



OCSC

O'CONNOR • SUTTON • CRONIN
MULTIDISCIPLINARY CONSULTING ENGINEERS

W383: SOUTH-NORTH ACCESS ROAD

EIA SCREENING ASSESSMENT

**For
Kilkenny County Council**

9 September 2024

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1 INTRODUCTION

1.1 PROJECT CONTRACTUAL BASIS & PARTIES INVOLVED

This report has been prepared by O'Connor Sutton Cronin & Associates Ltd. (OCSC) at the request of their Client, Kilkenny County Council, for the proposed new link road between the Clover Meadows and Abbeygate housing developments and a car park in Ferrybank, County Kilkenny. Proposed works include the construction of a carriageway with footpaths, a cycle lane, a verge, a car park and an associated drainage system.

The purpose of this report is to determine whether the project requires the preparation of an Environmental Impact Assessment Report (EIAR). This report documents the screening completed to provide a summarised overview of the potential impacts on the receiving environment whilst taking cognisance of the relevant statutory requirements. The Report is prepared in the context of an application under Part 8 of the Planning & Development Regulations 2001 (as amended).

A Stage 1 Screening for Appropriate Assessment has also been prepared. A Stage 1 Screening exercise assesses the likely significant effects of the development on Natura 2000 sites within the zone of influence of the proposed project. It concluded that, in the absence of mitigation, the proposed works are not likely to create significant impacts on any Natura 2000 sites within the zone of influence. Therefore, it has been screened out for a Stage Two Appropriate Assessment.

1.2 STUDY AREA

The site is located at Rathculliheen, Co. Kilkenny, just north of the border with Co. Waterford. The road is designed to connect the northern and southern outer suburbs of Ferrybank and the car park is designed to cater for greenway users. The site location is shown in Figure 1.1.

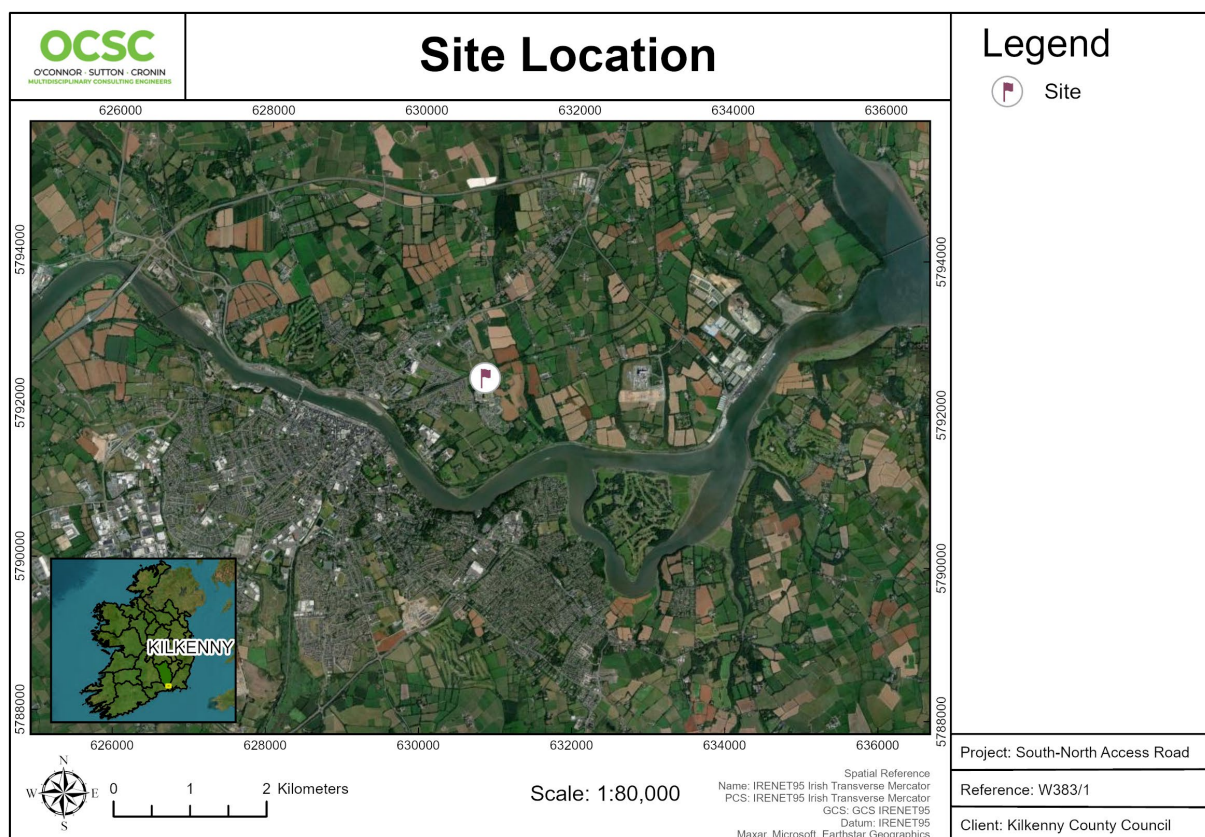


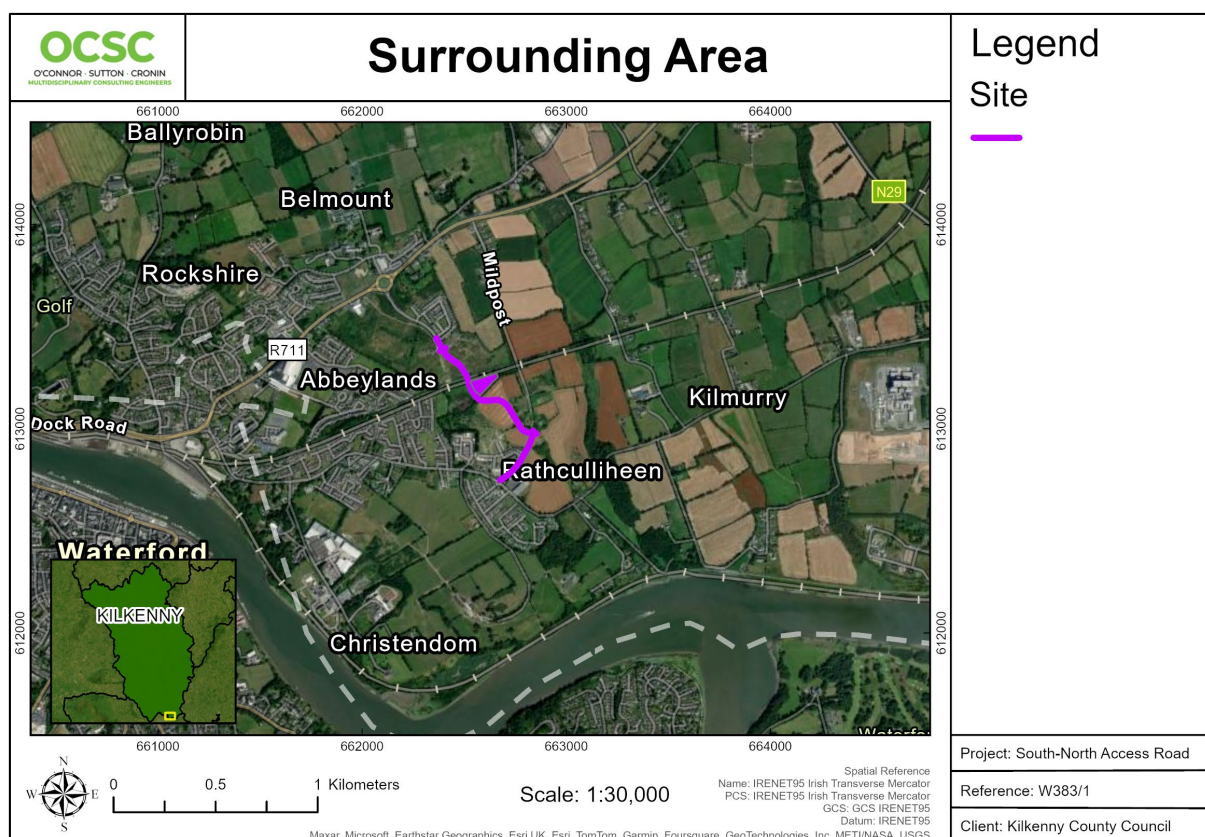
Figure 1.1: Regional Site Location (Source: OCSC, 2024)

1.3 SURROUNDING LAND USE

The area surrounding the site consists of vacant land in scrub, agricultural, residential, retail, commercial and industrial land uses and a disused rail line as shown in Figure 1.2. The site is bounded by agricultural land and vacant land in scrub to the east and west. Clover Meadow housing estate borders the site to the north and Abbeygate housing estate borders the site to the west. Bordering Abbeygate housing estate is Abbeylands Business Park, south/west of the site and an auto repair shop, retail units and a sports facility, south of the site. Further north of the site are scattered residences, agricultural and scrub lands and a petrol station. The disused railway bisects the northern portion of the site. West of the site is a pond located in a low-lying area. The size of this pond has increased over the past 10-15 years due to leakage from failed water main infrastructure. The pond encompassed a wide area but has shrunk since the leak has been addressed. However, the pond still receives surface water runoff from surrounding areas of higher elevation. Further west are residential dwellings, several commercial buildings along the R7100 and Ferrybank. Further east of the site are small areas of woodland and a light industrial facility. Further south is the River Suir. See Table 1.1 for adjacent land uses.

Table 1.1: Adjacent Land Uses

Boundary	Land Use
North	Clover Meadow housing estate, scattered residences, agricultural and scrubland, and a supermarket and petrol station along the R711.
South	Abbey Park Road, scattered residences, agricultural an auto repair shop, retail units, sports facility, and the River Suir.
East	Disused railway, agricultural land, scattered residences, woodlands and an engineering works
West	Abbeygate housing estate, Abbeygate Business Park, Several housing estates, Ferrybank,.

**Figure 1.2: Study Area (Source: OCSC, 2024)**

1.4 PROJECT DESCRIPTION

This Environmental Impact Assessment (Screening) Report has been prepared for the proposed new link road between the Clover Meadows and Abbeygate housing developments and car park in Ferrybank, County Kilkenny. The principal features of the proposed development will consist of:

- Construction of a new road, the South – North Access Road, approximately 940m in length, from the end of the existing access road serving the Clover Meadows Housing Estate to the end of the existing access

road serving the Abbeygate Housing estate/Abbeygate Shopping Centre. This to create a continuous road link between the existing Belmont Road Roundabout on the Belmont Road (R711) to the existing Abbeygate Roundabout on the Abbey Road (LP3412);

- Provision of a traffic signal-controlled crossroads junction on the access road approximately 270m north-east of the existing Abbeygate Roundabout on the Abbey Road (LP3412);
- Provision of a traffic signal-controlled crossroads junction on the access road approximately 430m south-east of the Belmont Roundabout on the Belmont Road (R711);
- Provision of a new road overbridge over the existing greenway;
- Minor upgrades to the existing Clover Meadows and Abbeygate access roads being tied into to provide improved pedestrian and cycle facilities and provide additional fencing where required;
- Provision of cyclist and pedestrian facilities along the new access road;
- Provision for 2 No. future bus-stops to both sides of the new road;
- Provision of a new carpark for the greenway accommodating c.172 no. parking spaces and 2 no. coach parking spaces along with toilets (with water supply and wastewater treatment), bicycle parking, accessible car parking spaces (10No.) and car parking spaces of which 20% are provided for e-cars with associated charging facilities;
- Provision of a link from the South-North Access Road footpath to the existing greenway via a ramped shared surface (pedestrians and cyclists) with stepped access also provided;
- Public lighting along the full length of the South - North Access Road and to the greenway carpark;
- The installation of road markings and signage throughout;
- Provision of a surface water drainage system to include Sustainable Drainage Systems (SuDS), attenuation storage both above and below ground and flow restrictors to maintain discharge of surface water to greenfield runoff rates. This also includes an outfall along the adjacent greenway; and
- Hard and soft landscaping including boundary treatments throughout.

1.5 SCREENING REPORT

This screening report includes the following elements:

- A description of the physical characteristics of the whole project;
- A description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected;
- A description of the aspects of the environment likely to be significantly affected by the project; and
- A description of any likely significant effects, to the extent of the information available on such effects, of the project on the environment resulting from a) the expected residues and emissions and the production of waste, where relevant and b) the use of natural resources, in particular soil, land, water, and biodiversity.

1.6 METHODOLOGY AND APPROACH

The methodology and approach used in the preparation of this report will follow:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Irish Environmental Protection Agency, May 2022.
- European Commission (2015) Environmental Impact Assessment – EIA, Over, Legal Context
- European Union EIA Directive (85/337/EEC) and its amendments in 1997, 2003, and 2009
- 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
- Planning and Development Act 2000 (as amended)
- Planning and Development Regulations 2001 (as amended)
- Directive 2014/52/EU
- Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems – Key Issues Consultation Paper (2017; DoHPCLG)
- Preparation of guidance documents for the implementation of EIA directive (Directive 2011/92/EU as amended by 2014/52/EU) – Annex I to the Final Report (COWI, Milieu; April 2017)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018)
- Environmental Impact Assessment – Guidance for Consent Authorities regarding Sub-threshold Development (2003; DoEHLG)

Using the above documents, it has been possible to carry out a desktop EIA Screening using the best available guidance and operating within the applicable legislation. The methodology employed in this screening exercise updates previous guidance in line with the new Directive 2014/52/EU.

1.7 SCOPE OF WORKS

To meet the project objectives, the following scope of works was completed:

- Present a discussion of the current site status and key environmental influences around the site;
- Undertake and present a historical site and area review, primarily referring to old Ordinance Survey Ireland maps but utilising other sources as appropriate and readily available;
- Present a discussion of the general soil and groundwater conditions within the topographical and area context; and
- Present an overview if any significant negative environmental impacts can arise from the proposed project.

1.8 LIMITATIONS

This Environmental Impact Assessment Screening Report has been prepared for Kilkenny County Council (“the Client”) as part of a part 8 planning application. No other warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by OCSC.

This assessment is based on a review of available historical information, environmental records, consultations, relevant guidance information, and reports from third parties. All information received has been taken in good faith as being true and representative.

This report has been prepared in line with best industry standards. The methodology adopted and the sources of information used by OCSC in providing its services are outlined in this Report. The assessment undertaken by OCSC and described was undertaken in August 2023, revised in March 2024 and revised again in July 2024 and is based on the information available during that period. The scope of this Report and the services are accordingly factually limited by these circumstances.

OCSC disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report which may come or be brought to OCSC’s attention after the date of the Report.

The conclusions presented in this report represent OCSC’s best professional judgement based on a review of the relevant information available at the time of writing. The opinions and conclusions presented are valid only to the extent that the information provided was accurate and complete.

The findings of the EIA screening assessment prepared for the project has informed our professional opinion as to whether an EIAR is warranted for the proposed project, with due regard to all relevant statutory requirements and technical guidance. However, it is ultimately the responsibility of the relevant planning authority to determine whether an EIAR is required for a particular project, based on screening conducted by the planning authority.

2 EIA SCREENING PROCESS

2.1 INTRODUCTION

This section of the report discusses the legislative basis for screening used to decide if the proposed project requires the preparation of an EIAR. It also sets out the project in terms of planning context.

This project has been screened in accordance with Section 3.2 of the 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022), the Environmental Impact Directive (85/337/EEC) and all subsequent relevant amendments, and Planning and Development regulations (2001-2018), including S.I. No. 296 of 2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, which came into operation on 1st September 2018.

2.2 EIA APPLICABLE LEGISLATION

The Environmental Impact Assessment (EIA) Directive 85/337/EEC has been in force across the European Union since 1985 and applies to a wide range of defined public and private projects which are defined in Annexes I (Mandatory EIA) and II (Screening-Discretion of Member States) of the directives. The EIA Directive of 1985 has been amended three times: 97/11/EC, 2003/35/EC, and 2009/31/EC. These amended directives have been coded and replaced by Directive 2011/92/EU of the European Parliament and Council on the assessment of the effects of certain public and private projects on the environment (and as amended by Directive 2014/52/EU). Directive 2014/52/EU has been transposed in 2018 in Irish law under the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (SI 296 of 2018).

2.3 MANDATORY EIAR REVIEW

Annex I of the European Communities (EIA) Directive lists the activities for which an EIA is required. The proposed project is not listed in Annex I; therefore, it is not mandatory for an EIA to be carried out.

Where a project is listed in Annex II or is a development that is not exempted, the national authorities of the member state must decide whether an EIA is needed for a proposed project. This is done by the "screening procedure", which determines the effects of project on the basis of thresholds/criteria or a case-by-case examination.

