a comprehensive management system for data, archival records and place name research conducted by the State. Its primary function is to undertake research in order to establish the correct Irish language forms of the place names of Ireland and to publish them on a public website (www.logainm.ie).

- *National Inventory of Architectural Heritage* - The function of the National Inventory of Architectural Heritage ('NIAH') is to record built heritage structures within the Republic of Ireland and to advise local authorities in relation to structures of interest within their areas. The NIAH commissions surveys of sites of architectural significance to assist in evaluating structures to be included in the RPS. Listing on the NIAH does not necessarily carry any statutory protection but does highlight the culturally significant aspects of the structure which ought to be conserved.

Types of impact

Impacts are categorised as either being *direct*, *indirect* or of *no predicted impact*. The criteria for determining the nature of impacts are based on the following:

- **Direct Impact** – where a cultural heritage site is physically located within the footprint of the scheme, which will result in its complete or partial removal.
- **Indirect Impact** – where a cultural heritage site or its setting is located in close proximity to the footprint of the scheme.
- **No predicted impact** – where the potential scheme will not adversely or positively affect a cultural heritage site.

A significance rating for these impacts is then applied; whether *profound*, *significant*, *moderate*, *slight*, or *imperceptible*

- A **profound** impact applies where mitigation would be unlikely to remove adverse effects that arise where a cultural heritage site is completely and irreversibly destroyed by a proposed development.
- A **significant** impact applies when an impact, by its magnitude, duration or intensity, alters an important aspect of the environment. It applies where part of a cultural heritage site would be permanently impacted upon, leading to a loss of character, integrity and data about the feature/site.
- A **moderate** impact applies when a change to a cultural heritage site is proposed that, though noticeable, does not compromise the integrity of the site and which is reversible. This arises where a cultural heritage site can be incorporated into a modern-day development without damage and where all procedures used to facilitate this are reversible.
- A **slight** impact causes changes in the character of the environment which are not significant or profound and do not directly impact or affect a cultural heritage site.
- An **imperceptible** impact applied where an impact is capable of measurement but does not carry noticeable consequences.

Field survey

A suitably qualified archaeologist (Camilla Brännström) carried out inspections of the land parcel on 26th January 2021. The study area was assessed in terms of historic landscape, land use, vegetation cover, presence and potential for undetected archaeological and architectural heritage sites/features. No difficulties were encountered during topographical survey. Extracts from the photographic record are presented below (**Appendix 1**).

3. Context

Location

The subject site is located within the grounds of Grange Castle Business Park in the townland of Nangor in South County Dublin, approximately 2.5km from the village of Clondalkin. The site consists of 0.1ha of rough ground adjacent to the existing Nangor AGI compound and west of the Outer Ring Road (R136). The site of Nangor Castle (DU017-037----) and its constraint zone is located immediately south of the proposed AGI extension and pipeline route.

***Figure 2**: Location of subject site (red line boundary) and pipeline route (blue line)*

The proposed development is to construct a new 70 to 19 barg PRS at the existing Nangor AGI to facilitate the supply of 19 barg natural gas to the power station. The proposed 19 barg pipeline from the AGI to the power station is approximately 1.7 km to the north, terminating at a green field site in Grange Business Park, Dublin 22. This pipeline will facilitate a new 19 barg natural gas connection to a new power station to be located in Grange Business Park.

Legal & Policy Framework

The management and protection of cultural heritage in Ireland is achieved through a framework of national laws and policies which are in accordance with the provisions of the Valetta Treaty (1995) (formally the *European Convention on the Protection of the Archaeological Heritage, 1992*)

ratified by Ireland in 1997; the *European Convention on the Protection of Architectural Heritage* (Granada Convention, 1985), ratified by Ireland in 1997; and the *UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, 2003*, ratified by Ireland in 2015.

The locations of World Heritage Sites (Ireland) and the Tentative List of World Heritage Sites submitted by the Irish State to UNESCO were reviewed. The Brú na Bóinne World Heritage Site is located approximately 40km to the north-northwest of the subject site. *The Historic City of Dublin* listed on Ireland's Tentative List of World Heritage Sites 2010, is located approximately 10km east-northeast of the site.

The national legal statutes and guidelines relevant to this assessment include:

- National Monuments Act (1930) (and amendments in 1954, 1987, 1994 and 2004);
- Heritage Act (1995);
- National Cultural Institutions Act (1997);
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999);
- Planning and Development Act (2000);
- *Architectural Heritage Protection: Guidelines for Planning Authorities*, Department of Arts, Heritage, and the Gaeltacht (2011); and
- *Framework and Principles for the Protection of the Archaeological Heritage*, Department of Arts, Heritage, Gaeltacht and the Islands, (1999).

Archaeological Heritage

The administration of national policy in relation to archaeological heritage management is the responsibility of the National Monuments Service (NMS) which is currently based in the Department of Culture, Heritage and the Gaeltacht. The National Monuments Act of 1930, and its Amendments, are the primary means of ensuring the satisfactory protection of the archaeological resource. They include a number of provisions that are applied to secure the protection of archaeological monuments. These include the designations of nationally significant sites as National Monuments, the Register of Historic Monuments (RHM), the Record of Monuments and Places (RMP), the Sites and Monuments Record (SMR), and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

Section 2 of the National Monuments Act, 1930 defines a National Monument as *'a monument or the remains of a monument, the preservation of which is a matter of national importance'*. The State may acquire or assume guardianship of examples through agreement with landowners or under compulsory orders. Archaeological sites within the ownership of local authorities are also deemed to be National Monuments. **There are no National Monuments located within the study area.** The nearest National Monuments to the subject site are Clondalkin Round Tower (SMR no. DU017-041006, National Monument no. 32) and Tully's Castle (SMR no. DU017-041005) (National Monument no. 285) both located at Clondalkin, approximately 2.5km to the east.

The National Monuments (Amendment) Act, 1994 made provision for the establishment of the RMP, which comprises the known archaeological sites within the State. The RMP, which is based on the earlier Register of Historic Monuments (RHM) and Sites and Monuments Record (SMR), provides county-based lists of all recorded archaeological sites with accompanying maps. All RMP sites receive statutory protection under the National Monuments Act 1994 and the NMS must be

given two months' notice in advance of any work proposed at their locations. There are **no** recorded archaeological sites within the subject site, however, **the site of Nangor Castle (DU017-037----) and its Zone of Notification (ZoN) is located immediately south of the proposed development with a further four such monuments located within approximately 500m of its boundary**. These recorded archaeological sites are listed in **Table 1.**

The *South Dublin County Council Development Plan 2016 – 2022* contains the following policies and objectives relating to archaeological heritage:

> *It is the policy of the Council to manage development in a manner that protects and conserves the Archaeological Heritage of the County and avoids adverse impacts on sites, monuments, features or objects of significant historical or archaeological interest.*
>
> ***HCL2 Objective 1:*** *To favour the preservation in-situ of all sites, monuments and features of significant historical or archaeological interest in accordance with the recommendations of the Framework and Principles for the Protection of Archaeological Heritage, DAHGI (1999), or any superseding national policy document.*
>
> ***HCL2 Objective 2:*** *To ensure that development is designed to avoid impacting on archaeological heritage that is of significant interest including previously unknown sites, features and objects.*
>
> ***HCL2 Objective 3:*** *To protect and enhance sites listed in the Record of Monuments and Places and ensure that development in the vicinity of a Recorded Monument or Area of Archaeological Potential does not detract from the setting of the site, monument, feature or object and is sited and designed appropriately.*
>
> ***HCL2 Objective 4:*** *To protect and preserve the archaeological value of underwater archaeological sites including associated features and any discovered battlefield sites of significant archaeological potential within the County.*
>
> ***HCL2 Objective 5:*** *To protect historical burial grounds within South Dublin County and encourage their maintenance in accordance with conservation principles.*

Architectural Heritage

Protection of architectural heritage is provided for through a range of legal instruments that include the Heritage Act (1995), the Architectural Heritage (National Inventory) & National Monuments (Misc. Provisions) Act (1999), and the Planning and Development Act (2000).

The Heritage Act (1995) (as amended) defines architectural heritage as including: *all structures, buildings, traditional and designed, and groups of buildings including streetscapes and urban vistas, which are of historical, archaeological, artistic, engineering, scientific, social or technical interest, together with their setting, attendant grounds, fixtures, fittings and contents.*

The National Inventory of Architectural Heritage (NIAH) was established under the Architectural Heritage Act (1999), to record architectural heritage structures within the State and to advise local authorities in relation to structures of architectural heritage significance within their administrative areas. The conservation principles of care and protection of architectural heritage and the facilitation of the listing of significant buildings of architectural merit are set out in Part IV of the Planning and Development Act (2000). This requires Local Authorities to maintain a Record of Protected Structures (RPS) of structures with special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, to be included in City/County Development Plans. In addition, Local Authorities must provide for the preservation of townscapes etc. through designation of Architectural Conservation Areas (ACAs). Any changes that materially affect the character of a protected structure require planning permission.

The *South Dublin County Development Plan 2016 – 2022* contains several policies and objectives relating to architectural heritage:

> *It is the policy of the Council to conserve and protect buildings, structures and sites contained in the Record of Protected Structures and to carefully consider any proposals for development that would affect the special character or appearance of a Protected Structure including its historic curtilage, both directly and indirectly.*
>
> ***HCL3 Objective 1:*** *To ensure the protection of all structures (or parts of structures) and the immediate surroundings including the curtilage and attendant grounds of structures contained in the Record of Protected Structures.*
>
> ***HCL3 Objective 2:*** *To ensure that all development proposals that affect a Protected Structure and its setting including proposals to extend, alter or refurbish any Protected Structure are sympathetic to its special character and integrity and are appropriate in terms of architectural treatment, character, scale and form. All such proposals shall be consistent with the Architectural Heritage Guidelines for Planning Authorities, DAHG (2011) including the principles of conservation.*
>
> ***HCL3 Objective 3:*** *To address dereliction and encourage the rehabilitation, renovation, appropriate use and re-use of Protected Structures. HCL3 Objective 4: To prevent demolition and inappropriate alteration of Protected Structures.*

There are **no** protected structures within the subject site. There are no ACA's within the study area. Clondalkin Village ACA is located approximately 2.5km east of the proposed development.

Archaeological & historical background

There are **no recorded archaeological sites located within the boundaries of the subject site, however, the proposed pipeline route associated with the AGI extension will encroach slightly on the ZoN of Nangor Castle (DU017-037-----) recorded c.15m to the south of the proposed.** No upstanding remains of Nangor Castle (DU017-037-----), the site of a demolished tower house later replaced by a nineteenth-century mansion, have survived. The Historic Environment Viewer records five archaeological sites within approximately 500m (study area) of the subject site (**Figure 3** & **Table 1**) and a further five (all medieval in date) within approximately 1km of the subject site.

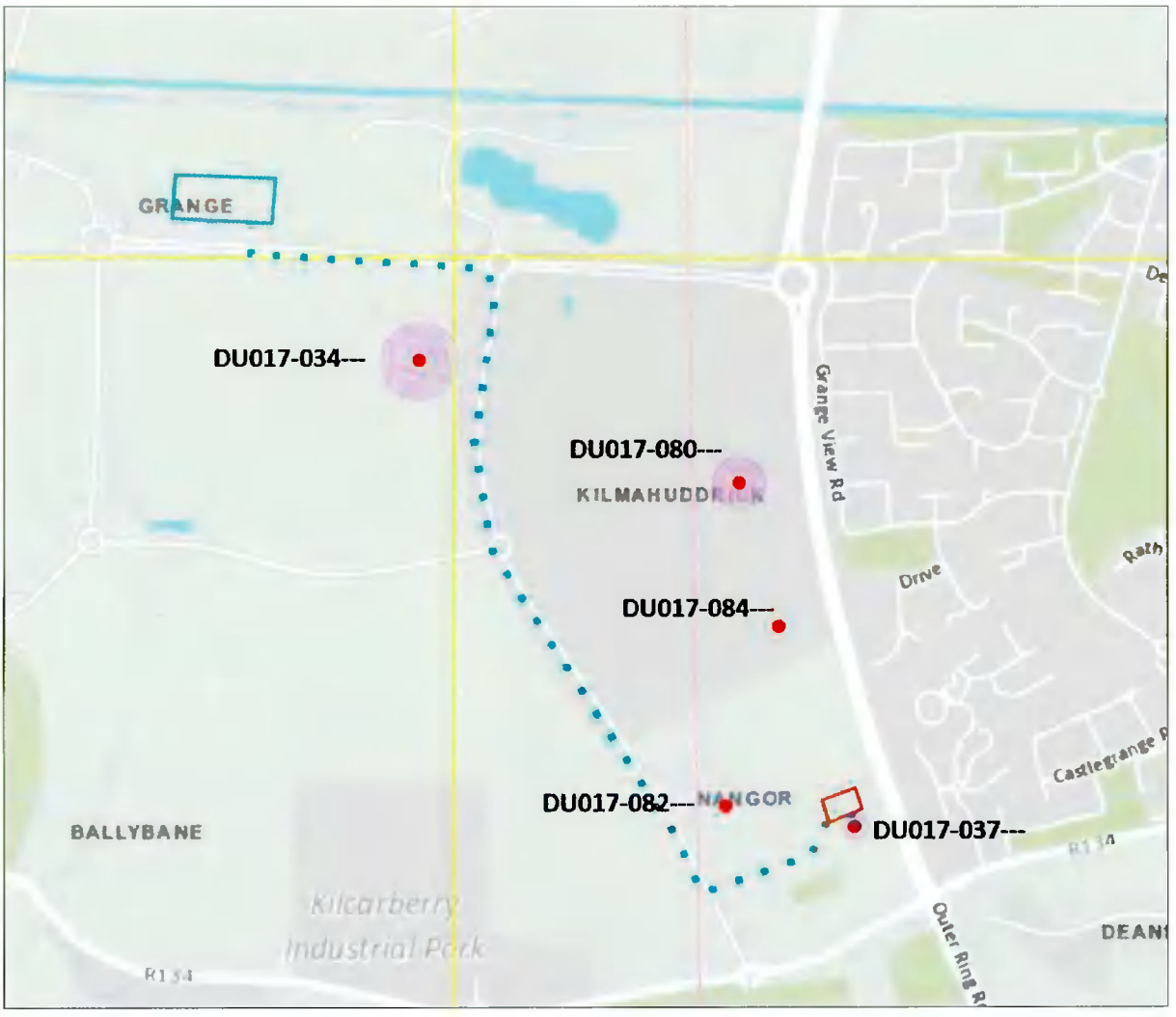

Figure 3: *Recorded archaeological sites located within approximately 500m of the subject site (red), showing pipeline route (blue dotted line)*
(Source: www.archaeology.ie)

Table 1: *List of recorded archaeological monuments within approximately 500m of the subject site*

SMR Number	Class	Townland	ITM Ref
DU017-034----	Castle - tower house (Grange Castle)	Grange	703857, 731878
DU017-037----	Castle – unclassified (Nangor Castle)	Nangor	704527, 731167
DU017-080----	Barrow - ring barrow	Kilmahuddrick	704347, 731692
DU017-082----	Field system - medieval	Nangor	704328, 731198
DU017-084----	Fulacht fia	Nangor	704410, 731472

Early Prehistoric
Traditionally, the earliest recorded evidence for human settlement in Ireland dates to the Mesolithic period (7000–4000 BC) when groups of hunter-gatherers arrived on the island, however recent evidence in the form of a butchered bear patella found in Alice and Gwendoline Cave near Ennis in Co. Clare now suggests that humans were present in Ireland during the Palaeolithic period between 12,800 to 12,600 cal BC (Dowd and Carden, 2016, 161). While the Mesolithic settlers did not construct any settlements or monuments that leave any above ground

traces, their presence in an area can often be identified by scatters of worked flints in ploughed fields or shell middens adjacent to the coastline. **There are no recorded sites dating to the Mesolithic period within the study area.** The Neolithic period (4000-2400 BC) began with the arrival and establishment of agriculture as the principal form of economic subsistence, which resulted in more permanent settlement patterns. As a consequence of the more settled nature of agrarian life, new site-types, such as more substantial rectangular timber houses and various types of megalithic tombs, begin to appear in the archaeological record during this period. **There are no recorded sites dating to the Neolithic period within the study area.** However, an early Neolithic a post-built house was uncovered during pre-development work at Kishoge (Licence no. 01E0061).

Late Prehistoric periods

Metalworking arrived in Ireland with the advent of the Bronze Age period (c. 2400–500 BC). This period was also associated with the construction of new monument types such as standing stones, stone rows, stone circles and fulachta fia. Fulacht fia translates as cooking places of the wild (or of deer), they are often interpreted as the remains of cooking sites and are the most numerous archaeological site type in Ireland, radiocarbon dating of excavated examples has generally produced dates in the Bronze Age (c.2400-500BC). **One fulacht fia (SMR no. DU017-084, licence no. 00E0718) has been excavated approximately 300m to the north of the subject site as part of pre-development investigations for Grange Castle Business Park while another three burnt mounds (Licence no. 04E0299) were uncovered during re-alignment of the Griffeen River c.400m south of the proposed end point of the new pipeline route.** The development of new burial practices saw the construction of funerary monuments such as cairns, barrows, boulder burials and cists. The later first millennium BC and the early centuries AD comprise the Irish Iron Age, which is the most obscure period in the Irish archaeological record. While there is general agreement that the introduction of an iron technology was a significant factor in the eventual demise of bronze working on a large scale, but how, why and when this came about in Ireland is far from clear. **One Bronze Age ring barrow (SMR no. DU017-080, licence no. 00E0448) has been excavated 500m to the north of the subject site as part of pre-development investigations for Grange Castle Business Park with an Iron Age furnace and charcoal clamp (13E0435) also identified c.100m to the west of the new pipeline route.**

Early Medieval

This period began with the introduction of Christianity in Ireland and continued up to the arrival of the Anglo-Normans during the 12th-century (c. 400–1169 AD). The establishment of the Irish church was to have profound implications for political, social and economic life and is attested to in the archaeological record by the presence of church sites, associated places for burial and holy wells. The early medieval church sites were morphologically similar to ringforts but are often differentiated by the presence of features such as church buildings, graves, stone crosses and shrines. This period saw the emergence of the first phases of urbanisation around the large monasteries and the Hiberno-Norse ports. However, the dominant settlement pattern of the period continued to be rural based in sites such as ringforts, which comprise roughly circular enclosures delimited by roughly circular earthen banks formed of material thrown up from a concentric external ditch. Ringforts are one of the most numerous monuments in the Irish landscape and the early medieval terms for these sites – rath/lios/dun these still form some of the most common place-name elements in the country. Archaeological excavations indicate that many ringforts were early medieval farmsteads with internal timber buildings and were surrounded by associated field systems. **A geophysical survey and preliminary testing ahead**

of the development of Grange Castle Business Park has identified an early medieval enclosure in the townland of Nangor (licence nos. 96E0273 and 07E0588).

Late and Post Medieval

The arrival and conquest of large parts of Ireland by the Anglo-Normans in the late 12th-century broadly marks the advent of the Irish late medieval period, which continued up until the beginning of the post-medieval period in *c.*1550. Within the late medieval period, towns, markets, and fairs were established and change and reform was attempted in the Irish church. By the 15th-century the native Irish chieftains and lords began to establish tower houses and smaller castles as centres of territorial control. There are several recorded archaeological sites from this period located within approximately 1km of the subject site; the medieval parish church of St Cuthbert (DU017-038001) its graveyard (DU017-038002) and an adjacent moated site (DU017-038003) are located approximately 800m northeast of the subject site in the townland of Kilmahuddrick. The remains of a tower house (DU017-039----) is recorded at Deansgrange, approximately 600m to the northeast of the proposed development, with the site of a now demolished tower house noted in the townland of Adamstown (DU017-029----) approximately 980m northwest of the pipeline customer connection point. **Within the study area there are two sites from this period recorded: the preserved remains of Grange Castle (DU017-034----) and its ZON are located 85m and 30m from the proposed pipeline route respectively and clearly visible from the same. While no upstanding remains of Nangor Castle (DU017-037----) have survived historical references and mapping indicates that it was first inhabited during the medieval period before later becoming incorporated into an 18th century house.** Records show that a Ffinian Bassenett was residing at Nangor in 1532. Ffinian's brother, Edward the Dean of St Patrick's at the time of the Dissolution, owned the adjacent townland of Deansrath (Ball, E.F. 1906). Archaeological test excavations in the vicinity of Nangor Castle have revealed a large ditch and artefacts dating to the early medieval - twelfth/thirteenth century, suggesting an earlier phase of occupation at the castle. The test excavations also uncovered human skeletal remains of unknown age (**Appendix 3**).

