Environmental Impact Assessment Report

NISA

North Irish Sea Array

Volume 10: Appendices (Onshore)

Appendix 22.2 Onshore Water Framework Directive Compliance Report

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Water Framework Directive Assessment

1. Introduction

This report presents the findings of the Water Framework Directive (WFD) (2000/60/EC) assessment for the potential impacts of the activities on the onshore environment associated with the North Irish Sea Array (NISA) Offshore Wind Farm (hereafter referred to as the proposed development).

The purpose of this document is to demonstrate compliance of the proposed development with the objectives of the WFD, by ensuring proposed activities during construction, operation and decommissioning do not result in adverse effects to designated water bodies (or WFD sensitive areas). This document also demonstrates that the proposed development will not jeopardise the potential for WFD water bodies to achieve good chemical or ecological status, whether already achieved or as a future objective.

This assessment must be read in conjunction with the EIAR. In particular the following documents are referenced:

- Volume 2, Chapter 7: Onshore Description of Development (hereafter referred to as the 'Onshore Description Chapter') provides a description of the proposed development
- Volume 2, Chapter 9: Onshore Construction Strategy (hereafter referred to as the ' Onshore Construction Chapter') describes the construction strategy for the proposed development
- Volume 4, Chapter 22 Water (hereafter referred to as the Water chapter)
- Volume 4, Chapter 21: Land, Soils, Geology and Hydrogeology (hereafter referred to as the Land and Soils chapter)
- Volume 4, Chapter 23: Biodiversity (hereafter referred to as the Biodiversity chapter)
- Volume 7, Figures

1.1 Scope

This WFD assessment covers the proposed development boundary as defined in the Onshore Description Chapter and contains the following information:

- Baseline environment and WFD waterbody status,
- Potential risks to WFD waterbodies for each of the proposed development activities,
- Determine whether scoped activities are likely to cause deterioration and whether deterioration will have a significant effect on WFD elements, and
- Consider measures to mitigate impacts of relevant activities and, if possible, improve the state of the water environment.

1.2 Summary of Data Sources

Data relating to WFD assessment has been obtained from the following sources:

- EPA Unified GIS Application (https://gis.epa.ie/EPAMaps/)
- Ireland's National Water Framework Directive Monitoring Programme 2019 - 2021 (EPA, 2021a)
- River Basin Management Plan for Ireland 2018 -2021 (Department of Housing, Planning and Local Government, 2018)
- Water Quality in Ireland Report 2013 - 2018 (EPA, 2019)

- Water Quality in 2022 - an indicators report (EPA, 2023a)
- Urban Wastewater Treatment in 2021 (EPA, 2022)
- Bathing Water Quality in Ireland, A Report for the Year 2022 (EPA, 2023b)

2. Regulatory Background

2.1 Water Framework Directive (WFD)

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (hereafter referred to as the Water Framework Directive (WFD) was established in 2000 by the European Union (EU), to provide a framework for the protection of groundwater and surface water bodies. Surface water bodies (rivers, lakes, transitional and coastal waters) are assessed through ecological and chemical status; whilst groundwater bodies are assessed through quantitative and chemical status. The WFD requires all member states to protect and improve water quality in all waters so that good ecological status is achieved by 2015 or, at the latest, by 2027. Ecological status assessments are performed by all member states every 6 years, in 2009, 2015 and 2021. Water bodies in moderate, poor, or bad ecological status require mitigation and restoration to achieve the good status objective. To plan such measures the pressures that prevent water bodies from achieving good ecological status must be identified.

As a member state of the EU, Ireland is obliged to transcribe the WFD into relevant regulations. The WFD was transcribed into Irish law through The European Communities (Water Policy) Regulation 2003 (S.I. 722 of 2003) and 2014; Schedule 5 of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. 272 of 2009), as amended; EU Groundwater Regulations (2010). The Environmental Protection Agency (EPA) acts as the environmental regulator of the Water Services Act (2013) and sets standards and enforces compliance with the EU and national legislation for water use. A key component of the WFD is the establishment in each member state of a national monitoring programme to provide integrated assessment of water status at the river basin district level. This monitoring programme provides the baseline from which to assess the trajectory of change of water body status. This is reported on as part of the River Basin Management Plan (RBMP).

The current baseline quality (referred to as the current ‘status’) of all water bodies is reported every six years as part of the RBMP cycle in Ireland. The EPA relates to these different cycles of data. This study will use the most relevant cycle of RBMP data accessed through the EPA and RBMPs.

2.2 Protected Areas Under the WFD

Relevant protected areas under the WFD are identified as follows:

2.2.1 Areas Designated as Drinking Waters

Areas designated for the abstraction of water intended for human consumption under Article 7 of the WFD.

2.2.2 Economically Significant Aquatic Species

Areas designated for the protection of economically significant aquatic species under the Conservation of Natural Habitats and of Wild Fauna and Flora Directive (92/43/EEC).

2.2.3 Bathing Waters

Bodies of water designated as recreational waters, including areas designated as bathing waters under the revised Bathing Water Directive (rBWD) (2206/7/EC). Under the Bathing Water Regulations, local authorities are required to monitor bacterial pollution (such as *Escherichia coli* (*E. coli*) and intestinal enterococci (IE)) in water bodies, the presence of which may indicate pollution from sewage.

An increase in these bacterial concentrations correlates to a decrease in the water quality. The outputs from this bacterial monitoring of Bathing Waters (BWs) are compiled by the EPA and submitted to the European Commission.

2.2.4 Nutrient Sensitive Waters

Nutrient-sensitive areas, including areas designated as vulnerable zones under Directive 91/676/EEC and areas designated as sensitive areas under Directive 91/271/EEC. The Urban Wastewater Treatment Regulations 2001 (S.I. 254 of 2001) (which functions to transpose the UUWTD into Irish law and update the Environmental Protection Agency Act 1992 (Urban Wastewater Treatment) Regulations 1994 (as amended in 1999)) list nutrient sensitive waters. In areas where the concentrations of nitrate in the water body exceed levels set in the Nitrates Directive (91/676/EEC), are designated as nitrate vulnerable zones (NVZs).

In these NVZs mandatory rules must be enforced to reduce nitrate loss from agricultural land, protecting vulnerable resources from water pollution.

2.2.5 Protected Areas

Areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 92/43/EEC and Directive 79/409/EEC.

2.3 National Implementation

To ensure compliance with the WFD, it is necessary to consider the elements of surface and groundwater systems. Ecological status of surface water is defined through assessment of ecological and chemical status. Ecological status relates to the biological quality elements supported by the physic-chemical elements and hydro morphology elements. Chemical status relates to the amount of priority substances, priority hazardous substance (i.e., listed in the EC Environmental Quality Standards Directive (2008/105/EC); transposed in Ireland by the European Communities Environmental Objectives (Surface Waters) Regulations 2009 S.I. No. 272/2009 (as amended)) and other pollutants (carried from relevant directives, i.e., Council Directive 76/464/EEC; Council Directive 86/280/EEC) in the aquatic environment.

All new developments in Ireland that may have an impact on the water environment are required to comply with objectives of the WFD, under European Communities Environmental Objectives (Surface Waters) Regulations 2009 S.I. No. 272/2009 (as amended). This includes ensuring that no changes occur that cause a deterioration of the current status of any water body, and that the development does not prevent the achievement of the future status objectives of any water body. Water body status deterioration can occur as a result of deterioration of any of the quality elements that make up the overall status (e.g., biological, physicochemical or hydro morphological elements for surface waters) even where this does not result in a lowering of overall water body status.