Annex III of the Directive outlines the specific criteria that must be considered when a sub-threshold project is being examined for Environmental Impact Assessment. The screening procedure investigates whether the project has a significant potential negative impact on the environment using different criteria including:

- Characterisation of the proposed development

- Location of the proposed development
- Type and Characteristics of the potential impact

Information to be provided for the purposes of screening sub-threshold development for Environmental Impact Assessment include:

- A description of the proposed development, including in particular—
 - a) A description of the physical characteristics of the whole proposed development and, where relevant, of demolition works and
 - b) A description of the location of the proposed development, with regard to the environmental sensitivity of geographical areas likely to be affected.
- A description of the aspects of the environment likely to be significantly affected by the proposed development.
- A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment, resulting from—
 - a) The expected residues and emissions and the production of waste, where relevant, and
 - b) The use of natural resources, in particular soil, land, water, and biodiversity.
- The compilation of the information in paragraphs 1 to 3 shall consider, where relevant, the criteria set out in Schedule 7 of the Directive". (Schedule 7 states 'Criteria for determining whether a development listed in Part 2 of Schedule 5 should be subject to an environmental impact assessment').

3 PLANNING CONTEXT

3.1 NATIONAL POLICY

3.1.1 NATIONAL PLANNING FRAMEWORK

The National Planning Framework (NPF) is the Government's high-level strategic plan for shaping the future growth and development of Ireland until 2040. This was released in tandem with the National Development Plan (NDP), which sets out the budget for national infrastructure investment for the next 10 years.

The NPF is considered a new approach that aims to improve the different areas of our lives while bringing the various government departments, agencies, State-owned enterprises, and local authorities together behind a shared set of strategic objectives for rural, regional, and urban development.

The proposed south-north access road at Ferrybank, Co. Kilkenny aligns with the NPF's Strategic Investment Priority number 2, Enhanced Regionally Accessibility which states:

“A co-priority is to enhance accessibility between key urban centres of population and their regions. This means ensuring that all regions and urban areas in the country have a high degree of accessibility to Dublin, as well as to each other. Not every route has to look east and so accessibility and connectivity between places like Cork and Limerick, to give one example, and through the Atlantic Economic Corridor to Galway as well as access to the North-West is essential.”

Furthermore, the NPF refers to key planning and development and place-making policy priorities for Southern Region and has the following specific goal:

“Regional opportunities to leverage growth include national and international connectivity, especially via ports proximate to continental Europe, such as Belview and Rosslare-Europort, strengthening HEIs and further balanced employment and housing development in key settlements and county towns. This must be based on infrastructure and quality of life, rather than long-distance commuting to Dublin, as is apparent in part of counties Carlow and Wexford in particular.”

The proposal is in compliance with the above NPOs and will significantly improve connectivity residential areas of Ferrybank and provide a high-quality amenity.

3.2 LOCAL POLICY

3.2.1 KILKENNY CITY AND COUNTY DEVELOPMENT PLAN 2021-2027

Kilkenny County Council's Development Plan for 2021 to 2027 sets out policies and objectives for the proper planning and sustainable development of the City and County. In preparing the Development Plan, the County Council had regard to relevant national plans, policies, and strategies relating to the proper planning and sustainable development of the area as well as regard to the plans of adjoining authorities. The plan provides for the mandatory objectives which are to be included in Development Plans as set out in the Planning and Development Acts (Kilkenny County Council, 2021).

In the Kilkenny City and County Development Plan, the Waterford Metropolitan Area Transport Strategy is discussed and relates to the proposed project. The aim is to see the development of sustainable travel options to support and facilitate improved access to the Waterford City Centre from the wider urban area north and south of the river by walking, cycling and public transport, including provision for Park and Ride facilities in tandem with the Green Route, and additional cycle lanes.

The following objectives of the Waterford Metropolitan Area Transport Strategy are supportive of the South-North Access Road:

- **12S** Develop the Link Road from the Abbey Road to the Belmont Road.
- **12T** To carry out improvements to the Abbey Road from the boundary with Waterford City and County Council to facilitate smarter travel improvements to Abbey Road and connect to the Link Road in objective 12S above.

4 LOCATION OF THE PROPOSED DEVELOPMENT

4.1 INFORMATION SOURCES

An understanding of the site setting and history was gained by undertaking a review of the following primary sources:

- A review of available extracts of historical Ordnance Survey of Ireland (OSI) maps;
- National Monuments Service (NMS) viewer;
- A review of information held by the Environmental Protection Agency (EPA) EnVision online Mapping;
- Aerial images available of the site (OSI and Google);
- The Geological Survey of Ireland (GSI) and GeoHive online mapping tools;
- The National Parks and Wildlife Service (NPWS) online map tool;
- Heritage Maps online; and
- Environmental Sensitivity Mapping online.

4.2 ABUNDANCE, AVAILABILITY, QUALITY, AND REGENERATIVE CAPACITY OF NATURAL RESOURCES

Limited natural resources will be required to complete the work. It is proposed that any material generated during the works will be reused on site or removed from site for recycling or reuse where possible. The relevant natural resources have been looked at in more detail in the following sections.

4.3 THE ABSORPTION CAPACITY OF THE NATURAL ENVIRONMENT

The absorption capacity of the natural environment with regard to the proposed project has been screened in accordance with Regulations paying particular attention to:

- wetlands, riparian areas, river mouths;
- coastal zones and the marine environment;
- mountain and forest areas;
- 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; and
- landscapes and sites of historical, cultural, or archaeological significance.

4.4 SURROUNDING LAND USE

The terrestrial environment is characterized not only by its physical land cover but also from a human/social perspective by its land use which is distinguished by its designated or identifiable purpose (EPA, 2008).

The immediately surrounding area is comprised primarily of residential and agricultural land. Refer to Section 1.3 for a full list of adjacent land uses.

4.5 SITE DEVELOPMENT

A review of the OSI historical maps dataset has found that the study area has been unoccupied since at least 1842. The following section outlines the historically mapped features on and in the immediate environs of the site.

The 6-inch map (1837-1842) shows the site as occupied by agricultural and woodlands. Newpark House estate contains numerous buildings, a walled garden, roadways, woodland, and agricultural land that borders the east of the site. Agricultural land with scattered residences surrounds the study area in all directions as shown in Figure 4.1.

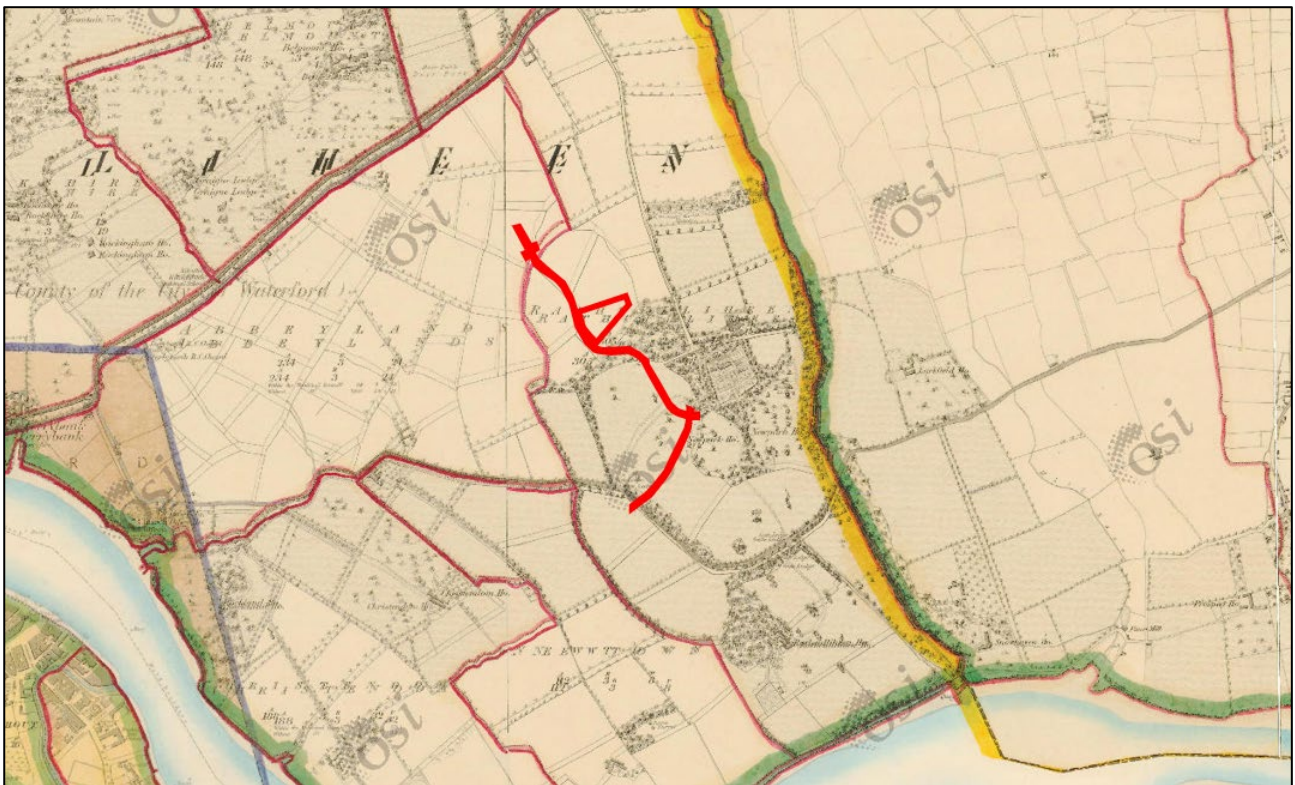


Figure 4.1: 1837-1842 6-inch OS Map; site location shown by the red outline (Source: GeoHive, 2024)

The 25-inch map (1888-1913) indicates that the railway through the central portion of the site was under construction at the time of mapping. No other significant changes to the site or surrounding area were noted as shown in Figure 4.2.

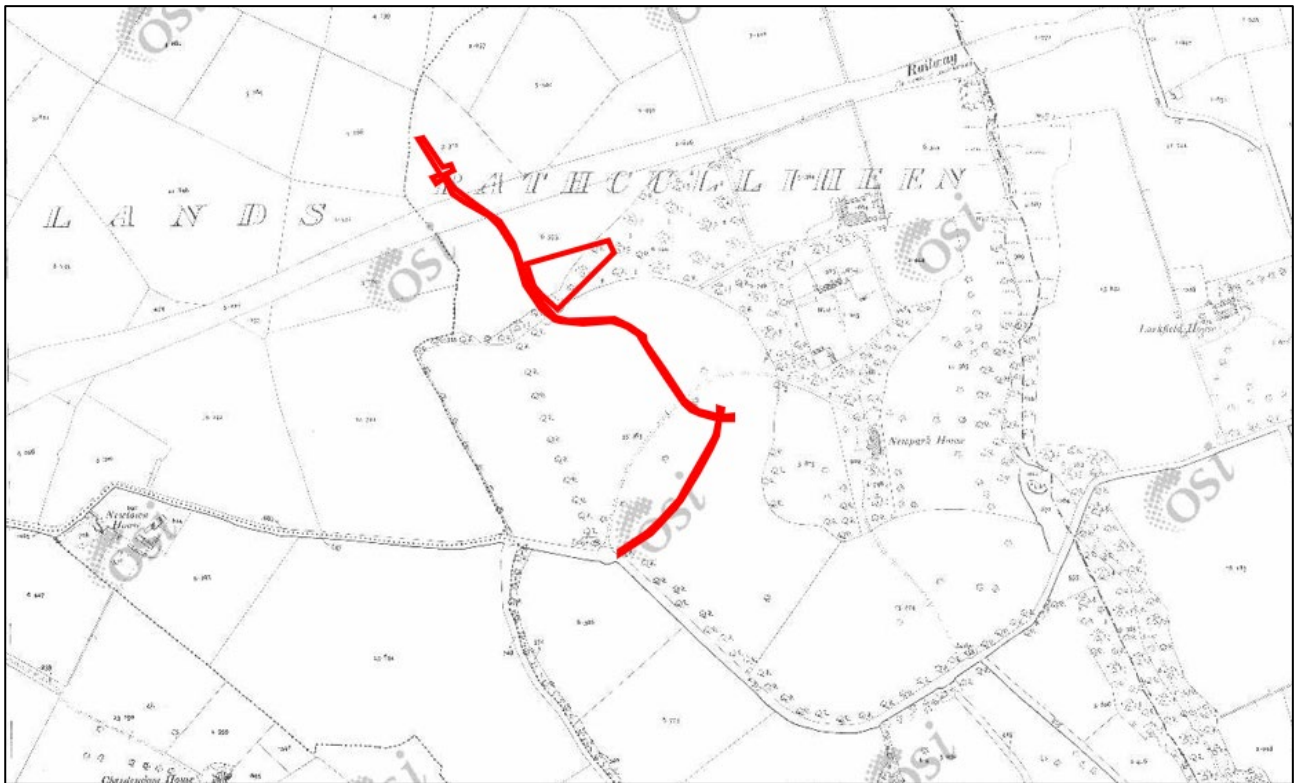


Figure 4.2: 1888-1913 25-inch OSI Map; site location shown by the red outline (Source: GeoHive, 2024)

The 6-inch Cassini map (1830s to 1930s) shows the completion of the railway within, east and west of the site and the removal of Newpark House. Construction had occurred to the west of the site in Ferrybank and along the river to the southwest in Christendom as shown in Figure 4.3.

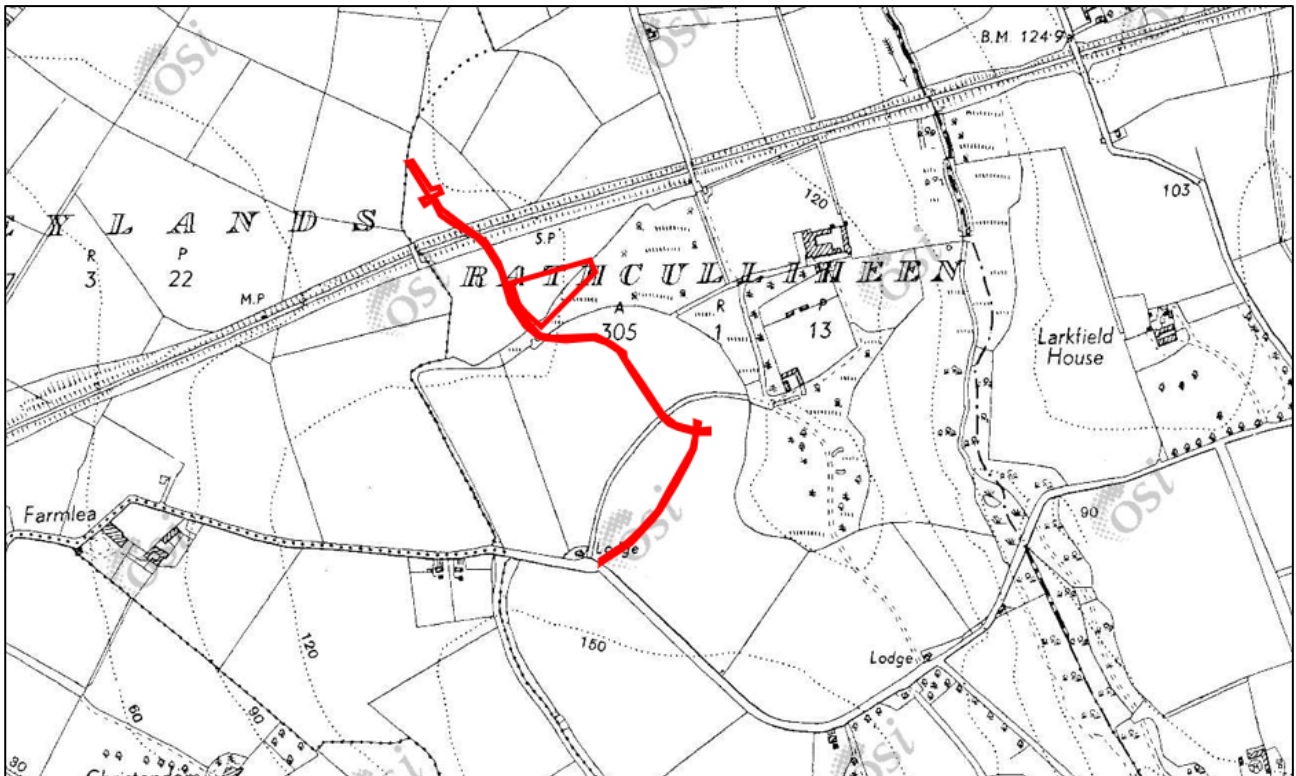


Figure 4.3: 6 Inch Cassini Map; site location shown by the red outline (Source: GeoHive, 2024)

The 1995 aerial photograph (Figure 4.4) shows the construction of the housing estate Abbey Park directly to the southwest of the site and the Abbeylands Business Park directly to the west. Structures had also been constructed east of the site, near buildings associated with the former Newpark House estate.