The post-medieval period (1550+) saw the development of high and low status stone houses throughout the Irish country. During this period any given settlement cluster is likely to have consisted primarily of single-storey thatched cottages with associated farm buildings while two-storey farmhouses became more common in the 19th-century. In the latter half of the 20th-century, there was a radical change in the nature and character of Irish domestic architecture manifested by the replacement of older stone-built structures with modern bungalows of concrete blockwork construction.

Historical context

The origin of the placename Nangor (Irish: *Nangar*) is unclear. The earliest reference to the name is found in the Calendar of the Patent and Close Rolls of Chancery in Ireland from 1560 where it is spelled 'Nanger'.

The proposed development site is located approximately 2.5km west of Clondalkin, a former village and now a suburb of Dublin. The lands of the townland of Nangor were held by the Verdon family in the early 14th century. Nangor Castle was recorded as being the property of John Bath in 1634, Limerick Nottingham at the time of his death in 1648 and later passed into the ownership of Mr. Joseph Budden, one of the commissioners for the Sale of Forfeited Estates at the end of the 17th century. Nangor Castle subsequently became the county residence for John Falkiner,

Budden's son-in-law, who built a Queen Anne-style house adjoining the Castle. The building was demolished in the 1970s (Byrne and Grahame 1989).

Samuel Lewis' *Topographical Dictionary of Ireland*, published in 1837, provides historical and statistical descriptions of several of the counties, cities, boroughs, parishes, villages, and post towns throughout Ireland. The entry under Clondalkin gives a thorough history of the village and parish from its origins through to the 19th century:

> *CLONDALKIN, a parish, in the barony of UPPERCROSS, county of DUBLIN, and province of LEINSTER, 5 miles (S. W.) from Dublin; containing 2976 inhabitants, of which number, 374 are in the village. This place, anciently called Cluain-Dolcan, and by the Danes Dun-Awley, appears, from the evidence of its ancient round tower, still in good preservation, to have had a very remote origin. A monastery was founded here, of which St. Cronan Mochua was the first abbot ; and a palace here belonging to Anlaff, or Auliffe, the Danish king of Dublin, was, in 806, destroyed by the Irish under Ciaran, the son of Ronan, Tile monastery was plundered and burnt in 832, 1071, and 1076, since which last date there is no further record of its history. In 1171, Roderic O'Connor, King of Leinster, with the forces of O'Ruarc and O'Carrol, Prince of Argial, marched to this place against Earl Strongbow, who was then besieging Dublin; but in order to oppose his further progress, Strongbow advanced to give him battle, and after some days' skirmishing compelled him to retreat, leaving Dublin to the mercy of the English (...)*
>
> *The greater portion of the parish is arable land ; the soil is fertile, and the system of agriculture very much improved under the auspices of many resident gentlemen, who farm their own estates, and have established ploughing matches for prizes, which are annually distributed. There are quarries of good limestone, which is raised in abundance for agricultural and other uses. The gentlemen's seats are Newlands, the residence of P. Crotty, Esq., a handsome modern mansion, previously occupied hy the late Lord Kilwarden, Chief-Justice of the King's Bench; Collinstown, of M. Mills, Esq.; Lark-field, of J. Hamilton, Esq., in the grounds of which are the ruins of an old castle covered with ivy; Corkagh, of W. Stockley, Esq.; Little Corkagh, of H. Arabin, Esq.; Moyle Park, of W. Caldbeck, Esq.; Neilstown House, of L. Rorke, Esq.; Nanger, of P. C. Rorke, Esq., formerly an old embattled castle, now modernised; Clondalkin, of Mrs. Anne Connolly; Kilcarbery, of H. Phillips, Esq.; St. Mark's, of Capt. Foss; Neilstown Lodge, of C. Brabazon, Esq.; Flora-ville, of F. Smith, Esq.; Rosebank, of W. Bayly, Esq.; Clonburrows, of M. Pearson, Esq.; Collinstown Cottage, of the Rev Mr. O'Callaghan; and Clover Hill, of D. Kinalson, Esq.*
>
> *There is an oil-mill in the parish, and in the demesne of Little Corkagh are some gunpowder-mills, established a century since, but not used since 1815 ; one of them has been converted into a thrashing and cleaning mill, capable of preparing 100 barrels daily. The Grand Canal passes through the parish, and the Royal Canal through the northern part of the union, near the Duke of Leinster's demesne. (Lewis 1837).*

There are **no recorded architectural heritage sites within the lands comprising the subject site**. The National Inventory of Architectural Heritage (NIAH) lists a total of seven architectural heritage sites within approximately 500m of the subject site boundary, including three architectural heritage sites within the study area, of which two (Grange Castle and Grange

Cottage) are also designated Recorded Protected Structures (RPS) as identified in the South Dublin County Council Development Plan 2016-2022. **Grange Castle, a tower house, (RPS no. 132, NIAH reg. no. 11208013, SMR DU017-034----) located some 80m to the west is the closest RPS site to the proposed development (Figure 4 & Table 2)**. There are no ACAs recorded within the study area, the nearest being Clondalkin Village ACA located approximately 2.5km to the east.

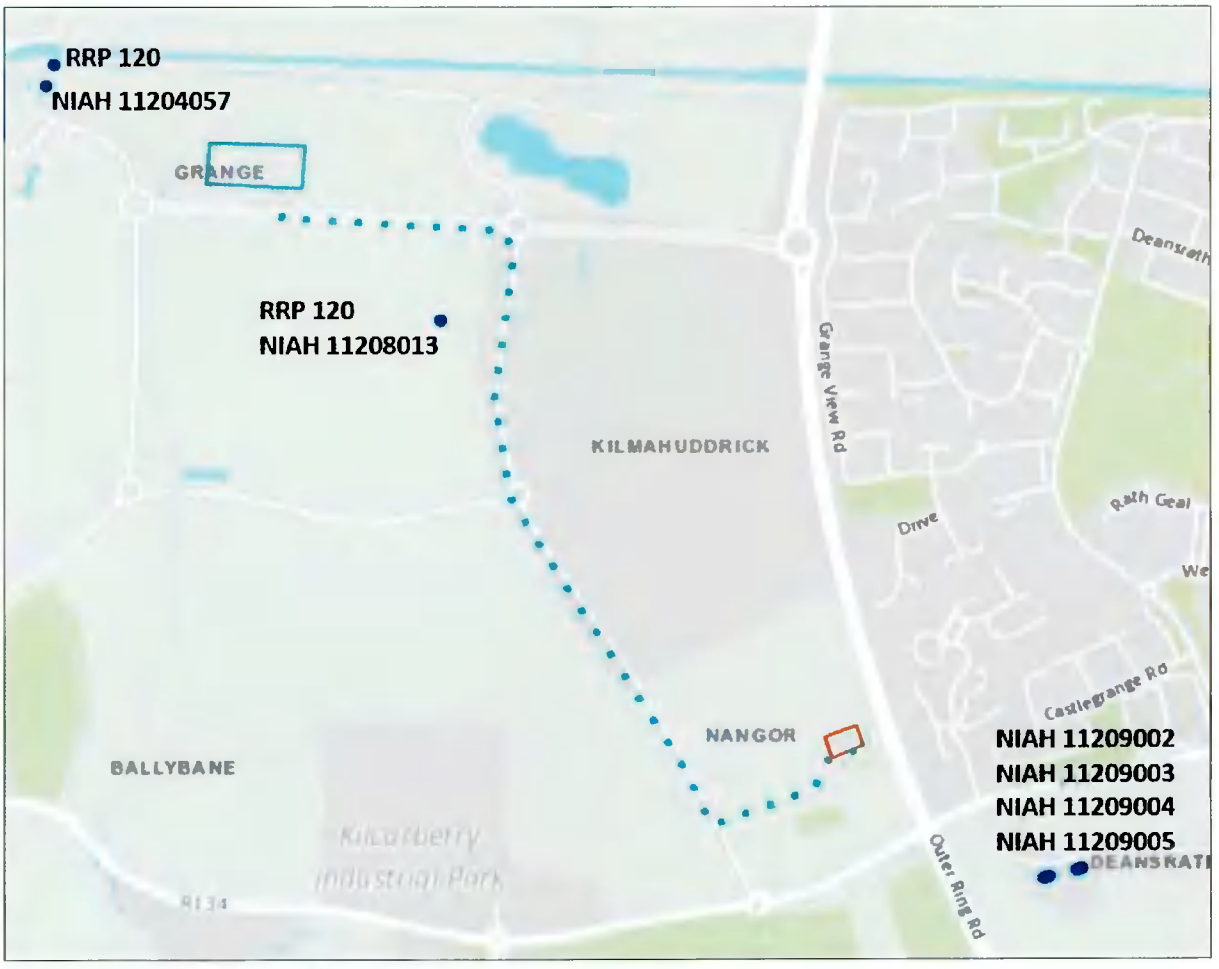

Figure 4: *Recorded architectural heritage sites located within approximately 500m of the subject site (Source: http://www.heritagemaps.ie/)*

Table 2: *List of recorded architectural heritage sites within approximately 500m of the subject site*

RPS ref. no	*NIAH ref. no*	*Description*	*Townland*	*Rating*
120	11204057 11204058	Grange Cottage, Detached six-bay single-storey farmhouse & outbuildings	Grange	Regional
132	11208013	Grange Castle, ruin of medieval tower house (SMR DU017-034----)	Grange	Regional
n/a	11209002	1 Old Nangor Road, semi-detached house, 1930s	Deansrath	Regional
n/a	11209003	2 Old Nangor Road, semi-detached house, 1930s	Deansrath	Regional
n/a	11209004	3 Old Nangor Road, semi-detached house, 1930s	Deansrath	Regional

RPS ref. no	NIAH ref. no	Description	Townland	Rating
n/a	11209005	4 Old Nangor Road, semi-detached house, 1930s	Deansrath	Regional

The Excavations Database

The Excavation Database contains summary accounts of archaeological excavations undertaken in the Republic of Ireland and Northern Ireland from 1970 to present. A search of the townlands of Nangor, Grange and Kilmahuddrick has revealed a considerable amount of archaeological activity in the areas immediately surrounding the subject site, with the majority of excavations relating to the construction of Grange Castle Business Park and Nangor AGI itself (**Table 3 Appendix 2**).

Archaeological test excavation and monitoring during the preceding phase of construction at Nangor AGI in 2019 under licence no. 19E0170 uncovered two highly disturbed metalled surfaces and three sides of a stone wall foundation, interpreted by the excavator, M. Ní Cheallacháin, as the remains of an outbuilding depicted on the 25inch OS map of 1906–9. Ní Cheallacháin concluded that the southern extension to the AGI is located within a former yard associated with the 19th century house of Nangor Castle.

In 2007, several phases of testing and monitoring were carried out next to the AGI access road and an area to the south of the proposed development (Licence Ref.: 07E0588). In the first phase, one test trench was excavated within the zone of notification for Nangor Castle (DU017-037) where a 2.5–3m thick layer of modern overburden was found to extend across the site. A large stone wall, 1m high by 1.75m wide, with a rubble core was identified within the trench and may represent the remains of the medieval Nangor Castle (DU017-037). A second phase of testing comprising three trenches was carried out within a field to the south and southwest of the castle. Trenches 1 and 2, located some 90m south of the proposed development, uncovered possible garden and landscaping features associated with the Queen Anne house. Trench 3, to the south-west of Nangor Castle, was excavated across a large early medieval enclosure ditch previously identified through geophysical survey and testing (licence no. 96E0273, 97E0116), which had identified a cemetery and possible structures as well as animal bone and medieval pottery.

A third phase of archaeological monitoring of the insertion of a service trench parallel with and south of the AGI access road also uncovered features interpreted as the remains of landscaped gardens associated with the Queen Anne house. The excavator noted a significant amount of modern fill at the western end of the trench, near the main entrance of the business park, becoming less apparent closer to the AGI where a series of low stone walls containing red brick were identified.

An archaeological evaluation in the form of test trenching carried out in a field that borders the subject site to the north in 2001 (licence no. 01E0754) established the presence of a medieval field system which contained a substantial assemblage of local medieval pottery and other artefacts.

Table 3: *List of licenced archaeological excavations within the vicinity of the subject site*

Excavation lic. no.	Location	Description
96E0273	Grange Castle Business Park, Grange	Early medieval enclosure
97E0273	Grange Castle Business Park, Grange, Nangor, Kilmahuddrick	Testing of geophysical anomalies
00E0448	Grange Castle Business Park, Kilmahuddrick	Barrow -ring barrow
00E0718	Grange Castle Business Park, Nangor	Fulacht fia
01E0061	Grange Castle Business Park, Kishoge	Neolithic house
01E0754	Grange Castle Business Park, Nangor	Medieval ditch complex
04E0299	Grange Castle Business Park, Grange	Burnt mounds
07E0588	Grange Castle Business Park, Nangor	Landscaped garden features, outbuildings, possible remains of medieval Nangor Castle
13E0435	Grange Castle Business Park, Grange	Iron age furnace and charcoal clamp
13E0459	Grange Castle Business Park, Grange	Pits and spreads
19E0170	Grange Castle Business Park, Nangor AGI Nangor	18th/19th century wall foundations for outbuildings, metalled surfaces

Cartographic review

The detail on historic cartographic sources demonstrates the nature of past settlements and land use patterns in recent centuries and can also highlight the impacts of modern developments and agricultural practices. This information can aid in the identification of the location and extent of unrecorded or partially levelled features of archaeological or architectural heritage interest.

The cartographic sources examined for the study areas include the Down Survey (1655) (**Figure 5**), John Rocque's map of Dublin (1760) (**Figure 6**), William Duncan's map of the County of Dublin (1821) (**Figure 7**), the 1st edition of the 6-inch OS map (surveyed and published in the 1830s) (**Figure 8a & b**), the 25-inch OS map (surveyed and published 1887-1913) and the Cassini map from 1940 (**Figure 9a & b**), as well as recent aerial orthorectified photography (**Figure 10**). The Down Survey map does not record the boundaries of the townland of Nangor, however it shows a tower house in the location of Nangor Castle, to the south of Grange townland.

Rocque's mid-eighteenth-century map records a group of square buildings centred around a courtyard with landscaped gardens and a small block of woodland to the west in the townland of Nangor (spelled 'Nanger'). A tree-lined avenue extends southwards from the house to the Nangor Road. Grange Castle is also depicted on this map. Duncan's map from 1821 records some re-development of the site with the absence of some buildings within the northwest corner of the former yard. The gardens are not defined, and in their place is a small square field bordered by trees to the west of the access lane which is depicted in the same place as on previous maps.

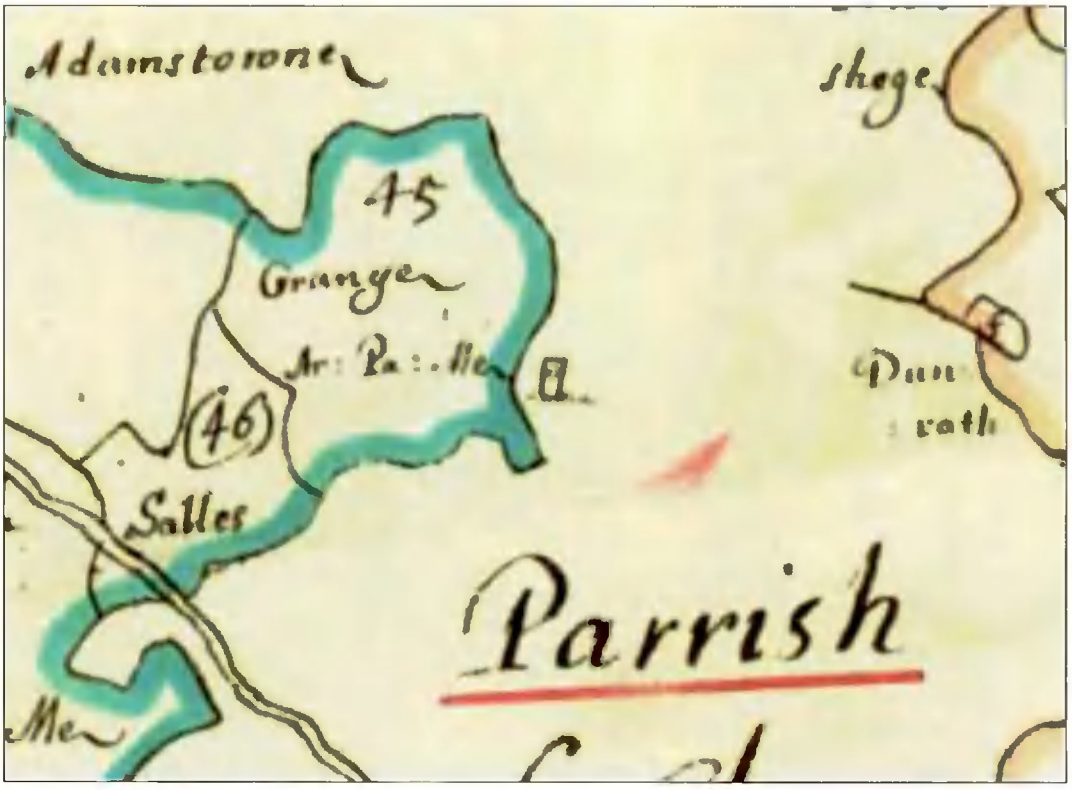

Figure 5: *Extract from William Petty's Down Survey map (1655) showing a tower house (centre) in the approximate location of Nangor Castle (www.downsurvey.tcd.ie)*

Figure 6: *Extract from John Rocque's map (1760) showing Nangor Castle (Source: South County Dublin Library mapviewer)*

A review of the first edition of the 6-inch OS map show the footprint of the proposed AGI extension as located within undeveloped farmland in the demesne of Nangor Castle. The tree-lined avenue noted on earlier mapping is shown leading northwards from Nangor Road which forms the southern boundary of the demesne at this time. A group of rectangular buildings labelled 'Nangor Castle' is located approximately 20m to the south of the development area while a rectangular land parcel to the east contains landscaped gardens with flower or vegetable beds and an orchard, with a similar layout to that noted on Rocque's map. The route of the proposed pipeline extends along an east – west axis along the northern boundary of the garden before turning northwards, continuing through a series of large irregular fields. Grange Castle is noted in the townland of the same name near the junction of Nangor, Grange and Kilmahuddrick townlands where the pipeline route follows the townland boundary of Kilmahuddrick for a short distance before turning westwards towards Grange Castle Power Station across a set of three large rectangular fields.

Figure 7: *Extract from William Duncan's map of County Dublin (1821) showing Nangor Castle (Source: South County Dublin Library mapviewer)*

Figure 8a: *Extract from the 1st edition 6-inch OS map showing the approximate site boundary (red) and pipeline route (blue) (Reproduced under Ordnance Survey Ireland Licence No. SU 0003320 (© Ordnance Survey Ireland/Government of Ireland))*

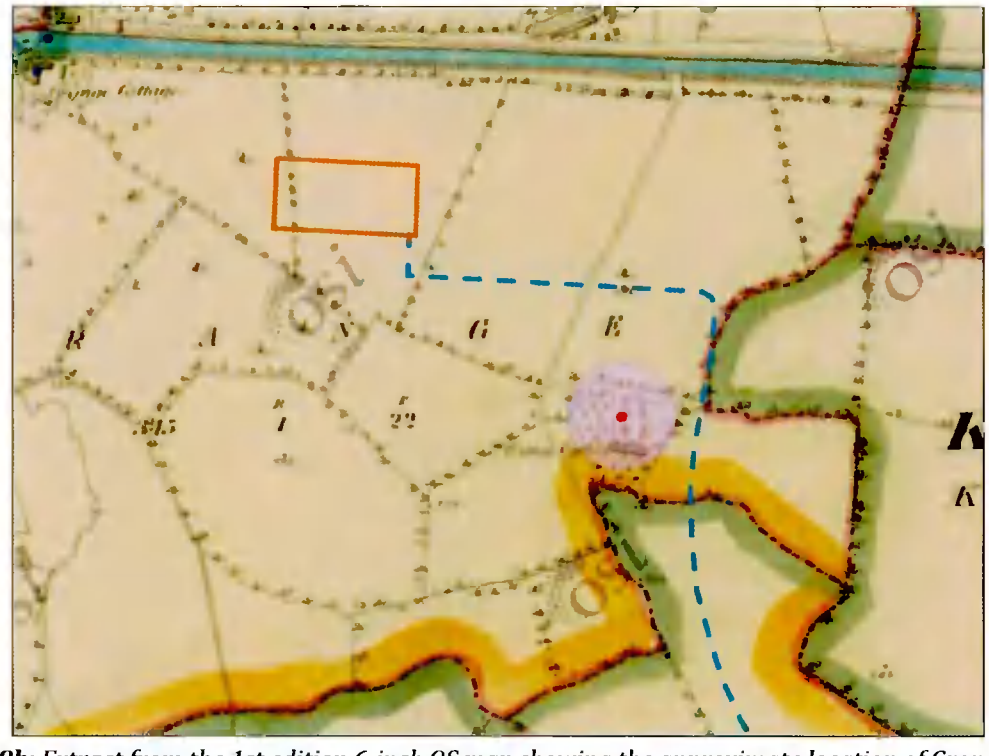

Figure 8b: *Extract from the 1st edition 6-inch OS map showing the approximate location of Grange Castle Power Station (orange) and pipeline route (blue) (Reproduced under Ordnance Survey Ireland Licence No. SU 0003320 (© Ordnance Survey Ireland/Government of Ireland))*

The early 20th century 25-inch map does not record any significant changes in land use from the first edition survey, however it does record the addition of one rectangular outbuilding and the foundations of a barn within the footprint of the existing AGI at Nangor Castle (**Figure 10**).