The most likely pressure point from the development will be on surface water biological quality elements through impacts to aquatic flora, benthic invertebrate fauna, and fish fauna; physico-chemical elements through impacts to oxygenation conditions; hydro morphology elements through impacts to hydrological regime, river continuity and morphological conditions.

3. Assessment Methodology

There are no published guidelines that can be used to undertake WFD assessments on water bodies in Ireland. In the absence of published methodologies, the EU-level guidance document ‘ Water Framework Directive Project assessment checklist tool’ (JASPERS, 2018) was used.

Other additional guidance documents published by the UK's Environment Agency for WFD assessments were also used to inform the assessment. These documents recommend a staged analysis progressing through each as required as outlined below:

- Stage 1 – Screening
- Stage 2 – Scoping
- Stage 3 – Detailed Assessment
- Stage 4 – Identify mitigation and monitoring measures; and
- Stage 5 – Derogation, i.e., if the assessment concludes that the proposed development is not compliant with the objectives of the WFD

4. STAGE 1: Screening

4.1 Proposed Development

The aspects of the proposed development which this assessment is based on includes the onshore infrastructure landward of the high-water mark. This primarily consists of a transition from offshore to onshore export cables, substations, cable route and connection into the national grid as follows :

- Landfall site which includes installation of the onshore export cables at Transition Joint Bays (TJB) via Horizontal Directional Drilling (HDD), underground crossing of Dublin to Belfast rail line via HDD and onshore underground cable route to grid facility
- Grid facility, which includes the compensation substation and Bremore substation.
- Approximately 33-35km of onshore underground cables
- Grid connection to the existing 220kV substation at Belcamp, Swords, Co. Dublin

The interface between the onshore cable route and watercourse crossings is shown in Figures 22.1 and 22.2 in Volume 7 of the EIAR. The study area comprises of a 250m buffer on each side along the route. Further details are provided in the Onshore Construction and Onshore Description chapters.

The onshore cable route crosses 25 No. watercourses between the onshore grid facility and the grid connection point at the existing substation at Belcamp. As described below and further described in the Onshore Construction chapter, four different crossing methods have been considered for each watercourse crossing and, in some instances, multiple crossing methods have been included in this planning application. However, at the detailed design/construction stage just one of these methods at each watercourse crossing will be chosen as a preferred option. It is assumed that the offline watercourse crossings will be located anywhere within the proposed development boundary. The onshore cable route interfaces with the watercourses, with the approximate Irish Transverse Mercator (ITM) reference coordinates are listed in Table 1.

Table 1: Summary of cable route river or stream crossings and the ITM reference coordinates.

Water Crossing Ref. No	EPA Waterbody Name	WFD Waterbody name	Crossing ITM X Coordinate	Crossing ITM Y Coordinate
Landfall Site	North Irish Sea	North Irish Sea (HA08)	719811	765320
Wx01	Bremore Stream	Matt_010	716974	764321
Wx02	Bracken (Matt) River	Matt_010	720022	763052

Water Crossing Ref. No	EPA Waterbody Name	WFD Waterbody name	Crossing ITM X Coordinate	Crossing ITM Y Coordinate
Wx03	Knock Stream	Matt_010	719491	760778
Wx04	Balrothery Stream	Matt_010	719103	760137
Wx05	Balrickard Stream	Matt_010	718600	758554
Wx06	Rowans Big Stream	Matt_010	718593	758439
Wx07	Rowans Little Stream	Matt_010	718580	758301
Wx08	Courtlough Stream	Ballough Stream_010	718832	756775
Wx09	Oberstown Stream	Ballough Stream_010	719280	755878
Wx10	Aldrumman Stream	Ballough Stream_010	719422	755619
Wx11	Ballough Stream	Ballough Stream_020	719828	752279
Wx12	Deanestown Stream	Ballyboghill_010	719810	751469
Wx13	Ballyboghill Stream	Ballyboghill_010	719806	751390
Wx14	Turvey Stream	Turvey_010	719768	750897
Wx15	Staffordstown Stream	Turvey_010	718986	748788
Wx16	Broadmeadow River	Broadmeadow_040	718729	748251
Wx17	Ward River	Ward_040	718695	748167
Wx18	Seapoint Stream	Gaybrook_010	719335	747507
Wx19	Greenfields Stream	Gaybrook_010	719482	747412
Wx20	Gaybrook Stream	Gaybrook_010	720899	745784
Wx21	Hazelbrook Stream	Sluice_010	721136	744876
Wx22A	Sluice Stream	Sluice_010	721088	743359
Wx22B	Sluice Stream	Sluice_010	721160	743383
Wx23A	Cuckoo Stream	Mayne_010	721023	741738
Wx23B	None (Cuckoo Stream Flood extents)	None (Cuckoo Stream Flood extents)	722056	741662
Wx23C	None (Cuckoo Stream Flood extents)	None (Cuckoo Stream Flood extents)	722280	741655
Wx24A	Mayne Stream	Mayne_010	721161	741195
Wx24B	Mayne Stream	Mayne_010	722097	741459
Wx24C	Mayne Stream	Mayne_010	722234	741428
Wx25	Mayne Stream	Mayne_010	719246	741332

4.2 Proposed Construction Methodology

Details on the onshore elements of the proposed development is described in the Onshore Description Chapter. The Water chapter assesses potential effects to waterbodies through four scenarios as listed in Table 2.

Table 2:Potential effects to WFD waterbodies through four scenarios

Scenario	Description
Do nothing scenario	The baseline environment describes the existing waterbodies within the study area as identified and categorised under the RBMP 2018-2021 and reported by the EPA.
Construction phase	The construction phase is estimated to be undertaken over a two-year period, subject to obtaining planning approval and the relevant permits and licences. The assessment considers the potential impacts of the proposed development construction

Scenario	Description
	activities prior to the implementation of mitigation or control measures. The following construction activities are anticipated with a potential to have direct WFD effects in WFD waterbodies: Open Cut Trenching through watercourses HDD operations (underneath water courses that may discharge drilling mud/fluids to the surrounding environment. Indirect WFD effects will mainly be the downstream water quality effects associated with onshore construction activity.
Operational phase	The operational phase effects are limited to permanent above ground structures which includes the compensation substation and Bremore substation at the grid facility site adjacent to the landfall site. The potential impacts predicted for the operational phase are related to water quality and surface runoff which may occur due to increased impermeable areas which may lead to increased surface runoff and increase in pollution and sediment load entering surface water receptors from maintenance works required. The onshore export cables, underground cable route and joint bays are excluded as these will be located underground. Maintenance of the underground cables will comprise of an inspection, approximately once every 2 years or ad-hoc whenever needed in response to a cable fault or issue, by means of the link box and communication chambers, which will be located at every joint bay.
Decommissioning phase	Once the proposed development has reached the end of its operational life, it is anticipated parts of it will be decommissioned. However, as the grid facility and onshore cable route (from the grid facility to the existing substation at Belcamp) will form part of the wider transmission system such infrastructure will be left in-situ.

4.3 Description of the Study Area

The onshore infrastructure of the proposed development is located in north County Dublin and falls within two local authorities, the majority being within Fingal County Council (FCC) and a small area within Dublin City Council (DCC) at the very south of the onshore cable route. The proposed development stretches approximately 33-35km from the landfall site south of Bremore Head, Balbriggan to the existing substation at Belcamp. The majority of the onshore cable route will be located on public roads with some offline sections. Habitats within the site (landward of the HWM) are represented by those typically found in agricultural, sub-urban to urban, coastal, and estuarine environments. The onshore aspect of the proposed development is dominated by arable agricultural lands and hedgerow field boundaries, built structures and hardstanding in urban areas, coastal habitats at the landfall, and watercourses and riparian corridors throughout the onshore cable route. Part of the onshore cable route also runs alongside – but does not intersect with - estuarine habitats close to Malahide Estuary.

