MWP

Chapter 07 Land and Soils

Newtown Transmission Gas Pipeline and Associated Above Ground Infrastructure

Gas Networks Ireland

November 2025

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7. Land and Soils

7.1 Introduction

This chapter considers the potential effects on the existing land and soils environment arising from the proposed development. A full description of the proposed development, development lands and all associated project elements is provided in Chapter 02 Description of the Proposed Development of this EIAR. The nature and probability of effects on the existing land and soils environment arising from the overall project has been assessed. The assessment comprises:

- A review of the existing receiving environment;
- Prediction and characterisation of likely effects;
- Evaluation of effects significance; and
- Consideration of mitigation measures, where appropriate.

7.1.1 Competency of Assessor

The assessment was undertaken by Roman Puotkalis and assisted by Leanne Leonard, Environmental Consultants at MWP.

Roman [BSc (Hons), MSc] holds an MSc in Environmental Analytical Chemistry and BSc (Hons) Environmental Science from University College Cork. Roman has been involved in geo-environmental investigation/interpretation and hydrogeological assessment and investigations. Roman has written Land and Soils chapters for various projects such as wind farms, grid routes and power generating stations. This included assessment of environmental impact on Land, Soils, Geology, and Hydrogeology, as well as cumulative impacts with various other aspects of the environment. He has also worked on Phase 1 and 2 environmental site assessments for several projects including pharmaceutical facilities, substations, mines, and power stations.

Leanne Leonard [BSc (Hons), MIEnvSc] is an environmental consultant with over six years of experience in the field. She has expertise in the preparation of Environmental Impact Assessment Reports and supporting documentation for renewable energy, transport and wastewater infrastructure developments. Her technical experience includes conducting Phase 1 Preliminary Risk Assessments and Phase 2 Generic Quantitative Risk Assessments, as well as associated site investigation works.

7.1.2 Legislation

This document is in compliance with the following European and Irish legislation and policy:

- EU Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the Environment as amended by Directive 2014/92/EU of the European Parliament and of the Council;
- Heritage Act 2018;
- Planning and Development Act 2000, as amended;
- Planning and Development Regulations, 2001 – 2023; and
- Fingal County Council (2022): Fingal Development Plan 2023-2029.

7.2 Methodology

7.2.1 Desktop Study

The methodology used for this study included desk-based research of published information and a site visit to assemble information on the local receiving environment. The desktop study included the following activities:

- Review of Ordnance Survey Mapping and aerial photography to establish existing land use and settlement patterns within the study area, refer to Section 7.3;
- Examination of the Geological Survey of Ireland (GSI) datasets pertaining to geological (bedrock, heritage, subsoil, etc.) and extractive industry data;
- Examination of Environmental Protection Agency (EPA) / GeoHive / Teagasc online soil and subsoil maps;
- Review of local and regional development plans and planning policy in order to identify future development and identify any planning allocations within the study area;
- Review of Fingal County Council's Planning Register to identify relevant development proposals currently under consideration by the Council;
- Review of Teagasc soil and subsoil database; and
- Review of National Parks and Wildlife Services (NPWS) – Protected Site Register.

Site specific data was derived from the following sources:

- Kilshane Energy – Site Investigation Specification, Fingleton White, February 2024;
- Kilshane Block Valve AGI Ground Investigation Report, Causeway Geotech Ltd, June 2025;
- Kilshane Energy – Construction Methodology, Fingleton White, October 2025;
- Site Investigation Report for Kilshane Power Station EIAR. Site Investigations Ltd 2021;
- Various design site plans and drawings; and
- Consultation with design engineers (Fingleton White) and Gas Networks Ireland.

Following the desktop study and field survey, a set of geological and soils maps were generated in GIS using data acquired from GSI, the EPA and GeoHive Online maps, and are included as figures in this chapter.

7.2.2 Site Walkover

A site walkover was completed on 30th January 2024 by Roman Puotkalis of MWP to identify land and soils features at the proposed development site.

7.2.3 Guidelines and Best Practice

The assessment methodology included a desk-based study, a site visit, and a qualitative assessment of the potential effects. The assessment criteria for land and soils are based on the guidelines from the following reports:

- Institute of Geologists Ireland (2013): Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements;
- (DoHPLG, 2018): Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment; and

- National Roads Authority (2009): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

7.2.4 Scope of Assessment

'Land and Soils' is considered a geological term in current, historical, and planned land use. The subject matter of hydrology and hydrogeology is addressed in Chapter 06 Water of this EIAR.

Accordingly, the scope of this assessment is made with respect to these topic areas and considers the effects of the construction and operation of the proposed development in terms of how the proposal could potentially affect the local land and soils environment, without appropriate mitigation measures being implemented if required.

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

- Geological heritage sites in the vicinity of the perimeter of the proposed development site;
- Landfills, industrial sites in the vicinity of the subject site and the potential risk of encountering contaminated ground;
- The quality, drainage characteristics and range of agricultural uses of soil around the site;
- Quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves; and
- The extent of topsoil and subsoil cover and the potential use of this material on site as well or requirement to remove it off-site as waste for disposal or recovery.

7.2.4.1 Assessment Criteria

The method of impact assessment and prediction follows the EPA (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR).* The methodology and approach outlined in the EPA Guidelines was used to determine whether the proposed development had the potential to cause significant effects on the land and soils environment. The recommendations outlined in the EPA Guidelines are delineated in Chapter 01 Introduction of this EIAR.

7.3 Proposed Development

The proposed development involves the installation of an underground transmission gas pipeline to connect the proposed Kilshane Block Valve (BV) Extension (to be located at the existing Kilshane BV station) and the proposed Newtown Above Ground Installation (AGI) (to be located within the proposed Kilshane Energy Facility). Refer to Chapter 02 Description of the Proposed Development for further details and Figure 7-1 for layout of the proposed Newtown AGI, Kilshane BV extension and the GNI139 pipeline route.

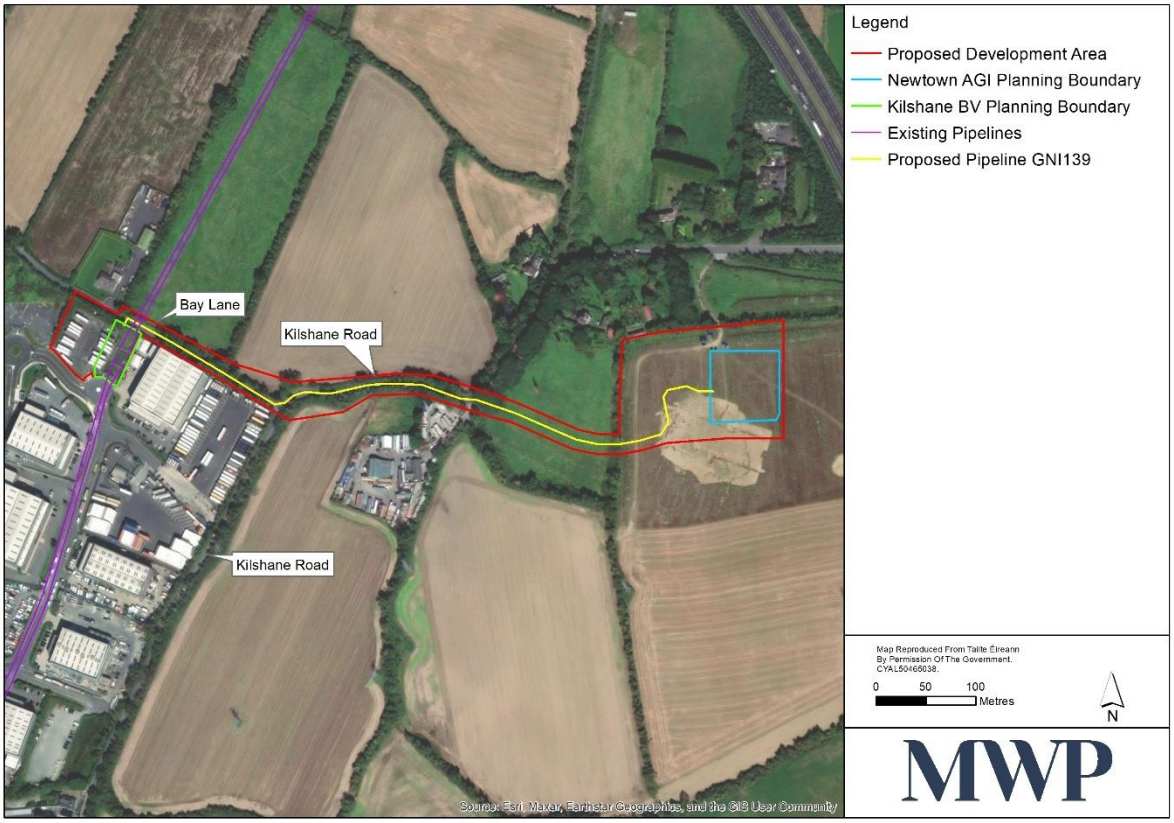

Figure 7-1: Site Layout

The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the proposed development, particularly in areas where potential impacts to land and soils may occur.

7.3.1 Construction Phase Activities

7.3.1.1 Earthworks and Excavation

There will be topsoil, subsoil, stones, tarmac and hardcore excavated as part of this activity to facilitate the installation of the gas transmission pipeline. The excavation of bedrock is not anticipated. It has been estimated by the project engineers that c. 5,890m^3 of material will be excavated. This volume consists of c. 1400m^3 of soil for the gas transmission pipeline, 550m^3 for the BV extension enabling works, 390m^3 for the BV and 650m^3 for the Newtown AGI.

The length of the pipeline is approximately 715m in length. The tie-in point will be within a proposed extension to the existing Kilshane BV site. The 300NB pipeline will connect into a 400NB brand connecting pipe between BGE36 and BGE72 transmission pipelines running through Kilshane BV.

Once the pipeline exits the tie-in location within Kilshane BV it will continue by means of open-cut excavation for approximately 0.1km through the site and onto Bay Lane. The pipeline enters the road perpendicular to the hedgerow and road before turning 90^o. From here it is routed within the road using open-cut method. The pipeline will cross the existing BGE36 (450NB) pipeline BGE72 (900NB) pipeline within Bay Lane. The pipe than routes for approximately 180m through Bay Lane before a T-junction on to Kilshane Road. The pipeline will stay to the northern lane within the road to avoid a proposed HV cable on the southern side.