The Cassini 6-inch map (*c.*1940) does not record any significant changes within the footprint of the proposed development however it does label the group of buildings of Nangor Castle as 'on site of Castle', suggesting that the medieval tower house had been demolished. An examination of recent orthorectified aerial photographs revealed that the subject site has undergone significant ground disturbance during the development of Grange Castle Business Park. Large areas of stripped ground and spoil heaps are noted within the site boundaries on imagery from 2000 (**Figure 11**).

A review of these historic cartographic sources has revealed that there is a slight potential for the remains of nineteenth century outbuildings and garden features relating to Nangor Castle to be present within the boundaries of the subject site.

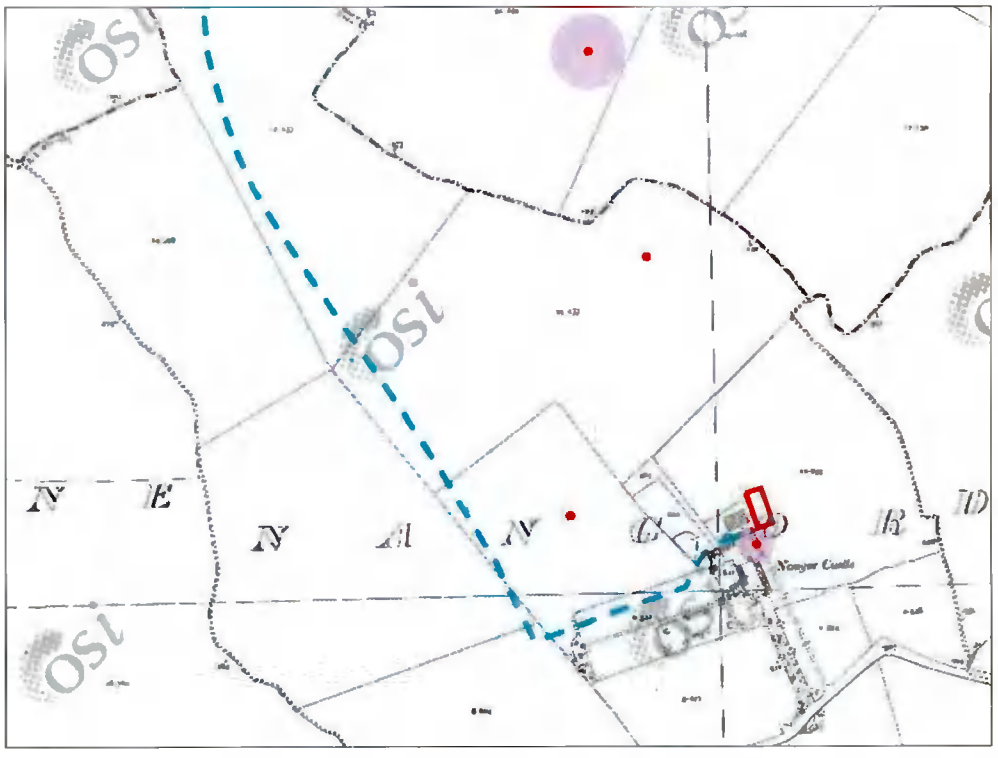

Figure 9a: *Extract from the 25-inch OS map showing the approximate site boundary (red) and pipeline route (blue) (Reproduced under Ordnance Survey Ireland Licence No. SU 0003320 (© Ordnance Survey Ireland/Government of Ireland))*

Figure 9b: *Extract from the 25-inch OS map showing the approximate site boundary (red) and pipeline route (blue) (Reproduced under Ordnance Survey Ireland Licence No. SU 0003320 (© Ordnance Survey Ireland/Government of Ireland))*

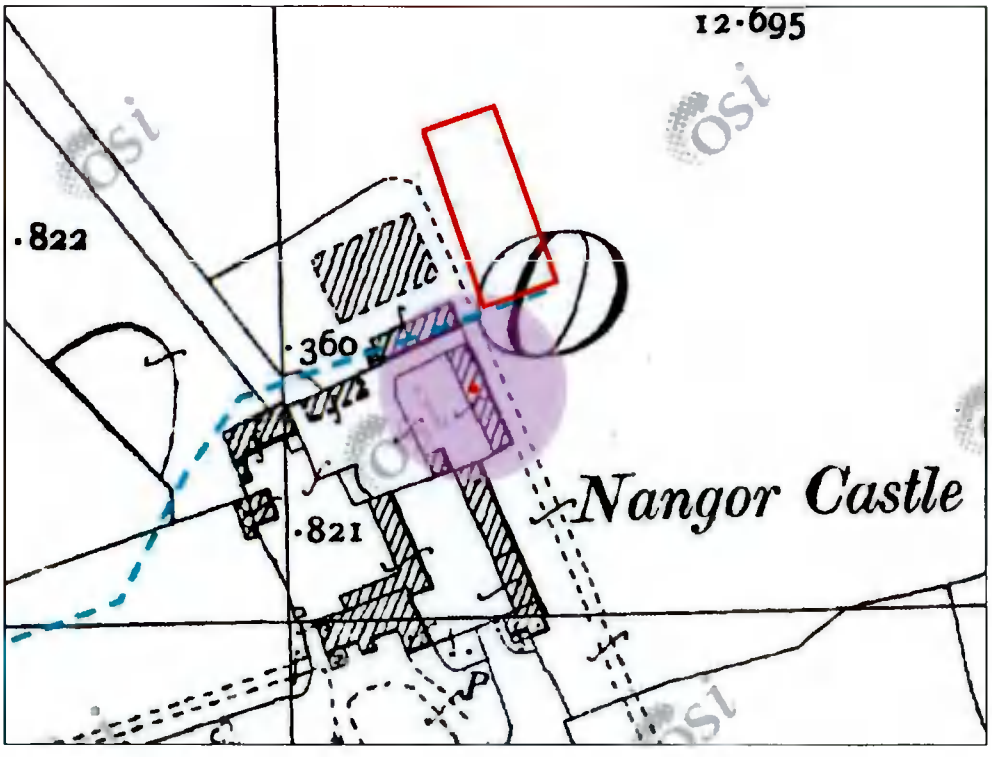

Figure 10: *Detail from the 25-inch OS map showing the approximate site boundary (red) and pipeline route (blue) (Reproduced under Ordnance Survey Ireland Licence No. SU 0003320 (© Ordnance Survey Ireland/Government of Ireland))*

Figure 11: *Extract from aerial imagery (2000) showing the approximate site boundary (red) and pipeline route (blue) (Source: www.heritagemaps.ie)*

Placenames

Townlands are the smallest unit of land division in the Irish landscape and many preserve early Gaelic territorial boundaries that pre-date the Anglo-Norman conquest. The layout and nomenclature of Irish townlands was recorded and standardised by the work of the Ordnance Survey in the 19th century. The Irish translations of the townlands names often refer to natural topographical features but name elements may also give an indication of the presence of past human activity within the townland, e.g. *dun*, *lios* or *râth* indicate the presence of a ringfort while *temple*, *saggart*, *termon* or *kill* record an association with a church site.

The subject site is located within the townland of Nangor (Irish: *Nangar*), the origins of which are unclear. John O'Donovan translated the townland name as *Neángar* meaning 'place of nettles' (www.logainm.ie). The placename pertaining to the subject site does not directly indicate the presence of previously unrecorded archaeological sites or deposits.

4. Description of site

An archaeological field survey of the subject site was undertaken on 26th January 2021. The weather was overcast, and visibility was good. The site of the proposed AGI extension comprised a small area of level ground under rough grass with limited views in all directions, its western boundary defined by a metal security fence enclosing the existing AGI compound. The proposed extension is bounded to the north by a tall earthen embankment planted with shrubs and semi-mature trees (deciduous and conifers). The eastern boundary of the site is defined by a derelict post and wire fence which protects a belt of semi-mature deciduous trees planted as a buffer towards the R136 outer ring road that bounds the land parcel to the east. In the south the ground rises slightly outside the site boundary towards the site of Nangor Castle where spoil deposited from previous developments in the area has created undulating ridges (**Plates 1-8, Figure 12**). At the time of the site inspection the ground within the footprint of the site and its immediate surroundings was waterlogged and uneven underfoot in places and had the appearance of having been disturbed relatively recently. A number of inspection chambers were noted to the west of the AGI along the southern verge of the access road. A band of recently planted whips and trees were also noted immediately south of the existing AGI along the route of the pipeline. Elsewhere, the proposed pipeline extends westwards along the grass covered verge of the existing AGI tarmac access road turning northwards along the main road through Grange Castle Business Park. This arterial route is flanked by concrete footpaths, maintained grass borders and lined with mature deciduous trees. The northern terminus of the scheme at Grange Castle Power Station is located within a land parcel that is occupied by two very large spoil-heaps, divided by a tarmac access road for the power station leading south from the main road. The recorded monument of Grange Castle, located approximately 85m to the west of the pipeline route, was inaccessible at the time of the survey however it is clearly visible from the proposed development (**Plate 9**).

No previously unrecorded above ground archaeological remains were noted during the site visit.

Figure 12: *Site location (red line), showing recorded archaeological site DU017-037---- and its ZoN in relation to subject site (www.heritagemaps.ie)*

Assessment of significance

The development will have a slight impact on the ZoN of Nangor Castle (DU017-037---- however it will have no direct impact on any recorded physical remains relating to archaeological or architectural heritage within the subject site. While remaining undeveloped from the early nineteenth century to the modern period the proposed development site has been subject to significant ground disturbance in recent years during the development of Grange Castle Business Park. A site inspection and examination of aerial imagery has confirmed that there are no potential archaeological features with a surface expression within the site. Previous archaeological investigations undertaken at Nangor AGI and its immediate environs have identified unrecorded sub-surface archaeological remains associated with the outbuildings and gardens of the eighteenth and nineteenth century mansion of Nangor Castle. **Therefore, there remains a slight possibility for sub-surface remains to survive within the boundaries of the proposed AGI extension.** The archaeology within the pipeline route and customer connection point has been comprehensively investigated and resolved during previous phases of development within Grange Business Park and as such **the possibility for archaeological remains to survive within the pipeline route is considered negligible.**

5. Assessment of impacts

There are **no recorded archaeological or architectural heritage sites within the lands comprising the subject site (red line boundary), the proposed development will, therefore, have no likely significant adverse impacts on the known archaeological resource.**

The proposed pipeline route in the immediate vicinity of Nangor AGI is located within the zone of notification for archaeological monument Nangor Castle (DU017-037----) (**Figure 2** & **Appendix 3**). Previous archaeological investigations in the vicinity of the AGI have uncovered the remains of nineteenth century outbuildings and metalled surfaces as well as garden features relating to the Queen Anne House at Nangor despite a considerable amount of modern ground disturbance and fill in this area. The likelihood of previously unrecorded archaeological remains surviving within the boundaries of the site must be considered **slight**, however this development will have a **direct negative** impact on any such potential remains

The assessment has identified no Recorded Protected Structures (RPS) or NIAH sites within the footprint of the subject site, therefore, any future development of the site will **have no direct impacts** on the recorded architectural resources.

The impact on the receiving environment can be considered **neutral**, the proposed extension to the existing AGI will be screened from view from all recorded monuments and architectural heritage with the exception of the site of the now demolished Nangor Castle (DU017-037----).

All proposed works relating to the pipeline route are restricted to the existing local road network, within Grange Castle Business Park and no undisturbed greenfield areas will be impacted by the proposed scheme. Consequently, the risk of negative impacts occurring to any potential unrecorded archaeological sites as a result of the proposed works programme associated with the pipeline route is considered to be **negligible.**

6. Mitigation measures

This assessment was undertaken to assess potential archaeological and cultural heritage assets associated with the 0.1ha site of the proposed Nangor AGI extension and associated pipeline to Grange Castle Power Station. Desk based research and an on-site inspection has revealed that **the proposed site is located within the Zone of Notification for Nangor Castle (DU017-037----). There is no evidence of any above ground unrecorded archaeological sites or features within the subject site.** However, the proposed development area is located close to the site of the medieval Nangor Castle, later incorporated into a Queen Anne House (both demolished) and previous archaeological investigations have uncovered structural remains of outbuildings and garden features associated with the latter as well as a possible wall segment from the original tower house. The wider landscape surrounding the proposed development site contains numerous archaeological and architectural heritage sites, including archaeological monuments (recorded in the SMR), NIAH sites and RPS sites.

Recommendation and mitigation measures

In conclusion, considering the substantial level of modern ground disturbance, and comprehensive archaeological investigations previously undertaken within the footprint of the subject site, it is deemed to have a **low archaeological potential** despite its proximity to a recorded archaeological monument **DU017-037----.** While the potential to reveal unknown sub-surface archaeological remains is limited in most parts of this development due to previous archaeological investigations and significant ground disturbance, **mitigation in the form of a programme of archaeological monitoring of groundworks within the vicinity of Nangor Castle (DU017-037----) is recommended** due to the location of the subject site within the zone of notification for Nangor Castle and its proximity to previously identified archaeological sites.

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Appendix 1: Photographic record

***Plate 1**: View of entrance to the existing Nangor AGI site, facing east*

***Plate 2**: View of proposed pipeline route next to the existing Nangor AGI site, facing west*

***Plate 3**: View of proposed extension to Nangor AGI looking north*

***Plate 4**: View of proposed extension looking southwest towards the site of Nangor Castle (DU017-037----)*

***Plate 5**: View from Nangor Castle (DU017-037----) looking northeast towards proposed extension area*

***Plate 6**: View of proposed pipeline route and existing Nangor AGI access road looking west*

***Plate 7**: View of proposed pipeline route looking north*

***Plate 8**: View of proposed customer connection point looking north*

***Plate 9**: View of Grange Castle (DU017-034----) from proposed pipeline route looking southwest*

Appendix 2: Sites and Monuments Record

SMR ref no	*Type*	*Description*
DU017-034----	Castle - tower house (Grange Castle)	Attached to a farmhouse in flat, low-lying ground. Shown as a castle on the Down Survey (1655-6) map. This is a rectangular tower house with a square tower that's projects to the N in the NE corner. The tower house is three storeys high. The walls are plastered but where stonework is visible it is coursed limestone with roughly dressed quoins. The windows are all later insertions. Entrance is in the N wall through a round-headed doorway. There is a murder hole over the entrance lobby which leads into a vaulted ground floor (int. dims. L 7.08m; Wth.5.2m). Access to stair turret is off the lobby through a round-headed doorway. First floor not accessible. Second floor is accessed through a two-centred arched doorway. There is a garderobe chute in the SE corner which is supported by corbels and entered through a narrow round-headed door to a small circular chamber lit by a single ope. The jambs are hammer-dressed. There is a square stair tower or cap house which rises above parapet level (Healy 1974, 22; Mc Dix 1897, XXXIX, 22). A drawing by Beranger in 1773 shows stepped crenellations at parapet level (Harbison 1998, 168-9). In 1997 monitoring and excavation were undertaken in the vicinity of the castle, in advance of the construction of an access road and the excavation of foul sewers for a Business Park at Grange Castle. A curving ditch was identified orientated north-east/south-west. It was 30m in length, 0.8-0.9m deep, and 1.2-2.4m wide. The upper fills contained charcoal, mortar, flint and animal bones, and were aceramic. A decorated bone comb, stick-pin and knife gave the later ditch phase a terminus ante quem of from the 12th to the 13th century AD. A stone causeway, 0.5-0.6m wide and 0.06-0.1m deep, crossed the ditch. The evidence suggests that extensive early medieval and post-medieval activity survives in this area; the ditches can be interpreted as medieval field boundaries (O'Brien, R. 1998, 26-7).
DU017-037----	Castle – unclassified (Nangor Castle)	Located in flat terrain. Named 'Nangor castle' on the 1837 edition OS 6-inch map and 'Nangor castle on site of castle' in the later edition. This indicates that the castle had been incorporated into an 19th-century mansion. All buildings on the site have been recently demolished leaving no surface trace of the earlier building. In 1532 Ffinian Bassenett was residing at Nangor (Ball 1906, 112; Healy 1974, 22; D'Alton 1976, 345 (2nd ed.). There are earthworks in the field to the south of the castle. Pre-development testing in the vicinity of the castle in 1996 produced evidence for a substantial ditch and an associated shallower linear feature of uncertain date. Trial-trenching in the field bounding the castle site to its south uncovered several lignite cores and slivers, early medieval pottery and metal slag suggesting a date in at least the early medieval period- twelfth/thirteenth century. Several trenches cut through a large ditch located on both the east and west of the field. Human skeletal remains were also uncovered, as were numerous charcoal-flecked irregular features (McConway 1997, 17).

SMR ref no	*Type*	*Description*
DU017-080----	Barrow - ring barrow	Geo-physical survey and test trenching in 2000 revealed a ring barrow. This was located in a slightly elevated position. It comprises a ditch (Wth 2.5m, D 1.6m) which encloses a maximum area of 13m. Fragments of a human skull was found in the upper fill of the ditch. A 'cist-like structure' was exposed in the northern quadrant of the ditch. Cremated bone associated with Early Bronze Age pottery and a bead were found within the interior of the enclosing ditch. Soil samples from the ditch contained remains of barley, wheat, oats and evidence for hazel, haw and sloe (Doyle 2002, 75-6).
DU017-082----	Field system - medieval	Excavations in 2001 revealed a medieval ditch complex. This appeared to represent the remains of medieval field boundaries with associated water management gullies. Some 1600 sherds of local medieval pottery were recovered and two sherds of imported ware (Doyle 2003, 135-136).
DU017-084----	Fulacht fia	Monitoring of topsoil-stripping in 2000 revealed the remains of a small fulacht fiadh. This consisted of a small pit or trough, a spread of heat-cracked stone and a linear feature to the south-west of the trough. The pit/trough consisted of a subcircular cut into natural, 0.56m by 1.25m. This spread measured 1.92m north-south x 1.18m with a maximum depth of 0.05m. Approximately 6m to the west of the spread a linear gully feature was revealed. This gully consisted of a cut into natural boulder clay measuring 2.57m north-south x 0.28-0.54m. This had a depth of 0.16m with sharply sloping sides and a flat base. The cut was filled with a moderately compact, mid-brown clay containing frequent pieces of oxidised clay and occasional flecks of charcoal. Infrequent fragments of burnt bone were noted in the fill (Doyle, 2001)

Appendix 3: Relevant "Excavations.ie" entries

Site Name	*Licence and Author*	*Summary*
Nangor Castle, Clondalkin	96E0273 Cia McConway	Trial-trenching in the vicinity of the now-demolished castle and eighteenth-century house produced evidence for a substantial ditch and an associated shallower linear feature. Neither feature produced any datable artefacts but had silted up with a series of organic-rich clays with animal bone, shell and matted grass-possibly bedding material. Trial-trenching continued in the field bounding the castle site to its south, after an extensive geophysical survey had been carried out. Results from these cuttings suggest widespread archaeology surviving below the ploughsoil. Several lignite cores and slivers, early medieval pottery and metal slag were all retrieved both from the trenches and from field-walking, suggesting a date in at least the early medieval period- twelfth/thirteenth century. Several trenches cut through a large ditch located on both the east and west of the field, which apparently substantiated the impression, given from the overall lie of the land, that the field had contained a ploughed-our rath or ring-ditch. Human skeletal remains were also uncovered, as were numerous charcoal-flecked irregular features. Other than some cutting into the ditch, the trench went no deeper once in situ archaeology was reached.
Nangor Castle, Grange Castle, Kilmahuddrick, Clondalkin	97E0116 Cia McConway	Test-trenching was carried out along the line of a proposed road leading northwards from the vicinity of the now-demolished Nangor Castle to Grange Castle, within the area of a proposed industrial park. This was the second phase of testing, the first phase having concentrated on the field to the immediate south of Nangor Castle and its general vicinity. An intensive geophysical survey had been carried out along the line of the proposed road and several anomalies were identified. This testing specifically examined the areas of anomalies, as agreed on with the relevant authorities within the National Monuments Service. Trenching was carried out by machine, and halted once in situ archaeological deposits were encountered. However, as experienced before, only subsoil-cut features survived-years of ploughing the fairly shallow ploughsoil had completely removed any potential archaeological stratigraphy. Seven trenches were opened. Of these, only three, all located in Grange Field 3, to the east of Grange Castle, produced any significant archaeology. Two linear features 0.5-0.8m wide, of unknown date and function, ran in a north-south direction. However, their proximity both to the 15th-century castle and to one another could suggest substantial archaeological potential. Some spreads of brown soil had 20th-century pottery inclusions in their upper surface, while other areas, a mix of brown soil and broken slate subsoil, were probably the result of the dragging action of the plough.