The bedrock geology of the region is predominantly underlain by Lower Carboniferous limestones, Silurian sedimentary rocks and Ordovician Volcanics. The aquifers (groundwater bearing bodies) within the area of the proposed development have been classified by Geological Society of Ireland (GSI) as Locally Important Aquifer and Poor Aquifer.

Surface water linked habitats are identified as FW2 Lowland depositing river. These watercourses play a key role in connectivity throughout the landscape. Some have a high degree of naturalness and provide essential habitat for aquatic and terrestrial life. Plant species included *Apium nodiflorum, Phalaris arundinacea, Iris pseudacorus, Potamogeton spp., Rubus fruticosis agg., Scrophularia nodosa, Calystegia spp., Urtica dioica, Rosa canina, Rumex spp., Heracleum sphondylium, Crataegus monogyna, Arrhenatherum elatius, Senecio jacobaea,* and *Salix spp*.

4.4 WFD Waterbodies

4.4.1 Surface WFD Waterbodies

The EPA catchment and sub-catchment details for each water crossing are summarised in Table 3 and Image 4.1. Wx1-Wx17 occur within the Nanny-Delvin catchment (HA 08) and Wx18-Wx25 occur within Liffey and Dublin Bay (HA 09) catchment.

The Nanny-Delvin Catchment Summary (Nanny Delvin Catchment Report HA 08, EPA 2021) describes this catchment as including the area drained by the Rivers Nanny and Delvin and by all streams entering tidal water between Mornington Point and Sea Mount, Co. Dublin, draining a total area of 711km^2. The largest urban centre in the catchment is Swords, and the other main urban centres relevant to the study area are Lusk and Balbriggan. The total population of the catchment area is approximately 159,230 with a population density of 224 people per km^2 (CSO, 2022).

The Liffey and Dublin Bay Catchment Summary (Liffey and Dublin Bay Catchment Report HA 09) (EPA 2021) describes this catchment as including the area drained by the river Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point in County Dublin, draining a total area of 1,616km^2. The largest urban centre in the catchment is Dublin city.

The Liffey and Dublin Bay catchment contains the largest population (approximately 1,255,000) of any catchment in Ireland and is characterised by a densely populated, upland south-eastern area underlain by granites and a densely populated flat, low lying limestone area over the remainder of the catchment basin (CSO, 2022). The catchment area is heavily urbanised and industrialised.

The EPA River dataset is designed as a geometric river network for monitoring, management, and reporting purposes. The EPA has split up rivers and streams into smaller sections to allow areas to be easily distinguished. These segments are assignment segment codes (estuaries and canals are not assigned segment codes). The EPA's segmented coding and naming system has been applied throughout this chapter.

Table 3: Catchment and Sub-catchment Details for each Water Crossing (according to WFD cycle 3)

Water Crossing Ref. No.	River at crossing	WFD Sub-Catchment	WFD Catchment
Wx01	Bremore Stream	Palmerston_SC_010	Nanny-Delvin
Wx02	Bracken (Matt) River	Palmerston_SC_010	Nanny-Delvin
Wx03	Knock Stream	Palmerston_SC_010	Nanny-Delvin
Wx04	Balrothery Stream	Palmerston_SC_010	Nanny-Delvin
Wx05	Balrickard Stream	Palmerston_SC_010	Nanny-Delvin
Wx06	Rowans Little Stream	Palmerston_SC_010	Nanny-Delvin
Wx07	Rowans Big Stream	Palmerston_SC_010	Nanny-Delvin
Wx08	Courtlough Stream	Ballough[Stream]_SC_010	Nanny-Delvin
Wx09	Oberstown Stream	Ballough[Stream]_SC_010	Nanny-Delvin
Wx10	Aldrumman Stream	Ballough[Stream]_SC_010	Nanny-Delvin
Wx11	Ballough Stream	Ballough[Stream]_SC_010	Nanny-Delvin
Wx12	Ballyboghil Stream	Ballough[Stream]_SC_010	Nanny-Delvin
Wx13	Deanestown Stream	Ballough[Stream]_SC_010	Nanny-Delvin
Wx14	Turvey Stream	Ballough[Stream]_SC_010	Nanny-Delvin
Wx15	Staffordstown Stream	Ballough[Stream]_SC_010	Nanny-Delvin
Wx16	Ward River	Broadmeadow_SC_010	Nanny-Delvin
Wx17	Broadmeadow River	Broadmeadow_SC_010	Nanny-Delvin
Wx18	Seapoint Stream	Mayne_SC_010	Liffey and Dublin Bay
Wx19	Greenfields Stream	Mayne_SC_010	Liffey and Dublin Bay
Wx20	Gaybrook Stream	Mayne_SC_010	Liffey and Dublin Bay

Water Crossing Ref. No.	River at crossing	WFD Sub-Catchment	WFD Catchment
Wx21	Hazelbrook Stream	Mayne_SC_010	Liffey and Dublin Bay
Wx22	Sluice Stream	Mayne_SC_010	Liffey and Dublin Bay
Wx23A-C	Cuckoo Stream	Mayne_SC_010	Liffey and Dublin Bay
Wx24A-C	Mayne Stream	Mayne_SC_010	Liffey and Dublin Bay
Wx25	Mayne Stream	Mayne_SC_010	Liffey and Dublin Bay