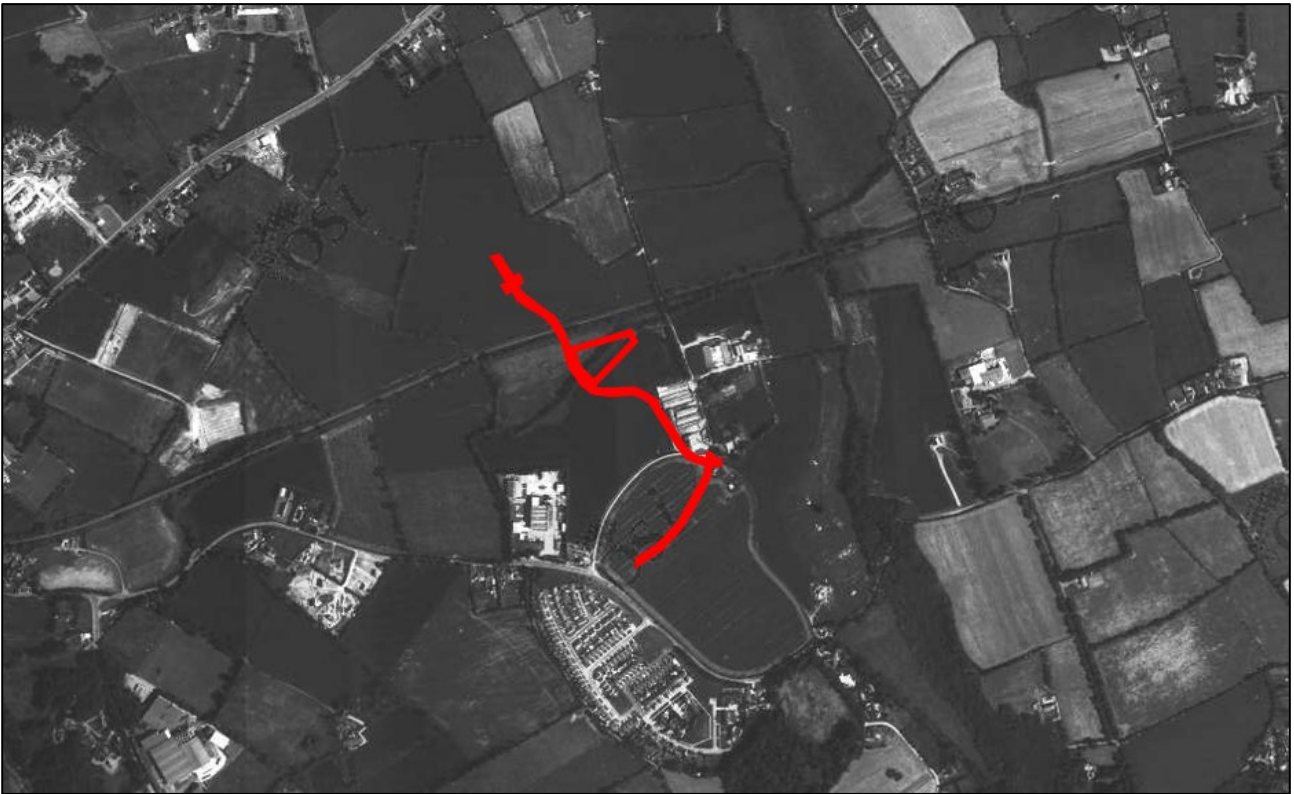


Figure 4.4: Aerial photograph for 1995; site location shown by the red outline (Source: GeoHive, 2024)

The 1999-2003 aerial photo shows no significant changes to the site or the nearby surrounding area as shown in Figure 4.4.

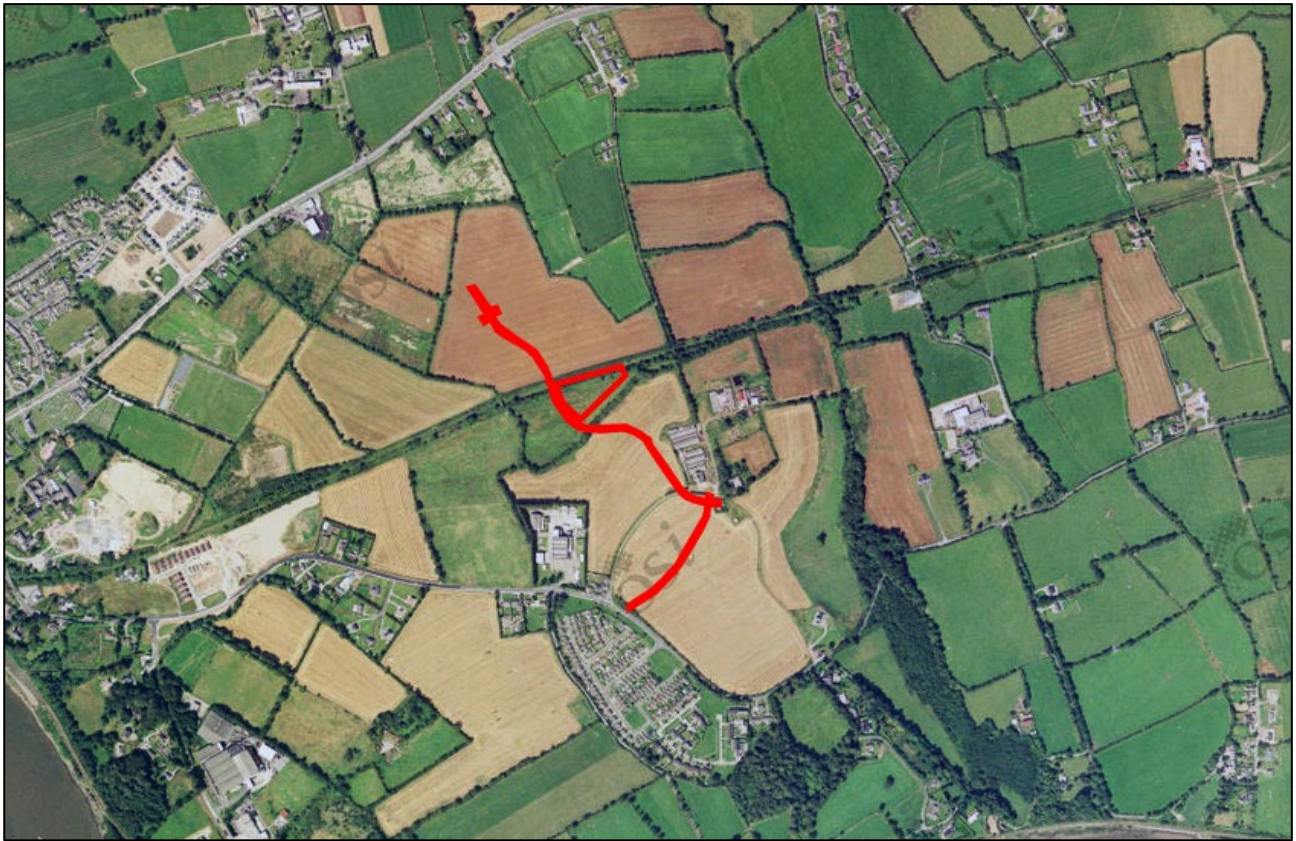


Figure 4.5: Aerial photograph for 1999-2003; site location shown by the red outline (Source: GeoHive, 2024)

The 2004-2006 aerial photo shows no significant changes to the site or the nearby surrounding area other than residential construction, which was ongoing to the west of the site, in the last aerial image as shown in Figure 4.6. See Figure 4.6

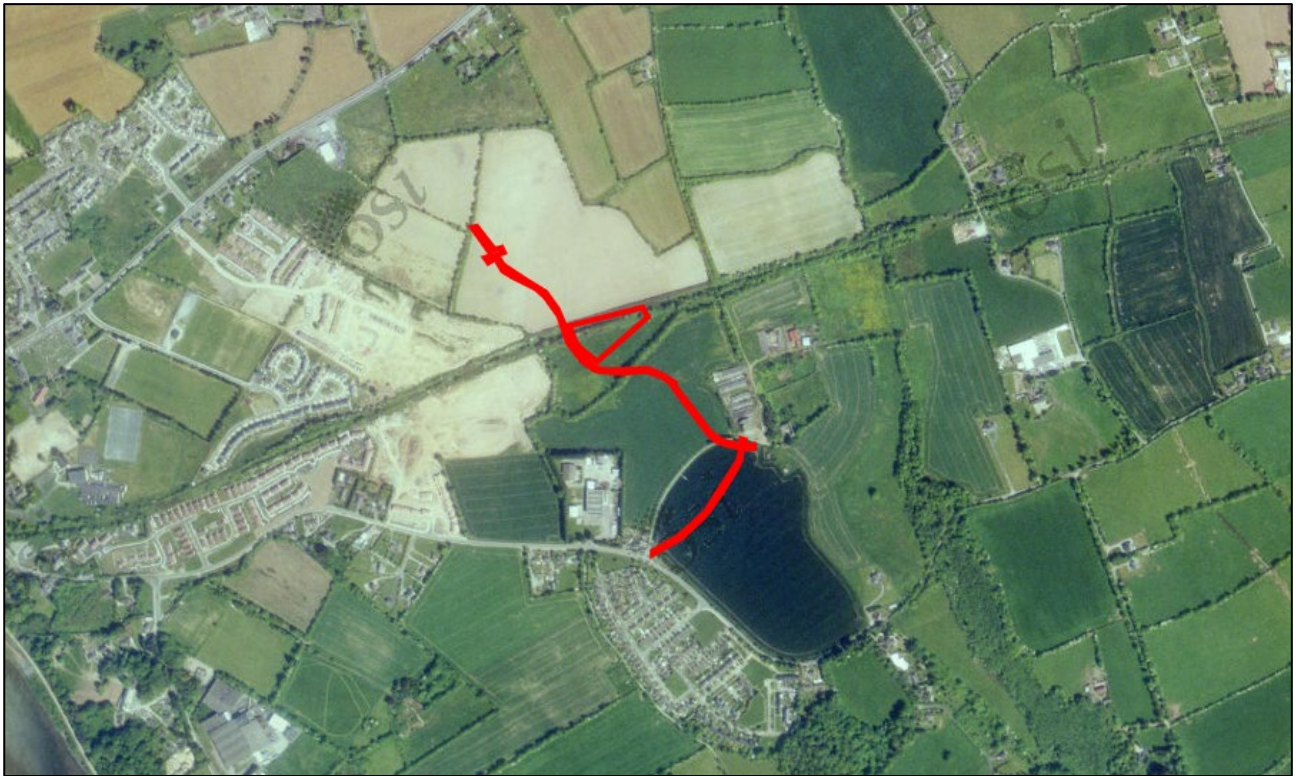


Figure 4.6: Aerial photograph for 2004-2006; site location shown by the red outline (Source: GeoHive, 2024)

The 2011-2013 aerial photo shows the completion of residential construction and the addition of many residential dwellings to the west of the site. This aerial image shows the construction of Clover Meadows north of the site. This aerial image shows the construction of the Abbeygate housing estate southwest of the site. Structures associated with Newpark House east of the site appear to have been removed by this time as shown in Figure 4.7.



Figure 4.7: Aerial photograph for 2011-2013; site location shown by the red outline (Source: GeoHive, 2024)

The 2013-2018 aerial photo shows no significant changes to the site or the nearby surrounding area as shown in Figure 4.8.



Figure 4.8: 2013-2018 Aerial Photograph; site location shown by the red outline (Source: GeoHive, 2024)

Subsequent Google Earth aerial photos show no significant changes to the site or adjacent lands since the 2013-2018 aerial photo.

4.6 SITE PHYSICAL SETTING

Information regarding the site topography, hydrology, geology, hydrogeology, and ecology of the area has been obtained from records held by the GSI, EPA Envision online mapping tool, OSI, GeoHive, Water Framework Directive Maps, and NPWS databases.

4.7 BIODIVERSITY

There are no EPA-designated surface water features within the site boundary. There is an undesignated pond approximately 20m west of the site. The nearest EPA-designated surface water feature is the Ferrybank Stream (Luffany_010 - IE_SE_16L680750), which is located approximately 259m east of the site. The Ferrybank Stream flows in a southerly direction and discharges to the River Suir (IE_SE_100_0500) approximately 830m downstream of the closet point of the site and the Ferrybank Stream (259m). The River Suir (Lower River Suir SAC) flows in a southeasterly direction, eventually entering Waterford Harbour and then the Eastern Celtic Sea. The next nearest surface water feature, Abbeylands Stream (Luffany_020 –

IE_SE_16L680750), is located approximately 705m east of the site and enters the River Suir downgradient of the discharge point for Ferrybank Stream.

An Appropriate Assessment (AA) Screening Report was prepared by OCSC which concluded that the proposed south-north access road, Abbey Road to Belmont Road, and car park at Ferrybank, is not likely to create significant impacts to any Natura 2000 Sites in the absence of mitigation.

There are three SACs within 15km of the proposed development as shown in Figure 4.9, the closest being the Lower River Suir SAC (0.78km south).

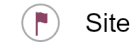
There are three SPAs within 15km of the site, as shown in Figure 4.9, the closest being the Tramore Back Strand SPA (10.2km south).

There are no Natural Heritage Areas (NHAs) within 15km of the site. There are eighteen proposed Natural Heritage Areas (pNHAs) within 15km of the site as shown in Figure 4.9. The nearest is the King's Channel pNHA located 1km south of the site.

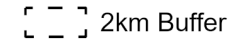
There is no direct hydrological link between the site and any SAC, SPA, or pNHA within 15km of the proposed scheme. As seen in Figure 4.10, the Ferrybank stream creates an indirect hydrological connection to the Lower River Suir SAC (0.83km downstream) and the King's Channel pNHA (1.2km downstream). However, this stream is located approximately 0.26km from the site at its nearest point (Figure 4.10). Therefore, due to the lack of hydrological connection between the nearest proposed work area and these designated sites, the risk of impact on the sites works is predicted to be unlikely and imperceptible. Furthermore, there is no physical connectivity in the form of hedgerows, treelines, or woodlands between the area of the proposed works and any of the designated sites.