Site Name	*Licence and Author*	*Summary*
Grange Castle International Business Park, Kilmahuddrick	00E0448 Ian Doyle	The initial detection of this ring-barrow by geophysical survey was confirmed by archaeological assessment under licence 00E0263 (See above No. 223). Excavation commenced in July for a period of eight weeks, during which time the ring-barrow and several adjacent features were excavated. The ring-barrow was located in Field 108, a large field at the centre of the area designated for the biotechnology campus buildings. The topography is generally level at c. 68m OD. However, the south-eastern corner of the field contains a natural raised area measuring c. 60m east–west x 150m. This area is generally 2m higher than the surrounding topography. The ring-barrow was sited in this slightly elevated position. The ring-barrow was not visible prior to the geophysical survey or archaeological testing. Following stripping, a dark, circular band of charcoal-rich, black, ditch fill was visible, with a spread of cremated bone in the interior. A series of linear features skirted the eastern side of the ditch. Excavation of the ditch fills revealed a well-stratified sequence of deposits in a ditch 2.5m wide at the top and 0.25–0.3m wide at the base. The ditch cut had a depth of 1.6m below the level of natural subsoil and measured c. 13m in external diameter. The uppermost fills of the ditch, F4 and F5, contained occasional fragments of burnt bone, charcoal and mollusc shells. Although occasional fragments of burnt bone were recovered from these ditch fills, no coherent or discrete cremation deposits were detected. Fragments of a human skull were recovered from the upper fill. A central fill of mid-brown, silty clay in the ditch sealed a series of stone features. F15 and F16, in the western quadrant, were large limestone blocks resting in the base of the ditch. Charcoal deposits were present on the flat upper surfaces of these stones. Oxidised clay patches against the sides of the ditch, adjacent to these stones, indicate that fires had been lit on these boulders in the ditch. In the northern quadrant of the ditch, at the base, a stone 'cist-like' structure with a capstone was revealed. This was composed of medium-to-large angular stones leaning inwards at an angle of c. 45o. A large, angular capstone was positioned at the apex of the inward-leaning stones. Several of the stones comprising this small structure were fire-reddened, though there were no indications of in situ burning. When excavated, this structure was empty. Some 2m to the east of this structure, at the base of the ditch, a limestone pillar was revealed. This stood upright to a height of 0.62m and had a width of 0.44m. Within the circular area enclosed by the barrow ditch, several deposits of cremated bone were visible. A small spread of cremated bone was initially apparent, and this may indicate disturbance. Upon excavation this was found to seal a shallow depression filled with frequent inclusions of powdered cremated bone fragments. To the north-west of this, a pit measuring some 2.1m north–south x 0.6m was revealed. This pit contained occasional fragments of cremated bone and appeared to cut an irregularly shaped cremation pit (F87), which measured 1.3m east–west x 0.5m and had a depth of 0.8–0.9m. The upper fill of this was a hard, compact, grey clay with occasional stones. This fill sealed a

Site Name	*Licence and Author*	*Summary*
		layer of cremated bone and charcoal. A sherd of pottery was recovered from this material, the characteristics of which all point to an Early Bronze Age date for its manufacture, specifically a Beaker or Food Vessel background (Anna Brindley, pers. comm.). What appears to be a small black bead was retrieved, during sieving, from this deposit. Two undated pits were excavated adjacent to the barrow. A series of linear features was also revealed in the area surrounding the ring-barrow. These are interpreted as the remains of field boundaries and were found to enclose the ring-barrow in a subrectangular field system. These remain undated. A geological seam was traced running from the north side of the barrow. Some 50m to the east of the ring-barrow a trench was reopened in Field 109 to examine features originally detected during assessment 00E0263 (see above No. 223). A northern return of the field system found to enclose the ring-barrow was revealed. This places the ring-barrow in a rectangular enclosure measuring c. 50m east-west x 100m (minimum). A metalled surface was found to seal the field boundary in this trench. While the field boundary system remains undated at the time of writing, it is likely to post-date the ring-barrow. A hearth was also excavated. Analysis of the soil samples from the ring-barrow has recovered evidence of cereal production. Charred remains of barley, wheat and oats were identified in the ditch fills and cremation deposits. Traces of hazel, haw and sloe were also found. Post-excavation analysis of the human remains, the faunal remains and the charcoal samples is ongoing. A cluster of ring-barrows is located on the upland area of Saggart Hill and Verschoyles Hill, approximately 6km to the south of the Kilmahuddrick site. Within this group, the Lugg monument complex, which contained a ring-barrow, was excavated by Kilbride-Jones in the late 1930s. The Kilmahuddrick barrow may be a northern element of this distributional cluster, or, alternatively, its presence in a heavily ploughed lowland area may indicate a greater survival rate and higher level of visibility in the upland areas.
Grange Castle International Business Park, Grange/Nangor/Kilmahuddrick	00E0718 Ian Doyle	Monitoring of topsoil-stripping commenced in early September 2000. In Nangor townland, in the northern part of Field 111, the remains of a small fulacht fiadh were revealed. This consisted of a small pit or trough, a spread of heat-cracked stone and a linear feature to the south-west of the trough. The pit/trough consisted of a subcircular cut into natural, 0.56m by 1.25m. The cut was steep-sided, leading to a flat base. It was filled with a mix of silt and compact, stony clays. A spread of heat-shattered sandstone was located some 0.9m to the west of the trough. This spread consisted of a moderately compact, dark grey, sandy clay with frequent inclusions of heat-shattered sandstone fragments, pieces of burnt clay and charcoal. This spread measured 1.92m north–south x 1.18m with a maximum depth of 0.05m. Approximately 6m to the west of the spread a linear gully feature was revealed. This gully consisted of a cut into natural boulder clay measuring 2.57m north–south x 0.28–0.54m. This had a depth of 0.16m with sharply sloping sides and a flat base. The cut was filled with a moderately compact, mid-brown clay containing frequent pieces of

Site Name	*Licence and Author*	*Summary*
		oxidised clay and occasional flecks of charcoal. Infrequent fragments of burnt bone were noted in the fill. Some 4m to the south of the heat-shattered sandstone spread, a small linear gully feature was excavated. This measured c. 1m north-east/south-west x 0.12m with a depth of 0.14m. The fill of this comprised a mid-brown, sandy clay with frequent charcoal flecking. No archaeological objects were recovered.
Grange Castle International Business Park, Kishoge	01E0061	The remains of a truncated burnt Neolithic wooden house were identified in Kishoge, Dublin 22, halfway between Clondalkin and Newcastle. Ploughing in antiquity had led to the truncation of the structure, and no occupation surfaces survived. However, cut features, such as post-holes, pits and foundation trenches, were identified at the site. The house was originally roughly rectangular in shape, although the walls were slightly curved at the south-western end. The structure measured 6.05m (north-east/south-west) by 4.5m. The archaeological remains consisted of foundation trenches cut into the glacial boulder clay and bedrock. The house walls and the support for the building's superstructure were constructed from timber posts augmented by planking. All of the posts and planks identified in the house were of oak. The foundation trenches varied between 0.25m and 0.3m in width and were excavated to a depth of 0.08–0.21m. The foundation trenches at the north-eastern end of the house originally housed upright timber planks that formed the house walls. A break in one of these linear features (house wall) was visible in the north-eastern foundation trench; this was interpreted as an entrance. The south-western end of the house was predominantly post-built. The south-western house walls curved, with an open entrance at the southern end of the building. Only two features were identified in the interior of the structure: the truncated remains of two internal timber roof supports, suggesting some kind of internal division within the house into two spaces at the north-east and south-west ends. The house appeared to have bur
Grange Castle International Business Park, Grange/Nangor/Kilmahuddrick	01E0718 Ian Doyle	Monitoring continued in the townlands of Grange, Nangor and Kilmahuddrick. Wyeth Medica Ireland commenced construction of a biotechnology campus in this area in September 2000. The campus area is located west of Clondalkin village and incorporates parts of the townlands of Grange, Kishoge, Kilmahuddrick and Nangor. It is bounded to the north by the Grand Canal, to the south by New Nangor Road, to the east by a new housing estate and reservation for the South Dublin Outer Ring Road and, finally, to the west by the Grange Castle International Business Park access road. The Wyeth Medica Ireland site is approximately 90 acres in extent. Previously, during 2000, excavation in Kilmahuddrick townland concentrated on a prehistoric ring-barrow, which was resolved in advance of construction (Excavations 2000, No. 225, 00E0448). Monitoring of topsoil-stripping in October 2000 led to the identification and excavation of a small fulacht fiadh in Nangor townland.

Site Name	*Licence and Author*	*Summary*
		The monitoring of topsoil-stripping within these townlands continued during January 2001. No additional archaeological material was detected.
Grange Castle International Business Park, Clondalkin	01E0754 Ian Doyle	Excavations were carried out in Nangor townland, west of Clondalkin, Dublin 22, during October 2000–January 2001. The excavations revealed a medieval ditch complex. The northern area of the site is presently under development as a biotechnology campus. (...) additional excavation was undertaken to mitigate the impact of a gas pipeline and associated access road in part of the area formerly occupied by the Nangor Castle gardens. Nangor Castle (RMP 17:37) is located immediately outside the southern boundary of the Wyeth Medica Ireland site. Trench 1, which measured 60m north–south by 33m, was located some 90m to the north-west of the castle site. Geophysical survey and subsequent test-trenching had suggested that the area of Trench 1 held archaeological potential. Excavation in Trench 1 commenced in October 2000 and continued until December 2000. Activity assigned to Phase I in this trench consisted of a linear feature and a pit, both of which cut natural subsoil. These features did not produce pottery or finds. The pit consisted of a rectangular cut into natural subsoil, which contained a series of ash deposits. Areas of oxidised or fire-reddened soil present on the north-east and south-west sides are indicative of in situ burning. This cut was filled with a series of sterile silty layers and dumps of ash. The Phase I activity was succeeded by a medieval phase of activity which consisted of further linear features, pits and cobbled surfaces. These were assigned to a single general phase which is capable of further subdivision based on stratigraphic grounds. Finds retrieved from the fills of these features include approximately 1000 sherds of Leinster Cooking Ware and Dublin-type wares, and assorted iron finds including nails, an armour-piercing arrowhead, a buckle, a key and an intact iron sickle. Trench 2, located to the east, detected a similar sequence of linear features, which contained sherds of medieval pottery in their fills. Trench 3, to the south of Trench 1, detected shallow linear features running on an east–west axis. These linear features were succeeded by a pit and a metalled surface, both of which were directly associated with medieval pottery. Trench 4, located to the west, was excavated to examine a ditch encountered during an earlier assessment. A ditch orientated north-west/south-east with steep sloping sides and a rounded U-shaped base was revealed. It was 1.05m wide, narrowing to 0.3m at the base, with a maximum depth of 1.1m. Its fill contained occasional fragments of animal bone, from which a radiocarbon date of cal. AD 601–883 was obtained. Trench 5, located to the south-east of Trench 4, uncovered further medieval linear features. A narrow ditch which ran across the trench on a south-east/north-west axis is likely to represent a continuation of a similar feature encountered in Trench A to the south. A series of post-medieval field boundaries was also detected in Trench 5.

Site Name	*Licence and Author*	*Summary*
		Trench A was excavated to the south of Trench 5 on the line of the gas pipeline and associated roadway. Excavation in this area revealed an undated metalled surface and a series of ditches/gullies. Excavation of these commenced in January 2001. Although there were relatively few finds from these features, their stratigraphic relationship indicates that there were five phases of ditches and gullies in the trench dating from medieval to modern times. The excavation of Trench B, an extension of Trench A, revealed one feature of interest, a substantial medieval ditch which cut into natural subsoil. This was found in the extreme eastern end of the trench. The ditch ran through Trench B, outside the northern and southern limits of excavation. The cut measured 10m north–south by 2.5m, with a depth of 1.1m as exposed, and had sloping sides and a rounded base. The ditch ran on a north–south axis with a slight curve towards the north-east. In overall plan the ditch appears to have been subcircular, enclosing an area to the east of Trench B. The fills of the ditch comprised black sticky silts with organic content. The lower and upper fills contained medieval pottery. No trace of an enclosing bank was detected in the area opened for examination; however, the depth of overburden, composed of cultivated soils, in this area may be in part composed of a levelled bank. Trench C to the north-east of Trench B did not detect the ditch. No archaeological material was detected in Trench C, where it was found that modern disturbance had removed the old ground surface. In total, some 1600 sherds of native medieval pottery were recovered from the Nangor excavations. It is of some interest that only two sherds of imported medieval pottery were recovered. The excavated linear features at Nangor may represent the remains of medieval field boundaries with associated water-management gullies. The presence of such linear features, which can be dated to the medieval period by the presence of Leinster Cooking Ware and Dublin-type wares, argues for land enclosure during the medieval period. That cereal production was the purpose of such enclosures may be suggested by evidence from pollen and macro-plant analysis. The examination of a wide range of medieval samples from the Nangor excavations has shown a predominance of wheat over other plant remains.
Grange Castle Business Park, Grange	04E0299 Red Tobin	Burnt Mound 1, 303279.542 231522.602 During the monitoring of the topsoil removal this site was identified as an irregularly shaped deposit of firing material (heat-shattered stone and blackened soil). The burnt-mound material extended 28m east-west along the northern edge of the stripped corridor and extended to the south by 8m from the northern baulk. The feature lay c. 25m to the west of the Griffeen River on gently undulating pasture sloping to the south. The evidence from initial survey work and subsequent excavation suggests that the main spread of this site remains preserved in situ to the south of this location. The nature and extent of the mound material was exaggerated by plough action, which had dragged it from its original focal point to extend over 28m in length. After the removal of topsoil, etc., the F2 mound of firing material extended little more than 0.5m from the limit of the excavation. From this southern extremity, the mound rose to the north to

Site Name	Licence and Author	Summary
		a maximum height of 0.65m at the northern limit of the excavation. No cut features were exposed during the excavation. Burnt Mound 2, 303104.7 231270.2 The realigned Griffeen crosses the course of the old river at two locations. To allow for the excavation of the first of these crossings it was necessary to divert the Griffeen into a third channel. During stripping prior to this channel being dug the second burnt mound was found. During the topsoil removal this site was identified as an irregularly shaped deposit of firing material (heat-shattered stone and blackened soil). The area of excavation measured 13m east-west by 17.5m. A silted-up streambed abutted the southern part of the mound. The stream appears originally to have flowed from east-north-east to south-west. It had a width of 3-5m, but the length could not be discerned as it extended beyond the limit of excavation. The stream fill contained water-rolled stones, pebbles and a dark-grey silt with a minimum depth of 0.1m. Wood residue, possibly alder, was in evidence here and was probably indicative of remnants of fen woodland. This stream system is likely to have been the reason for siting the burnt mound at this location. One of the earliest features on the site was a grouping of stake-holes cut into the clayey peat. These formed a semicircular band. All were comparable in shape and size and all contained the same fill. They ranged in depth from 5mm to 2mm with a diameter of 6-12mm. Small amounts of heat-affected pebbles and small stones around the sides of the stake-holes may be evidence for packing material. The function of the complex is not clear. Some stake-holes are vertical, while others have been driven into the ground at an angle. They follow a vague northeast to south-west pattern, but the angled stakes do not appear to offer support to each other or to any possible structure. The burnt mound was situated on the northern bank of the silted up stream. The bank was steepsided. The main concentration of firing material is in the west. No evidence for a trough was found and the only evidence of activity associated with the burnt mound appears to be the stake-hole complex. The mound measured 11m east-west by 4.5m. It is more likely that the original east-west dimensions were closer to being 6m, with a depth of 0.12-0.25m. Covering and surrounding the burnt mound was a layer of peat measuring 4.64m from north to south by 14.7m, with a surviving depth of 0.2-0.45m. This was a moist dark-reddish-brown peat of moderate compaction that contained inclusions of sphagnum moss, plants and wood. It was most pronounced to the south of the burnt mound, sloping downwards to the stream. A third burnt mound was recorded during the course of the topsoil-strip. The site was not fully exposed but was identified by a number of concentrations of the characteristic firing material. This site was not impacted on by the

Site Name	*Licence and Author*	*Summary*
		development and it was possible to preserve it in situ. It was first sealed using a double layer of geotextile material and then covered by a soil bund forming the boundary between the business park and the pitch-and-putt course.
Nangor	07E0588 Sylvia Desmond	Monitoring and testing took place between August and October 2007 within and adjacent to the Nangor Castle, Clondalkin, Co. Dublin. The monitoring of a service trench, 400m in length, 1m in depth and 0.5–0.55m in width, revealed several archaeological features that have been tentatively identified as part of the landscaped gardens, located to the west of the RMP site and associated with the now demolished 18th-century Queen Anne house that was built on the site of the earlier Nangor Castle. The initial stage of the service trench, which was parallel to an existing access road to a gas pumping station, ran through heavily disturbed ground that contained redeposited topsoil, subsoil and road-making materials. As the monitoring trench approached the gas pumping station, a series of small stone walls, averaging 0.5m in width, separated in some instances by low banks of stone-free soil, were revealed. The walls, six in all, were located at a depth of 0.5m below the present ground surface. They consisted of stones, c. 0.2m by 0.15m or smaller, bonded together in some instances with creamy gritty mortar with fragments of red brick. One wall, F9, lay at a depth of 1m; it was 0.5m in width and appeared to be bordered by narrow pieces of wood on each side. All the walls ran in a north-west to south-east direction across the monitoring trench. As the service trench ran to the south of the pumping station it cut through concrete floors, possibly associated with farm and cattle yards. The foundation for the floors consisted of loose stone, stone blocks and mortar and lay directly on the subsoil. Two further stone walls were revealed at the extreme eastern portion of the service trench in this area. Both ran north–south across the service trench. The walls were just under 1m in width and were revealed 0.6m beneath disturbed topsoil and fill. As the service trench turned southwards and ran parallel with the site boundary for 120m, there was a marked difference in the ground conditions. The ground here was undisturbed. However, nothing of any significance was revealed in this area. It should be noted that, while the monitoring did reveal landscape features possibly associated with the Queen Anne house, the rubble foundation that underlay the concrete floors in the northern portion of the site contained a considerable amount of stonework, which may be related to the 18th-century house and possibly to Nangor Castle itself. The incidence of red brick and large blocks of stone may indicate this to be the case. Areas with the constraint zone for Nangor Castle are strewn with large rough-hewn limestone blocks, possibly relating to the castle structure, although the dumping of construction waste and other waste within the area masks this to quite a degree. There was no evidence for in situ remains of the Queen Anne house or Nangor Castle revealed during monitoring.