The pipeline must cross T50 telecom cables twice upon entering Kilshane Road. From here it will be routed through Kilshane Road using the open cut method for approx. 200m before entering the customer's site, again staying to the northern lane of the road to avoid proposed HV cable on the southern side. The pipeline crosses the hedgerow/ditch into the greenfield site where it will be laid using open/cut method. It runs directly across this field to where it will meet a watercourse crossing. Upon crossing this and entering the second greenfield site, the pipeline follows the route of the customers proposed site road to the Newtown AGI site.

The pipeline terminates at a proposed AGI located within the Kilshane Energy Ltd. power generation site.

A 3m deep excavation will be undertaken at the BV Extension Site to allow the new pipeline to tie into the existing pipeline. A 5m x 5m area trench to a depth of approximately 2m will be excavated around the 400NB branch connecting pipe between GNI pipelines BGE36 and BGE72. The branch will be cold cut in 2 locations. A new section of pipework will be welded in at these 2 locations to form the tie-in point for the GNI139 pipeline. Refer to Mechanical Arrangement Drawing No. 1395.01-DG-0003 contained in the drawing pack for details. The trench for the new pipework to be buried within the BV extension shall be excavated to a size of 1.67 mm deep x 624 mm wide, ensuring depth of cover to the top of the pipe is not less than 1200mm. Excavation works will be required to facilitate the accessible pit for the pipeline isolation valve. Excavations will also be required for foundations, site levelling and access roadways associated with the BV Extension.

For the section of the pipeline routed within the customers field, a working width of 30m will be fenced off. Where found, topsoil will then be cleared to a typical depth of 300 mm.

Soil stripping required for the AGI will be completed as part of the proposed Kilshane Power Station development's groundworks phase if permitted.

Further detail on earthworks and excavation is present in Section 2.5 of Chapter 02 Description of the Proposed Development. Excavations will be required to facilitate each of the road crossings. For these concrete and asphalt/bitmac sections, permanent reinstatement will be carried out immediately after pipeline installation in accordance with design drawings, IS 328:2021, GNI/AD/SP 007, *Guidelines for Managing Openings in Public Roads 2017* (The Purple Book) and to the approval of the local authority and/or private landowners.

During the construction process, there will be a need for localised stockpiling of this soil, soil, tarmac and hardcore in certain areas. The stockpiling of the soil component allows for the efficient reuse of excavated material on site, rather than importing fill material from off-site. This approach reduces the environmental impact of the construction project by minimising the amount of waste that needs to be disposed of and reducing the need for transportation of materials. It is anticipated that approximately 50% of excavated soil will be reinstated as backfill. However, due to the site location and the nature of the anticipated excavations, it will not be possible to reuse all of the excavated material on-site. For example, when the excavations involve the removal of tarmac and hardcore, which are typically not suitable for reuse, this excavated material will need to be exported off site as waste.

7.3.1.2 Storage of Plant Equipment, Machinery, Oils and Fuels

All equipment used on the site will be stored within the works area or temporary construction compounds. It is envisaged that there will be 1 no. temporary storage area at the BV extension / tie-in location and 1 no. temporary storage area at the Newtown AGI location.

The storage of oils and fuels is also critical to prevent any potential environmental contamination. Therefore, oils and fuels used in the construction process will not be stored in the works area on the site but instead will be stored in an appropriately bunded area within the temporary storage compounds. A bunded area is a secondary containment system that is designed to contain spills and leaks, preventing them from spreading into the surrounding environment. This will ensure that any potential leaks or spills are contained and can be safely and efficiently cleaned up, minimising the risk of harm to the environment.

The key civil engineering works which could have a potential effect on the land and soils environment during construction of the proposed development are summarised below.

- Excavations required for the BV Extension, AGI and installation of the gas transmission pipeline resulting in the excavation quantities are detailed in **Section 7.3.1.1**. There will be topsoil, subsoil, stones, tarmac and hardcore excavated as part of this activity to facilitate the installation of the gas transmission pipeline, and construction of the BV extension and Newtown AGI. The excavation of bedrock is not anticipated;
- There are three potential sheet piling locations, refer to **Figure 7-2**. Two potential piling locations are located on the main gas pipeline route and one is located within the footprint of the BV extension.

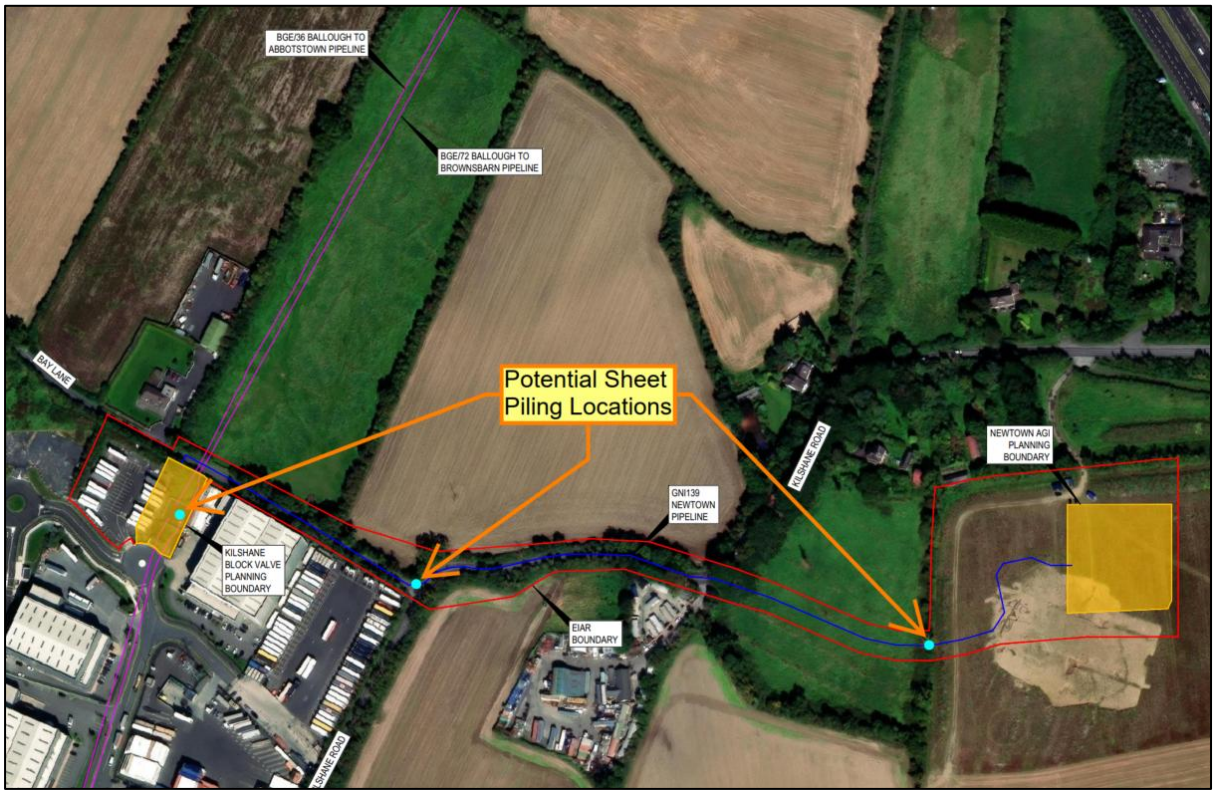

Figure 7-2: Potential Sheet Piling Locations

- Sheet piling will take 2 - 5 days. Ground type, access and construction staff experience will dictate the duration of the works hence the varied forecast duration. Sheet piling will include the following activities:
    - Remove road surface to create suitable strata for piling;
    - Install sheet piles:
        - Use a vibration pile driver to ensure reduced noise pollution is adhered to;
        - A tracked 16 tonne to 32 tonne excavator sized excavator will be used to excavate to formation (base of trench) and create safe access for operators if required / deal with any groundwater if required; and .
        - A trench box may also be used depending on the chosen method by the contractor.

- The BV extension, tie in location and temporary pigging facilities will be located within the existing Kilshane BV site. The proposed BV extension will consist of an area of 22.57m x. 43.31m with a 2.4m high fence;
- The proposed transmission pipeline will be approximately 715m in length and includes 1 drainage ditch crossing to the east of the proposed Newtown AGI location. This drainage ditch crossing will be achieved via an open cut method as set out in Section 6.4.4.4 of Chapter 06 Water of this EIAR;
- The proposed Newtown AGI will be located within the proposed Kilshane Energy Facility in a 63m x 35.85m enclosure within 2.4m high fence;
- Construction activities will necessitate the storage of cement and concrete materials, temporary oils, and fuels. Cement will be stored in the temporary storage compounds or on site. Oils and fuel will be stored in the temporary storage compounds in bunded area;
- All plant, machinery and equipment will be stored on site within the works area or within the temporary construction compound located at the BV extension or the Newtown AGI; and
- The commissioning phase of the development will involve hydrostatically testing the pipeline. This will involve filling the entire transmission pipeline with clean potable water, requiring approximately 76,000 litres that will be pressurised to identify any leak. The required water will be sourced from an existing potable mains supply point. Once hydrostatic testing is complete, the c. 76,000 litres of water (volume based on pipeline length) used for this purpose will need to be disposed of appropriately, via discharge to ground or alternatively, tankered away. There are no chemical additives to the hydrostatic testing water.

7.3.2 Operational Phase Activities

Operational phase activities are summarised below:

7.3.2.1 Changes to Hardstanding

The underground gas transmission pipeline once completed will not alter the extent of the existing hardstanding area (all trenches established across roads to facilitate the proposed pipeline will be fully reinstated). There will be new hardstanding at the Newtown AGI and BV extension sites.

7.3.2.2 Potable Water, Foul Water and Surface Water

The proposed development does not require any regular potable water demands, or wastewater demand.

The new hardstanding at the Newtown AGI and BV extension sites, will result in increased surface water generation. Surface water at the BV extension site will drain via soakaways to ground. Surface water drainage from the AGI site will be connected to the proposed surface water infrastructure at the proposed Kilshane Energy Facility with consent from the developer.