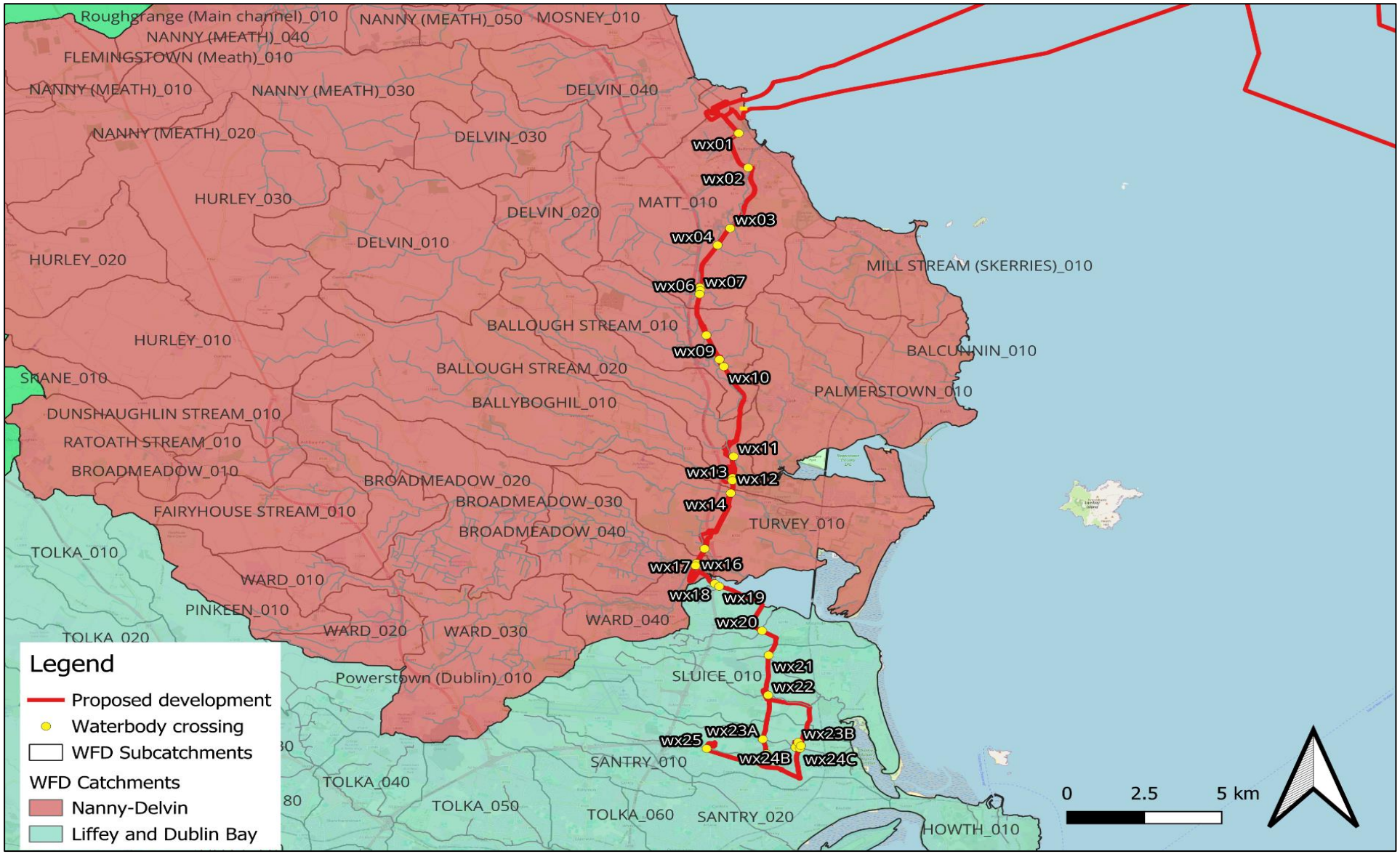

Image 4.1: Proposed Crossing Locations (not to scale)

4.4.2 Groundwater WFD waterbodies

Under the WFD, the regional hydrogeology has been assessed using the GSI groundwater viewer (GSI 2019b). The regional groundwater bodies (GWB) are shown in Figure 21.6 in Chapter 1: Volume 7 of this EIAR. The regional GWBs occurring within the proposed development are Dublin GWB, Swords GWB, Lusk-Bog on the rig GWB, Balrothery GWB and Balbriggan GWB.

4.4.3 Protected Areas

4.4.3.1 Areas Designated as Drinking Waters

The designated drinking water sites reviewed are presented in the Soils and Land chapter and in the Water chapter.

Within both the Nanny Delvin and the Liffey and Dublin Bay catchments, there are no drinking water abstractions associated with surface waters (EPA, 2021b). All groundwaters are nationally identified as Drinking Water protected areas. There are no pathways identified which may impacts the designated Drinking Water protected areas, so they are not considered further within this assessment.

A groundwater Source Protection Zone (SPZ) for the Bog of the Ring Public Water Supply (PWS) is present in the north of the region which is intercepted by the onshore cable route. The scheme is served by four boreholes which abstract water from the underlying bedrock aquifer.

4.4.3.2 Economically Significant Aquatic Species

The designated sites reviewed are linked to water, all other protected sites relating to ecological receptors are reviewed in the Biodiversity chapter.

No designated salmonid rivers were identified within the study area.

4.4.3.3 Bathing Waters

The designated bathing water sites reviewed are presented in the Water chapter.

There is one designated marine bathing water south of the landfall area (Balbriggan, Front Strand Beach). The website for beaches in Ireland (www.beaches.ie) was consulted to determine the most recent (2018 to 2021) Annual Water Quality Rating (AWQR) for this designated area and the Front Strand Beach at Balbriggan has a" Poor Quality" Status following the 2022 bathing season.

4.4.3.4 Nutrient Sensitive Waters

The designated nutrient sensitive water sites reviewed are presented in Volume 3: Chapter 22: Water of the EIAR.

There is one nutrient sensitive area in the study area. This is the Broadmeadow Estuary (Inner) designated under the Urban Wastewater Treatment (UWWT) Directive.

4.4.3.5 Protected Areas

A review of the protected features was conducted in the Water chapter of the EIAR to determine those sites which were within the study area and / or hydrologically connected to the waterbodies. Table 4**Error! Reference source not found.** summarises the sites which were identified to be relevant to this assessment.

Table 4:List of protected areas with a potential hydraulic connection

Protected Feature	Site Code	Protection Reason	Description
Baldoyle Bay	000199	SAC & pNHA	The protected feature is 90% below HWM1 with 10% of the protected feature above HWM. Several of the qualifying features relate to items above and below the HWM so this feature will be

Protected Feature	Site Code	Protection Reason	Description
			included in the assessment. Proposed cable route is connected via upstream watercourse crossings
Malahide Estuary	000205	SAC & pNHA	80% of the protected feature below HWM with 20% of the protected feature above HWM. Several of the qualifying features relate to items above and below the HWM so this feature will be included in the assessment. Proposed cable route is connected via upstream watercourse crossings
Rogerstown Estuary	000208	SAC & pNHA	80% of the protected feature below HWM with 20% of the protected feature above HWM. Several of the qualifying features relate to items above and below the HWM so this feature will be included in the assessment. Proposed cable route is connected via upstream watercourse crossings
Sluice River Marsh	001763	pNHA	This site is of importance as a relatively intact freshwater marsh, a habitat that is now rare in County Dublin. Proposed cable route is connected via upstream Sluice crossing
Knock Lake	001203	pNHA	This lake, although artificial in origin, is of importance for botanical and zoological interests. Similar such water bodies are scarce Co Dublin. Lake is located upstream of Knock stream crossing
Bog of the Ring	001204	pNHA	Marshes are few in County Dublin and therefore the site is of interest. Located c0.3km west of proposed cable route. Groundwater supports the wetland habitat
North-west Irish Sea SPA	004236	SPA	The protected feature is 100% below HWM. This site is located at the landfall and will therefore be included in the assessment

1. Note that the distinction between the area above and below the HWM is an approximation.

There are two designated shellfish areas hydrologically connected to the WFD waterbodies within the study area:

- Balbriggan / Skerries (IEPA2_0063)
- Malahide (IEPA2_0057)

- The shellfish areas are compliant with the relevant standards and there are no water quality issues of concern (as per the Sea Fisheries Protection Authority (SFPA) and Marine Institute Monitoring Programme).

4.5 WFD Status

The 2016-2021 WFD Status of the rivers and streams within the study area of the proposed development are detailed in Table 5. The WFD of all crossings is shown in Image 4.2, with details of Wx01-Wx07 shown in Image 4.3; Wx08-Wx11 shown in Image 4.4; Wx12-Wx19 shown in Image 4.5; and Wx20-Wx24 shown in Image 4.6

4.5.1 Surface Waterbody Status

The WFD status of the surface water bodies show that the watercourses along the cable route and at the grid facility have "poor" or "moderate" WFD status apart from one stream (Ballough Stream_020). The key pressures associated with these bodies have also been noted. However, all waterbodies have the year 2027 set as the date to meet their environmental objectives in line with the WFD Regulations.