Site Name	Licence and Author	Summary
		Two phases of testing took place on the site. The initial phase took place within the RMP site and one test-trench was located across the possible remains of the Queen Anne house and the castle. It had been hoped to insert a series of test-trenches over possible subsurface remains of the Queen Anne house and castle site, but, due to a very large and unstable overburden and the desire not to impact unnecessarily on the RMP site, only one test-trench was completed. This test-trench, located across possible structural remains in the western portion of the site, was cut through a very large deposit of construction debris, general dumping and waste, averaging between 3m and 4m in places. This overburden was extremely loose and unsound. Consequently a test-trench 6m in width was cut through this overburden and battered back for safety. Within this a slightly narrower test-trench revealed the remains of a modern concrete building at the western end of the test-trench, 3m below the original overburden. The modern structural remains were abutted by a portion of a large stone structure, over 1m in height and 1.75m in width, with a rubble core, suggesting it may be associated with or be part of Nangor Castle. The true depth of the wall was not ascertained. It appeared to run in a southwards direction from the test-trench. Further to the east, possible remains associated with the Queen Anne house were revealed. These consisted of stone walls plastered on one side, walls of red brick and painted walls. They were revealed to be up to 1m or more in depth. Red brick from this area was identified as being very early in date. No further work was done in the area due to the instability of the overburden. A second phase of testing took place to the south, south-east and south-west of the RMP site. A series of three test-trenches were excavated. This testing took place within a possible Early Christian 90m diameter enclosure previously identified. An area to the south-east of the RMP site and the Early Christian enclosure was also tested. The two test-trenches to the south-east revealed a redeposit of disturbed modern fill, within which lay garden features such as low banks of stone-free soil, for trees or shrubs, which may have been associated with the avenue which led up to the Queen Anne house, which was located to the immediate west. The third test-trench, which was 150m in length, ran across the previously identified Early Christian enclosure to the south-west of the RMP. This long test-trench cut across the entire width of the enclosure, at the northern extremity, and confirmed the previous investigations and geophysical survey. The presence of a large enclosure with ditches up to 2.7m in width and over 0.7m in depth, with the possible remains of a second ditch in the western portion of the enclosure, were revealed. Previous investigations had revealed a cemetery and possible structures within the enclosure. There was considerable evidence for occupation levels, areas of burning within the test-trench and features such as pits and linear features. Finds from the original investigations by Cia McConway (Excavations 1996, No. 68, 96E0273; Excavations 1997, No. 86, 97E0116) included lignite slivers and cores, metal slag, animal bone, medieval pottery and human remains. Additional medieval pottery, green-glazed, was recovered from this second phase of testing, together with large quantities of animal bone.

Site Name	*Licence and Author*	*Summary*
		The monitoring of the service trench and the two phases of testing has confirmed that this is an area of considerable archaeological activity. The location of such a large enclosure, Early Christian in date, with evidence for a cemetery and interior occupation, may have given the site considerable importance, marking it out as a significant place in the landscape. The second phase of activity, to the north and north-east of the enclosure, that of the medieval Nangor Castle, also attests to the importance of this site, as does the erection of the later Queen Anne house. The layout of the Queen Anne gardens is still clearly visible on the ground, although heavily overgrown, and the testing has shown that subsurface features associated with the gardens still exist. Possible substantial remains of Nangor Castle itself and the Queen Anne house, under a deep overburden of unstable construction fill, were also revealed, although further investigations would be necessitated to confirm this.
Grange/Ballybane/Nangor, Co. Dublin	13E0435 Gill McLoughlin	Archaeological monitoring of a proposed central carriageway at Grange Castle Business Park, Co. Dublin was carried out from 1-8 November 2013 (east of Pfizer Ireland). Monitoring followed an archaeological appraisal carried out in September 2013 and geophysical survey was previously carried out throughout the entire area of Grange Castle Business Park. Two features of archaeological interest were identified during monitoring of topsoil stripping in the east of the development area in Nangor townland. These features comprised a small bowl furnace (0.36m x 0.33m x 0.15m) filled with charcoal rich soil and slag, and a shallow oval charcoal clamp (0.97m x 0.69m x 0.1m). These features were located approximately 35m apart and it was initially thought that they could have been associated, however the dating evidence has indicated otherwise. The furnace pit contained 1.26kg of metalworking residues and constituted the base of a typical slag-pit furnace. A sample of oak charcoal from fill C3 of the furnace pit returned a radiocarbon date of 2403+/-30 BP (UBA 25347), which was calibrated to 732-400 BC (2 Sigma) dating this feature to the early Iron Age. This radiocarbon date is one of the earliest to come from an Irish iron smelting context to date (Rondelez, 2014). (ITM 703873E 731566N). A sample of oak charcoal from fill C7 in the charcoal clamp returned a radiocarbon date of 1256+/-32 BP (UBA 25348). The 2 Sigma calibrated result for this was 671-867 AD dating this deposit to the early medieval period. (ITM 703843E 731580N). The features discovered at the site have been excavated and "preserved by record" and as such no further mitigation measures are necessary in relation to this development, however future development of the adjacent areas have the potential for further isolated small features to be discovered.
Grifols Phase 2 site #B201, Grange Castle Business Park, Grange	13E0459 Fintan Walsh	Testing (Phase 2) was undertaken within the footprint of a proposed biopharmaceutical plant at Grange Castle Business Park, Nangor Road, Grange, Dublin 22 in 2016. This testing followed from a previous phase (Phase 1) of

Site Name	*Licence and Author*	*Summary*
		testing undertaken in the southern half of the development site (2013:196), under an extension to licence 13E0459. A total of 13 test trenches were excavated within the Phase 2 development area. One archaeological feature (AA 1: a pit filled with charcoal-rich soils) was identified. Subsequent monitoring of the Phase 2 development area in late 2016 identified an additional six archaeological areas (AA 2–7) all of which are individual pits/spreads similar to AA1. These areas were excavated under an extension to 13E0459 in December 2016.
Grange Castle	16E0510 Paul Duffy	Site investigation works associated with a programme of conservation at Grange Castle, Clondalkin, Dublin 22 (OS Sheet 17) by South Dublin County Council took place in October 2016. IAC Ltd monitoried these groundworks. The original structure of Grange Castle (DU017-034) dates from c. 1580 and has an 18th-century, two-storey addition attached to its western elevation. The overall footprint is 6m x 16m. While the buildings were inhabited until the 1970s, they are now in a state of dilapidation. There is significant build-up of vegetation including tree and shrub growth to the external walls of the castle as well as to the internal floors at ground floor level and at first floor level over a deep arch to the original castle. Monitoring was carried out in October 2016 and a total of eight pits were excavated. The pits revealed that both the Georgian house and the earlier tower-house possess shallow foundations. Nothing of archaeological significance was identified within the pits surrounding the house and tower-house.
Nangor Castle	19E0170 Muireann Ní Cheallacháin	Testing and monitoring at Nangor AGI revealed wall foundations and two disturbed metalled surfaces believed to be associated with nineteenth century outbuildings at Nangor Castle

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Appendix 3: AA Screening Assessment

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ASSESSMENT OF THE EXTENSION OF NANGOR AGI AND CONSTRUCTION OF A 19 BARG PIPELINE AT THE EXISTING NANGOR ABOVE GROUND INSTALLATION (AGI)

APPROPRIATE ASSESSMENT SCREENING REPORT

Prepared for: Gas Networks Ireland

Gas Networks Ireland

Date: **August 2021**

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APPROPRIATE ASSESSMENT SCREENING REPORT – ASSESSMENT OF EXTENSION OF NANGOR AGI AND CONSTRUCTION OF A 19 BARG PIPELINE AT THE EXISTING NANGOR ABOVE GROUND INSTALLATION (AGI)

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Abstract: This document comprises the Stage One: Appropriate Assessment Screening Report for the extension of Nangor AGI and construction of a 19 barg pipeline at the existing Nangor above ground installation (AGI) Grange Castle Business Park, Co. Dublin. Appropriate Assessment is required under Article 6 (3) of the Habitats Directive for any project or plan that may give rise to significant effects on a European (Natura 2000) site.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

Fehily Timoney and Company (FT) were commissioned by Fingleton White on behalf of Gas Networks Ireland (GNI) to prepare an Appropriate Assessment Screening Report, as required by Article 6 of Council Directive 92/43/EEC (Habitats Directive) with regards to the installation of a new pipeline connecting the existing Nangor above ground installation (AGI) to a new dual fuel power plant in Grange Castle Business Park (see Figure 1-1 for location).

In compliance with the provisions of Article 6 of the Habitats Directive, as implemented by Part XAB of the Planning and Development Act 2000, as amended, in circumstances where a proposed plan or project is likely to have a significant effect on a European (Natura 2000) site, either individually or in combination with other plans or projects, an Appropriate Assessment (AA) must be undertaken by the competent authority, of the implications for the site in view of the site's conservation objectives.

European sites comprise both Special Protection Areas (SPAs) for birds and Special Areas of Conservation (SACs) for habitats and species. The Habitats Directive formed a basis for the designation of SACs. Similarly, SPAs are legislated for under the Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds). In general terms, European sites are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community.

Article 6 of the Habitats Directive envisages a two-stage process, which is implemented in some detail by the provisions of sections 177U and 177V of the Planning and Development Act. Screening for appropriate assessment in accordance with section 177U is the first stage of the AA process (Stage One), in which the possibility of there being a significant effect on a European site is considered. Plans or projects that have no appreciable effect on a European site are thereby excluded, or screened out, at this stage of the process. Where screening concludes that there is the potential for significant effects, then it is necessary to carry out an AA (Stage Two) for the purposes of Article 6(3), and a Natura Impact Statement (NIS) is produced. The NIS, which forms the basis of the AA, considers the effect of a project or plan on the integrity of a European site and on its conservation objectives, and where necessary, draws up mitigation measures to avoid/minimise negative effects.

The competent authority, in carrying out an AA, is required to make an examination, analysis, evaluation, findings, conclusions and a final determination as to whether or not the proposed works would be likely to have significant effects on the relevant European site (s) in view of their conservation objectives. To evaluate the potential effect(s) of the proposed development on the European sites, all sites located within a 15 km radius of the development or those which are ecologically linked were considered. Please note that while a 15 km buffer is recommended for plans, there is no hard and fast rule for buffer size (DoEHLG, 2009). A 15 km buffer was used in line with standard industry practice; however, the potential zone of influence was considered to extend to European sites located outside the 15 km buffer where downstream hydrological links exist. However, no additional sites beyond the 15 km buffer were identified as being within the zone of influence.

The proposed project is not located within any European site. Seven European sites are located within 15 km of the proposed development:

- Rye Water Valley/Carton SAC (site code 001398; 4.8 km north west)
- Glenasmole Valley cSAC (site code 001209; 8 km south east)
- Wicklow Mountains SAC (site code 002122; 9.9 km south)
- Wicklow Mountains SPA (site code 004040; 12.6 km south east)
- South Dublin Bay and River Tolka Estuary SPA (site code 004024; 14 km east)
- South Dublin Bay SAC (site code 000210; 14.6 km east)

There is no evidence of any direct or indirect hydrological links to any European site.

1.1 Legislative Requirements

The requirements for an AA are set out in the Habitats Directive 92/43/EEC. Articles 6(3) and 6(4) of this Directive states:

6(3) Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 sites) but likely to have 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 conservation objectives.

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.

6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

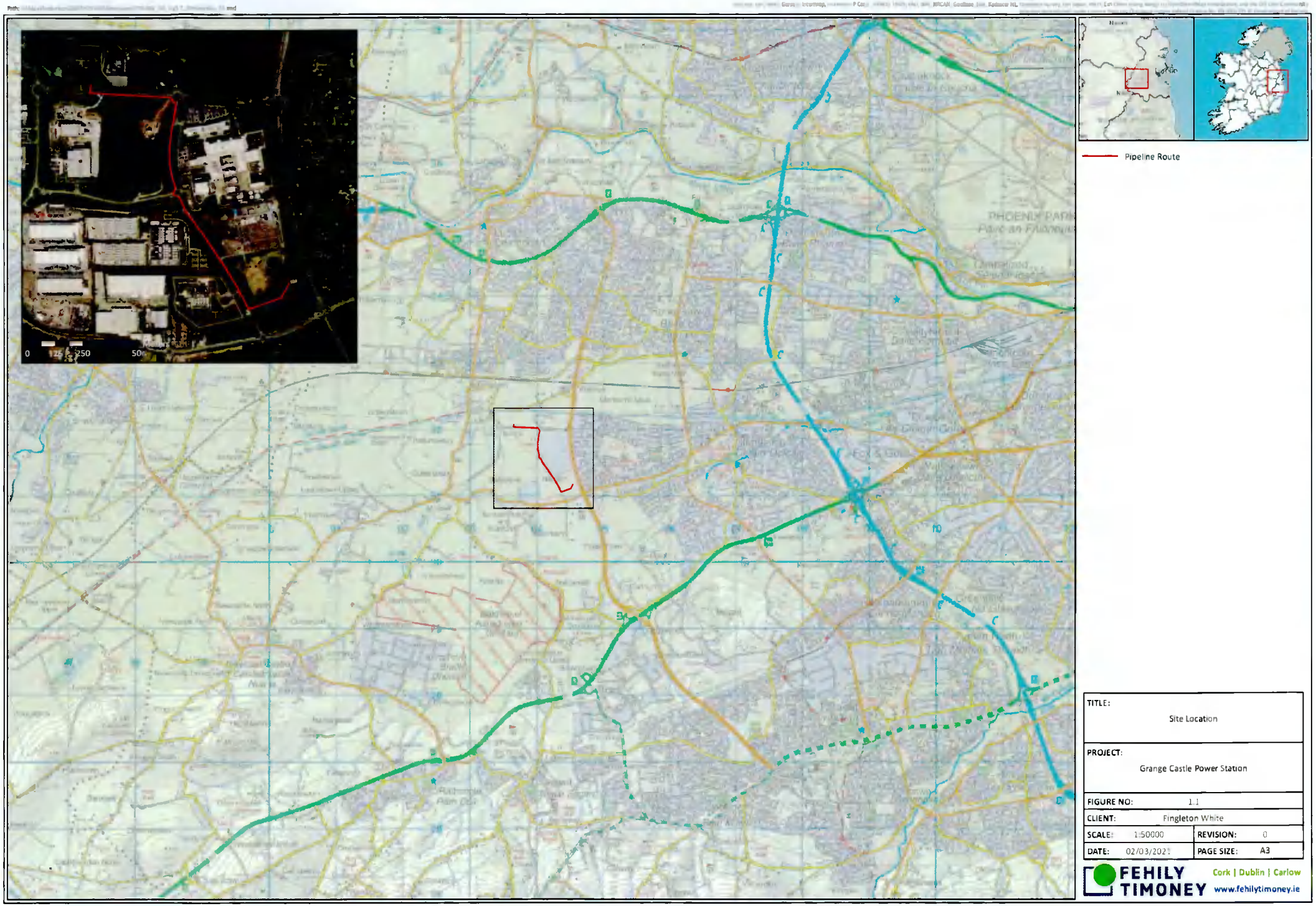
The statutory agency responsible for European sites is the National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht (DCHG). In December 2009 'Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government' was published (DoEHLG, 2009) with a minor amendment in 2010. This guidance document was prepared jointly by the NPWS and Planning Divisions of DoEHLG (now DCHG), with input from local authorities. Previously, in 2001, the European Commission issued a guidance document. This guidance document has been updated in the recently published European Commission (2018) "*Managing Natura 2000 sites the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*". This Appropriate Assessment Screening Report has been prepared in accordance with the relevant Irish and European Commission Guidance.

1.1.1 Regulatory Context

In 1997, the Habitats Directive was transposed into Irish National Law by the European Communities (Natural Habitats) Regulations, SI 94/1997 (as amended by S.I. 233/1998 & S.I. 378/2005). The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477/2011) revoked the 1997 Regulations (and amendments) as well as the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010. The purpose of the 2011 Regulations was to address transposition failures identified in the Court of Justice of the European Union (CJEU) judgements.

Following additional amendments in 2013 (S.I. 499/2013) and 2015 (S.I. 355/2015) the regulations are now cited as the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.

The Regulations have been prepared to address several judgments of the CJEU against Ireland, notably cases C-418/04 (*Commission v Ireland*) and C-183/05 (*Commission v Ireland*), in respect of failure to transpose elements of the Birds Directive and the Habitats Directive into Irish law.



TITLE:	Site Location
PROJECT:	Grange Castle Power Station
FIGURE NO:	1.1
CLIENT:	Fingleton White
SCALE: 1:50000	REVISION: 0
DATE: 02/03/2021	PAGE SIZE: A3

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2. METHODOLOGY

2.1 Appropriate Assessment Methodology

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures to be addressed in the AA process. Firstly, a project should aim to avoid any negative effects on European sites by identifying possible effects early in the project and should design the project in order to avoid such effects.

There are four stages in an AA, as outlined in the European Commission Guidance document (2001). The following is a brief summary of these steps:

- Stage One - Screening: This stage examines the likely effects of a project either alone or in combination with other projects upon a European Site and considers whether it can be objectively concluded that these effects will not be significant.
- Stage Two - Appropriate Assessment: In this stage, the effect of the project on the integrity of the European site is considered with respect to the conservation objectives of the site and to its structure and function. Mitigation measures should be applied to the point where no adverse effects on the site(s) remain.
- Stage Three - Assessment of Alternative Solutions: Should the Appropriate Assessment determine that adverse effects are likely upon a European site, this stage examines alternative ways of implementing the project that, where possible, avoid these adverse effects.
- Stage Four - Assessment where no alternative solutions exist and where adverse effects remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the Natura site will be necessary. European case law highlights that consideration must be given to alternatives outside the project area in carrying out the IROPI test. It is a rigorous test which projects are generally considered unlikely to pass.

In the preparation of this assessment therefore regard has been given to the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations 2011, and with reference to the relevant guidance, in particular:

- 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, European Commission 2001.
- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin 2010.
- European Commission (2018). *Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC.* Brussels, 21.11.2018 C (2018) 7621 final.

2.1.1 Assessment of Effects

The first step in the screening process is to develop a list of European sites potentially affected by the proposed development.

Each European site is reviewed to establish whether or not the proposed development is likely to have a significant effect on the integrity of the site, as defined by its structure and function, and its conservation objectives.

The qualifying interests of each European site are identified and the potential threats are summarised into the following categories for the screening process, and described within the screening matrix as follows:

- Direct effects refer to habitat loss or fragmentation arising from land-take requirements for development or agricultural purposes. Direct effects can be as a result of a change in land use or management, such as the removal of agricultural practices that prevent scrub encroachment.
- Indirect and secondary effects do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect effects of the plan (or project) – in combination with other plans and projects - have been established. These can arise when a development alters the hydrology of a catchment area, which in turn affects the movement of groundwater to a site, and the qualifying interests that rely on the maintenance of water levels. Deterioration in water quality can occur as both an indirect or direct consequence of development, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals. The introduction of invasive species can also be defined as an indirect effect, which results in increased movement of vectors (humans, fauna, surface water), and consequently the transfer of alien species from one area to another.
- Disturbance to fauna can arise directly through the loss of habitat (e.g. bat roosts) or indirectly through noise, vibration and increased activity associated with construction and operation.

2.2 Desktop Study

In order to complete the Screening for Appropriate Assessment certain information on the existing environment is required. A desk study was carried out to collate available information on the site's natural environment. This comprised a review of the following publications, data and datasets:

- South Dublin County Council Development Plan 2016-2022
- South Dublin County Planning Services (www.sdcc.ie)
- National Parks and Wildlife Service (NPWS) website and metadata available (www.npws.ie)
- OSI Aerial photography and 1:50,000 mapping
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- BirdWatch Ireland website
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps
- Environmental Protection Agency (EPA) water quality data
- River Catchment & Sub-catchment WFD datasets

3. PROPOSED WORKS

3.1 Purpose of the project

As part of a separate permitted development (Ref. SD15A/0061), Grange Backup Power Ltd are constructing a 96 MW dual fuel fired power plant on a greenfield site in Grange Castle Business Park, Clondalkin, Dublin 22. The power plant, known as 'Grange' will be a fast flexible plant which is a power plant designed to run at times when electricity demand is high and to support high levels of intermittent wind generation on the national grid. The power plant will consist of 6 no. dual fuel engines. The power plant is designed to use natural gas as the main fuel, with low sulphur distillate fuel oil being used as a backup fuel only. The natural gas demand will be 283,000 kWh MHQ (maximum hourly quantity – net assumed), which corresponds to a gas flowrate requirement of 28 kSCMH.