Site drainage will be installed as per Drawing No.1395.03-DG-0004 contained in the drawing pack. There are no new connections for potable water or foul water proposed.

7.3.2.3 Storage of hazardous Material

There will be no bulk storage of any chemicals during the operational phase of this development.

7.4 Baseline Environment

7.4.1 Site Location

The proposed development is located in the townland of Kilshane on lands at Kilshane Road (L3120) and Bay Lane, Kilshane, Finglas, Dublin 11.. The area of the proposed development within the designated boundary extends to c. 3.14Ha.

The proposed development is located northwest of the M50 motorway and on the western side of the N2 national road and the R135 regional road. The surrounding area is characterised by agricultural fields and industrial uses such as logistics, power stations, and additional business park operations. Roadstone Huntstown Quarry and Huntstown Power Station are located on lands to the south of the proposed development and the site is located to the east and north of Ballycoolin and Rosemount Industrial Estates. Refer to **Figure 7-3** for site location.

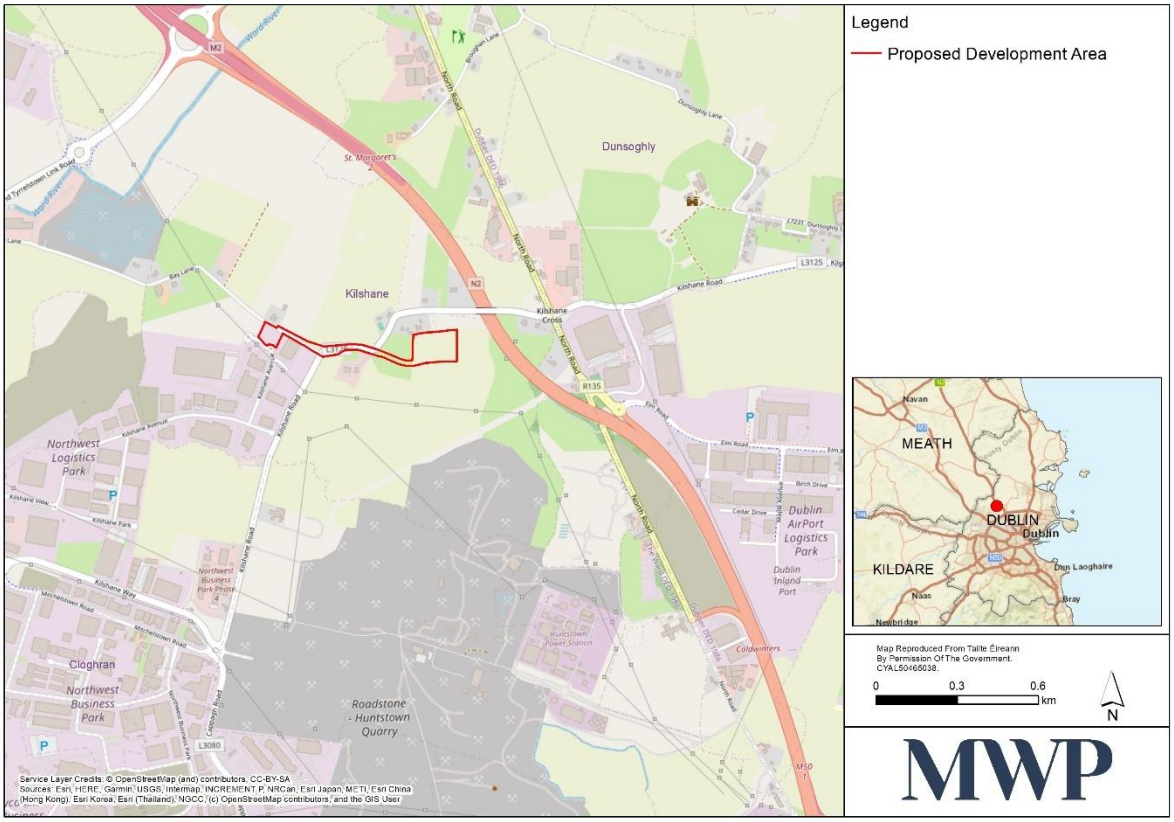

Figure 7-3: Site Location

7.4.2 Existing Land Use

Part of the proposed BV extension site is currently in use by Gas Networks Ireland (GNI) as a BV station. To the north, there is a fence marking the boundary of the site with Bay Lane. To the west, there is a yard where lorries are currently stored. To the south lies an access road to the industrial estate and site and to the east lies a warehouse.

The majority of the proposed gas pipeline route is in use as a public road after exiting the BV area. The roads include Bay Lane and Kilshane Road (L3120). After leaving Kilshane road the pipeline will cross the hedgerow and enter into the customer site which is currently greenfield site where it will be laid using open-cut method. It will

traverse directly across this field to where it will meet a watercourse crossing. This watercourse is a man-made drainage ditch. Upon crossing this and entering the second greenfield site, the pipeline follows the route of the customers proposed site road to the Newtown AGI site

The entire Newtown AGI site is currently in use for arable agricultural activities. Access / entrance to the site is found in the north portion of the site via a driveway off Kilshane road. To the northwest of the site there are building structures characterised by a residential and associated agricultural functions. The south of the site is bounded by agricultural land, further south is the Huntstown Quarry and Huntstown Powerplant. The site is bounded to the east by agricultural land and further to the east runs N2 national carriageway. The site is bounded to the north by agricultural land and further to the north runs the Kilshane Road. Agricultural land is located to the west.

Land use in the vicinity of the overall site is characterised by a mixture of primarily agricultural use and an industrial function. Land to the north and north east is dominated by farmland and scattered residential dwellings with an associated agricultural function with the exception of Bay Lane Quarry. Dublin Airport is located approximately 3.1km to the north east. Huntstown Quarry and adjacent Huntstown Powerplant are located a short distance to the south, while Dublin Airport Logistics Park and Northwest Business Park are found to the east and west of the site, respectively. Further south are more greenfield lands and the M50 motorway. According to the EPA (2024), there are 3 no. licensed activities currently active in the vicinity of the proposed development site (between 550 and 1km to the south of the southern boundary of the development site). These are:

- Energia Power Limited (P0077-02);
- Huntstown Power Company (P0483-04); and
- Huntstown Bioenergy Limited (P0993-02).

Historical Ordnance Survey Ireland (OSI) maps were examined for the purpose of this assessment. OSI maps were available from 1830 (the historic 6" maps) and 1900 from the historic 25" maps. The historic maps indicate that the proposed Newtown AGI site has always been a greenfield site. No evidence was noted to indicate that commercial or industrial processes have been undertaken at this location. The proposed Newtown AGI site appears to be used for agricultural purposes, possibly grazing, cropping, storing cattle. According to historical maps and aerial photographs this land use has not changed on the proposed Newtown AGI site from 1830 to present. However, the associated building structures currently occupying the northwest corner of the site are absent from the 1830 and 1900 historical maps, suggesting these structures were established sometimes between then and when they are first displayed in the 1995 aerial photograph. The site of the proposed Kilshane Power Station including the proposed AGI site was subject to archaeological assessment and excavation on two occasions in the first half of 2022 as part of the proposed Kilshane Power Station EIAR. Further detail is provided in Chapter 11 Archaeological, Architectural and Cultural Heritage of this EIAR.

These maps also show that the sections of Bay Lane and Kilshane Road where the pipeline is proposed, have been present at this site since 1837. Part of the proposed pipeline route crosses an agricultural area where Kilshane House used to be located according to the Historic OSI Maps. From the historic 25" maps it appears that Kilshane House was moved to the east and is depicted on a plot adjacent to the junction with a turnpike road connecting Finglas to Ashbourne. The area of the former Kilshane House is now shown with only two rectangular buildings and what appears to be the foundations of the former house. This suggests the house was perhaps destroyed and moved to the east of the site. It appears from Historic OSI maps that the site of the proposed BV extension was a greenfield site bounded by Bay Lane to the north until 1995. Imagery from 1999-2003 period shows what appears to be Kilshane BV being constructed. Between the 2005 and 2012 period the industrial estate surrounding the Kilshane BV site was constructed.

The land use at the site has been mapped as shown in **Figure 7-4**. The land cover mapping was created using information from CORINE Land Cover 2018 available on the EPA online mapping system.

The following land uses have been identified within and around the site:

- 231 – Pastures;
- 211 - Non-irrigated arable land;
- 121 - Industrial or Commercial units;
- 122 - Road and rail network;
- 242- Complex cultivation patterns;

The proposed development site is dominated by land mapped as *Industrial and commercial units (proposed BV extension)*, with the proposed gas pipeline route and Newtown AGI sites mapped as *Non-irrigated arable land.*