Table 5:Surface Water WFD Status (according to WFD cycle 3)

Water crossing	WFD Sub-Catchment	WFD ID	WFD Waterbody type	WFD status (2016-2021)	Risk categories	Key pressure
Wx01 – Wx07	Palmerston_SC_010	Matt_010	River	Poor	At Risk	Hydromorphology, Urban Runoff
Wx08 – Wx10	Ballough[Stream]_SC_010	Ballough Stream_010	River	Moderate	At Risk	Agriculture
Wx11	Ballough[Stream]_SC_010	Ballough Stream_020	River	Moderate	At Risk	Agriculture, Urban Wastewater
Wx12 – Wx13	Ballough[Stream]_SC_010	Ballyboghill_010	River	Poor	At Risk	Agriculture
Wx14 – Wx15	Ballough[Stream]_SC_010	Tuvrvey_010	River	Poor	At Risk	Urban Runoff, Urban Wastewater
Wx16	Broadmeadow_SC_010	Broadmeadow_040	River	Poor	At Risk	Urban Runoff, Hydromorphology, Urban Wastewater
Wx17	Broadmeadow_SC_010	Ward_040	River	Poor	At Risk	Urban Runoff, Hydromorphology, Urban Wastewater
Wx18 - Wx20	Mayne_SC_010	Gaybrook_010	River	Poor (2013-2018)	Review	Anthropogenic Pressures
Wx21 – Wx22	Mayne_SC_010	Sluice_010	River	Poor	Review	Anthropogenic Pressures
Wx23 – Wx25	Mayne_SC_010	Mayne_010	River	Poor	At Risk	Urban Runoff

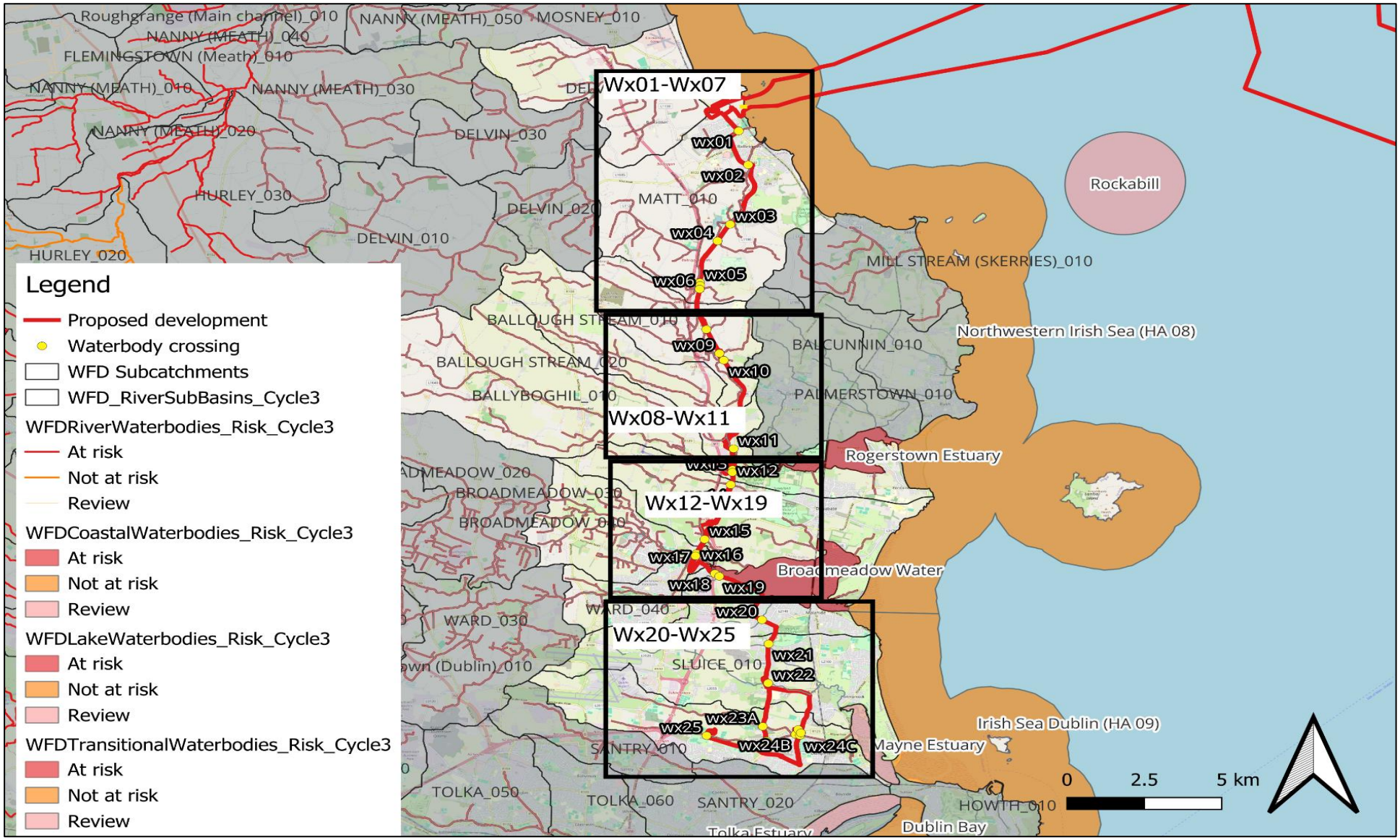

Image 4.2 WFD status for all proposed crossing locations (not to scale)