NPWS Designated Sites

Legend



Site



2km Buffer



15km Buffer



SAC



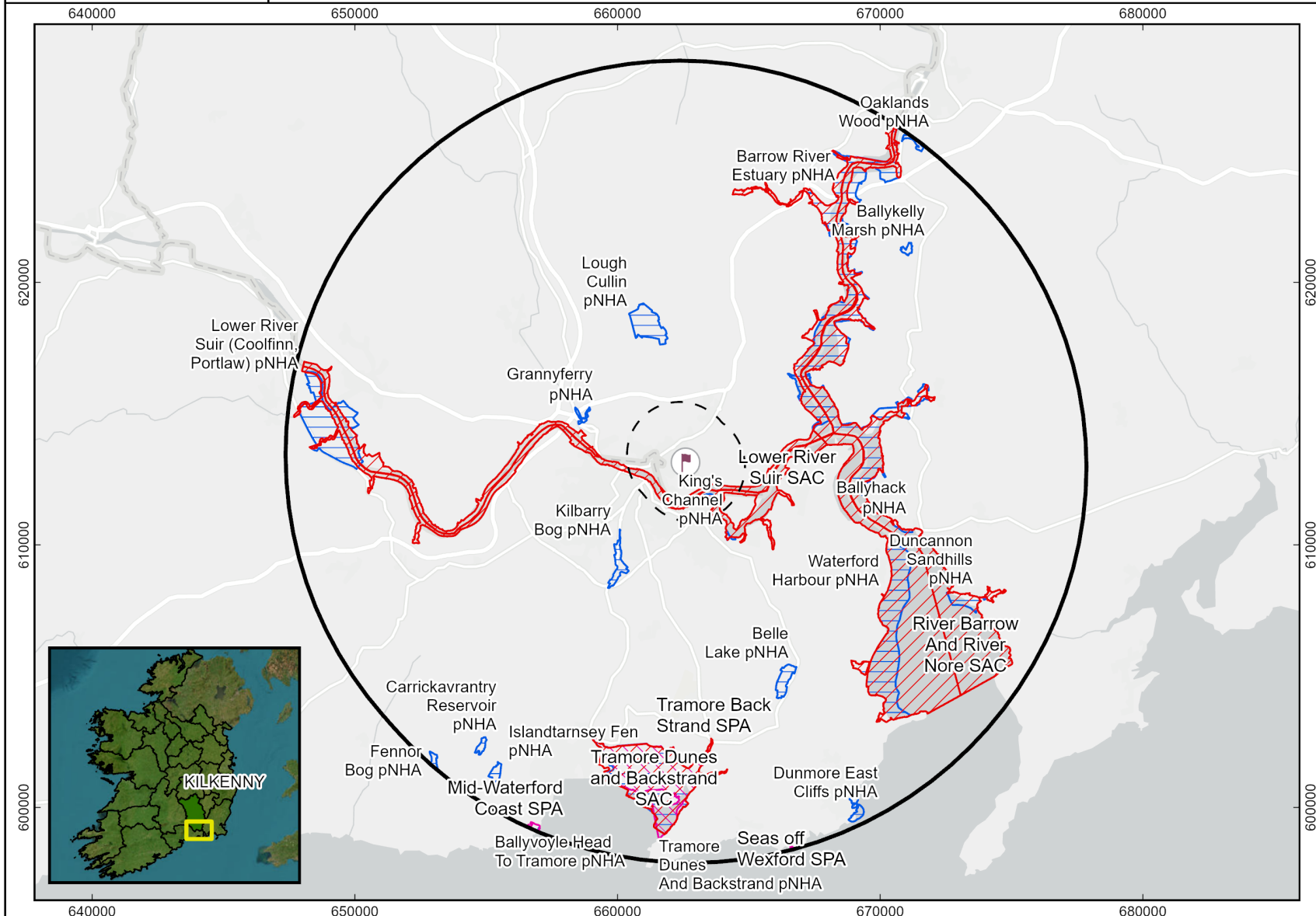
SPA



NHA



pNHA



0 2.5 5 10 Kilometers

Scale: 1:220,000

Spatial Reference
Name: IREN95 Irish Transverse Mercator
PCS: IREN95 Irish Transverse Mercator
GCS: GCS IREN95
Datum: IREN95
Projection: Transverse Mercator
Earthstar Geographics, Esri UK, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS

Project: South-North Access Road

Reference: W383/1

Client: Kilkenny County Council

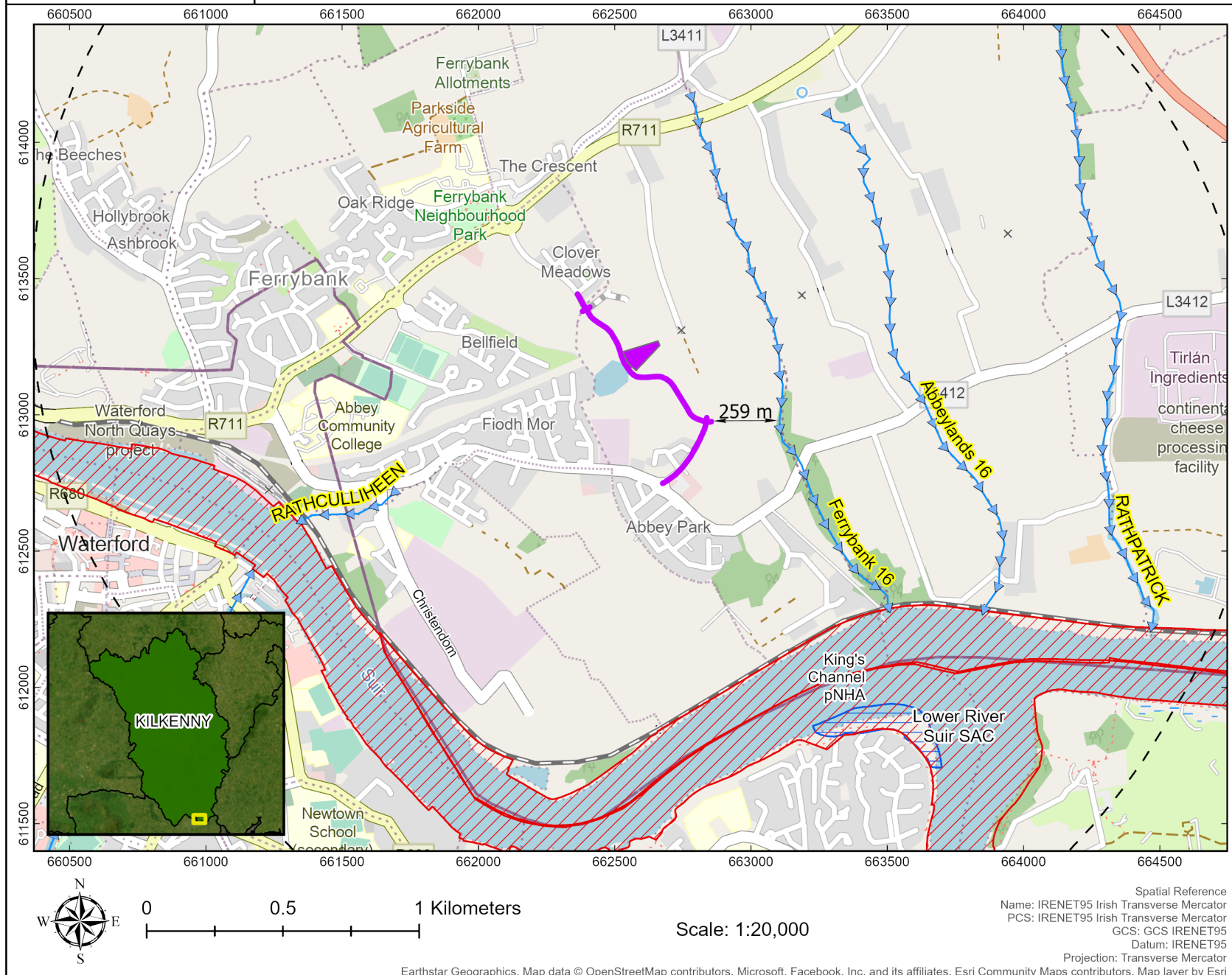
Figure 4.9: NPWS Designated Sites (Source: OCSC, 2024)

Water Flow and NPWS Designated Sites

Legend

Site

-  2km Buffer
-  15km Buffer
-  Flow Network
-  Flow Direction
-  SAC
-  SPA
-  NHA
-  pNHA
-  Distance



Project: South-North Access Road

Reference: W383/1

Client: Kilkenny County Council

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
PCS: IRENET95 Irish Transverse Mercator
GCS: GCS IRENET95
Datum: IRENET95
Projection: Transverse Mercator

Earthstar Geographics, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

Figure 4.10: European Sites and EPA Rivers near the Study Area (Source: OCSC, 2024)

4.8 TOPOGRAPHY

The topography of the site slopes gently to the northwest.

4.9 UNCONSOLIDATED GEOLOGY

The site is underlain by deep, well-drained, mainly acidic mineral soils (AminDW), as seen in Figure 4.11.

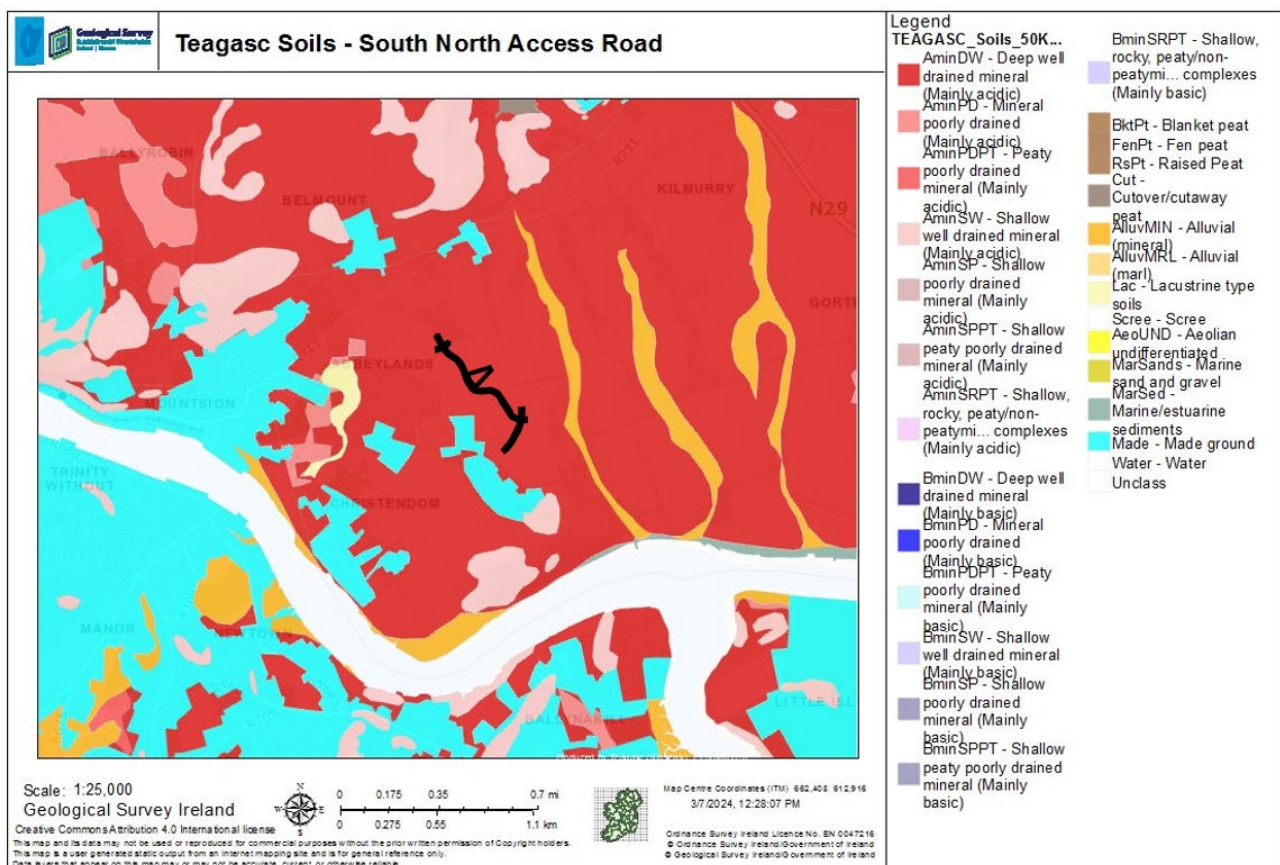


Figure 4.11: Teagasc Topsoil Soil Classification; approximate site location indicated by the black outline (Source: GSI, 2024)

4.10 GEOLOGY

The site is underlain by the Ross Member of the Campile Formation, which is comprised of dark grey slate with thin-bedded, turbiditic greywacke siltstone as shown in Figure 4.12 (GSI, 2023).

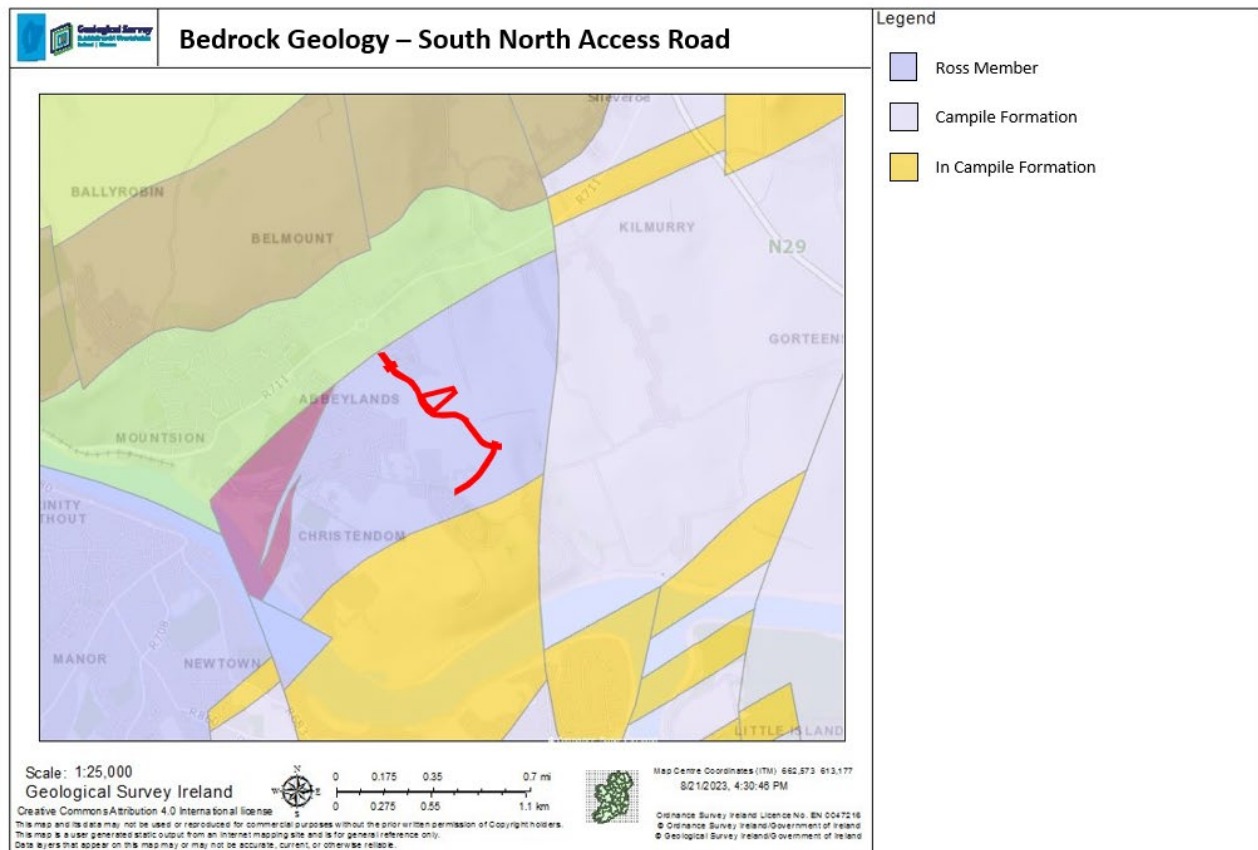


Figure 4.12: Bedrock Geology 100K; approximate site location indicated by the red outline (Source: GSI, 2024)

4.11 AREAS OF GEOLOGICAL INTEREST

The GSI online mapping service was consulted regarding areas of geological interest in the vicinity of the site. The nearest area of geological interest is the Granny Quarry (KK011) which is located 4.7km northwest of the site at its nearest point. It has been designated as a County Geological Site (CGS). The Granny Quarry site has exposed faces of limestone and shale with localised karst weathering features. See Figure 4.13 for the location of the nearest geological heritage site.