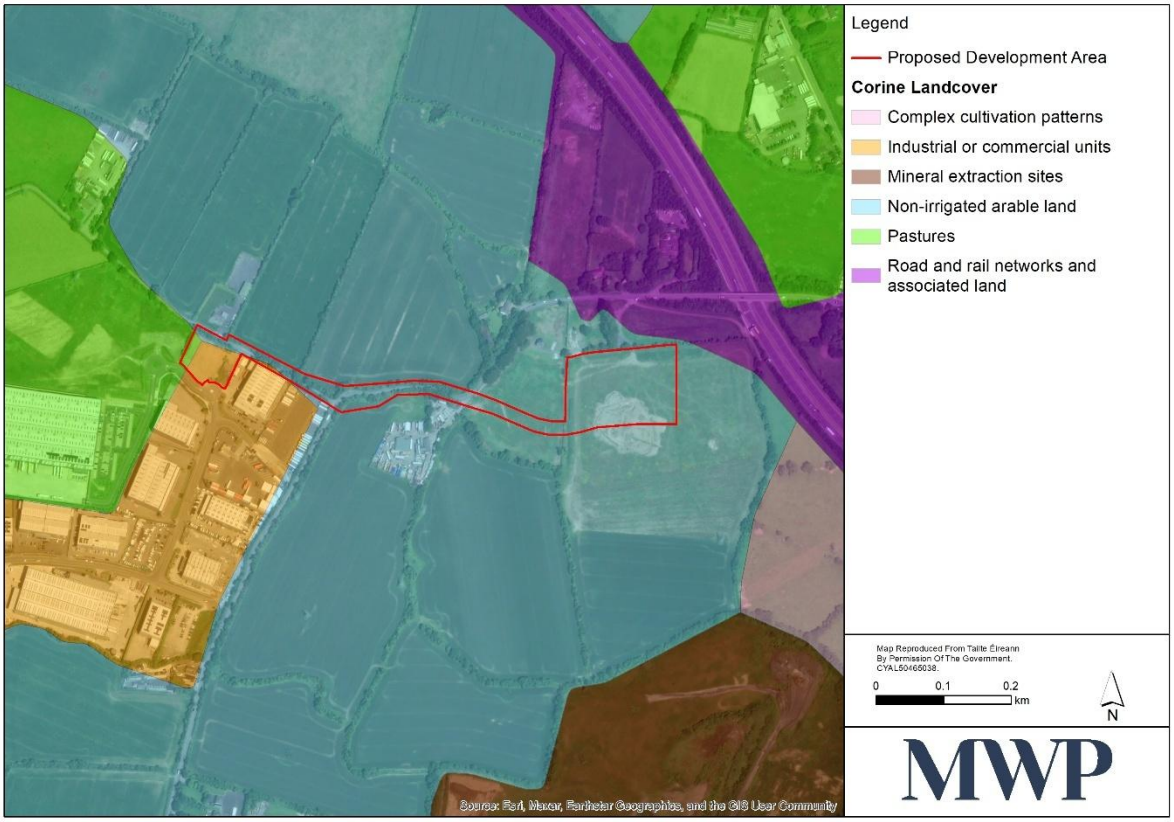

Figure 7-4: CORINE Land Use Map

7.4.3 Site Investigation Works

A ground investigation report was undertaken by Causeway Geotech at the BV extension site. Details of site investigation at the BV extension site are included in **Appendix 7-1** of this **EIAR**.

The ground investigation was undertaken between 01/04/2025 and 28/04/2025, comprised:

- Three machine dug trial pits;
- Five slit trenches by a combination of hand digging and mechanical excavation;

- Three plate load tests;
- GPS survey of all completed locations.

A summary of the ground types encountered in the exploratory holes is listed below, in approximate stratigraphic order:

- Topsoil: encountered typically in thickness of between 200mm and 400mm across the site.
- Made Ground (fill): reworked sandy gravelly clay fill with fragments of concrete and brick etc extending to a maximum depth of 2.65m.
- Glacial Till: sandy gravelly clay, frequently with low cobble content, typically stiff in upper horizons, becoming very stiff with increasing depth.

Further details of the ground types encountered during excavations, including their specific depths and descriptions, can be found on the individual exploratory hole logs accompanying the ground investigation report.

7.4.4 Topography

The main topographical features within the study relative to the pipeline are the L3120 Kilshane Road; Bay Lane, two agricultural fields on the customers site (proposed Kilshane Power Station site); and the temporary carpark next to existing Kilshane BV station. This carpark is raised approximately 5 feet above the current level of Kilshane BV. The topography between Newtown AGI and Kilshane BV is generally flat, with some minor variations in ground level.

A topographic survey of the Newtown AGI site completed for the proposed Kilshane Power Station indicated that the site generally slopes from west to east with a high point of 82.90m OD Malin on the western boundary, and a low of 77.27m OD Malin on the eastern boundary. The topographic survey and OS details also indicate that the boundary hedgerows separating the fields comprising the site contain local ditches which convey surface water flows from rainfall to the Huntstown stream located to the south of the proposed Newtown AGI. There is a drainage ditch located to east and west of the proposed Newtown AGI site. This ditch serves the agricultural fields and does not convey any upstream watercourses.

7.4.5 Bedrock Geology

Inspection of the available GSI (2024) records (Data Sheet 16 and on-line mapping database) shows that the bedrock geology of the proposed development site and the surrounding area is dominated by Calcareous shale and limestone conglomerates referred to as part of the Tober Colleen Formation (Rock Unit code: CDTOBE). Massive unbedded lime mudstone associated with the Waulsortian Limestones Formation (CDWAUL) are found underlying immediately southeast/east of the site. Areas further to the south and east are underlain by the Boston Hill Formation and to the northeast by the Rush Conglomerate Formation. Due to this variability, the GSI (2024) bedrock geology map (100K structural database) indicates a number of faults in the study area, one of which passing/transverse through the site with a north-south orientation (Refer to Figure 7-5 below).

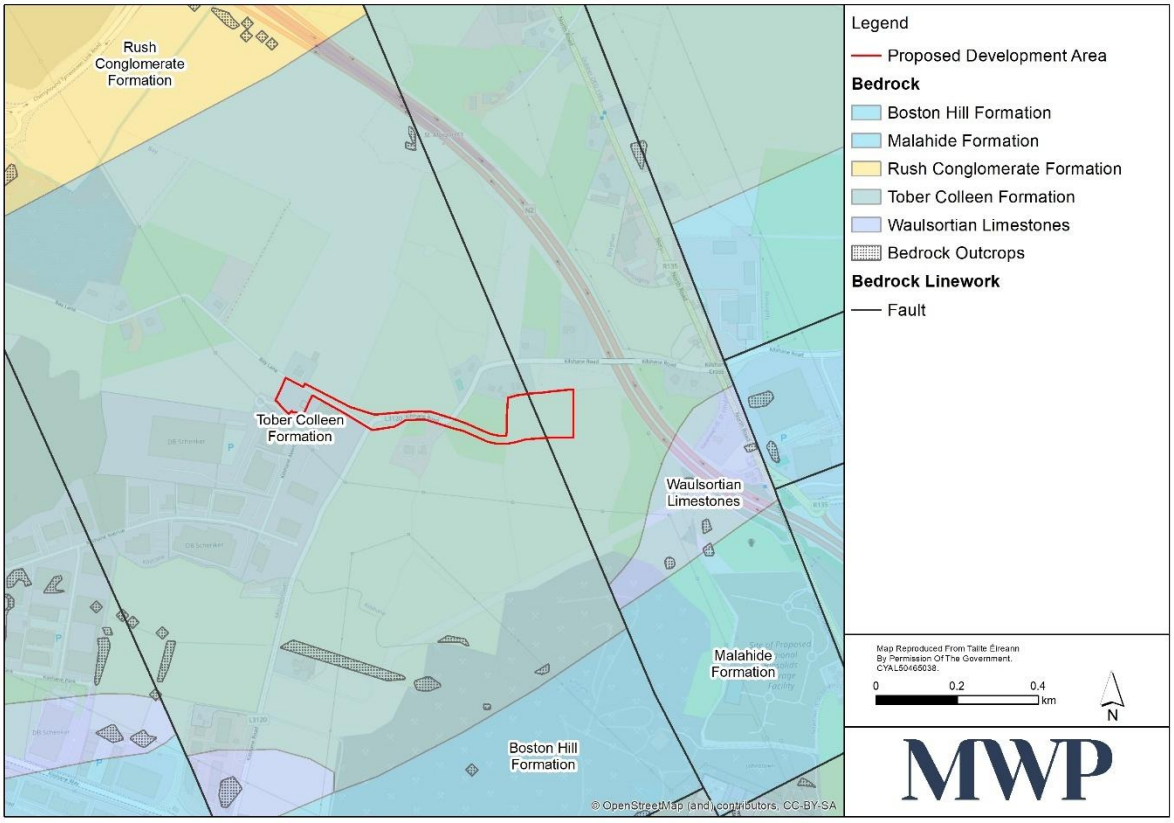

Figure 7-5: Bedrock Geology Map (Source: GSI Maps)

7.4.6 Soil and Subsoil

The GSI/EPA/Teagasc mapping shows that the soil type beneath the proposed development is composed predominantly of *BminDW - Grey Brown Podzolics/Brown Earths Basic* as presented in **Figure 7-6** below. There is also *BminPD - Surface water Gleys/Ground water Gleys Basic* areas in the north section of the BV extension site as well as the north east section of the AGI site.

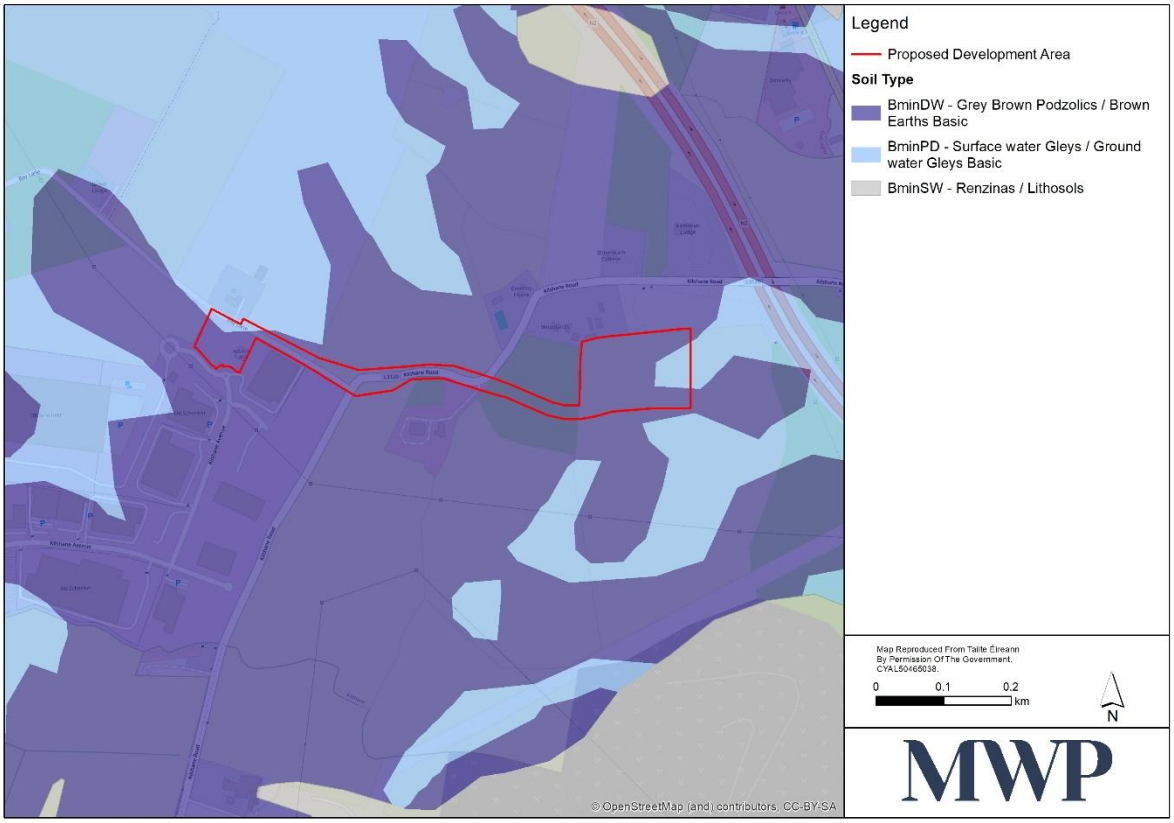

Figure 7-6: Soils Map (Source: GSI/Teagasc/EPA Maps)