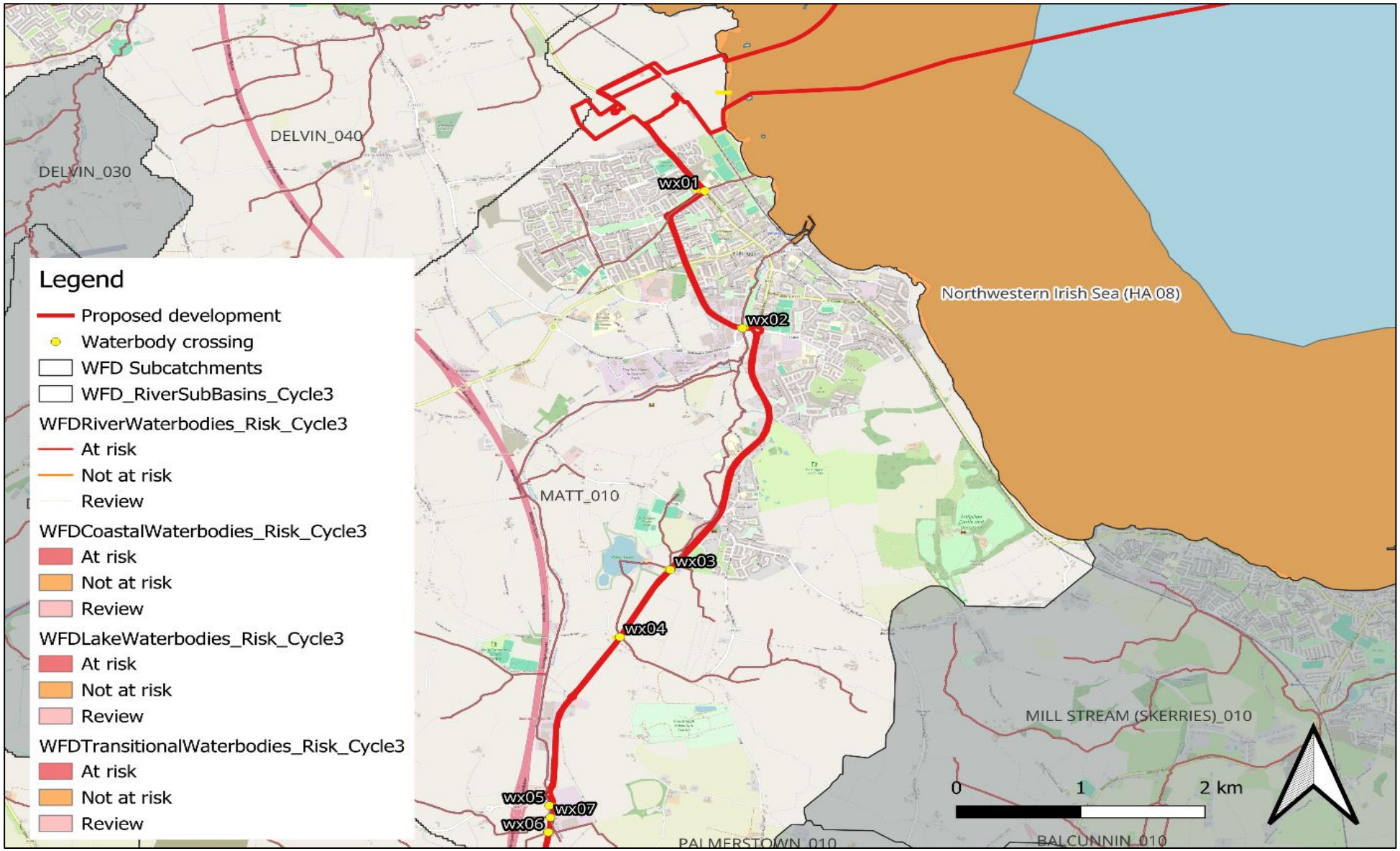

Image 4.3 WFD status for proposed crossing locations Wx01-Wx07 (not to scale)

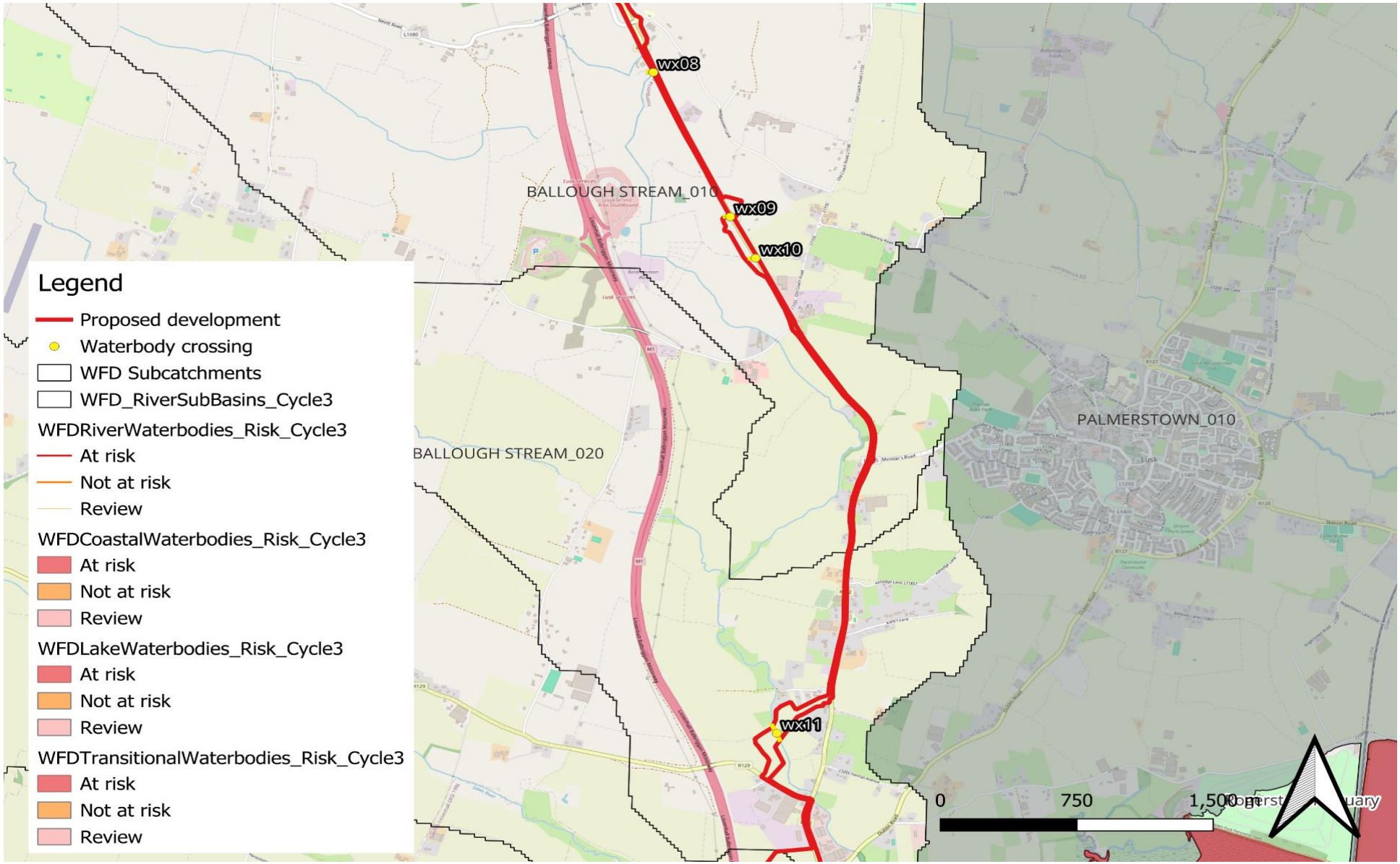

Image 4.4 WFD status for proposed crossing locations Wx08-Wx11 (not to scale)