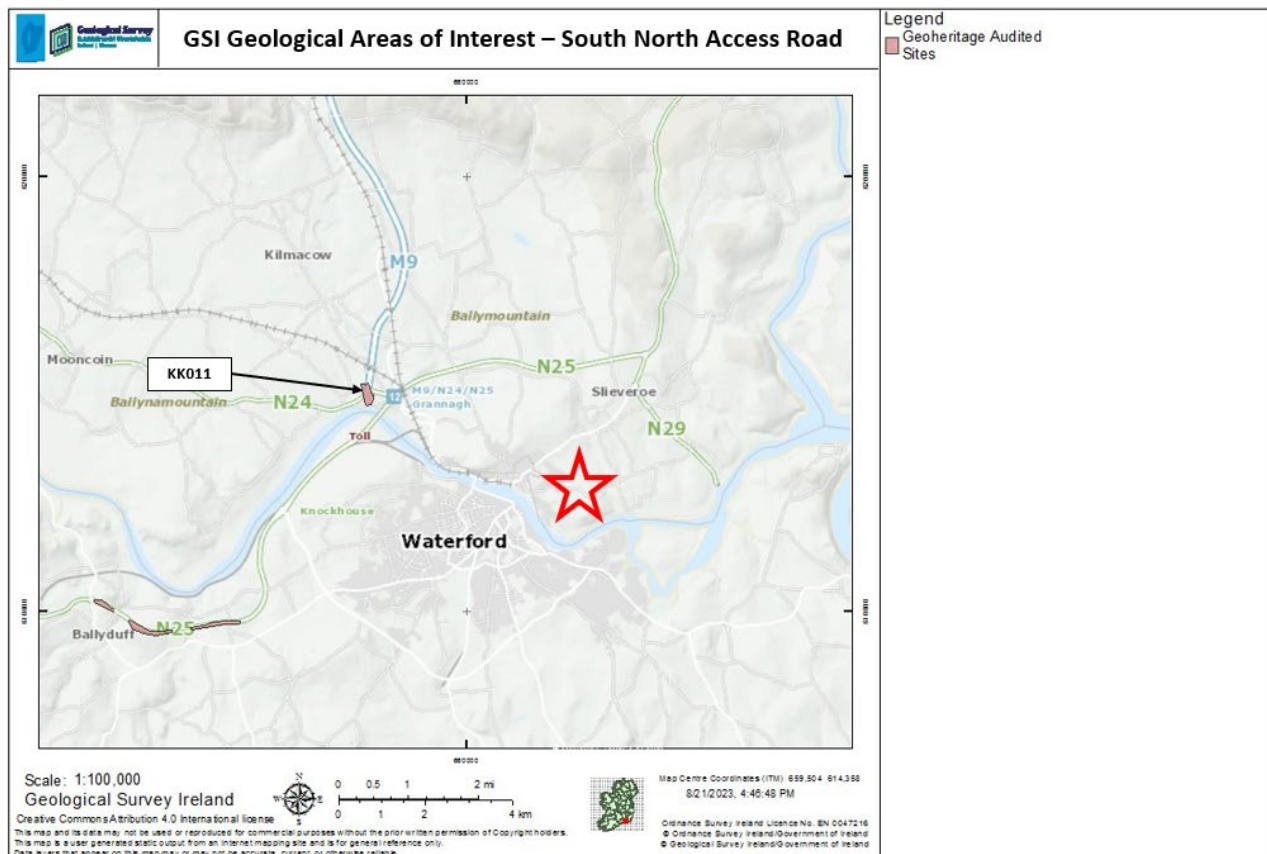


Figure 4.13: Geological Heritage Sites; approximate site location indicated by the red star (Source: GSI, 2024)

4.12 AQUIFERS

GSI provides a methodology for aquifer classification based on resource value (regionally important, locally important, and poor) and vulnerability (extreme, high, moderate, or low). Resource value refers to the scale and production potential of the aquifer whilst vulnerability refers to the ease with which groundwater may be contaminated by human activities (vulnerability classification is primarily based on the permeability and thickness of subsoils). The site is underlain by a regionally important, fissured bedrock aquifer (Rf) as shown in Figure 4.14.

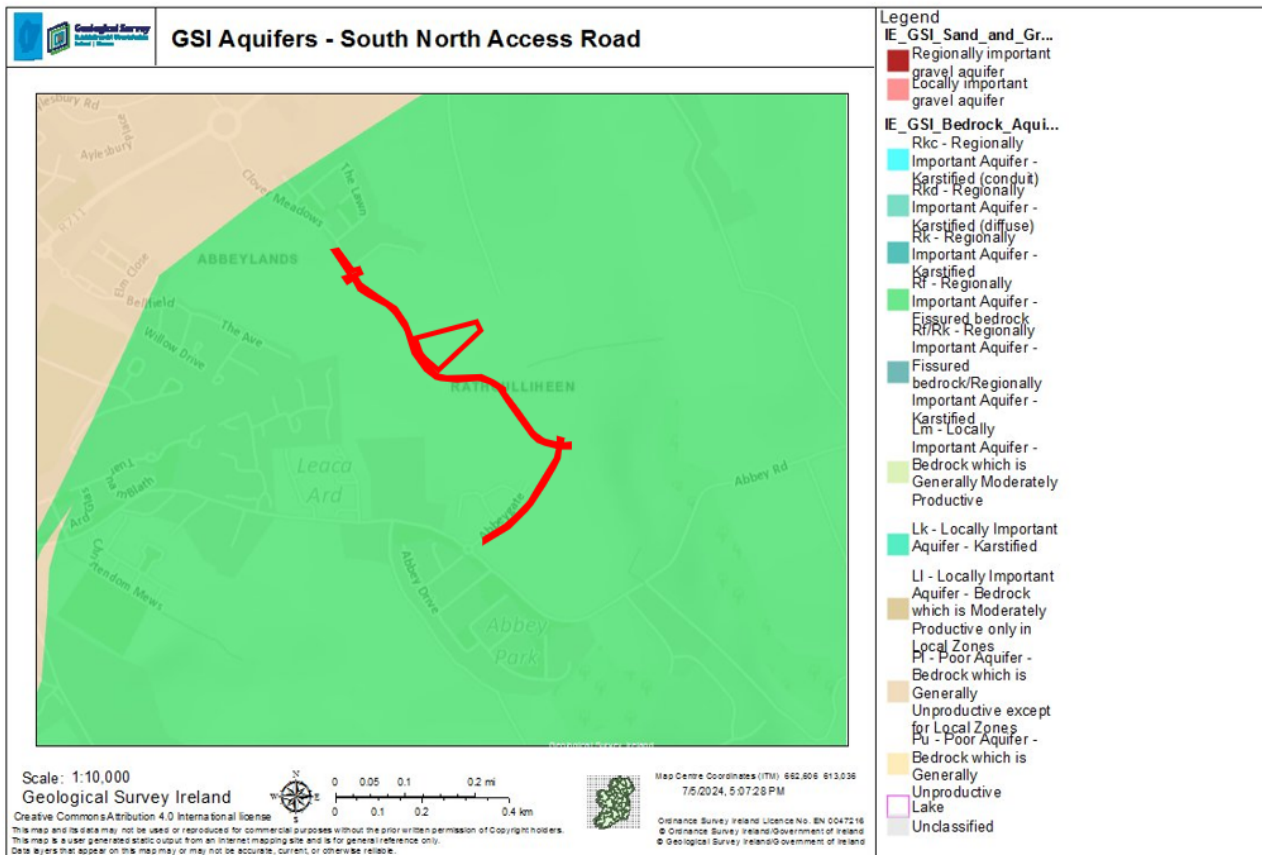


Figure 4.14: Aquifers; approximate site location indicated by the red outline (Source: GSI, 2024)

4.13 GROUNDWATER VULNERABILITY

The GSI database indicates that groundwater vulnerability for the site is moderate as seen in Figure 4.15. Vulnerability ratings are a function of overburden thickness and permeability which might offer a degree of protection and/or attenuation to the underlying aquifer from surface activities and pollution.

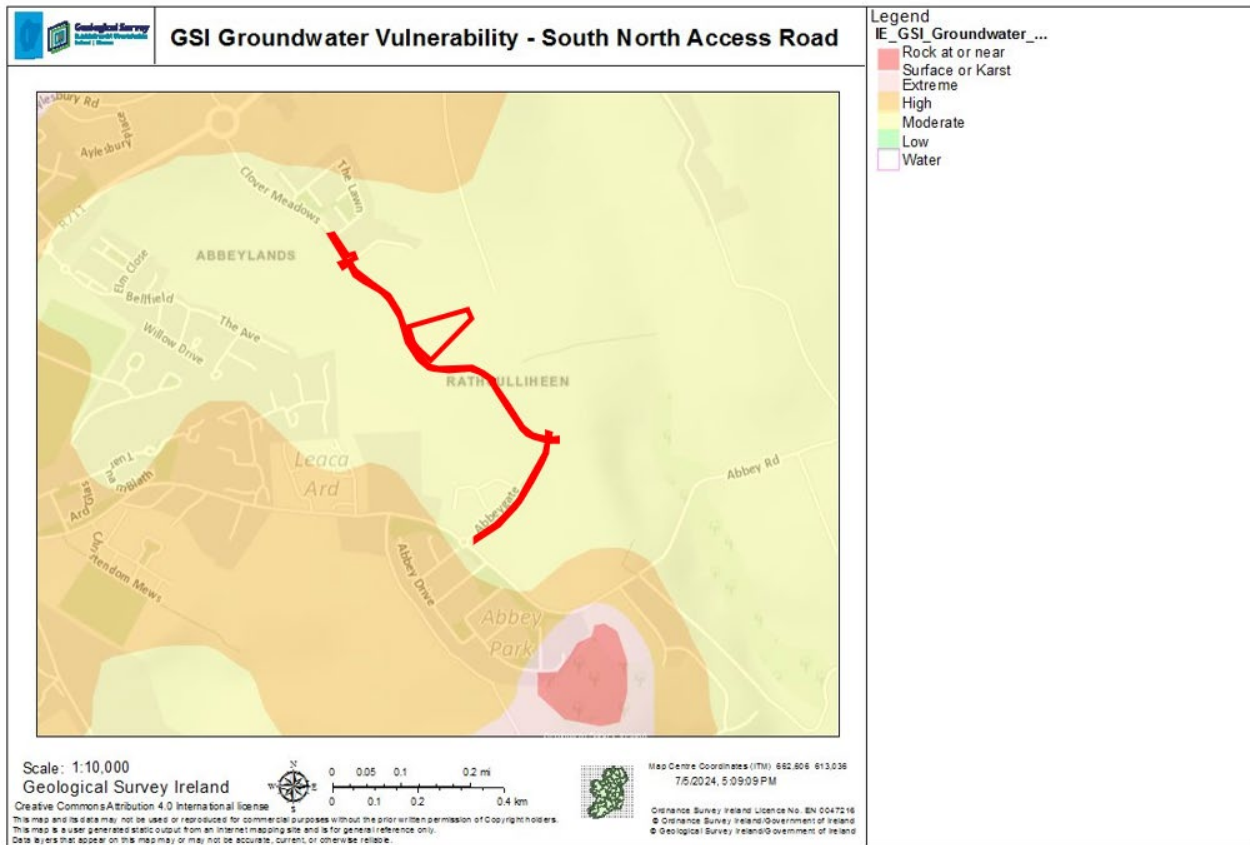


Figure 4.15: Groundwater Vulnerability; approximate site location indicated by the red outline (Source: GSI, 2024)

4.14 GROUNDWATER RECHARGE

Diffuse recharge generally occurs via rainfall percolating through the subsoil with its rate being higher in areas where the subsoil is thinner and/or more permeable. The proportion of effective rainfall that recharges the aquifer is largely determined by the thickness and permeability of the soil and subsoil and by the slope. The groundwater recharge zones associated with the site are shown in Figure 4.16. GSI groundwater recharge model parameters for these zones are summarised in Table 4.1.

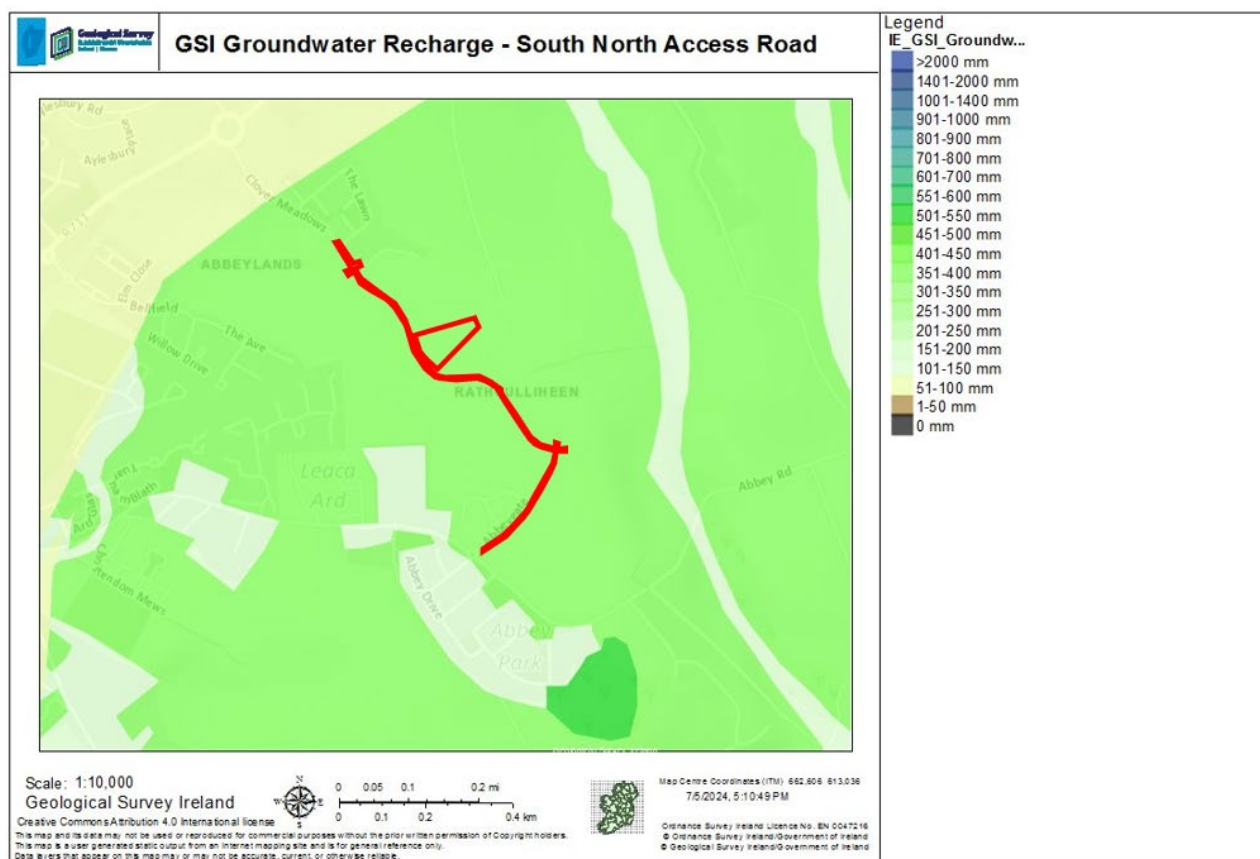


Figure 4.16: Groundwater Recharge; approximate site location indicated by the red outline (Source: GSI, 2024)

Table 4.1: GSI Groundwater Recharge Parameters

Groundwater Recharge Parameters	
Average Recharge (mm/yr.):	370
Hydrogeological Setting Code:	3.i
Hydrogeological Setting Description:	Moderate permeability subsoil overlain by well-drained soil
Recharge Coefficient (%):	60.00
Effective Rainfall (mm/yr.):	616
Average Recharge Range (mm/yr.):	351-400
Subsoil Permeability Description:	Moderate
GW Vulnerability:	Moderate
Aquifer Category Description:	Regionally Important Aquifer - Fissured bedrock

4.15 WELLS AND SPRINGS

A search of the GSI groundwater well database was conducted to identify registered wells within the site footprint and the surrounding area.

There are potentially sixteen wells located within 1km of the proposed route. The nearest borehole, which may be located within the site footprint due to the inaccuracy of the borehole locations is 2611SWW146 which was drilled on the 6th of March 1975 to 62m for industrial use. The second nearest borehole is 2611SWW145 which

was drilled on the 21st of January 1975 to 45m for industrial use, located 102m from the site. There are a further fourteen wells within 1km of the site, as shown in Figure 4.17.

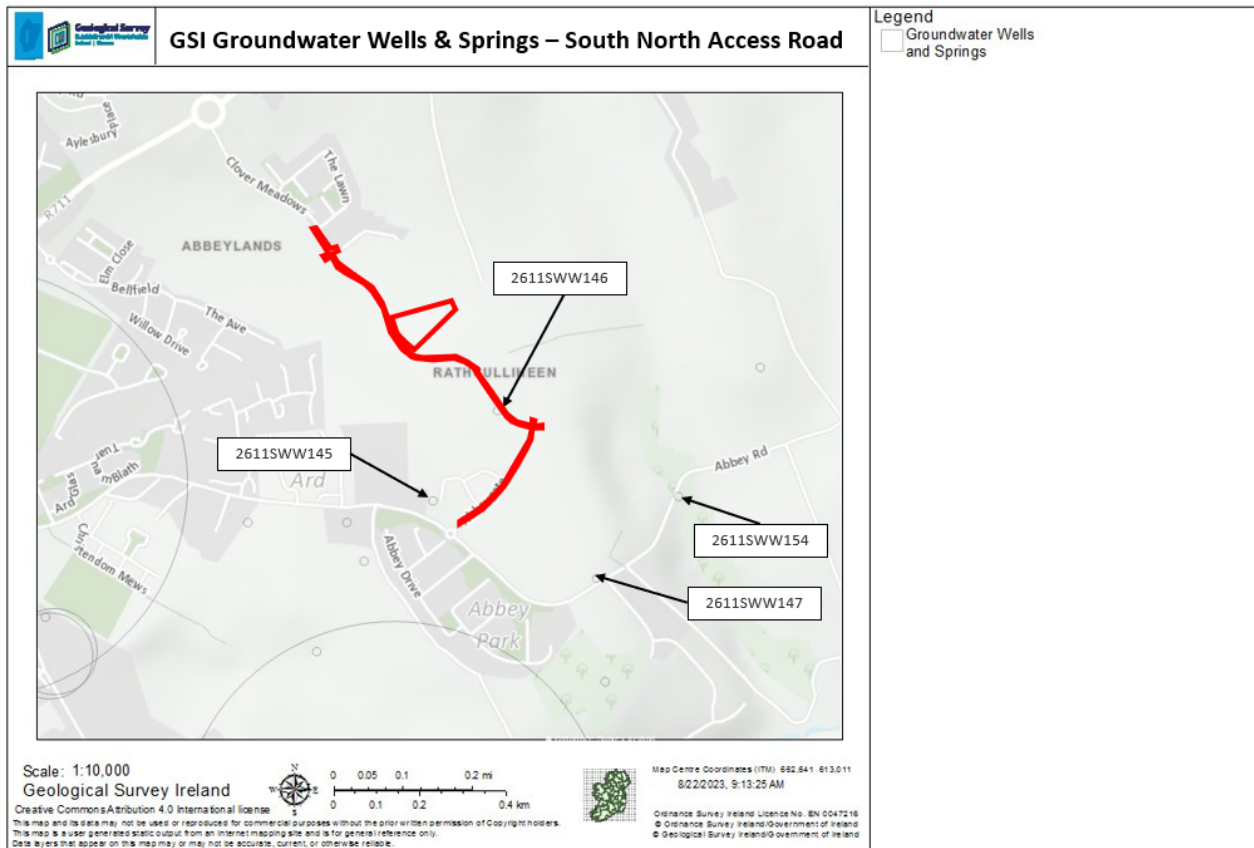


Figure 4.17: Wells and Springs; approximate site location indicated by the red star (Source: GSI, 2024)

The GSI database also provides information on groundwater Source Protection Zones (SPZs) (e.g., areas of contribution to water supply bores). The nearest SPZ is the Glenmore Public Water Supply, which is located 11.5km northwest of the site. See Figure 4.18.