The EPA soil mapping indicates that the soils comprise primarily of Carboniferous limestone diamictons (tills). The Quaternary geological period extends from about 1.5 million years ago to the present day and can be sub-divided into the Pleistocene Epoch, which covers the Ice Age period, and which extended up to 10,000 years ago and the Holocene Epoch, which extends from that time to the present day. The GSI/EPA/Teagasc mapping database of the subsoils in the area of the proposed development site indicates one principal soil type, as shown in **Figure 7-7** below. The quaternary subsoil type present across the site is:

- LIMESTONE till Carboniferous (TLs). The north portion of the subject site is composed primarily of TILL derived from limestone. This till is made up of glacial CLAYs which are less permeable than alluvium subsoils; and
- Bedrock OUTCROP or shallow underlying SUBCROP. To the south, west and east of the proposed development site areas are dominated by a combination of bedrock outcrop and shallow buried subcrop according to the GSI mapping.

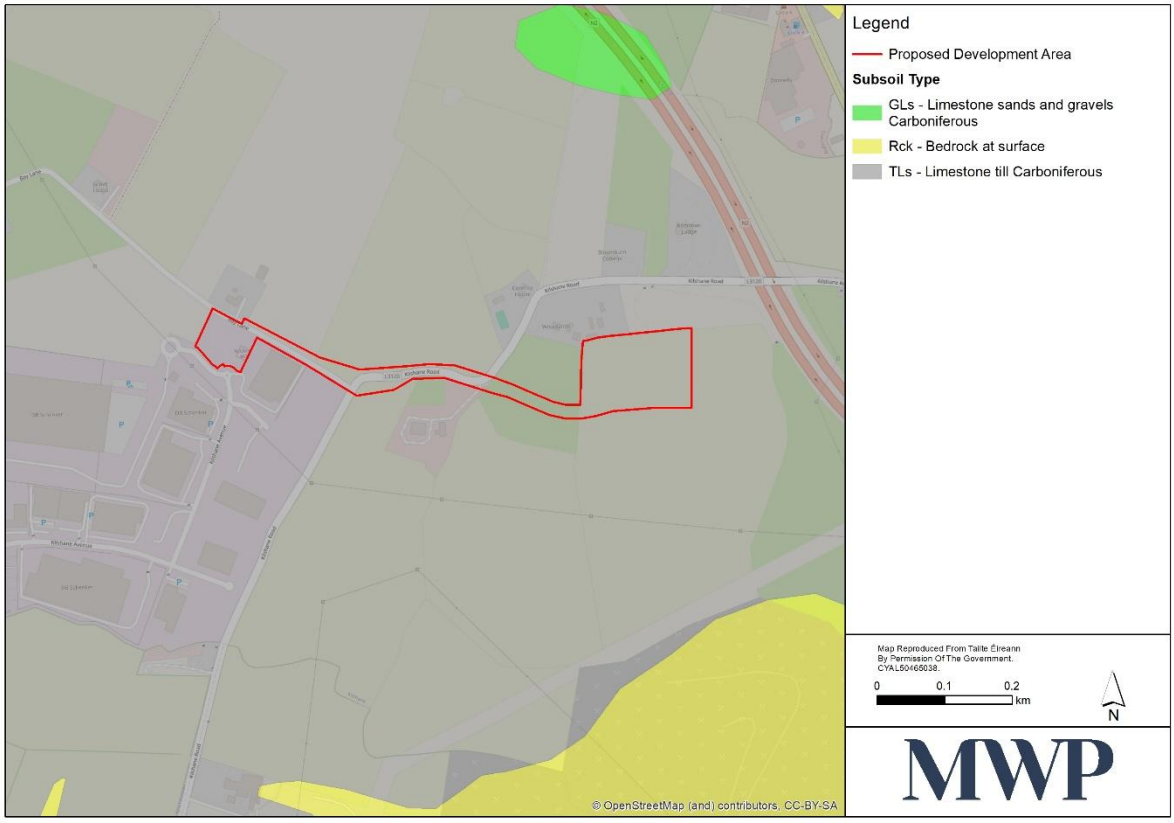

Figure 7-7: Subsoils Map (Source: EPA Maps)

7.4.7 Waste Acceptance Criteria (WAC) Analysis

Pre-construction site investigations have been undertaken at the BV extension site. Details of site investigation at the BV extension site are included in Appendix 7-1 of this EIAR. Three trial pits (TP01 to TP03) were excavated at the site and environmental samples were taken at varying depths.

Rilta suite of analysis was carried out on samples for landfill disposal criteria as well as for hazardous waste classification purposes.

The results indicate that all determinands are present at low concentrations and are well below the relevant hazardous waste classification threshold. Total petroleum hydrocarbons (TPH) and associated aromatic fractions were detected at only minor levels, while heavy metals, PAHs and PCBs were generally below or close to laboratory limits of detection. The soils are therefore considered to be non-hazardous and suitable for disposal under the non-hazardous Waste Acceptance Criteria (WAC). Overall, the analytical results indicate that the soils do not pose a risk of contamination or require special hazardous waste management measures.

It is therefore anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

During the construction phase, further environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste, including potential pollutant concentrations and leachability.

7.4.8 Geological Heritage

The GSI Map Viewer was reviewed to identify sites of geological heritage for the site and surrounding area. The Huntstown Quarry (Site Code DF022) is the closest audited site located approximately 0.3km south of the proposed development site (see **Figure 7-8**).

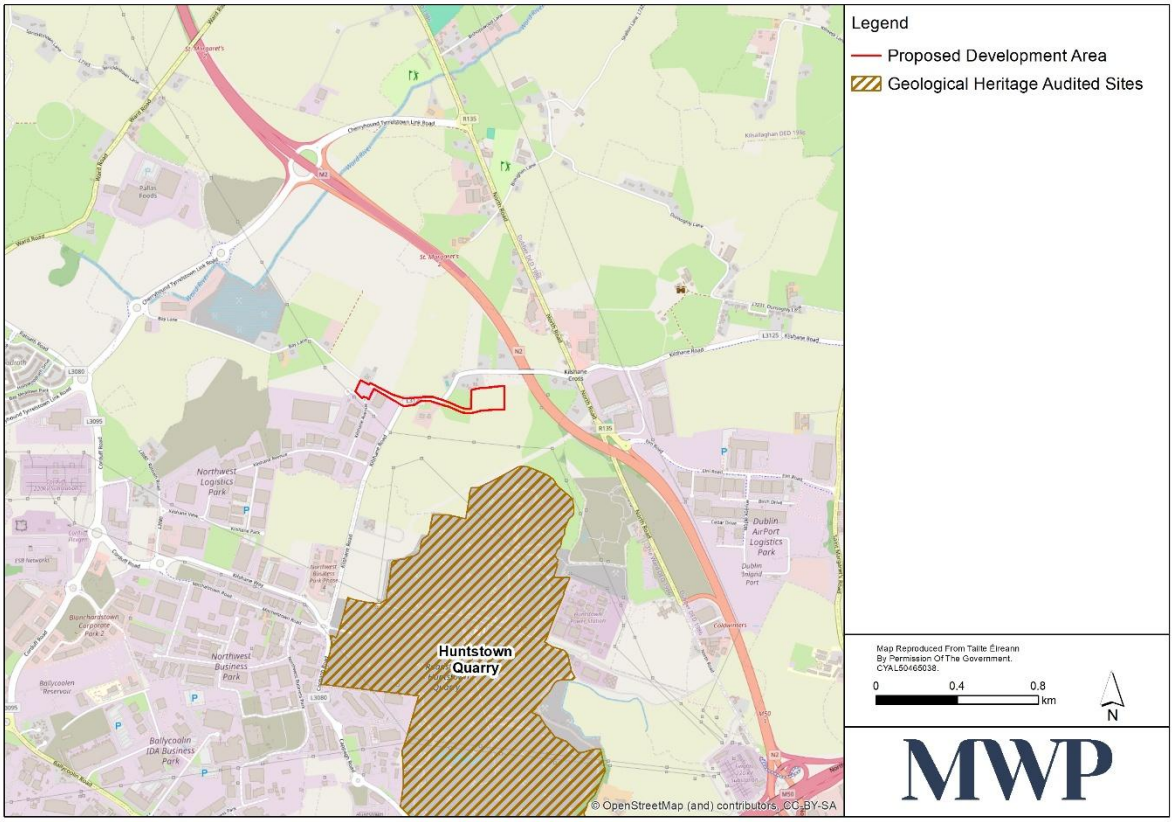

Figure 7-8: Geological Heritage Sites (Source: GSI Maps)

7.4.9 Radon

According to the EPA Mapping (2024), the proposed development location in Kilshane is a Low Radon Area where is it estimated that less than 1% of dwellings within the given 10 km grid square will exceed the Reference Level of 200 Bq/m^3. This is the lowest of the five radon categories which are assessed by the EPA.

7.4.10 Economic Geology

Huntstown quarry (Quarry Number D 006) is located approximately 0.3km south of the proposed Newtown AGI. Huntstown quarry produces aggregates for concrete, hardcore and earthworks/fill. There are no other active quarries or pits located in the vicinity of the proposed development site. Huntstown quarry is a licensed inert waste facility operating under EPA license number W0277-03 issued in 2015.