The powerplant will connect to the existing Nangor Above Ground Installation (AGI), Grange Business Park, Dublin 22. To facilitate this connection the AGI must undergo an extension and a new outflow pipeline will be installed between the AGI and the powerplant as part of the proposed development.

3.2 The Proposed Development

The proposed development comprises underground and above ground works to Nangor (AGI) and the construction of a new outflow pipeline (250mm diameter, c. 1.7km in length) from the AGI to the permitted powerplant (ref. SD15A/0061). The proposed works are to take place within the adjacent grounds of the current Nangor AGI facility, and within the business park roadway.

A new 70 to 19 barg Pressure Reduction Skid (PRS) will be installed at Nangor AGI to facilitate the supply of 19 barg natural gas to the permitted power station. Nangor AGI is located to the south of Grange Castle Business Park. The proposed 19 barg pipeline from the AGI to the power station is approximately 1.7 km.

To facilitate the new 19 barg pipeline, the existing Nangor AGI will be extended and will include a new 70/19 barg PRS, 4 no. 140 kW boilers, a 4 barg to mbarg fuel gas PRS, and a new E&I kiosk.

The following works will be carried out as part of the proposed development:

1) Installation of sufficiently sized pipework to facilitate the required flow capacity (283,000 kWh)
2) Construction of a new outlet pipework (250mm pipe, c. 1.7 km length)
3) Installation of required plant in the AGI extension, including 4 no. boilers, E&I Kiosk and 4 barg to mbarg fuel gas PRS
4) Earthworks to level the area between the proposed AGI extension and the existing AGI
5) Earthworks to facilitate the construction of the new outlet pipework.

Excavations proposed as part of the development (as part of the AGI extension, installation of new outflow pipeline and new outlet pipework) is not expected to be more than 1.2m in depth, however at road and underground services crossings this may be slightly increased.. Approximately 1.4 km will be through the existing road network.

The location of the existing AGI Facility is shown in Figure 3-1.

Maintenance works are currently carried out at the AGI when required, maintenance will continue in the future once construction is complete, however these works are minor, unintrusive and will not result in any emissions or environmental effects.

Figure 3-1: Location of AGI

4. STAGE ONE – SCREENING REPORT

4.1 Brief Description of the Existing Site

The site of the proposed development includes the existing Nangor AGI facility in Grange Castle and adjacent access road through Grange Castle Business Park, Co. Dublin. The Corine landcover classification for the site is Code: 121 'Industrial Commercial Units'. Based on a review of aerial photography, the lands surrounding the existing AGI facility are also industrial consisting mainly of warehouses, carparks, data centres and manufacturing plants (e.g. Microsoft and Pfizer). The surrounding lands to the north and east are mainly residential with open space. Land to the immediate west is industrial and further west beyond this is agricultural land. Lands south of the site consist of a Grange Castle Golf Course and additional warehouses.

According to South Dublin County Council Development Plan 2016-2022, the proposed works are located within land use zone EE with the specific objective: *"to provide for enterprise and employment related issues"*.

The plan states that this zoning objective permits the following developments:

> *"Abattoir, Advertisements and Advertising Structures, Boarding Kennels, Enterprise Centre, Fuel Depot, Heavy Vehicle Park, Home Based Economic Activities, Industry-General, Industry-Light, Industry-Special, Office-Based Industry, Office less than 100 sq.m, Open Space, Petrol Station, Public Services, Recycling Facility, Refuse Transfer Station, Science and Technology Based Enterprises, Scrap Yard, Service Garage, Shop-Local, Transport Depot, Traveller Accommodation, Warehousing, Wholesale Outlet."*

The bedrock[1] of the project area is Lucan Formation, consisting of dark limestone and shale. The soil types[2] at and in the vicinity of the site are classified as Limestone Till (Carboniferous).

There are no waterbodies on site. The closest waterbody[3] is the Griffeen River (EPA code: 09G01) which is 150 m west of the proposed development and separated by roads and open space. The River runs along the western edge of the Grange Castle Business Park and has a WFD Status of 'Good'.

The Baldonnell Stream (EPA code: 09B09) also flows through the western portion of the Grange Castle Business Park in a northerly direction and is located 270 m from the proposed pipeline route. This waterbody has a Water Framework Directive status[4] of 'Good'. The Baldonnell Stream merges with the Griffeen River south west of the site.

The proposed development is located in the Liffey_SC_090[5], which is part of the Liffey and Dublin Bay catchment[6].

---

[1] Bedrock Geology 100k. Map viewer from www.data.go.ie website. https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0 . Accessed 02/02/2021.

[2] Subsoils. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

[3] WFD river name. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

[4] WFD river status 2013-2018. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

[5] Sub-catchment name. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

[6] Catchment name. EPA mapviewer. Accessed 02/02/2021. https://gis.epa.ie/EPAMaps/

4.1.1 Habitats Within and Immediately Adjacent to the Proposed Development

From a review of aerial photography and online mapping, the main habitat types (Fossitt, 2000) of the proposed development site are: buildings and artificial surfaces (BL3), amenity grassland (GA2), with adjacent treelines (WL2) and hedgerows (WL2).

Buildings and artificial surfaces (BL3) are represented by industrial buildings, roads and pavements, including the AGI site and roads where the proposed works will be located. Amenity grassland (GA2) includes managed verges. Treelines (WL2) border roads and property boundaries.

There are no habitats within the study area that conform to those listed under Annex I of the EU Habitats Directive.

4.2 Brief Description of the European Sites within 15 km of the Development

There are seven European sites within the zone of influence (15 km) of the proposed project (see Figure 4-1). Of these, five are SACs and two are SPAs. Table 4-1 lists the European sites located within 15 km of the project, including their qualifying interests, conservation objectives and known threats to these sites (according to information provided by the NPWS www.npws.ie). The seven sites are as follows:

- Rye Water Valley/Carton SAC (site code 001398; 4.8 km north west)
- Glenasmole Valley cSAC (site code 001209; 8 km south east)
- Wicklow Mountains SAC (site code 002122; 9.9 km south)
- Wicklow Mountains SPA (site code 004040; 12.6 km south east)
- South Dublin Bay and River Tolka Estuary SPA (site code 004024; 14 km east)
- South Dublin Bay SAC (site code 000210; 14.6 km east)
- Red Bog, Kildare SAC (site code 000397; 15km south)

Of the seven named European sites, all are located within the same Liffey and Dublin Bay catchment as the proposed development. However, no European sites are located within the same Liffey_SC_090 sub-catchment as the proposed works.

There are no waterbodies on site and therefore no hydrological links to any European site.

Figure 4-1 shows the location of the European sites in relation to the proposed development.

The full NPWS site synopses for the relevant designated sites are available in Appendix 1.

Table 4-1: European Sites Within 15 km of Proposed Works

Designated Site (Site Code)	Direct-line Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats[7]
Rye Water Valley/Carton SAC (001398)	4.8 km	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	• Petrifying springs with tufa formation (*Cratoneurion*) [7220] * • *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] • *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016]	Medium intensity threats: • B Sylviculture, forestry (I) • E01.01 Continuous urbanisation (O) • J02.05.02 Modifying structures of inland water courses (I) Low intensity threats: • A04 Grazing (O) • A04 Grazing (I) • A08 Fertilisation (I) • A08 Fertilisation (O) • A10.01 Removal of hedges and copses or scrub (I) • D01.02 Roads, motorways (O) • E01.03 Dispersed habitation (O)
Glenasmole Valley cSAC (001209)	8.0 km	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils	High intensity threat: • J02 Human induced changes in hydraulic conditions (I) Medium intensity threat: • A03.03 Abandonment / lack of mowing (O, I) • A04 Grazing (O, I)

[7] Threat occurs: I = inside the site, O = outside the site and B = both inside and outside the site

Designated Site (Site Code)	Direct-line Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats[7]
			(*Molinion caeruleae*) [6410] • Petrifying springs with tufa formation (*Cratoneurion*)* [7220]	• A04.02.01 Non intensive cattle grazing (O, I) • A04.02.02 Non intensive sheep grazing (O) • A04.02.03 Non intensive horse grazing (O) • A08 Fertilisation (O, I) • B02 Forest and Plantation management & use (O) • B02.01.02 Forest replanting (non-native trees) (O) • D01 Roads, paths and railroads (I) • E01.02 Discontinuous urbanisation (O) • H01.05 Diffuse pollution to surface waters due to agricultural and forestry activities (O) • H01.08 Diffuse pollution to surface waters due to household sewage and waste waters (O) • H02.07 Diffuse groundwater pollution due to non-sewered population (0) • I01 Invasive non-native species (I)

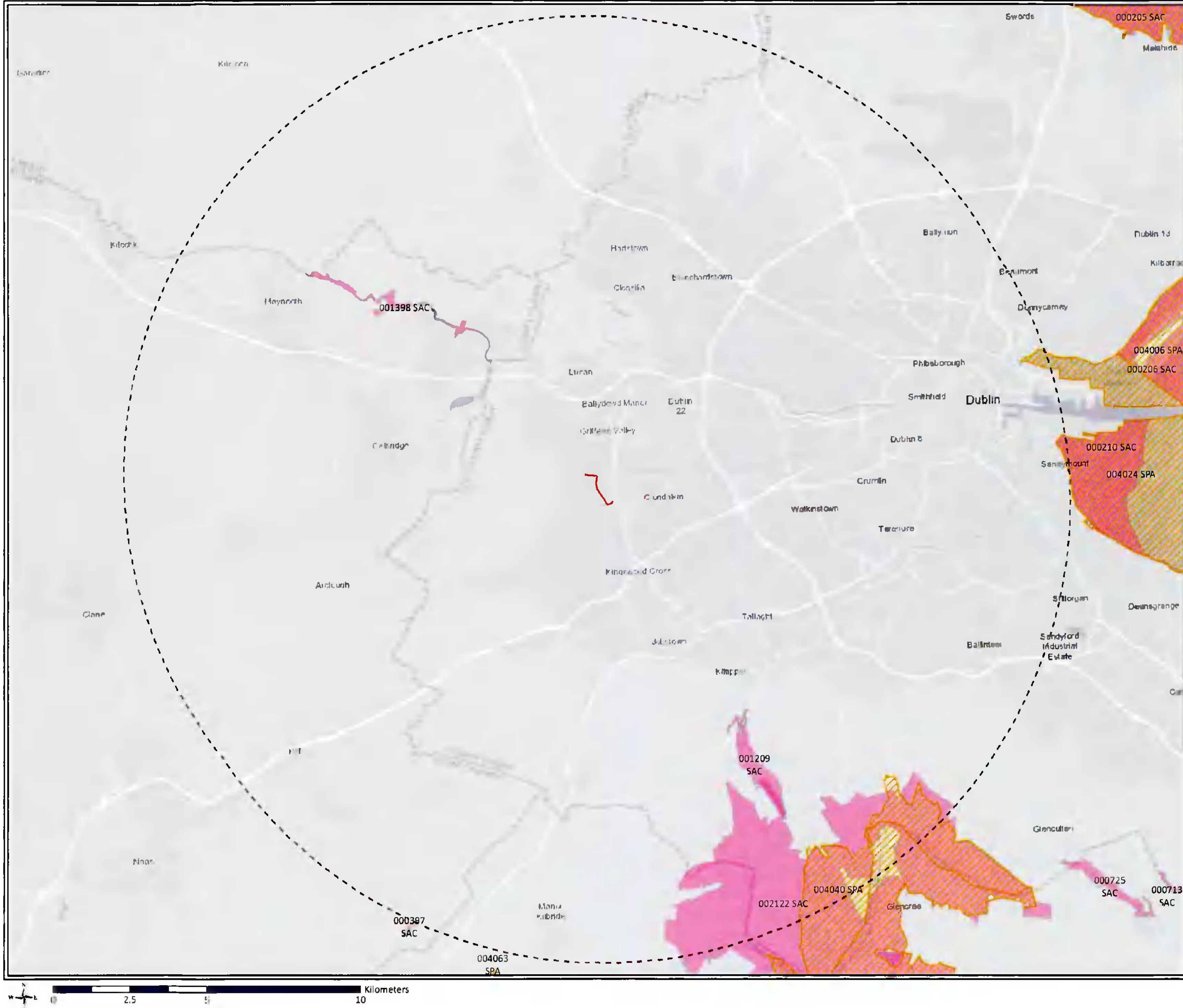
Designated Site (Site Code)	Direct-line Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats[7]
				Low intensity threat: • A03 Mowing / cutting of grassland (O) • B01.01 Forest planting on open ground (native trees) (O) • B01.02 Artificial planting on open ground (non-native trees) (O) • C01.03 Peat extraction (O) • F02.03 Leisure fishing (O)
Wicklow Mountains SAC (002122)	9.9 km	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	• Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)* • Natural dystrophic lakes and ponds • Northern Atlantic wet heaths with *Erica tetralix* • European dry heaths • Alpine and Boreal heaths • Calaminarian grasslands of the *Violetalia calaminariae* • Species-rich *Nardus* grasslands, on	High Intensity Threat: • I01 invasive, non-native species (b) • J01.01 burning down (b) • K01.01 erosion (i) • G01.03.02 off road motorised driving (b) • B06 grazing in forest woodlands (i) Medium intensity threat • E01 urbanised areas, human habitation (b) • G01.02 walking horse riding and non-motorised vehicles • D01.01 paths tracks , cycling tracks (b)

Designated Site (Site Code)	Direct-line Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats[7]
			siliceous substrates in mountain areas (and submountain areas, in Continental Europe) • Blanket bogs (* if active bog) • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae and Galeopsietalia ladani*) • Calcareous rocky slopes with chasmophytic vegetation • Siliceous rocky slopes with chasmophytic vegetation • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • *Lutra* (Otter)	• F03 hunting and collection of wild animals (Terrestrial) (i) • G05.04 Vandalism (i) • G04.01 Military manoeuvres (b) • A04 intensive grazing (b) • K04.05 damage by herbivores (including game species) (i) • G01 outdoor sports and leisure activities, recreational activities (b) • F03.02.02 taking from nests (falcons) (b) • C01.03 peat extraction (i) • G05.07 missing or wrongly directed conservation measures (b) • G05.01 trampling, overuse (b) Low intensity threats: • E03.01 disposal of household recreational waste facility (i) • L05 Collapse of terrain, landslide (i) • G01.04 mountaineering,

Designated Site (Site Code)	Direct-line Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats[7]
				rock climbing, speleology (b) • F04.02 collecting: fungi, lichen, berries etc (i) • G05.06 tree surgery, felling for public safety, removal of roadside trees (i) • G02.09 wildlife watching (i) • A05. 02 Stock feeding (i)
Wicklow Mountains SPA (004040)	12.6 km	To maintain/restore the favourable conservation condition of the bird species for which the SPA has been selected.	• Merlin (*Falco columbarius*) • Peregrine (*Falco peregrinus*)	High intensity threats: • G01.02 walking, horse-riding and non-motorised vehicles (i) • B sylviculture and forestry (O) Medium intensity threats: • A04 grazing (i) • C01.03 peat extraction (i) • D01.01 paths, tracks and cycle tracks (i)
South Dublin Bay and River Tolka Estuary SPA (004024)	14 km	To maintain/restore the favourable conservation condition of the bird species for which the SPA has been selected.	• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Oystercatcher (*Haematopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Grey Plover (*Pluvialis squatarola*) [A141]	High intensity threats: • E01 Urbanised areas, human habitation (O) • E02 Industrial or commercial areas (O) • E03 Discharges (I) • G01.02 Walking, horseriding and non-motorised vehicles (I)

Designated Site (Site Code)	Direct-line Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats[7]
			• 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]	• J02.01.02 Reclamation of land from sea, estuary or marsh (O) Medium intensity threats: • D01.02 Roads, motorways (O) • F02.03 Leisure fishing (I) • F02.03.01 Bait digging / collection (I) • G01.01 Nautical sports (I) • K02.03 Eutrophication (natural) (I)
South Dublin Bay SAC (000210)	14.6 km	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	• Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • *Salicornia* and other annuals colonising mud and sand [1310] • Embryonic shifting dunes [2110]	High intensity threats: • E01 Urbanised areas, human habitation (O) • E02 Industrial or commercial areas (O) • G01.02 Walking, horseriding and non-motorised vehicles (I) • J02.01.02 Reclamation of land from sea, estuary or marsh (O) • K02.02 Accumulation of

Designated Site (Site Code)	Direct-line Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats[7]
				organic material (I) Medium intensity threats: • D01.01 Paths, tracks, cycling tracks (I) • E03 Discharges (B) • F02.03.01 Bait digging / collection (I) • G01.01 Nautical sports (I) • G01.01.02 Non-motorized nautical sports (I) • H03 Marine water pollution (B) Low intensity threats: • D01.02 Roads, motorways (O)
Red Bog, Kildare SAC (000397)	15 km	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	• Transition mires and quaking bogs [7140]	High intensity threats: • C01.01 sand and gravel extraction (O) Medium intensity threats: • A08 fertilisation (O) • F02.03 Leisure fishing (I) • A04 intensive grazing (O) • E01.03 dispersed habitat (O) Low intensity threats: • F03.01 hunting (I)



- Pipeline Route
- 15km Buffer of Pipeline Route
- Special Protection Area

Code, Name, Distance (km)

004024, South Dublin Bay and River Tolka Estuary SPA, 14.15

004040, Wicklow Mountains SPA, 12.66

- Special Area of Conservation

Code, Name, Distance (km)

000210, South Dublin Bay SAC, 14.62

000397, Red Bog SAC, 15.00

001209, Glenasmole Valley SAC, 8.05

001398, Rye Water Valley/Carton SAC, 4.81

002122, Wicklow Mountains SAC, 9.88

TITLE:	European Sites within 15km of Pipeline Route
PROJECT:	Grange Castle Power Station
FIGURE NO:	4.1
CLIENT:	Fingleton White
SCALE: 1:120000	REVISION: 0
DATE: 11/03/2021	PAGE SIZE: A3

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4.3 Conservation Objectives

According to the Habitat's Directive, the *conservation status of a natural habitat* will be taken as 'favourable' within its biogeographic range when:

- Its natural range and areas it covers within that range are stable or increasing; and
- 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 as defined below.

According to the Habitat's Directive, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' within its biogeographic range 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; and
- 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 specific conservation objectives for each site are available on www.npws.ie. These have been accessed for the sites listed in Table 4-1 on the 2nd of February 2021.

Detailed site-specific conservation objectives were available for the following sites:

- South Dublin Bay and River Tolka Estuary SPA (site code 004024; 09/03/2015)
- South Dublin Bay SAC (site code 000210; published 22/08/2013)
- Wicklow Mountains SAC (site code 002122; published 31/07/2017)
- Red Bog, Kildare SAC (site code 000397; published 17/07/2019)

Generic conservation objectives only were available for:

- Glenasmole Valley cSAC (001209; published 07/04/2020)
- Rye Water Valley/Carton SAC (001398; published 07/04/2020)
- Wicklow Mountains SPA (004040; published 07/04/2020)

The following conservation objective supporting documents were available for the following sites:

- NPWS (2013). South Dublin Bay SAC (site code 210) Conservation objectives supporting document-marine habitat V1.
- NPWS (2014) South Dublin Bay and River Tolka Estuary SPA (site code 004024) Conservation objectives supporting document – V1

- Goodwillie (1972) A Preliminary Report on Areas of Scientific Interest in County Kildare
- NPWS (2005) Wicklow Mountains National Park Management Plan
- Cummins et al., (2010) The status of Red Grouse in Ireland and the effects of land use, habitat and habitat quality on their distribution. Irish Wildlife Manuals No. 50
- NPWS (2017) Wicklow Mountains SAC (002122) Conservation objectives supporting document - blanket bogs and associated habitats V1
- NPWS (2015) Habitats Directive Annex I Lake Habitats, A working interpretation for the purposes of site-specific conservation objectives and Article 17 reporting

Conservation objectives and conservation objectives supporting documents for these sites are available from the NPWS through the protected sites search portal at https://www.npws.ie/protected-sites.

4.4 Potential Cumulative Effects

In considering whether the proposed development, by itself or in combination with other plans and projects, has the potential to affect the conservation objectives of the designated sites within 15 km of the proposed development, the following were considered:

- South Dublin County Council Development Plan 2016-2022
- South Dublin County Council Planning Enquiry System
- Permitted projects in the vicinity of the development
- Proposed projects in the vicinity of the development

A planning search limited to applications submitted within the townlands overlapping and surrounding the Grange Castle site during the previous three years was conducted on 3rd February 2021.