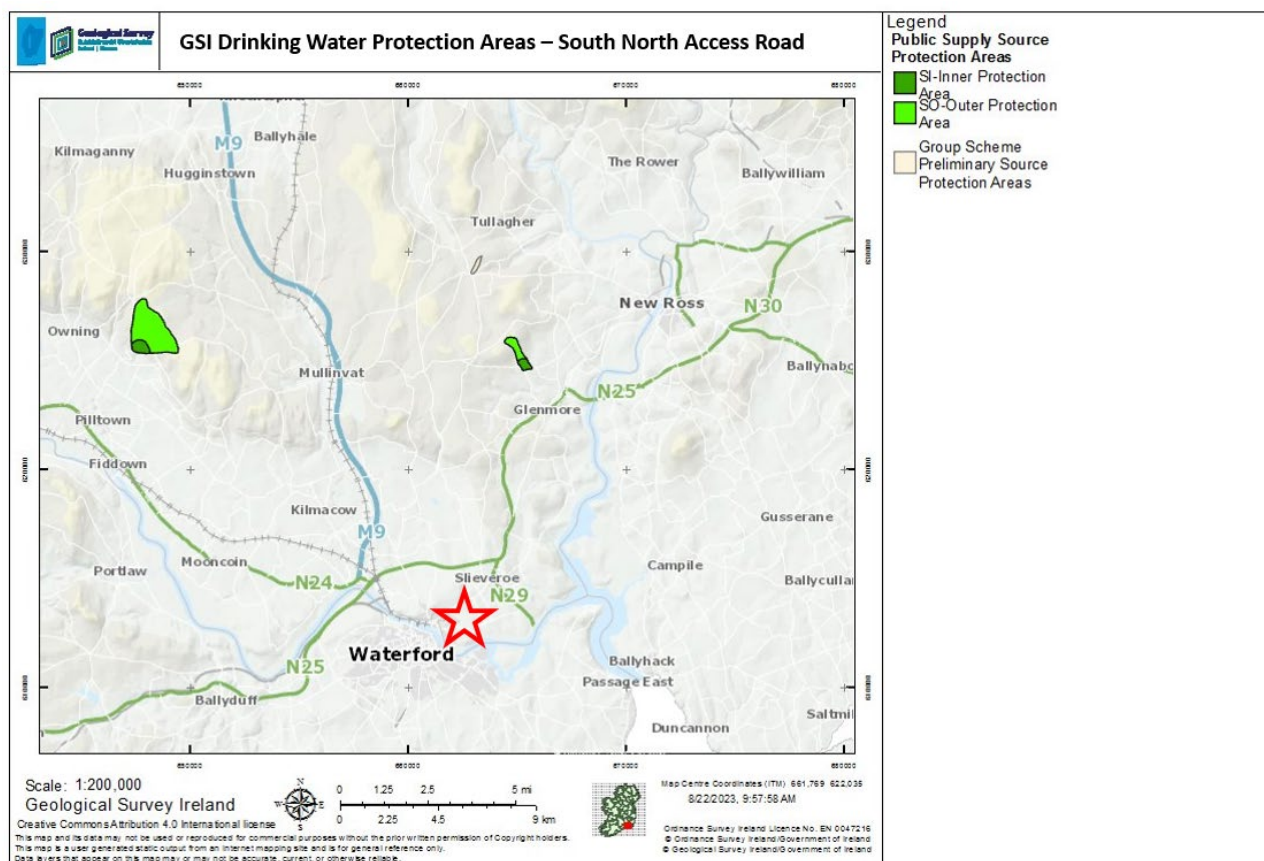


Figure 4.18: Source Protection Zones; approximate site location indicated by the red star (Source: GSI, 2024)

4.16 HYDROLOGY

There are no EPA-designated surface water features within the site boundary. There is an undesignated pond approximately 20m west of the site. The nearest EPA-designated surface water feature is the Ferrybank Stream (Luffany_010 - IE_SE_16L680750), which is located approximately 259m east of the site. The Ferrybank Stream flows in a southerly direction and discharges to the River Suir (IE_SE_100_0500) approximately 830m downstream of the closest point of the site and the Ferrybank Stream (259m). The River Suir is designated as an estuary by the EPA in this area and flows in a southeasterly direction, eventually entering Waterford Harbour and then the Eastern Celtic Sea. The next nearest surface water feature, Abbeylands Stream (Luffany_020 – IE_SE_16L680750), is located approximately 705m east of the site and enters the River Suir downgradient of the discharge point for Ferrybank Stream. See Figure 4.19 and Figure 4.20 for waterbody locations.

Based on the most recent water quality information (2016-2021), the Ferrybank Stream has an overall Water Framework Directive (WFD) status of 'Moderate' as has the Lower Suir Estuary as shown in Figure 4.19.

The EPA spatial dataset indicates that the risk of the Ferrybank Stream failing to meet its WFD objectives by 2027 is under review (EPA 2023) while the Lower Suir Estuary is at risk of not meeting its WFD objectives by 2027. See Figure 5.19. WFD summary information for these water bodies is summarised in Table 4.2.

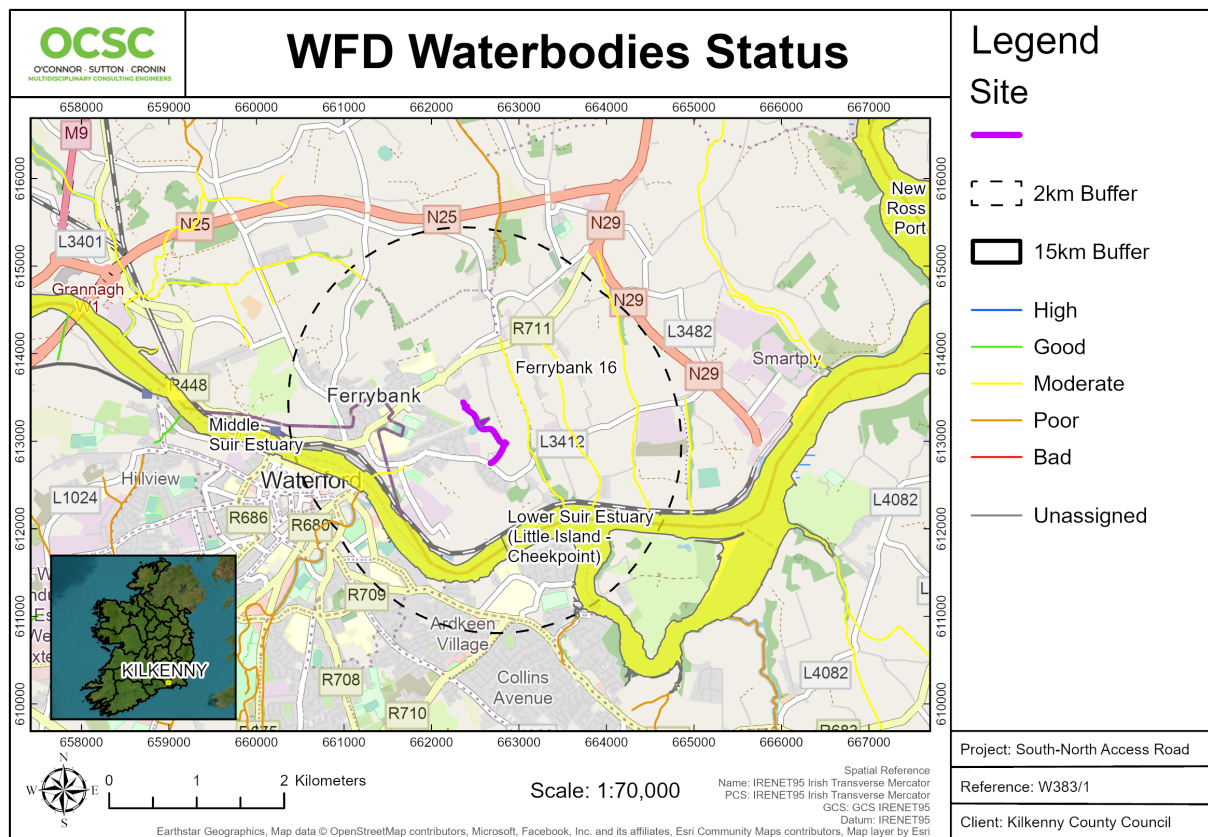


Figure 4.19: River and Transitional Waterbody WFD Status (Source: OCSC, 2024)

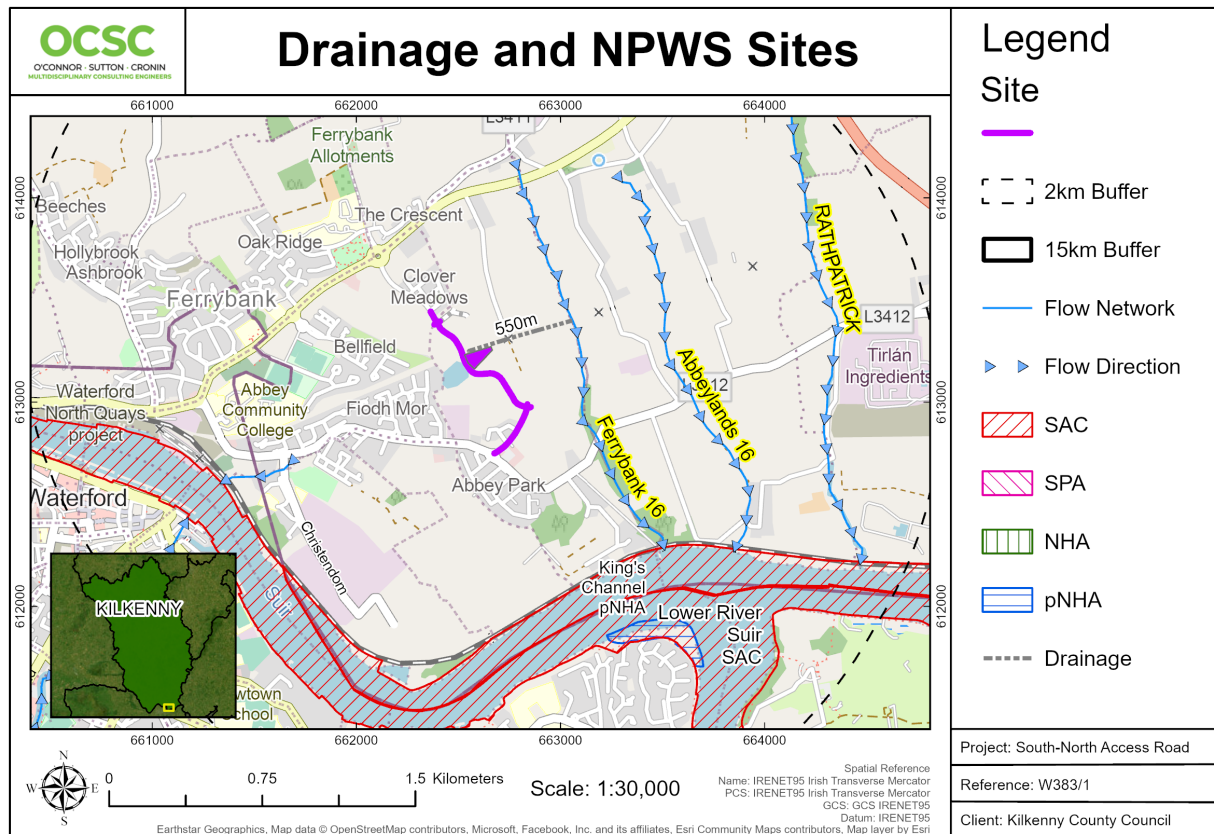


Figure 4.20: River and Transitional Waterbodies Risk (Source: OCSC, 2024)

Table 4.2: WFD Summary Information

Name	Ferrybank Stream	Lower Suir Estuary
Waterbody Code	IE_SE_16L680750	IE_SE_100_0500
Waterbody Name	Luffany_010	Lower Suir Estuary (Little Island - Checkpoint)
Waterbody Type	River	Transitional Waterbody
Iteration	SW 2016-2021	SW 2016-2021
Status	Moderate	Moderate
Risk	Under Review	At Risk

4.17 RADON

According to the EPA, the site has been classified as an area where about 1 in 10 homes are likely to have high radon levels as shown in Figure 4.21.

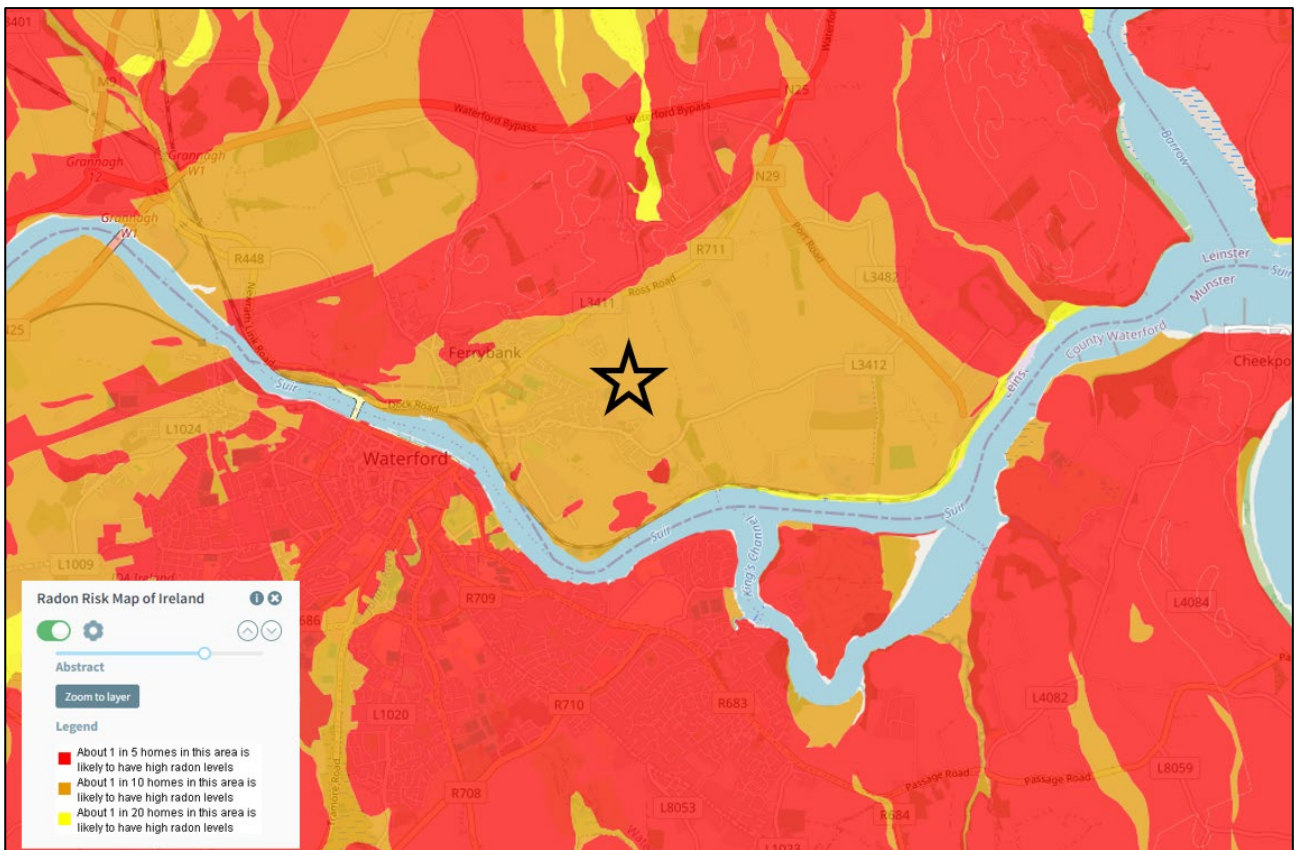


Figure 4.21: Radon Risk; approximate site location indicated by the black star (Source: EPA Maps, 2024)

4.18 PROTECTED STRUCTURES

The National Monuments Service (NMS) maps shows that there are no sites on the National Inventory of Architectural Heritage within 100m of the site. The nearest site (Reg. No. 22900904) is located 1.1km west of the site. See Figure 4.22 for locations of the two nearest National Inventory of Architectural Heritage sites and Table 4.3 for information regarding these sites.