Recorded mineral locations have the potential to be used for future mineral extraction. According to the GSI-mapping, there are few mineral and non-mineral locations recorded in the area, but none of these are within the proposed development site. The closest is non-metallic mineral – Huntstown limestone quarry which used to produce aggregate and concrete products. See **Figure 7-9** for economic geological sites in the vicinity of the proposed development site.

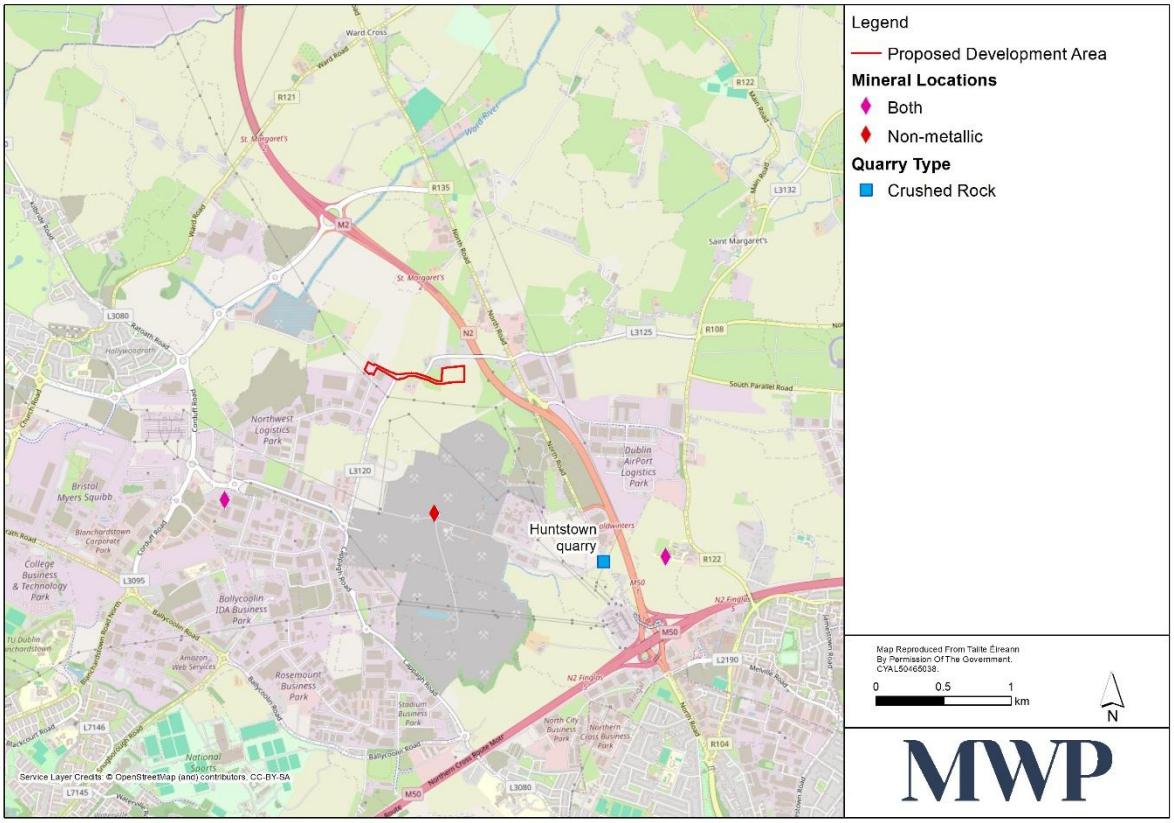

Figure 7-9: Economic Geological Sites in the Kilshane Area (Source: GSI Maps)

7.4.11 Geohazards

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating the slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result. In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff, landslides and falls lead to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities.

Based on the GSI map viewer, the proposed development site is not in an area susceptible to landslides. This is consistent with the topography and the geology across the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics at the Dublin Institute for Advanced Studies (DIAS) has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. However, currently there are five permanent broadband seismic recording stations in Ireland and operated by DIAS. The seismic data from the stations comes into DIAS in real-time and are studied for local and regional events. Records since 1980 show that the nearest seismic activity to the proposed location was in County Wicklow (>1.0 Ml magnitude) due to quarry blasts. There is a very low risk of seismic activity to the proposed development site.

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

7.4.12 Areas of Conservation

According to the NPWS Designations Viewer (2024), there are no Natura 2000 (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) or proposed Natural Heritage Area sites on or in the vicinity of the subject site. The closest NPWS designated areas are as follows (Figures 7-10 and 7-11):

- The Royal Canal (002103) proposed Natural Heritage Area (pNHA) - circa. 4.6km to the south of the site; and
- The Santry Demesne (00178) pNHA – circa 5.9km to the south east of the site.

The proposed development site has an indirect hydrological pathway or connection with the Malahide Estuary SPA/SAC/pNHA through the local drainage network, the Huntstown Stream and the Ward River. The intervening overland hydrological distance between the proposed development site and the Malahide Estuary SAC/SPA is 13.4km (Figure 7-11).