Owing to the high volume of planning applications within the area and small-scale nature of the proposed works, these applications were refined to those within a 100 m radius of the proposed development which have been granted in the last three years.

There is one recently permitted development in the vicinity of the proposed expansion project. Application SD20A/0147 was granted permission on 8/10/2020 for the construction of an expansion to an existing biopharma production facility which includes the construction of a circa 2,155sq.m, two storey biopharma production facility to a maximum height of circa 14.9m including extension to carpark and external utility yard. The appropriate assessment screening carried out for this application concluded that there will be no effects on any European Sites as a result of the development either alone or in combination with other projects / plans. The works proposed as part of the Grange Castle AGI pipeline upgrade are minor in nature and will not result in any cumulative effects with other projects.

The proposed pipeline project consists of minor works within an already industrialised area and will not result in any cumulative effects with other projects or developments.

4.5 Screening Assessment Criteria

Throughout this section the line items in *italics* refer to suggested instructions for information to be contained in a screening assessment, and in an appropriate assessment from the guidance document '*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*', (European Commission, 2001). The standard 'Screening Matrix' and 'Finding of No Significant Effects Report Matrix' in Annex 2 of this guidance document are also followed.

As set out in NPWS guidance (DoEHLG, 2010), the task of establishing whether a plan or project is likely to have an effect on a European site(s) is based on an evaluation using available information and data (e.g. water quality data), supplemented as necessary by local site information and ecological surveys. This results in a determination by the competent authority as to whether there may be a significant effect on the designated site. A precautionary approach is required.

Some examples given in the NPWS guidance (DoEHLG, 2010) of effects that are likely to be significant are:

1. Any impact [effect] on an Annex I habitat,
2. A reduction in the area of a habitat of conservation interest in a European site or a reduction in the area of a European site,
3. Direct or indirect damage to the physical quality of the environment (e.g. water quality and supply, soil compaction) in the European site,
4. Serious or ongoing disturbance to species or habitats for which the European site is selected (e.g. increased noise, illumination and human activity),
5. Direct or indirect damage to the size, characteristics or reproductive ability of populations in the European site,
6. Interference with mitigation measures put in place for other plans or projects.

4.6 Screening Matrix

Assessment Criteria	Discussion of Potential Effects
Brief description of project or plan	<u>Details of physical changes that will take place during the various stages of implementing the proposal</u> The proposed development comprises an extension to the existing Nangor AGI in Grange Castle Business Park, Dublin 22, along with the installation of a 1.7 km 19 barg pipeline connecting the AGI to a permitted power plant (ref. SD 15A/00061) located on the north side of Grange Business Park. The proposed development will consist of the following works: 1) Installation of sufficiently sized pipework to facilitate the required flow capacity (283,000 kWh) 2) Construction of a new outlet pipework (250mm pipe, 1.7 km length)

Assessment Criteria	Discussion of Potential Effects
	3) Installation of required plant in the AGI extension, including 70/19 bar pressure reduction skid, 4 no. boilers, E&I Kiosk and 4 barg to mbarg fuel gas PRS 4) Earthworks to level the area between the proposed AGI extension and the existing AGI 5) Earthworks to facilitate the construction of the new outlet pipework. For a more detailed description see Section 3 above.
Brief description of the Natura 2000 (European) SiteAssessment criteria	The proposed project is not located within any European site. Seven European sites are within 15 km of the proposed project: • Rye Water Valley/Carton SAC (site code 001398; 4.8 km north west) • Glenasmole Valley cSAC (site code 001209; 8 km south east) • Wicklow Mountains SAC (site code 002122; 9.9 km south) • Wicklow Mountains SPA (site code 004040; 12.6 km south east) • South Dublin Bay and River Tolka Estuary SPA (site code 004024; 14 km east) • South Dublin Bay SAC (site code 000210; 14.6 km east) • Red Bog, Kildare SAC (site code 000397; 15km south) There are no waterbodies on site. The closest waterbody is the Griffeen River (EPA code: 09G01) which is 150 m west of the proposed development and separated by roads and open space. The River runs along the western edge of the Grange Castle Business Park and has a WFD Status of 'Good'. The Baldonnell Stream (EPA code: 09B09) also flows through the western portion of the Grange Castle Business Park in a northerly direction and is located 270 m from the proposed pipeline route. This waterbody has a Water Framework Directive status of 'Good'. The Baldonnell Stream merges with the Griffeen River south west of the site. The proposed development is located in the Liffey_SC_090, which is part of the Liffey and Dublin Bay catchment.
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to effects on the Natura 2000 sites.	No other individual elements of the project, either alone or in combination with other plans or projects are likely to give rise to effects on the European (Natura) sites identified above.
Describe any likely direct, indirect or secondary effects of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of: ▪ *Size and scale;*	**Size and scale, land-take and distance from European (Natura 2000) sites** **Potential Effects:** *None* The project is not located within any European site and there are no direct links to the same. There is no evidence of a hydrological link to the Griffeen Stream or

Assessment Criteria	Discussion of Potential Effects
▪ *Land-take;* ▪ *Distance from Natura 2000 site or key features of the site;* ▪ *Resource requirements;* ▪ *Emissions;* ▪ *Excavation requirements;* ▪ *Transportation requirements;* ▪ *Duration of construction, operation etc.;* ▪ *Other.*	Baldonnell stream. The project is not located close to any European site (Rye Water Valley/ Carton SAC is closest at 4.8 km north west). The proposed development is located within an urban, industrial landscape and has no habitats of ecological value. The site is unlikely to be used by any mobile QI species from nearby SACs or SPAs. The lack of suitable habitat present within the immediate vicinity of the works site means there is no habitat for *Vertigo angustior,* or *Vertigo moulinsiana* for which the Rye Water Valley/Carton SAC (001398) is designated. This precludes any effects on this species and the SAC. There is no evidence of any non-native invasive plant species present in the vicinity of the project and therefore, the proposed works do not have the potential to spread invasive plant species to any European sites. There will be no land-take from any European site and no direct or indirect effect on any European site as a virtue of the size and scale and location of the project. **Resource requirements and Excavation requirements** **Potential Effects:** *None* There will be no resource requirements or excavation requirements from any European site as a result of the proposed development. Excavation requirements within the proposed site will be minimal. Therefore, no direct or indirect effects on any European site is envisaged. **Emissions** **Potential Effects:** *None* As the proposed development is not located within any European site, no direct effect via emissions is envisaged. During the construction of the proposed development there is a likelihood of some silt production from limited excavation works and concrete will also be used on-site. There will be no emissions as a result of the works as there are no direct downstream hydrological connections between the proposed site, any watercourses and any European site. Therefore, no direct or indirect effects are envisaged on any European site. During the operational phase, gas pressures may deviate outside the control value. If this occurs, the proposed installation will install natural gas through a relief vent at a safe height above the ground level. Due to distance (Rye Water Valley/Carton SAC is the nearest site at 4.8 km northwest) and the dilution factor of the ambient air, no indirect effects are envisaged on any European site. **Transportation requirements** **Potential Effects:** *None.*

Assessment Criteria	Discussion of Potential Effects
	Site access will not traverse any European site. The project will be accessed via the existing Grange Castle Business park entrance and Grange Castle Road (R136). The AGI entrance road will be extended to allow access to the extension to the existing AGI site. Vehicles/machinery will not be refuelled on site. There are no direct or indirect downstream hydrological links to any European site, so no effects owing to transportation requirements are envisaged. **Duration of Construction and Operation** **Potential Effects:** *None.* The construction stage is expected to take ca. 7 months to complete, commencing May 2022 and is expected to conclude in December 2022. This project will be sequenced, so the degree of activity will vary over the period of construction and consequently the number of people employed on site will vary with progress (between 10 and 20 people). The works will take place during normal working hours. The operational phase will be ongoing into the foreseeable future. **Cumulative effects** **Potential Effects:** *None.* A planning search was conducted on 3rd February 2021 (see section 4.4). There are no planned or permitted projects within the vicinity of the proposed works that could cumulatively on any European site. No direct or indirect cumulative effects are envisaged on any European site.
Describe any likely changes to the site arising as a result of: ▪ *Reduction of habitat area;* ▪ *Disturbance of key species;* ▪ *Habitat or species fragmentation;* ▪ *Reduction in species density;* ▪ *Changes in key indicators of conservation value;* ▪ *Climate change.*	There will be no direct or indirect reduction in habitat area or habitat fragmentation within any European site as a result of the project. There will be no predicted effect to any European site via disturbance of key species or reduction of key species as a result of the proposed development. There will be no predicted changes in key indicators of conservation value to any European site due to the proposed project.
Describe any likely effects on the Natura 2000 site as a whole in terms of: ▪ *Interference with the key relationships that define the structure of the site;*	There are no potential effects on the key relationships that define the structure or function of any European site considered in this Appropriate Assessment Screening due to the proposed development.

Assessment Criteria	Discussion of Potential Effects
▪ *Interference with key relationships that define the function of the site.*	
Provide indicators of significance as a result of the identification of effects set out above in terms of: ▪ *loss,* ▪ *fragmentation,* ▪ *disruption,* ▪ *disturbance,* ▪ *change to key elements of the site (e.g. water quality etc.).*	No effects will occur; therefore, an indicator of significance is not required.
Describe from the above those elements of the project or plan, or combination of elements, where the above effects are likely to be significant or where the scale of magnitude of effects is not known.	No significant effects or effects of unknown scale or magnitude, either alone or in-combination with other projects or plans are predicted.

4.7 Conclusion

It is concluded beyond reasonable scientific doubt that there are not likely to be significant effects from the proposed development on the seven European sites identified for consideration (or any other European site), either alone or in combination with other plans or projects.

No significant effects on any of European Sites are predicted. Therefore, the following seven European sites have been 'screened out' within the Stage 1: Appropriate Assessment Screening Report:

- South Dublin Bay and River Tolka Estuary SPA (site code 004024; 14 km east)
- Rye Water Valley/Carton SAC (site code 001398; 4.8 km north west)
- South Dublin Bay SAC (site code 000210; 14.6 km east)
- Glenasmole Valley cSAC (site code 001209; 8 km south east)
- Wicklow Mountains SPA (site code 004040; 12.6 km south east)
- Wicklow Mountains SAC (site code 002122; 9.9 km south)
- Red Bog, Kildare SAC (site code 000397; 15km south)

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APPENDIX 1

European Site Synopses

SITE SYNOPSIS

SITE NAME: WICKLOW MOUNTAINS SPA

SITE CODE: 004040

This is an extensive upland site, comprising a substantial part of the Wicklow Mountains. Most of the site is in Co. Wicklow, but a small area lies in Co. Dublin. The underlying geology of the site is mainly of Leinster granites, flanked by Ordovician schists, mudstones and volcanics. The area was subject to glaciation and features fine examples of glacial lakes, deep valleys and moraines. Most of site is over 300 m, with much ground being over 600 m; the highest peak is Lugnaquillia (925 m). The substrate over much of site is peat, with poor mineral soil occurring on the slopes and lower ground. Exposed rock and scree are features of the site. The predominant habitats present are blanket bog, heaths and upland grassland.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Merlin and Peregrine.

A series of surveys of the Wicklow Mountains SPA indicates that up to 9 pairs of Merlin breed within the site in any one year. Traditionally a ground-nesting species, Merlin in the Wicklow Mountains are usually found nesting in old crows nests in conifer plantations. The open peatlands provide excellent foraging habitat for Merlin with small birds such as Meadow Pipit being their main prey. The cliffs and crags within the site also provide ideal breeding locations for Peregrine (20 pairs in 2002). Other birds of the open peatlands and scree slopes that have been recorded within the site include Ring Ouzel and Red Grouse.

The Wicklow Mountains SPA is of high ornithological importance as it supports nationally important populations of Merlin and Peregrine, both species that are listed on Annex I of the E.U. Birds Directive. Part of Wicklow Mountains SPA is a Statutory Nature Reserve.

7.7.2014

SITE SYNOPSIS

Site Name: Wicklow Mountains SAC

Site Code: 002122

Wicklow Mountains SAC is a complex of upland areas in Counties Wicklow and Dublin, flanked by the Blessington reservoir to the west and Vartry reservoir in the east, Cruagh Mountain in the north and Lybagh Mountain in the south. Most of the site is over 300 m, with much ground over 600 m. The highest peak is 925 m at Lugnaquilla. The Wicklow uplands comprise a core of granites flanked by Ordovician schists, mudstones and volcanics. The form of the Wicklow Glens is due to glacial erosion. The topography is typical of a mountain chain, showing the effects of more than one cycle of erosion. The massive granite has weathered characteristically into broad domes. Most of the western part of the site consists of an elevated moorland, covered by peat. The surrounding schists have assumed more diverse outlines, forming prominent peaks and rocky foothills with deep glens. The dominant topographical features are the products of glaciation. High corrie lakes, deep valleys and moraines are common features of this area. The substrate over much of the area is peat, usually less than 2 m deep. Poor mineral soil covers the slopes, and rock outcrops are frequent. The Wicklow Mountains are drained by several major rivers including the Dargle, Liffey, Dodder, Slaney and Avonmore. The river water in the mountain areas is often peaty, especially during floods.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[3110] Oligotrophic Waters containing very few minerals
[3160] Dystrophic Lakes
[4010] Wet Heath
[4030] Dry Heath
[4060] Alpine and Subalpine Heaths
[6130] Calaminarian Grassland
[6230] Species-rich *Nardus* Grassland*
[7130] Blanket Bogs (Active)*
[8110] Siliceous Scree
[8210] Calcareous Rocky Slopes
[8220] Siliceous Rocky Slopes
[91A0] Old Oak Woodlands

[1355] Otter (*Lutra lutra*)

The vegetation over most of Wicklow Mountains SAC is a mosaic of heath, blanket bog and upland grassland (mostly on peaty soil, though some on mineral soil), stands of dense Bracken (*Pteridium aquilinum*), and small woodlands mainly along the rivers. Mountain loughs and corrie lakes are scattered throughout the site.

The two dominant vegetation communities in the area are heath and blanket bog. Heath vegetation, with both wet and dry heath well represented, occurs in association with blanket bog, upland acid grassland and rocky habitats. The wet heath is characterised by species such as Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), cottongrasses (*Eriophorum* spp.), Tormentil (*Potentilla erecta*), Mat-grass (*Nardus stricta*), bent grasses (*Agrostis* spp.) and bog mosses (*Sphagnum* spp.). In places the wet heath occurs in conjunction with flush communities and streamside vegetation, and here species such as Heath Rush (*Juncus squarrosus*) and sedges (*Carex* spp.) are found. Dry heath at this site is confined to shallow peaty soils on steep slopes where drainage is better and particularly in sheltered conditions. It is characterised by species such as Heather, gorse (*Ulex* spp.), Bell Heather (*Erica cinerea*), Bilberry (*Vaccinium myrtillus*), Purple Moor-grass (*Molinia caerulea*) and lichens (*Cladonia* spp.). In places the heath grades into upland grassland on mineral soil.

Blanket bog is usually dominated by cottongrasses, Heather and bog mosses. On steeper slopes there is some flushing and here Purple Moor-grass, Heath Rush and certain *Sphagnum* species become more common. The Liffey Head blanket bog is among the best of its kind in eastern Ireland, with deep peat formations and an extensive system of dystrophic pools developed among the hummocks and hollows on the bog surface. The vegetation is largely dominated by Heather and Cross-leaved Heath, with cottongrasses (*Eriophorum vaginatum* and *E. angustifolium*), Deergrass (*Scirpus cespitosus*) and Bog Asphodel (*Narthecium ossifragum*). In drier areas, Bilberry and Cowberry (*Vaccinium vitis-idaea*) are common, while the scarce Bog-rosemary (*Andromeda polifolia*) is also found. Blanket bog occurs over extensive areas of deeper peat on the plateau and also on gentle slopes at high altitudes.

Due to the underlying rock strata, the water of the rivers and streams is acid rather than alkaline. The water is generally oligotrophic and free from enrichment. The lakes within the area range from the high altitude lakes of Lough Firrib and Three Lakes, to the lower pater-noster lakes of Glendalough, Lough Tay and Lough Dan. Spectacular corrie lakes, such as Loughs Bray (Upper and Lower), Ouler, Cleevaun, Arts, Kellys and Nahanagan, exhibit fine sequences of moraine stages. The deep lakes are characteristically species-poor, but hold some interesting plants including an unusual form of Quillwort (*Isoetes lacustris* var. *morei*), a stonewort (*Nitella* sp.) and Floating Bur-reed (*Sparganium angustifolium*).

Alpine vegetation occurs on some of the mountain tops, notably in the Lugnaquilla area, and also on exposed cliffs and scree slopes elsewhere in the site. Here alpine heath vegetation is represented with heath species such as Crowberry (*Empetrum nigrum*) and Cowberry, and others such as Dwarf Willow (*Salix herbacea*), the grey-green moss *Racomitrium lanuginosum*, and scarce species such as Mountain Clubmoss

(*Diphasiastrum alpinum*), Firmoss (*Huperzia selago*), and Starry Saxifrage (*Saxifraga stellaris*). Some rare arctic-alpine species have been recorded, including Alpine Lady's-mantle (*Alchemilla alpina*) and Alpine Saw-wort (*Saussurea alpina*).

Old lead mine workings at Glendasan support an estimated 3.6 hectares of Calaminarian Grassland, with a suite of rare metallophyte (metal-loving) bryophytes, including the moss *Ditrichum plumbicola* and the liverworts *Cephaloziella massalongi* and *C. nicholsonii*.

Small areas of old oakwood (Blechno-Quercetum petraeae type) occur on the slopes of Glendalough and Glenmalure, near Lough Tay and Lough Dan, with native Sessile Oak (*Quercus petraea*) trees, many of which are 100-120 years old. On wetter areas, wet broadleaved semi-natural woodlands occur which are dominated by Downy Birch (*Betula pubescens*). Mixed woodland with non-native tree species also occurs.

The site supports a range of rare plant species. Parsley Fern (*Cryptogramma crispa*), Marsh Clubmoss (*Lycopodiella inundata*), Lanceolate Spleenwort (*Asplenium billotii*), Small-white Orchid (*Pseudorchis albida*) and Bog Orchid (*Hammarbya paludosa*) are all legally protected under the Flora (Protection) Order, 2015. Greater Broomrape (*Orobanche rapum-genistae*), Alpine Saw-wort and Alpine Lady's-mantle are listed in the Irish Red Data Book. The rare Myxomycete fungus *Echinostelium colliculosum* has been recorded from the Military Road.

The Red Data Book fish species Arctic Char has been recorded from Lough Dan, but this population may now have died out.

Mammals and birds which occur are typical of the uplands. Deer are abundant, mainly hybrids between Red and Sika Deer. Other mammals include Hare, Badger and Otter, the latter being a species listed on Annex II of the E.U. Habitats Directive. Pine Marten has recently been confirmed as occurring within the site. Among the birds, Meadow Pipit, Skylark, Raven and Red Grouse are resident throughout the site. Wheatear, Whinchat and the scarce Ring Ouzel are summer visitors. Wood Warbler and Redstarts are rare breeding species of the woodlands. Dipper and Grey Wagtail are typical riparian species. Merlin and Peregrine, both Annex I species of the E.U. Birds Directive, breed within the site. Recently, Goosander has become established as a breeding species.

Large areas of the site are owned by the National Parks and Wildlife Service (NPWS) and are managed for nature conservation based on traditional land uses of upland areas. The most common land use is traditional sheep grazing, but others include turf cutting, mostly hand-cutting but some machine-cutting also occurs. These activities are largely confined to the Military Road, where there is easy access. Large areas which had been previously hand-cut and are now abandoned are regenerating. In the last 40 years, forestry has become an important land use in the uplands, and has affected both the wildlife and the hydrology of the area. Amenity use is very

high, with Dublin city close to the site. Peat erosion is frequent on the peaks. This may be a natural process, but is likely to be accelerated by activities such as grazing.

Wicklow Mountains is important as a complex, extensive upland site. It shows great diversity from a geomorphological and a topographical point of view. The vegetation provides examples of the typical upland habitats with heath, blanket bog and upland grassland covering large, relatively undisturbed areas. In all, twelve habitats listed on Annex I of the E.U. Habitats Directive are found within the site. Several rare or protected plant and animal species occur, adding further to its value.