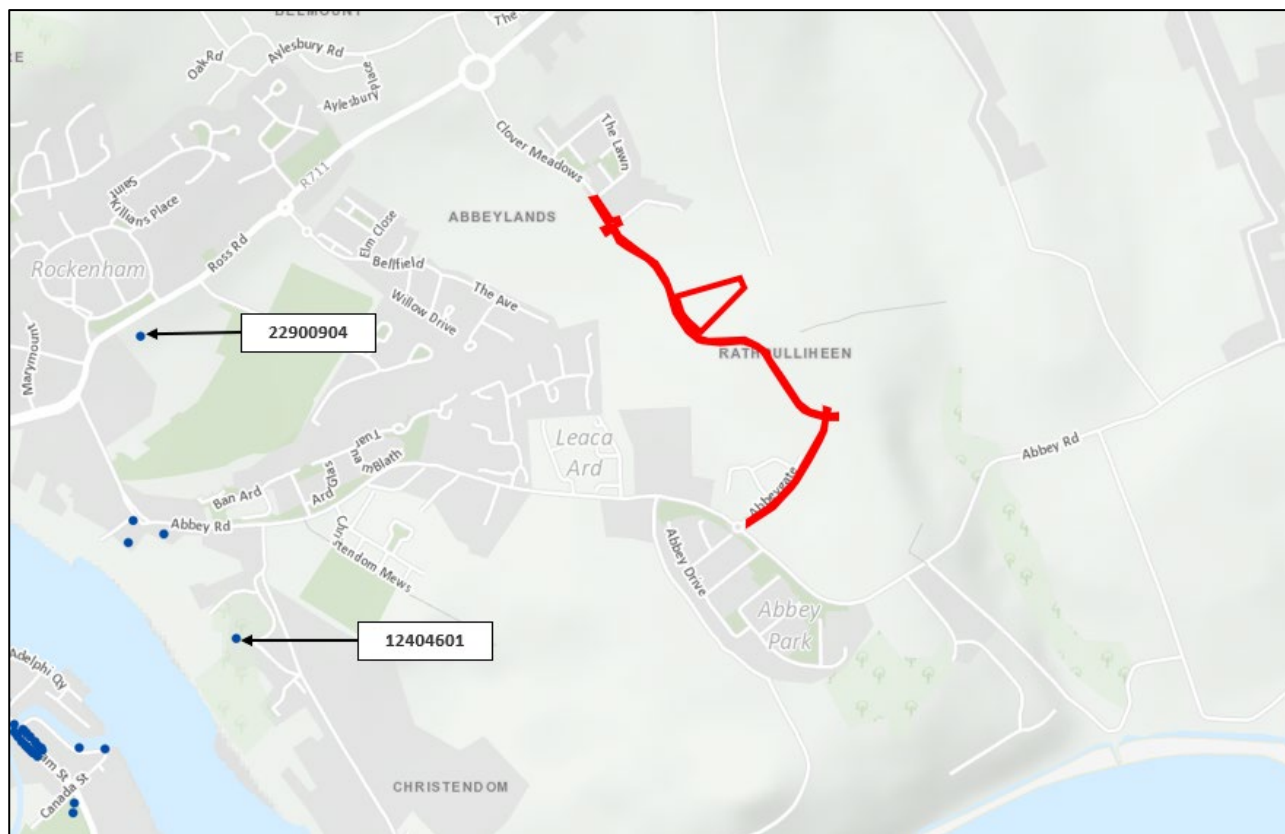


Figure 4.22: National Inventory of Architectural Heritage sites and Protected Structures in the vicinity of the proposed site; approximate site location indicated by the red outline (Source: NMS, 2024)

The NMS maps indicate that there are two sites on the Sites and Monuments Records within 100m of the site. The closest (KK046-035----) feature is located 52.3m of the site. See Figure 4.23 for the location of this Sites and Monuments Record and other nearby records and Table 4.3 for information regarding nearby sites.

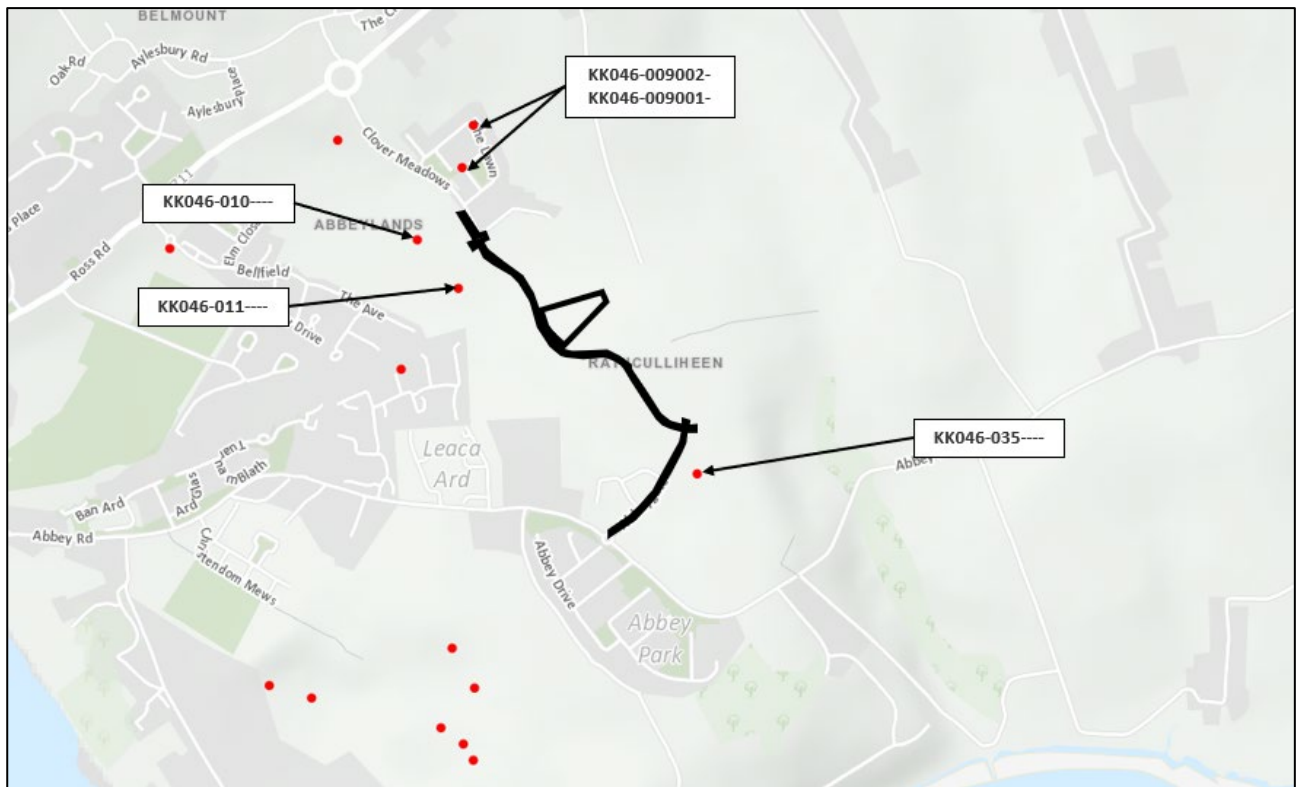


Figure 4.23: Sites and Monuments Records in the Vicinity of the Proposed Site; approximate site location indicated by the black outline (Source: NMS, 2024)

Table 4.3: Summary Of National Inventory Of Architectural Heritage Sites and Record of Protected Structures Near the Site

NIAH Ref.	Name	Location	Description	Distance from site
22900904	Church/chapel	Catholic Church Of Sacred Heart, Ross Road, Abbeylands, Ferrybank, Waterford	Detached seven-bay single- and two-storey Gothic Revival Catholic church, built 1904, possibly incorporating fabric of earlier church, 1834, on-site comprising five-bay double-height nave with five-bay single-storey lean-to side aisles to north-east and to south-west, single-bay double-height transepts to north-east and to south-west, single-bay double-height lower chancel to south-east having single-bay single-storey over raised basement flanking bays, and single-bay three-stage tower, dated 1867, to north-west on a square plan having polygonal broach spire.	1.03km W
12404601	House	Rockland House, Christendom, Ferrybank, Kilkenny	Detached three-bay two-storey house, c.1825, possibly over basement. Extensively renovated and extended comprising single-bay two-storey recessed end bay to left, and single-bay three-storey linking bay to right extending into seven-bay three-storey over raised basement wing having single-bay single-storey gabled projecting glazed porch added to centre ground floor to accommodate use as hotel. Hipped slate roof (hipped artificial slate roofs to additional ranges) with clay ridge tiles, rendered chimney stacks, and replacement uPVC rainwater goods on rendered eaves. Gabled glazed roof to porch on iron frame. Painted rendered, ruled and lined walls. Square-headed window openings with cut-limestone sills, nine-over-six (ground floor) and six-over-six (first floor) timber sash windows (concrete sills to additional ranges with six-over-six timber sash windows). Elliptical-headed door opening under glazed porch on iron frame with panelled pilaster surround having archivolt, glazed timber panelled door having sidelights on panelled risers, and fanlight. Interior with timber panelled reveals/shutters to window openings. Set back from road in own grounds. (ii) Detached four-bay single-storey outbuilding with half-attic, c.1825, to north on a T-shaped plan with elliptical-headed carriageways to ground floor, and three-bay full-height central return to west. Now disused. Hipped slate roof on a T-shaped plan with clay ridge tiles, red brick Running bond chimney stack, copper-clad cylindrical vents to apex on tapered square-profiled bases, rooflights, and cast-iron rainwater goods on red brick eaves. Unpainted rendered, ruled and lined walls with red brick quoins to corners. Square-headed window openings with cut-limestone sills, and red brick block-and-start surrounds (blocked-up with concrete block infill having iron bars). Square-headed door openings with red brick block-and-start surrounds (blocked-up with concrete block infill). Series of elliptical-headed carriageways to ground floor with red brick block-and-start surrounds (blocked-up with concrete block infill).	1.2km W

Table 4.4: Summary of Sites and Monuments Records Near the Site

NIAH Ref.	Name	Location – Townland	Description	Distance from site
KK046-035----	Concentric enclosure	Rathculliheen	A possible concentric enclosure (overall diam. c. 90m) visible as a cropmark on aerial photographs (ASIAP (1) 23-27 and 29, August 1996). There is a gap of c. 20-30m between the inner (diam. c. 50m) and outer enclosure.	52.3m E
KK046-011----	Fulacht fia	Abbeylands	The Archaeological Survey of Ireland (ASI) is in the process of providing information on all monuments on The Historic Environment Viewer (HEV). Currently the information for this record has not been uploaded.	81m W
KK046-009002-	Fulacht fia	Abbeylands	The Archaeological Survey of Ireland (ASI) is in the process of providing information on all monuments on The Historic Environment Viewer (HEV). Currently the information for this record has not been uploaded.	122.8m N
KK046-010----	Fulacht fia	Abbeylands	The Archaeological Survey of Ireland (ASI) is in the process of providing information on all monuments on The Historic Environment Viewer (HEV). Currently the information for this record has not been uploaded.	125m NW

All information taken from the Ordnance Survey Ireland website.

4.19 NEARBY SITE INVESTIGATIONS

The Geological Survey of Ireland (GSI) have compiled a database of site investigations carried out in Ireland. There were two geotechnical sites within 1km of the proposed site. The nearest is an investigation for a residential development (Report ID 5,934) conducted 0.74km west of the site in 2005 and two investigations conducted 0.66km to the west (Report ID 4578 and Report ID 6903), one of which was undertaken in 2006 for a commercial development. See Figure 4.24 for the location of nearby site investigations and boreholes.

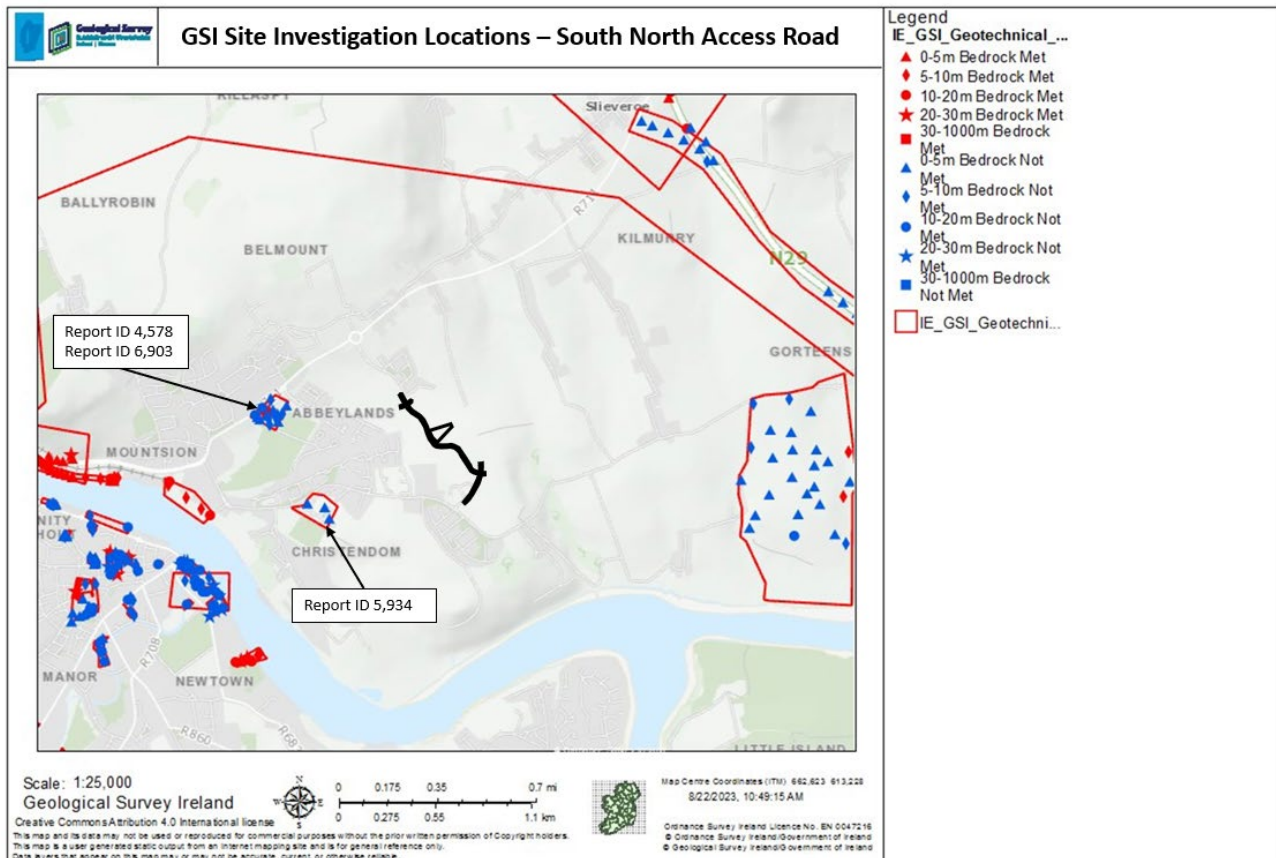


Figure 4.24: Nearby Boreholes and Site Investigations; approximate site location indicated by the black outline (Source: GSI, 2024)

5 CHARACTERISTICS OF PROPOSED DEVELOPMENT

Schedule 7 of SI 296 of 2018 requires that the characteristics of a proposed development are identified. In particular, it references the following sections:

5.1 SIZE AND DESIGN

This project relates to the proposed new link road between the Clover Meadows and Abbeygate housing developments and car park in Ferrybank, County Kilkenny. Proposed works include:

- Construction of a new road, the South – North Access Road, approximately 940m in length, from the end of the existing access road serving the Clover Meadows Housing Estate to the end of the existing access road serving the Abbeygate Housing estate/Abbeygate Shopping Centre. This to create a continuous road link between the existing Belmont Road Roundabout on the Belmont Road (R711) to the existing Abbeygate Roundabout on the Abbey Road (LP3412)
- Provision of a Traffic Signal controlled crossroads junction on the access road located approximately 270m north-east of the existing Abbeygate Roundabout on the Abbey Road (LP3412).
- Provision of a Traffic Signal controlled crossroads junction on the access road located approximately 430m south-east of the Belmont Roundabout on the Belmont Road (R711).
- Provision of a new road overbridge over the existing Greenway.
- Minor upgrades to the existing Clover Meadows and Abbeygate access roads being tied into to provide improved pedestrian and cycle facilities and provide additional fencing where required.
- Provision of cyclist and pedestrian facilities along the new access road.
- Provision for future bus-stops each side of the new road.
- Provision of a new carpark for the Greenway accommodating c.170 no. parking spaces and 2 no. coach parking spaces along with toilets (with water supply and wastewater treatment), bicycle parking, accessible parking spaces and car parking spaces of which 20% are provided for e-cars with associated charging facilities.
- Provision of a shared surface link from the footpath on the South-North Access Road to the existing Greenway via a ramped shared surface with stepped access also provided.
- Provision of public lighting on the South - North Access Road and Greenway car park.
- The installation of road markings and signage.
- Provision of a surface water drainage system to include Sustainable Drainage Systems (SuDS), attenuation storage both above and below ground and flow restrictors to maintain discharge of surface water to greenfield runoff rates. This also includes an outfall along the adjacent Greenway.
- Hard and soft landscaping including boundary treatments.