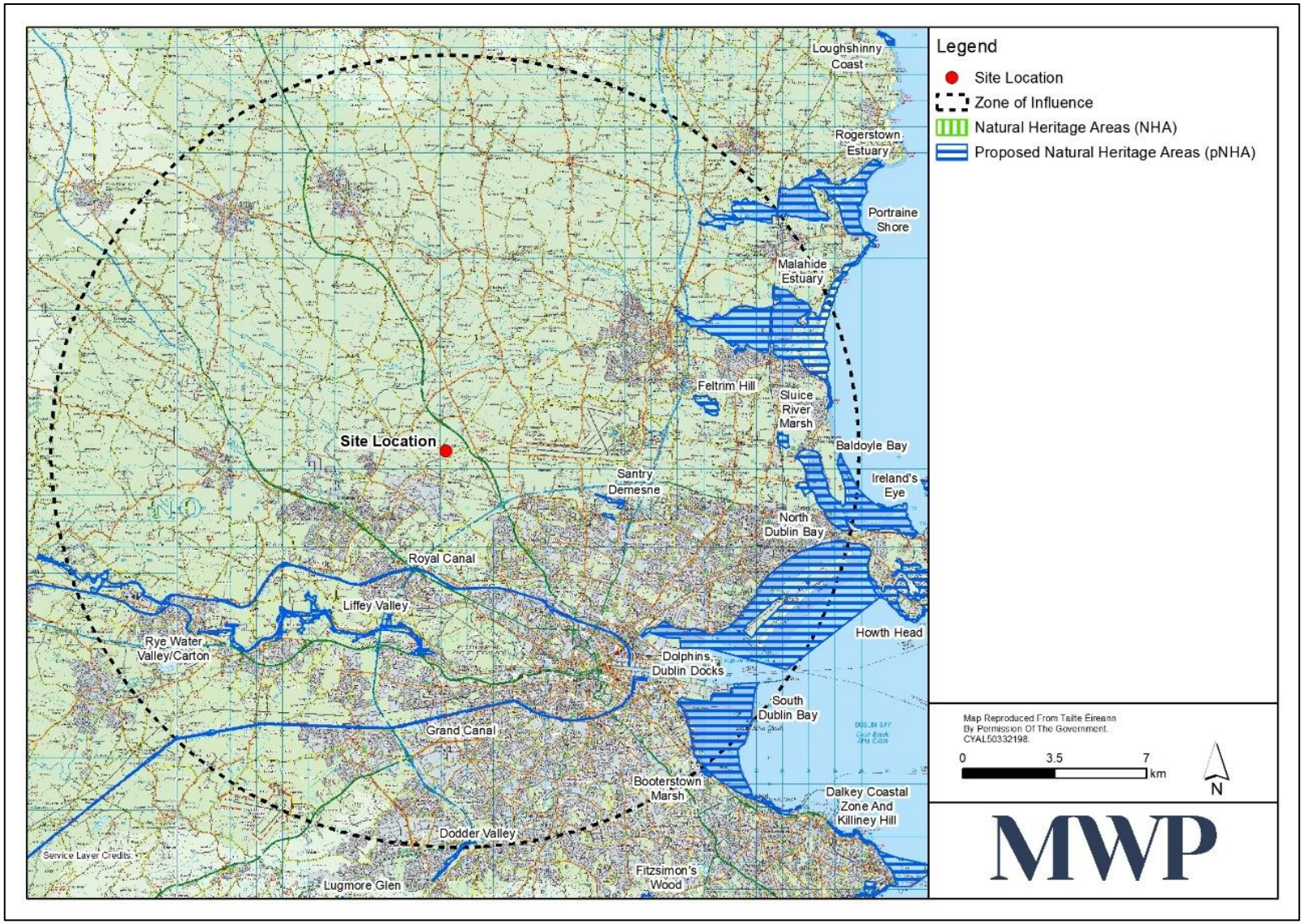

Figure 7-10: Designated NHAs and pNHAs

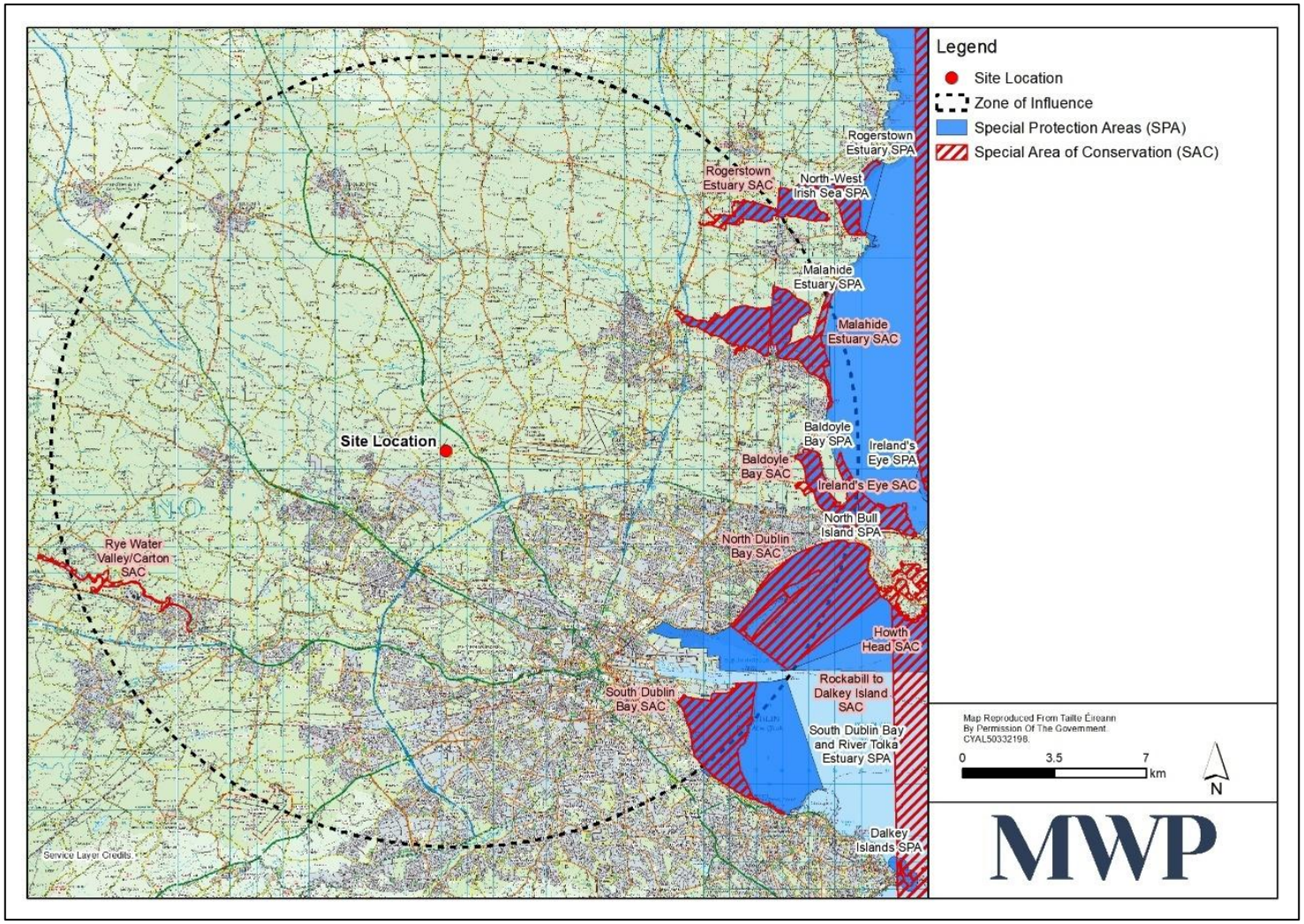

Figure 7-11: Designated Natura 2000 Sites

7.5 Assessment of Effects

An analysis of the potential effects of the proposed development on the land and soils environment during the construction and operation phases is outlined in the sections below. Mitigation measures included as part of this project to address these potential impacts are presented in Section 7.6.

7.5.1 Do-Nothing

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no excavation or construction at this site. There would, therefore, be a neutral effect on the land and soils environment.

7.5.2 Construction Phase

In the absence of mitigation, the following potential effects to land and soil have been considered for the construction phase.

7.5.2.1 Excavations and Import / Export of Infill Materials

Excavations of topsoil, subsoil, stones, tarmac and hardcore will be required for the proposed development site to facilitate the installation of the underground gas transmission pipeline in the form of an open cut trench. For the section of the pipeline routed within the customers' field, the working width of 30m will be fenced off and associated hedges and trees will be removed within the working width as required.

A bedding layer of preapproved inert material will be placed at a minimum depth of 150mm (300mm in rock) and compacted in the trench before laying the 300mm NB steel pipeline. The pipeline will then be surrounded and covered by preapproved material in accordance with the design drawings. Backfill shall be placed in layers of 300mm to accommodate warning tape and to facilitate compaction. Following this, the topsoil is reinstated, contoured, and replanted based on landowner specifications.

It is estimated that approximately 400m^3 of imported stone will be required for the temporary works area. This material will be used to provide a stable working platform, access routes and support areas for construction plant. All stone used for the temporary works will be recovered and recycled following completion of the works. Recovered material will be cleaned, graded and stored for reuse in future construction phases or other approved projects, reducing the requirement for additional imported material and minimising waste sent to disposal.

It is acknowledged that the excavation works will result in the local removal and reinstatement (including infilling) of the 'protective' topsoil and subsoil cover across part of the development area at the site. However, these works are temporary only and there is no significant effect potential for impacts associated with the removal of topsoil and subsoil cover across the site; therefore, no mitigation is required.

The effects of soil stripping and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during construction.

In the absence of mitigation, the effect on the local and regional land and soils environment is likely to be **negative**, **short-term** and **slight**. The effect is considered to be '**slight**' due to the fact that there will not be a change on the land and soils regime on a local or regional scale.

7.5.2.2 Accidental Spills and Leaks

There is potential for the soil to become contaminated with pollutants associated with construction activity. Contaminated water and collected surface water run-off which arises from construction activities and sites can

pose a short-term risk to the underlying soil if contaminated water is allowed percolate into the soil. The potential of contamination is associated with the following sources:

- Suspended solids (muddy water with increased turbidity and a measure of the degree to which the water loses its transparency due to the presence of suspended particulates) – arising from potential dewatering, excavation and ground disturbance;
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or stored fuels, oils, and materials.
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

There is also the potential risk of unintentional discharge form construction traffic which could have negative impacts on both soil and water. Construction materials often involve the use of chemicals, such as paints, adhesives, solvents and pesticides, which can also pose a risk of contamination if not handled and disposed of properly. If a spill occurs, contaminated water and collected surface water run-off which arises from construction sites can pose a short-term risk to the underlying soil. These chemicals can seep into the soil or be carried by rainwater or other runoff, ultimately contaminating groundwater. It is necessary for the measures set out in Section 7.6.1 to be implemented to reduce and prevent accidental discharges from occurring during construction, including the implementation of effective containment and monitoring procedures.

Accidental discharges can also occur from welfare facilities during construction activities. Wastewater can contain high levels of bacteria, chemicals and organic matter, which could contaminate nearby soil if discharged incorrectly. The establishment and use of welfare facilities and use of sealed containment, ensures that there are no potential significant impacts; therefore, no additional mitigation is required.

In the absence of mitigation measures the potential impacts during the construction phase on land and soils are negative, slight and temporary.

7.5.2.3 Loss of Agricultural Land

There will be local loss of agricultural soil during the construction phase however the area of development is small in the context of the overall agricultural land available in the region and the area is zoned for HI – Heavy Industry land use according to the Fingal Development Plan. Within the overall context of Ireland's available farmland, the loss is negligible. Therefore, there are no potential impacts of loss of agricultural land on land and soils during the construction phase and no mitigation measures are required.

7.5.3 Operational Phase

Once operational and reinstatement has occurred, the underground gas transmission pipeline will not alter the existing hardstanding areas that it will run beneath and will not result in any additional hardstanding.

There will be additional localised areas of hardstanding at the Newtown AGI and BV extension sites.

There is limited potential for leaks or spills of petroleum hydrocarbons from vehicles during site maintenance activities during the operation of the development. Unmitigated leaks or spills may lead to contamination of soil. Soils that are contaminated by petroleum hydrocarbons can affect soil health. However, it is noted that during the operational phase any accidental discharge will more likely impact stormwater drainage due to the hardstand and drainage infrastructure proposed and any releases to drainage will be mitigated through the provision of petrol interceptors at the AGI.

Therefore, there are no potential impacts during the operational phase on land and soils as results of the proposed development.

7.5.4 Cumulative Impacts and Effects

The proposed development, in combination with all other developments in the area that consist primarily of a concentration of existing and emerging commercial, industrial and infrastructural development represents a continuation and consolidation of the established land-use patterns of the area as envisioned by the zoning of the Fingal Development Plan.

Section 1.6 of EIAR Chapter 01 Introduction identifies the developments considered in the cumulative assessment of the project. Those projects deemed directly relevant and requiring closer examination are detailed in Table 1-3 of the same chapter.

7.5.4.1 Construction Phase

Given the uncertainty associated with project sequencing, this EIAR assumes that all works, including the 220 kV Transmission Line connection, the proposed gas pipeline, the Kilshane Power Station, and the 220 kV GIS Substation and AGI, will be constructed concurrently.

The construction activity related to the installation of the BV extension, gas pipeline and Newtown AGI (including excavation, use of heavy machinery, stockpiling, etc.), will potentially give rise to effects on land and soil resources. These effects will however be temporary in duration and not significant / imperceptible with the implementation of the proposed mitigation detailed in Section 7.6.1.

Nonetheless, in comparison to the proposed Kilshane Energy Facility, the proposed development's construction stage effects will be localised, temporary in nature, and will only result in a very minor increase in the intensity of construction related effects should these projects be constructed simultaneously.

In respect of the potential effects of the Kilshane Energy Facility project and proposed 220kV Gas Insulated Switchgear (GIS) Substation and Underground 220kV Transmission Line Connection to the Existing Cruiserath 220kv, they have been subject to the EIA process, which includes appropriate mitigation measures to minimise environmental effects. The proposed development will not increase the construction phase predicted effects of the Kilshane Energy Facility or the proposed 220kV Gas Insulated Switchgear (GIS) Substation and Underground 220kV Transmission Line Connection to the Existing Cruiserath 220kv.

Therefore, the construction phase cumulative effect of the proposed development in combination with the related Kilshane Energy Facility on land and soil effects is considered to be ***negative***, ***imperceptible*** and ***temporary*** (the construction phase of the proposed development will be no more than 10 months).

7.5.4.2 Operational Phase

The BV extension, the Newtown AGI and their related infrastructure (including fencing) will be the only above ground structures during the operational phase.

As the BV extension will be located within the existing Kilshane BV site, the pipeline will be underground and the AGI will be constructed within the Kilshane Energy Facility, no operational cumulative land and soils effects will be generated concerning related permitted developments and other existing and permitted developments within the study area.