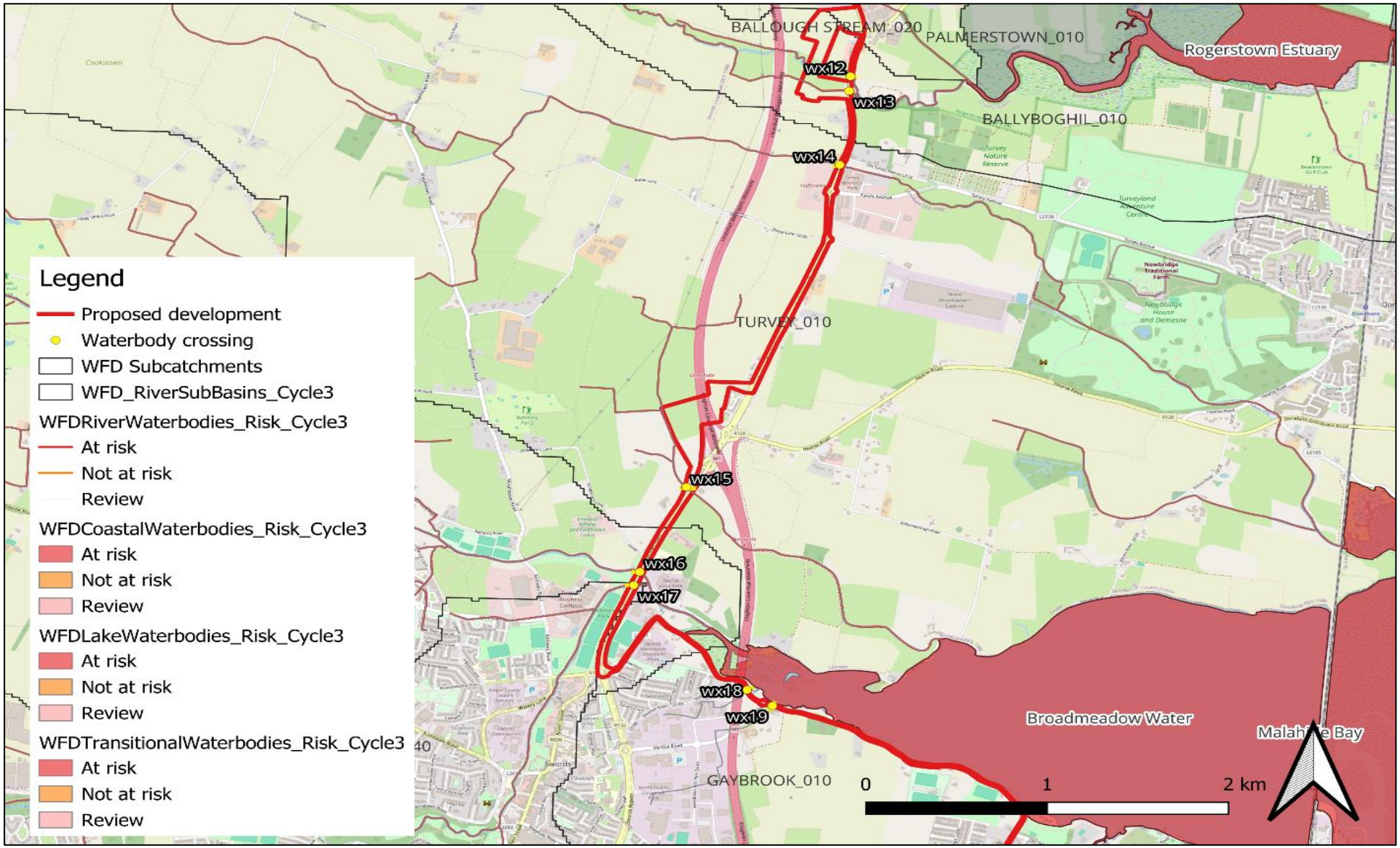

Image 4.5 WFD status for proposed crossing locations Wx12-Wx19 (not to scale)

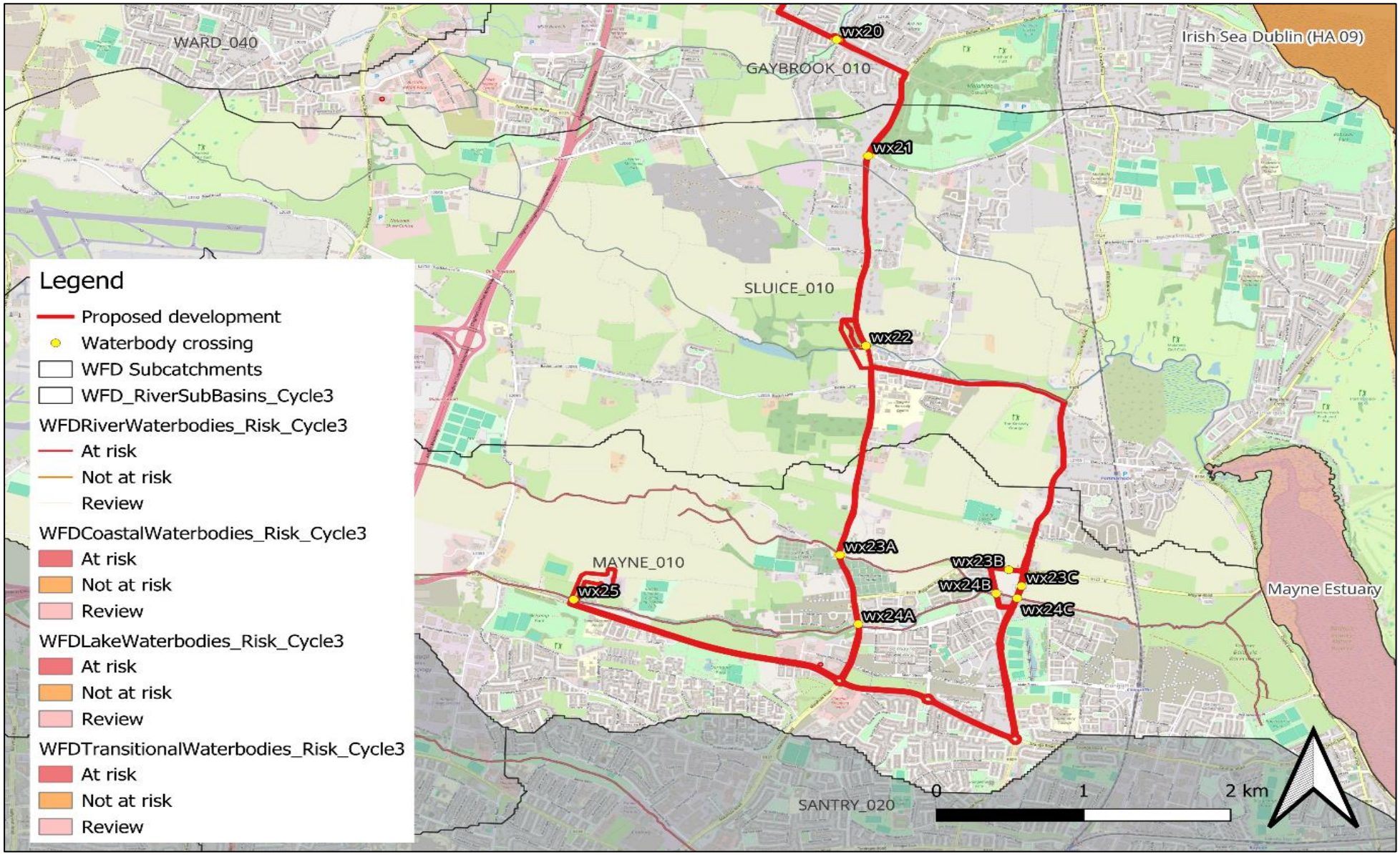

Image 4.6 WFD status for proposed crossing locations Wx20-Wx25 (not to scale)

4.5.2 Groundwater Body Status

The WFD status for the groundwater bodies within the proposed development is 'good' and some of the area is currently under 'review' regarding the risk of not maintaining that status (Table 6**Error! Reference source not found.**).

Table 6:EPA WFD Groundwater Body status and risk

Water Feature	European Code	WFD Status (2013-2018)	WFD Risk	Location
Balrothery GWB	IE_EA_G_043	Review	Good	North of the region
Balbriggan GWB	IE_EA_G_039	Not at risk	Good	North of the region
Dublin GWB	IE_EA_G_008	Review	Good	South of the region
Lusk-Bog on the rig GWB	IE_EA_G_014	Review	Good	Centre of the region
Swords GWB	IE_EA_G_011	Not at risk	Good	South of the region

4.5.3 EPA Water Monitoring

The EPA assesses the water quality of rivers and streams across Ireland using a biological assessment method (EPA 2018). The EPA assigns biological river quality (biotic index) ratings from Q5 to Q1 to watercourse sections (refer to Table 7). Q5 denotes a watercourse with high water quality and high community diversity, whereas Q1 denotes very low community diversity and bad water quality. This data will be used to inform baseline receptor importance.

The WFD also considers highly modified waterbodies and artificial surface waterbodies. The WFD requires highly modified waterbodies and artificial surface waterbodies to achieve 'good ecological potential' rather than 'good status.'