5.2 CUMULATION WITH OTHER EXISTING DEVELOPMENTS/DEVELOPMENT THE SUBJECT OF A CONSENT

Grants of planning in the vicinity of the site were reviewed to identify works of a significant scale which may produce in-combination effects with the proposed works. The following planning grants of larger than a single domestic scale were identified:

- **19730:** construction of 98 no. residential units immediately north of the study area
- **20453:** construction of 40 no. residential units within the study area
- **20845:** for the following: a) change of use of the existing first floor area to residential use to provide 15 no. apartments, b) construct a new rooftop penthouse containing 8 no apartments (23 apartments in total) together with c) elevational modifications, and all associated site works

Other granted planning permissions in the vicinity of the site pertain primarily to small-scale agricultural, residential, and commercial constructions, alterations, extensions, change of use, or retention of works. Although three larger planning grants were identified within and in the vicinity of the site, due to the small scale of the proposed development and the distance to the nearest SAC and pNHA, in-combination effects with these and other existing land uses in the vicinity of the site are considered to be unlikely and not significant.

5.3 THE NATURE OF ANY ASSOCIATED DEMOLITION WORKS

It is not anticipated that any buildings/structures will require demolition as part of the proposed project.

5.4 THE USE OF NATURAL RESOURCES, IN PARTICULAR LAND, SOIL, WATER AND BIODIVERSITY

There will be no long-term use of any natural resources in association with the project.

5.5 PRODUCTION OF WASTE

Any waste generated during the construction will be reused on-site where possible, e.g., topsoil generated will be reused to provide landscaping and excavated material will be reused for backfill where this material meets acceptable construction criteria. However, if offsite disposal is required for any material, it will be managed in accordance with all relevant waste management legislation. There will be no generation of the waste following the completion of the works.

5.6 POLLUTION AND NUISANCES

Potential water quality impacts during the construction phase include increased siltation and turbidity to surface runoff during the construction of the access road and car park as well as pollution from surface runoff due to accidental spillages of oils or fuels from machinery, concrete/cement, bitumen, paint, etc. As seen in Figure 4.10, the Ferrybank stream creates an indirect hydrological connection between the site and the Lower River Suir SAC (0.83km downstream) and the King's Channel pNHA (1.4km downstream) and the site. However, this stream is located approximately 0.26km from the site (see Figure 4.10). Therefore, changes in water quality in the Lower River Suir SAC and the King's Channel pNHA are anticipated to be unlikely and negligible, given the distance from the site to the Ferrybank Stream (0.26km).

During the operational phase, surface water from the site will be treated before discharge by attenuation and oil separation to ensure that the water quality of the receiving watercourse is not adversely impacted. The rate of discharge will be discharged at an allowable rate equal to or lesser than the green field discharge rate (estimated Q_{bar} rate is 6.7l/s) from the development into the nearest stream. The development's storm network outfall chamber will be fitted with a site flow control device, this will help restrict the stormwater flows to pre-development levels for Soil Type 2. Therefore, during the operational phase of the project the site will have an indirect hydrological connection to the Lower Suir SAC (1786m downstream), via the drainage along the greenway to the Ferrybank Stream (550m) and from the Ferrybank Stream to the River Suir (1236m). See Figure 5.1 below. Although, the operational phase of the proposed project will contribute intermittent additional surface water to the Ferrybank Stream and the River Suir due to rainfall events, it is unlikely to cause a significant impact on the Lower River Suir SAC due to the nature of the works and distance downstream,

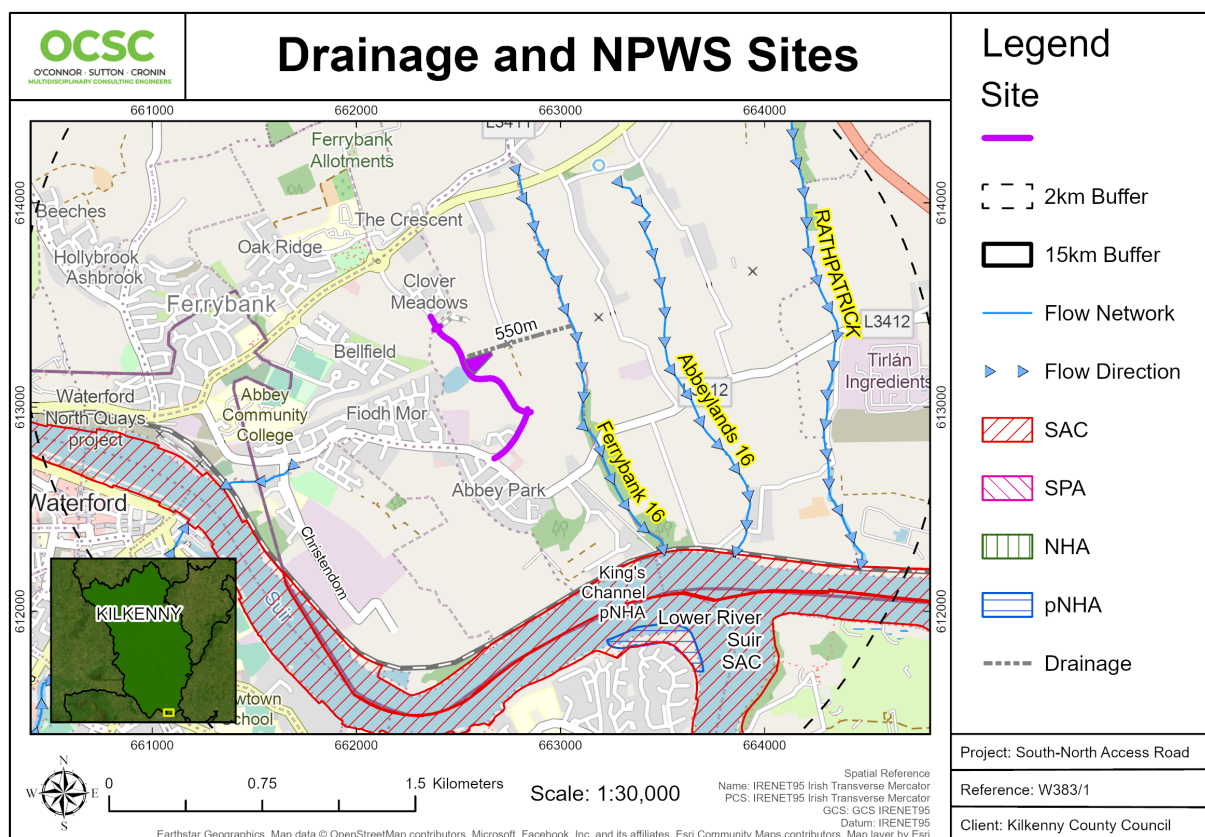


Figure 5.1: Site Drainage to the Ferrybank Stream (Source: OCSC, 2024)

There will be a temporary increase in noise during the proposed works. However, noise levels will not exceed levels typical of construction works and will be short-term in duration. There will be a moderate increase in local traffic during the construction activities, i.e., bringing supplies to the site and removal of material if required. This disturbance will be short-term. Some dust will likely be generated during the works; however, this nuisance will be managed in line with best practices. There will be no pollution or nuisance following the completion of the works other than noise related to the use of the new roadway and car park.

5.7 THE RISK OF MAJOR ACCIDENTS OR DISASTERS INCLUDING THOSE CAUSED BY CLIMATE CHANGE

There is minimal risk of major accidents or disasters including those caused by climate change given the small-scale and short duration of the proposed construction works and the nature of the project during its operational phase. Any risks that are present are associated with typical construction activities including working with machinery and future use of the roadway. The appointed contractor will be required to prepare and implement a site-specific Construction Environmental Management Plan (CEMP) clearly detailing all necessary environmental control measures.

5.8 RISKS TO HUMAN HEALTH – E.G., WATER CONTAMINATION/ AIR POLLUTION

Risks to surface water during the construction phase will be minimised via engineering design in line with best practices. In addition, contractors will be required to implement construction methods in line with best practices regarding fuel and chemical storage, excavation, waste storage, and use on the site of any items that may pose a risk to surface water or groundwater.

Based on the GSI groundwater well database (refer to section 4.15), one well is potentially located within the site or very close to the site boundary. There are a further fifteen wells or springs within 1km of the site.

The GSI database provides information on groundwater source protection zones (SPZs) (e.g., areas of contribution to water supply bores). SPZ delineation provides an assessment of the land area that contributes groundwater to a borehole or spring. The purpose of SPZs is to provide additional protection to safeguard drinking water quality through constraining the proximity of an activity that may impact upon a drinking water abstraction. The nearest SPZ is the Glenmore Public Water Supply which is located 11.5km northwest of the site.

Given the short-term nature of the works and the undertaking of works in accordance with best practices, the risk to groundwater quality during either the construction or operations phase of the works is predicted to be unlikely and imperceptible subject to implementation of the site-specific CEMP which will address the mitigation of risks to groundwater. In addition, air pollution will be limited to typical construction nuisances such as dust. Best practice guidelines will be applied to noise and dust nuisance mitigation. Overall, the risk to human health is low, subject to the implementation of mitigation measures in the CEMP.

6 TYPES AND CHARACTERISTICS OF POTENTIAL IMPACTS

The likely effects on the environment of the proposed development in relation to specified criteria are assessed below.

6.1 MAGNITUDE AND SPATIAL EXTENT OF IMPACT

This project relates to the proposed new link road between the Clover Meadows and Abbeygate housing developments and a car park in Ferrybank, County Kilkenny. Proposed works include the construction of a carriageway with footpaths, a cycle lane, a verge, a car park and an associated drainage system. There is an indirect hydrological connection between the proposed project and the Lower River Suir SAC and the King's Channel pNHA via the Ferrybank Stream (0.26km from the site). Due to the small scale and short duration of this project, the potential impact to the nearest protected areas, the Lower River Suir SAC (and King's Channel pNHA is considered unlikely, not significant and imperceptible.

6.2 THE NATURE OF THE IMPACT

This project relates to the proposed new link road between the Clover Meadows and Abbeygate housing developments and a car park in Ferrybank. This project is small in magnitude and extent. The Ferrybank stream establishes an indirect hydrological connection with the Lower River Suir SAC during construction phase, situated 0.83km downstream, and 1.79km downstream of the site during the operational phase. Despite the surface water discharging to the nearest stream (at an allowable discharge rate and based on the greenfield runoff calculation which will be restricted to pre-development levels, estimated Q_{bar} rate is 6.7l/s), creating an indirect hydrological link, the significant separation between the proposed project and the Lower River Suir SAC and in the absence of mitigation measures, impact to this and other European sites within the ZOI is considered to be unlikely and negligible. Therefore, potential impacts relate primarily to noise, vibration, and lighting and are likely to be temporary and not significant.

6.3 THE TRANSBOUNDARY NATURE OF THE IMPACT

Due to the scale and nature of the works, transboundary impacts are unlikely.

6.4 THE INTENSITY AND COMPLEXITY OF THE IMPACT

This project relates to the proposed new link road between the Clover Meadows and Abbeygate housing developments and a car park in Ferrybank. This project is small in scale and duration. Any potential impacts are considered to be unlikely, temporary, and not significant.

6.5 THE PROBABILITY OF THE IMPACT

The impact of the project on nearby designated sites is predicted to be unlikely and imperceptible during the construction and operations phases. Impact on local flora and fauna within the area of construction is predicted to be short-term, and moderate during the construction phase and not significant during the construction phase.

6.6 EXPECTED ONSET, DURATION, FREQUENCY AND REVERSIBILITY OF THE IMPACT

Based on the scope of work, the short duration of the project, and the distance to the nearest designated national and European sites, the Lower River Suir SAC and the King's Channel pNHA, which are located 0.78km and 1km south of the site, respectively, at their closest points, potential impacts to designated sites are expected to be unlikely, not significant, and short-term subject to the implementation of the site-specific CEMP.

6.7 THE CUMULATION OF THE IMPACT WITH THE IMPACTS OF OTHER EXISTING AND/OR FUTURE DEVELOPMENTS

Cumulative impacts of the proposed works in conjunction with committed developments based on a review of planning grants and existing activity in the area are predicted to be unlikely and not significant.

6.8 THE POSSIBILITY OF EFFECTIVELY REDUCING THE IMPACT

The project involves a work area which has been limited to the construction of a carriageway with footpaths, a cycle lane, a verge, a car park and an associated drainage system. A CEMP detailing all required mitigation measures will be prepared and implemented by the appointed contractor to reduce the impact of the site works on the surrounding environment with regard to construction noise and dust, potential impacts to surface water and groundwater, and nuisances associated with localised traffic disruption.

6.9 SCREENING DECISION

Based on the duration, nature, and scale of the proposed project, it is considered that the overall impact on the receiving environment will be unlikely, short-term, and not significant subject to the implementation of all mitigation measures detailed in the CEMP.

An AA Screening Report has been prepared by OCSC which concluded that the proposed project is not likely to give rise to adverse effects on any designated European sites, alone or in combination with other plans or projects. Therefore, a Natura Impact Statement (NIS) is not required for this proposed project.

Please refer to the completed Screening Checklist (Table 6.1) identified in the European Commission publication Environmental Impact Assessment of Projects, Guidance on Screening (2017).

Table 6.1: Environmental Impact Assessment of Projects Screening Checklist

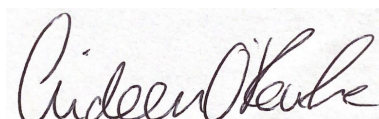
Checklist	Response
Will there be a large change in environmental conditions?	No
Will new features be out-of-scale with the existing environment?	No
Will the impact be unusual in the area or particularly complex?	No
Will the impact extend over a large area?	No
Will there be any potential for transboundary impact?	No
Will many people be affected?	Minor, short-term impacts. Overall positive impact in providing a new link road, opportunities for non-motorised transport, and improved drainage.
Will many receptors of other types (fauna and flora, businesses, facilities) be affected?	No (refer to AA screening)
Will valuable or scarce features or resources be affected?	No (refer to AA screening)
Is there a risk that environmental standards will be breached?	No (refer to AA screening)
Is there a risk that protected sites, areas, and features will be affected?	No
Is there a high probability of the effect occurring?	No
Will the impact continue for a long time?	Temporary to short term.
Will the effect be permanent rather than temporary?	No (refer to AA screening)
Will the impact be continuous rather than intermittent?	Temporary to short-term during construction.
If it is intermittent, will it be frequent rather than rare?	-
Will the impact be irreversible?	No
Will it be difficult to avoid, or reduce or repair or compensate for the effect?	No

7 VERIFICATION

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