7.6 Mitigation and Monitoring Measures

These specific measures will provide protection to the receiving land and soils environments during the construction and operational phase. These are work practices that are industry best practice measures that will be applied during the construction and operational phases, and they are in no way included to avoid or reduce potential harmful effects to Natura 2000 sites.

7.6.1 Mitigation Measures

7.6.1.1 Construction Phase

An **Outline Construction Environmental Management Plan** (**OCEMP**) has been prepared and is included in **Volume III**, **Appendix 2-1** of this **EIAR**. The OCEMP is a 'live' document and will be updated by the Appointed Contractor.

The **CEMP** will set out the Contractor's overall management and administration of the construction project. The **CEMP** will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The **CEMP** sets out the proposed procedures and operations to be utilised on the proposed construction site. All mitigation measures outlined here, and within the **CEMP** will be implemented during the construction phase, as well as any additional measures required pursuant to consent conditions which may be imposed.

Construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741)
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005); and
- Guidelines for the crossing of watercourses during the construction of national road schemes (National Roads Authority; 2008).

During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as:

- Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events; and
- Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

7.6.1.1.1 *Management of Excavations, Stockpiled Materials, and Suspended Solids*

In order to manage the potential effects associated with the establishment and operation of the temporary construction compounds, and construction works including excavation and stockpiled materials, the following mitigation measures will be implemented during the construction phase.

- Prior to commencement of construction, the main contractor will prepare and adhere to a method statement indicating the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works;
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust;
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only;
- A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site;
- Aggregate hardstand will be established at the site entrance points from the construction site boundary extending for at least 10 m;
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection;
- Construction materials, including aggregates etc. shall be kept within designated storage areas as specified in the Contractor's CEMP, ensuring they are kept clear of surface water drains to prevent any obstruction to floodwater flow during heavy rainfall events;
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination;
- The topsoil will be stored separately to the subsoil for future reinstatement. Topsoil will be kept free from disturbance for the duration of construction to reduce risk of physical damage and compaction;
- Silt fences will be installed around stockpiles to limit movement of entrained sediment in surface water runoff. The use of bunds around earthworks and mounds will prevent egress of water from the works;
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site;
- Excavations will remain open for as little time as possible before placement of fill and reinstatement. This will help to minimise the potential for water ingress into excavations; and
- Reinstatement will be carried out as soon as practicable after pipeline installation.

The procedure for crossing the drainage ditch at the proposed Kilshane Energy Facility will include the following:

- The pipeline will cross the drainage ditch from the west side of the proposed Newtown AGI location;
- The open cut crossing will be carried out as quickly as possible (typically 3-4 days) to minimise the potential environmental impact;
- At the beginning of construction, any trees or hedges along the water crossing banks will be removed along with the adjacent topsoil (refer to Chapter 05 Biodiversity and Appendix 5-5 Arboriculture Impact

Assessment for further details of the hedges and trees to be removed as part of the proposed development). A bridge crossing will then be installed to allow for an uninterrupted flow;

- The watercourse will be left uninterrupted for a few days (estimated 2-3 days) before the pipeline installation. The banks will be graded back to bed level. Topsoil will be stored separately to the subsoil;
- Flume pipes sized to ensure they are capable of accommodating flood flow water volumes are inserted into the watercourse, ensuring they extend past the area of the proposed trench and running track. The flume pipes are surrounded with sandbags to create a seal. Straw bales are placed downstream to capture sediments as required.
- The pipe trench is then excavated below the flume pipe. This excavated material is stored separately to the topsoil and subsoil and only this material will be used to backfill the watercourse trench. If dewatering is required, particular care will be taken to ensure appropriate sediment control is taken.
- The pipeline is installed in the trench. For water crossings a distance of 1600mm will be maintained from the top of the pipeline to the bottom of the true cleaned stream. A precast marker slab will be laid 300mm above the pipeline.
- The trench is backfilled such that it is level with the rest of the watercourse bed. The watercourse banks are then reformed to their original profile.
- The dams and flume are removed, and the watercourse is allowed to flow normally for the remainder of construction.
- When the running track is no longer required the bridge crossing is removed.
- Where appropriate the riverbanks are reinstated with native plants and fencing is erected as agreed with the landowner.
- The pipeline will be installed in the trench. For water crossings, a distance of 1600mm will be maintained from the top of the pipeline to the bottom of the true cleaned stream. A precast marker slab will be laid 300mm above the pipeline;
- The trench will then backfilled such that it is level with the rest of the watercourse bed. The watercourse banks are then reformed to their original profile;
- The dams and flume will be removed, and the watercourse is allowed to flow normally for the remainder of construction;
- When the running track is no longer required the bridge crossing will be removed; and
- Where appropriate the banks are reinstated with native plants and fencing is erected as agreed with the landowner.

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

Before laying the pipeline, suitable fill material will be required to provide a suitable bedding layer that will be placed at a minimum depth of 150mm (300mm in rock) and compacted in the trench. The pipeline will then be surrounded and covered by preapproved material in accordance with the design drawings. Backfill shall be placed

in layers of 300mm to accommodate warning tape and to facilitate compaction. Fill and aggregate that may be required for the proposed development will be sourced from reputable suppliers. All suppliers will be vetted for:

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

If any waste soil requires removal from site, it should be classified by an experienced and qualified environmental professional to ensure that the waste soil is correctly classified for transportation and recovery/disposal offsite.

7.6.1.1.2 *Management of Hydrocarbons, Construction Chemicals and Wastewater*

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting impact to land and soils systems:

- All plant and machinery will be regularly maintained and serviced to minimise the risk of release of hydrocarbons. This will only be undertaken by qualified personnel;
- Designation of bunded maintenance and refuelling areas on the Site;
- Provision of spill kit facilities across the site strategically located in high risk areas;
- Where mobile fuel bowsers are used, the following measures will be taken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - All bowsers to carry a spill kit and operatives must have spill response training;
    - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be temporarily diverted for collection and safe disposal;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling and maintenance of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which

will be away from surface water drains – a minimum 50 buffer zone will be adhered to. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "*Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors*" (CIRIA 532, 2001) will be complied with.

Any ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash water from cleaning ready-mix concrete wagons and mixers will be contaminated. Wagons and mixers must be washed off-site or in a bunded, impermeable designated washout area. Washout to be removed off site and disposed of appropriately at a licenced facility or reused for concrete creation. Washout area is to be located as far away from the watercourse as is practicably possible.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will be contained within the portable toilets and collected by a licensed waste sewerage contractor.

7.6.1.2 Operational Phase

There will be no requirements for mitigations against increased run-off and sediment loading post construction phase of the proposed development as the underground gas transmission pipeline will not alter the existing hardstanding areas (all trenches established across roads to facilitate the proposed pipeline will be fully reinstated). There will be new hardstanding at the Newtown AGI and BV extension sites.

During operation, there will be no requirement for bulk storage of petroleum products. Due to the nature of the proposed development in operation there is no risk of potential leaks and spillages of fuel and oil, therefore no mitigation is required for the operational phase.

7.6.2 Monitoring Measures

7.6.2.1 Construction Phase

During construction phase, the following monitoring measures will be carried out:

- Excavated soil during construction may contain contaminants or pollutants that could pose a risk to the environment if not managed properly. Soil sampling involves collecting representative samples of the excavated soil and analysing them to determine their composition and potential contaminants to confirm disposal options. All excavated materials will be visually inspected by suitably qualified persons assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor; and
- Construction sites involve numerous activities that can impact the environment, from pouring concrete to refuelling vehicles and equipment. Regular inspections of these activities ensure that mitigation measures are implemented to environmental effects.

7.6.2.2 Operational Phase

No monitoring measures will be required during operational phase.

7.7 Residual Effects

The residual effects section outlines the degree of environmental change that will occur after the proposed mitigation measures have taken effect. Refer to Table 7-1 for the residual effects of the proposed development on the land and soils environment.

Table 7-1 Residual Effects

IMPACT (PRE-MITIGATION)	MITIGATION MEASURES	RESIDUAL EFFECT (POST-MITIGATION)				
		QUALITY OF EFFECT	SIGNIFICANCE	DURATION	OTHER RELEVANT CRITERIA	LIKELIHOOD
CONSTRUCTION						
Excavations and import / export of infill materials	Refer to Section 7.6.1.1	Neutral	Imperceptible	Temporary	Direct	Unlikely
Accidental Spills and Leaks	Refer to Section 7.6.1.1	Negative	Imperceptible	Temporary	Direct	Unlikely

7.8 References

CIRIA (2001) *Control of water pollution from construction sites: guidance for consultants and contractors.* London: CIRIA.

CIRIA (2005) *Environmental good practice on site (C650).* London: CIRIA.

CIRIA (2007) *The SUDS manual (C697).* London: CIRIA.

Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (2000). *Official Journal of the European Communities,* L327/1.

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (2014). *Official Journal of the European Union,* L124/1.

Environmental Protection Agency (EPA) (2022) *Guidelines on the information to be contained in environmental impact assessment reports.* Johnstown Castle, Wexford: EPA.

Environmental Protection Agency (EPA) (n.d.) *EPA map viewer.* Available at: https://gis.epa.ie/EPAMaps/ (Accessed: 8 September 2025).

Fingal County Council (2022) *Fingal County Development Plan 2023–2029.* Swords: Fingal County Council.

Geological Survey Ireland (n.d.) *GSI map viewer.* Available at: https://www.gsi.ie (Accessed: 8 September 2025).

Institute of Geologists of Ireland (2013) *Guidelines for the preparation of soils, geology and hydrogeology chapters of environmental impact statements.* Dublin: IGI.

National Parks and Wildlife Service (NPWS) (n.d.) *Protected site register.* Available at: https://www.npws.ie/protected-sites (Accessed: 8 September 2025).

Ordnance Survey Ireland (2024) *GeoHive online mapping.* Available at: https://www.geohive.ie (Accessed: 8 September 2025).

Teagasc (n.d.) *Teagasc soils map viewer.* Available at: http://gis.teagasc.ie/soils/map.php (Accessed: 8 September 2025).

Transport Infrastructure Ireland (TII) (2009) *Guidelines on procedures for assessment and treatment of geology, hydrology and hydrogeology for national road schemes.* Dublin: TII.