SITE SYNOPSIS

Site Name: Glenasmole Valley SAC

Site Code: 001209

Glenasmole Valley in south Co. Dublin lies on the edge of the Wicklow uplands, approximately 5 km from Tallaght. The River Dodder flows through the valley and has been impounded here to form two reservoirs which supply water to south Dublin. The non-calcareous bedrock of the Glenasmole Valley has been overlain by deep drift deposits which now line the valley sides. They are partly covered by scrub and woodland, and on the less precipitous parts, by a herb-rich grassland. There is much seepage through the deposits, which brings to the surface water rich in bases, which induces local patches of calcareous fen and, in places, petrifying springs.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[6210] Orchid-rich Calcareous Grassland*
[6410] *Molinia* Meadows
[7220] Petrifying Springs*

At this site, examples of calcareous fen and flush occur between the two reservoirs, where sedges (including *Carex flacca* and *C. panicea*) are joined by such species as Grass-of-parnassus (*Parnassia palustris*), Few-flowered Spike-rush (*Eleocharis quinqueflora*), Zig-zag clover (*Trifolium medium*) and the scarce Fen Bedstraw (*Galium uliginosum*). Tufa depositing springs are long-known from the site, along the valley sides, and some have substantial tufa mounds and banks. Tufa formation is also known from small streams within the woodland at the site. Within the hazel woods, and associated with the springs and flushes, a distinctive flora with Marsh Hawk's-beard (*Crepis paludosa*) and luxuriant stands of Great Horsetail (*Equisetum telmateia*) has developed.

Orchid-rich grassland occurs in the drier parts of this site and in places grades into *Molinia* meadow. Orchids recorded in these habitats include Frog Orchid (*Coeloglossum viride*), Northern Marsh-orchid (*Dactylorhiza purpurella*), Fragrant Orchid (*Gymnadenia conopsea*), Marsh Helleborine (*Epipactis palustris*), Early-purple Orchid (*Orchis mascula*) and Greater Butterfly Orchid (*Platanthera chlorantha*). Two further orchid species, both Red Data Book-listed, have also been found here, Green-winged Orchid (*Orchis morio*) and Small-white Orchid (*Pseudorchis albida*). Common grasses in the sward include Sweet Vernal-grass (*Anthoxanthum odoratum*), Creeping Bent (*Agrostis stolonifera*) and Crested Dog's-tail (*Cynosurus cristatus*). Other species which occur are Common Bird's-foot-trefoil (*Lotus corniculatus*), Kidney Vetch (*Anthyllis vulneraria*), Common Restharrow (*Ononis repens*), Yellow-wort (*Blackstonia*

perfoliata) and Autumn Gentian (*Gentianella amarella*). While much of the calcareous grassland has been improved to some extent for agriculture, a suite of typical species still remain.

The areas of *Molinia* meadows at the site occur associated with the grasslands on the valley sides, and in particular in seepage and flushed areas. Typical and indicative species include Greater Bird's-foot-trefoil (*Lotus uliginosus*), Tormentil (*Potentilla erecta*), Purple Moor-grass (*Molinia caerulea*), Sharp-flowered Rush (*Juncus acutiflorus*), Adder's-tongue (*Ophioglossum vulgatum*), Meadow Thistle (*Cirsium dissectum*) and Fen Bedstraw. As noted above, orchids are frequent in the grasslands at this site.

Woodland occurs in patches around the site. On the east side of the valley, below the northern lake, a Hazel (*Corylus avellana*) wood has developed on the unstable calcareous slopes and includes other species such as Ash (*Fraxinus excelsior*), Downy Birch (*Betula pubescens*), Goat Willow (*Salix caprea*) and (Irish) Whitebeam (*Sorbus hibernica*). Spring Wood-rush (*Luzula pilosa*), Wood Speedwell (*Veronica montana*) and Bramble (*Rubus fruticosus* agg.) are present in the ground flora.

Wet semi-natural broadleaved woodland is also found around the reservoirs and includes Alder (*Alnus glutinosa*) and willow (*Salix* spp.), with Yellow Iris (*Iris pseudacorus*), horsetails (*Equisetum* spp.), Bramble and localised patches of Japanese Knotweed (*Reynoutria japonica*), an introduced and invasive species.

The lake shore vegetation is not well developed, which is typical of a reservoir. There are occasional patches of Reed Canary-grass (*Phalaris arundinacea*) and Purple-loosestrife (*Lythrum salicaria*), which are more extensive around the western shore of the northern lake, along with Common Marsh-bedstraw (*Galium palustre*) and Water Mint (*Mentha aquatica*). Other vegetation includes Shoreweed (*Littorella uniflora*) and the scarce Water Sedge (*Carex aquatilis*).

As well as the Green-winged Orchid and Small-white Orchid, two other threatened species which are listed in the Irish Red Data Book occur in the site, Yellow Archangel (*Lamiastrum galeobdolon*) and Yellow Bird's-nest (*Monotropa hypopitys*). Small-white Orchid is legally protected under the Flora (Protection) Order, 1999.

The site provides excellent habitat for bats, with at least four species recorded: Pipistrelle, Leisler's, Daubenton's and Brown Long-eared. Otter occurs along the river and reservoirs.

The site supports Kingfisher, an Annex I species under the E.U. Birds Directive.

Glenasmole Valley contains a high diversity of habitats and plant communities, including three habitats listed on Annex I of the E.U. Habitats Directive. The presence of four Red Data Book plant species further adds to the value of the site, as does the presence of populations of several mammal and bird species of conservation interest.

SITE SYNOPSIS

Site Name: South Dublin Bay SAC

Site Code: 000210

This site lies south of the River Liffey in Co. Dublin, and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion Gates. The main channel which drains the area is Cockle Lake.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1140] Tidal Mudflats and Sandflats
[1210] Annual vegetation of drift lines
[1310] Salicornia and other annuals colonising mud and sand
[2110] Embryonic shifting dunes

The bed of Dward Eelgrass (*Zostera noltii*) found below Merrion Gates is the largest stand on the east coast. Green algae (*Enteromorpha* spp. and *Ulva lactuca*) are distributed throughout the area at a low density. Fucoid algae occur on the rocky shore in the Maretimo to Dún Laoghaire area. Species include *Fucus spiralis, F. vesiculosus, F. serratus, Ascophyllum nodosum* and *Pelvetia canaliculata.*

Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/ Booterstown. The formation at Booterstown is very recent. Drift line vegetation occurs in association with the embryonic and incipient fore dunes. Typically drift lines occur in a band approximately 5 m wide, though at Booterstown this zone is wider in places. The habitat occurs just above the High Water Mark and below the area of embryonic dune. Species present are Sea Rocket (*Cakile maritima*), Frosted Orache (*Atriplex laciniata*), Spear-leaved Orache (*A. prostrata*), Prickly Saltwort (*Salsola kali*) and Fat Hen (*Chenopodium album*). Also occurring is Sea Sandwort (*Honkenya peploides*), Sea Beet (*Beta vulgaris* subsp. *maritima*) and Annual Sea-blite (*Suaeda maritima*). A small area of pioneer saltmarsh now occurs in the lee of an embryonic sand dune just north of Booterstown Station. This early stage of saltmarsh development is here characterised by the presence of pioneer stands of glassworts (*Salicornia* spp.) occurring below an area of drift line vegetation. As this is of very recent origin, it covers a small area but ample areas of substrate and shelter are available for the further development of this habitat.

Lugworm (*Arenicola marina*), Cockles (*Cerastoderma edule*) and annelids and other bivalves are frequent throughout the site. The small gastropod *Hydrobia ulvae* occurs on the muddy sands off Merrion Gates.

South Dublin Bay is an important site for waterfowl. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. The principal species are Oystercatcher (1215), Ringed Plover (120), Sanderling (344), Dunlin (2628) and Redshank (356) (average winter peaks 1996/97 and 1997/98). Up to 100 Turnstones are usual in the south bay during winter. Brent Goose regularly occur in numbers of international importance (average peak 299). Bar-tailed Godwit (565), a species listed on Annex I of the E.U. Birds Directive, also occur.

Large numbers of gulls roost in South Dublin Bay, e.g. 4,500 Black-headed Gulls in February 1990; 500 Common Gulls in February 1991. It is also an important tern roost in the autumn, regularly holding 2000-3000 terns including Roseate Terns, a species listed on Annex I of the E.U. Birds Directive. South Dublin Bay is largely protected as a Special Protection Area.

At low tide the inner parts of the south bay are used for amenity purposes. Bait-digging is a regular activity on the sandy flats. At high tide some areas have wind-surfing and jet-skiing.

This site is a fine example of a coastal system, with extensive sand and mudflats, and incipient dune formations. South Dublin Bay is also an internationally important bird site.

SITE SYNOPSIS

SITE NAME: SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPA

SITE CODE: 004024

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included.

In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. There is a bed of Dwarf Eelgrass (*Zostera noltii*) below Merrion Gates which is the largest stand on the east coast. Green algae (*Ulva* spp.) are distributed throughout the area at a low density. The macro-invertebrate fauna is well-developed, and is characterised by annelids such as Lugworm (*Arenicola marina*), *Nephthys* spp. and Sand Mason (*Lanice conchilega*), and bivalves, especially Cockle (*Cerastoderma edule*) and Baltic Tellin (*Macoma balthica*). The small gastropod Spire Shell (*Hydrobia ulvae*) occurs on the muddy sands off Merrion Gates, along with the crustacean *Corophium volutator*. Sediments in the Tolka Estuary vary from soft thixotrophic muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. The site includes Booterstown Marsh, an enclosed area of saltmarsh and muds that is cut off from the sea by the Dublin/Wexford railway line, being linked only by a channel to the east, the Nutley stream. Sea water incursions into the marsh occur along this stream at high tide. An area of grassland at Poolbeg, north of Irishtown Nature Park, is also included in the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher, Ringed Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-headed Gull, Roseate Tern, Common Tern and Arctic Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of the SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is an important site for wintering waterfowl, being an integral part of the internationally important Dublin Bay complex – all counts for wintering waterbirds are five year mean peaks for the period 1995/96 to 1999/2000. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. An internationally important population of Light-bellied Brent Goose (368) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at

Merrion. At the time of designation the site supported nationally important numbers of a further nine species: Oystercatcher (1,145), Ringed Plover (161), Grey Plover (45), Knot (548), Sanderling (321), Dunlin (1,923), Bar-tailed Godwit (766), Redshank (260) and Black-headed Gull (3,040). Other species occurring in smaller numbers include Great Crested Grebe (21), Curlew (127) and Turnstone (52). Little Egret, a species which has recently colonised Ireland, also occurs at this site.

South Dublin Bay is a significant site for wintering gulls, with a nationally important population of Black-headed Gull, but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter.

Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the E.S.B. dolphin – this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007.

South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. This site is selected for designation for its autumn tern populations: Roseate Tern (2,000 in 1999), Common Tern (5,000 in 1999) and Arctic Tern (20,000 in 1996).

The South Dublin Bay and River Tolka Estuary SPA is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. It is of note that four of the species that regularly occur at this site are listed on Annex I of the E.U. Birds Directive, i.e. Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Sandymount Strand/Tolka Estuary is also a Ramsar Convention site.

30.5.2015

SITE SYNOPSIS

Site Name: Red Bog, Kildare SAC

Site Code: 000397

Red Bog, Kildare is located 3 km north of the village of Blessington in east Co. Kildare, close to the boundary with Co. Wicklow. It comprises a wetland complex of lake, fen and bog situated in a hollow between ridges of glacially-deposited material and underlain by rocks of Ordovician age.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[7140] Transition Mires

The shores of the lake are muddy and support such species as Bog Stitchwort (*Stellaria alsine*), Brooklime (*Veronica beccabunga*) and Soft Rush (*Juncus effusus*). Fringing the lakeshore is a narrow zone with emergent Soft Rush, Water-plantain (*Alisma plantago-aquatica*), Bottle Sedge (*Carex rostrata*), as well as the moss *Climacium dendroides*. In places, particularly at either end of the lake and along its south-eastern side, this zone grades into extensive areas of quaking scraw vegetation of dense Bogbean (*Menyanthes trifoliata*) and Marsh Cinquefoil (*Potentilla palustris*), accompanied by such species as Sharp-flowered Rush (*Juncus acutiflorus*), Cuckooflower (*Cardamine pratensis*), Marsh Speedwell (*Veronica scutellata*), Common Marsh-bedstraw (*Galium palustre*), Water Horsetail (*Equisetum fluviatile*), Common Sedge (*Carex nigra*), Common Spotted-orchid (*Dactylorhiza fuchsii*) and the mosses *Rhytidiadelphus squarrosus* and *Sphagnum squarrosum*. Bulrush (*Typha latifolia*) and areas of Willow (*Salix* spp.) scrub also occur in association with this vegetation.

The deeper water supports submerged aquatic plants such as Water-starworts (*Callitriche* spp.) and Water-crowfoots (*Ranunculus* spp.), while in sheltered areas floating plants including Common Duckweed (*Lemna minor*) and the liverwort *Riccia fluitans* are found.

At the north-east end of the site, bog vegetation has developed, with Heather (*Calluna vulgaris*) and Hare's-tail Cottongrass (*Eriophorum vaginatum*) being the most frequent species. Other bog plants found here include Bog Asphodel (*Narthecium ossifragum*), Cross-leaved Heath (*Erica tetralix*), Tormentil (*Potentilla erecta*), Heath Wood-rush (*Luzula multiflora*), the mosses *Sphagnum palustre*, S. *capillifolium*, *S. subnitens*, *Hypnum cupressiforme*, *Polytrichum commune* and *Dicranum scoparium*, and the lichen *Cladonia portentosa*.

Red Bog is of ornithological significance and breeding birds recorded from the site include Mute Swan, Mallard, Tufted Duck, Coot, Moorhen, Snipe and Black-headed Gull (estimated <20 pairs).

Gravel extraction, drainage and eutrophication of the wetland from agricultural activities in the surrounding lands all pose a threat to the site.

Red Bog, Kildare is a site of particular conservation significance, supporting a good example of transition mire, a habitat that is listed on Annex I of the E.U. Habitats Directive.

SITE SYNOPSIS

Site Name: Rye Water Valley/Carton SAC

Site Code: 001398

Rye Water Valley/Carton SAC is located between Leixlip and Maynooth, in Counties Meath and Kildare, and extends along the Rye Water, a tributary of the River Liffey.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[7220] Petrifying Springs*
[1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)
[1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)

The Rye Water in Carton Estate is dammed at intervals, creating a series of lakes. Reed Sweet-grass (*Glyceria maxima*) is frequent around the lakes, along with Yellow Iris (*Iris pseudacorus*), Reed Canary-grass (*Phalaris arundinacea*), Bulrush (*Typha latifolia*), Water Forget-me-not (*Myosotis scorpioides*), Marsh-marigold (*Caltha palustris*) and starworts (*Callitriche* spp.). Along the remainder of the site the river has been dredged and much of the reed fringe removed.

To the north-west of Carton Bridge a small clump of willows (*Salix* spp.), with dogwood (*Cornus* sp.), Alder (*Alnus glutinosa*), Ash (*Fraxinus excelsior*) and Elder (*Sambucus nigra*) occurs. The ground flora found here includes Golden Saxifrage (*Chrysosplenium oppostifolium*), Meadowsweet (*Filipendula ulmaria*), Common Valerian (*Valeriana officinalis*), Wavy Bitter-cress (*Cardamine flexuosa*) and Bittersweet (*Solanum dulcamara*).

The woods on Carton Estate are mostly old demesne woods with both deciduous and coniferous species. Conifers, including some Yew (*Taxus baccata*) – a native species, are dominant, with Beech (*Fagus sylvatica*), oak (*Quercus* sp.), Sycamore (*Acer pseudoplatanus*), Ash and Hazel (*Corylus avellana*) also occurring. The ground flora is dominated by Ivy (*Hedera helix*), with such species as Hedge Woundwort (*Stachys sylvatica*), Wood Speedwell (*Veronica montana*), Woodruff (*Galium odoratum*), Wood Avens (*Geum urbanum*), Common Dog-violet (*Viola riviniana*), Wild Angelica (*Angelica sylvestris*), Ramsons (*Allium ursinum*), Ground-ivy (*Glechoma hederacea*) and Ivy Broomrape (*Orobanche hederae*) also found.

Hairy St. John's-wort (*Hypericum hirsutum*), a species legally protected under the Flora (Protection) Order, 1999, occurs in Carton Estate and there is an old record from the estate for the similarly protected Hairy Violet (*Viola hirta*). However, this latter species has not been recorded from the site in recent years. Another species

listed in the Red Data Book, Green Figwort (*Scrophularia umbrosa*), occurs on the site in several locations by the Rye Water. The woods at Carton Demesne are the site of a rare Myxomycete fungus, *Diderma deplanatum*.

The marsh, mineral spring and seepage area found at Louisa Bridge supports a good diversity of plant species, including stoneworts, Marsh Arrowgrass (*Triglochin palustris*), Purple Moor-grass (*Molinea caerulea*), sedges (*Carex* spp.), Common Butterwort (*Pinguicula vulgaris*), Marsh Lousewort (*Pedicularis palustris*), Grass-of-parnassus (*Parnassia palustris*) and Cuckooflower (*Cardamine pratensis*). The mineral spring found at the site is of a type considered to be rare in Europe and is a habitat listed on Annex I of the E.U. Habitats Directive. The Red Data Book species Blue Fleabane (*Erigeron acer*) is found growing on a wall at Louisa Bridge.

Within the woods, Blackcap, Woodcock and Long-eared Owl have been recorded. Little Grebe, Coot, Moorhen, Tufted Duck, Teal and Kingfisher, the latter a species listed on Annex I of the E.U. Birds Directive, occur on and about the lake.

The Rye Water is also a spawning ground for Trout and Salmon, and the rare, White-clawed Crayfish (*Austropotamobius pallipes*) has been recorded at Leixlip. The latter two species are listed on Annex II of the E.U. Habitats Directive. The rare Narrow-mouthed Whorl Snail and Desmoulin's Whorl Snail occur in marsh vegetation near Louisa Bridge. Both are rare in Ireland and in Europe, and are listed on Annex II of the E.U. Habitats Directive. The scarce dragonfly, *Orthetrum coerulescens*, has also been recorded at Louisa Bridge.

The conservation importance of the site lies in the presence of several rare and threatened plant and animal species, and the presence of petrifying springs, a habitat type listed on Annex I of the E.U. Habitats Directive. The woods found on Carton Estate and their birdlife are of additional interest.

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Appendix 4: NMS Correspondence

John Lennon

From: Cleary, Rose <r.cleary@ucc.ie>
Sent: Saturday 28 August 2021 17:45
To: Mark Flynn
Subject: Fw: Gas Networks proposal for temporary compound at Nangor, Co. Dublin
Attachments: ATT00001.txt; ATT00002.htm

Hi Mark,
See email below from Mark Keegan, NMS. Archaeological monitoring of groundworks for compound will suffice.
Rose

From: Mark Keegan <Mark.Keegan@housing.gov.ie>
Sent: 27 August 2021 12:03
To: Cleary, Rose <r.cleary@ucc.ie>
Subject: RE: Gas Networks proposal for temporary compound at Nangor, Co. Dublin

Hello Rose,

Apologies for the slow response.

Having looked at the 2007 and 2019 reports which show overburden of c.1.5m and the shallow nature of the proposed temporary works at 0.4m, then monitoring of the stripping of the temporary works area would be the NMS recommendation.

Regards,

Mark

Please note change of email address to: Mark.Keegan@housing.gov.ie

Mark Keegan
Archaeologist

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From: Cleary, Rose [mailto:r.cleary@ucc.ie]
Sent: Wednesday 25 August 2021 21:04

To: Mark Keegan <Mark.Keegan@housing.gov.ie>
Subject: Re: Gas Networks proposal for temporary compound at Nangor, Co. Dublin

Hi Mark,
Any progress on this?
Thanks,
Rose

From: Mark Keegan <Mark.Keegan@housing.gov.ie>
Sent: 09 August 2021 15:28
To: Cleary, Rose <r.cleary@ucc.ie>
Subject: RE: Gas Networks proposal for temporary compound at Nangor, Co. Dublin

Rose,

Still me. Email on some details and I'll have a look.

Thanks,

Mark

From: Cleary, Rose [mailto:r.cleary@ucc.ie]
Sent: Wednesday 4 August 2021 18:14
To: Mark Keegan <Mark.Keegan@housing.gov.ie>
Subject: Gas Networks proposal for temporary compound at Nangor, Co. Dublin

Hi Mark,
I hope you are keeping well. I have a query on Nangor where Gas Networks are planning works and wonder if you are still dealing with infrastructural works? If not can you tell me who to contact?
Thanks
Rose