Table 7:EPA Scheme of Biotic Indices or Quality (Q) Values (EPA 2018)

Biotic Index Q Value	WFD Status	Pollution Status	Condition	Quality Class
Q5, Q4-Q5	High	Unpolluted	Satisfactory	Class A
Q4	Good	Unpolluted	Satisfactory	Class A
Q3-Q4	Moderate	Slightly Polluted	Unsatisfactory	Class B
Q3, Q2-Q3	Poor	Moderately Polluted	Unsatisfactory	Class C
Q2, Q1-Q2, Q1	Bad	Seriously Polluted	Unsatisfactory	Class D

Only the following water quality monitoring locations are found on the streams adjacent to the onshore cable route where ratings are established:

- Mayne River (Q3)
- Sluice Stream (Q3-Q4)
- Meadowbrook Stream (Q3-Q4)
- Turvey Stream (Q3), and
- Ballough Stream (Q3-Q4)

The majority of these are moderately polluted to slightly polluted which indicates that the overall water quality is unsatisfactory.

Q-value and fish status for water crossings are provided in Table 8.

Table 8:Review of water quality within the Study Area (Source: Catchments.ie)

Crossing	Stream Name / WFD Name	Lat, Long	IFI WFD Fish Monitoring[1] Status & Assemblage	Q-value Status (2016-2021)	WFD Risk Score	Salmonid Suitability
Wx01	Bremore Stream / Matt_010	53.61514, -6.19107	Not monitored	Not assessed / Poor	At risk	No stream visible. Possibly culverted
Wx02	Bracken (Matt) River / Matt_010	53.60364, -6.18646	Not monitored	Not assessed / Poor	At risk	Yes, substrate available and good flows.
Wx03	Knock Stream / Matt_010	53.58334, -6.19539	Not monitored	Not assessed / Poor	At risk	No, choked with vegetation. No passage.
Wx04	Balrothery Stream / Matt_010	53.57752, -6.20143	Not monitored	Not assessed / Poor	At risk	No, subterranean flow and no substrate
Wx05	Balrickard Stream / Matt_010	53.56375, -6.20998	Not monitored	Not assessed / Poor	At risk	No passage
Wx06	Rowans Big Stream	53.562488, -6.209828	Not monitored	Not assessed / Poor	At risk	Not viable.
Wx07	Rowans Little Stream	53.561208, -6.210099	Not monitored	Not assessed / Poor	At risk	Not viable.
Wx08	Courtlough Stream / Ballough Stream_010	53.54808, -6.20729	Not monitored	Moderate (downstream)	At risk	No water present
Wx09	Obserstown Stream / Ballough Stream_010	53.53922, -6.20030	Not monitored	Moderate (downstream)	At risk	Yes, substrate available and suitable flow
Wx10	Aldruman Stream / Ballough Stream_010	53.53695, -6.19849	Not monitored	Moderate (downstream)	At risk	No flow
Wx11	Ballough Stream / Ballough Stream_020	53.50901, -6.19605	Not monitored	Moderate (downstream)	At risk	Yes, close proximity to estuary
Wx12	Deanestown Stream / Ballyboghil_010	53.49933, -6.19425	Not monitored	Poor	At risk	Yes. No visual on substrate, but appears to have potential suitability
Wx13	Ballyboghil Stream / Ballyboghil_010	53.49876, -6.19433	Not monitored	Poor (upstream)	At risk	Yes, due to proximity to estuary
Wx14	Turvey Stream / Turvey_010	53.4944, -6.19517	Not monitored	Poor (upstream)	At risk	No available substrate, no flow and choked with vegetation
Wx15	Staffordstown Stream / Turvey_010	53.47575, -6.20782	Not monitored	Poor	At risk	No, very low flow

[1] Water Framework Directive: Fish Ecological Status Map Viewer. Available at: Water Framework Directive Fish Ecological Status 2008-2021 | Water Framework Directive Fish Ecological Status 2008-2021 | Inland Fisheries Ireland Data Hub (arcgis.com) (Accessed December 2022)

Crossing	Stream Name / WFD Name	Lat, Long	IFI WFD Fish Monitoring[1] Status & Assemblage	Q-value Status (2016-2021)	WFD Risk Score	Salmonid Suitability
Wx16	Broadmeadow River / Broadmeadow_040	53.47097, -6.21177	In monitoring year 2017, the status upstream was Poor. Fish recorded were Minnow Stone loach, European eel, Brown trout (≥1+,0+)	Moderate (upstream)	At risk	Yes, suitable substrate and flows – high potential
Wx17	Ward River / Ward_040	53.47021, -6.21257	In monitoring year 2017, the status upstream was Good to Moderate. Fish recorded were Minnow, Brown trout (≥1+,0+), Sea-trout	Moderate (upstream)	At risk	Yes, suitable substrate and flows – high potential
Wx18	Seapoint Stream / Gaybrook_010	53.463879, -6.202588	Not monitored	Poor	At risk	
Wx19	Greenfields Stream / Gaybrook_010	53.46322, -6.19996	Not monitored	Poor	At risk	No, concrete pipe discharge point
Wx20	Gaybrook Stream / Gaybrook_010	53.44824, -6.18000	Not monitored	Poor	Under review	No, subterranean flow
Wx21	Hazlebrook Stream / Sluice_010	53.44008, -6.17665	Not monitored	Poor	Under review	No, subterranean flow
Wx22	Sluice Stream / Sluice_010	53.42769, -6.17768	In monitoring year 2016, the status downstream was Poor. Fish recorded were: 3-spined stickleback, Brown trout (0+), European eel, Flounder	Poor	Under review	Yes, good substrate and flows
Wx23(A-C)	Cuckoo Stream / Mayne_010	53.41197, -6.17983	In monitoring year 2016, the status upstream was Bad. Fish recorded were: European eel, 3-spined stickleback	Poor (downstream)	At risk	No, substrate mixed but urban
Wx24 (A-C)	Mayne Stream A / Mayne_010	53.40701, -6.17787	In monitoring year 2016, the status downstream was Poor to Bad. Fish recorded were: European eel	Poor (downstream)	At risk	No potential, but substrate mixed
Wx25	Mayne Stream B / Mayne_010	53.4086, -6.20646	In monitoring year 2016, the status downstream was Poor to Bad. Fish recorded were: European eel	Poor	At risk	No, substrate loaded with sediment and heavily vegetated

4.6 Potential Impacts on WFD Waterbodies

4.6.1 Surface WFD Waterbodies

The only WFD surface waterbodies assessed were river waterbodies.

4.6.1.1 Hydromorphology

This section must be read alongside the Land and Soil, Water and Biodiversity chapters of the EIAR.

Hydro morphology elements consider the impacts to hydrological regime, river continuity and morphological conditions (Table 9**Error! Reference source not found.**).

Table 9:Potential effects to WFD hydromorphology elements through four scenarios

Scenario	Possible impacts to hydromorphology elements
Do nothing scenario	Under the do-nothing scenario, it is likely that the baseline conditions of the proposed development would continue to exist as they are under the current land uses and continue to influence WFD hydromorphology elements.
Construction phase	Construction phase impacts that could result in potentially significant impacts on WFD hydromorphology elements include: Temporary creation of a barrier to movement (hydrologically) at watercourse crossings; Temporary and permanent habitat loss and fragmentation; Degradation of habitats.
Operational phase	No operational phase impacts are predicted on habitats.
Decommissioning phase	The above assessment of potential impacts identified under baseline applies in a decommissioning scenario.

4.6.1.2 Biological Quality

This section must be read alongside the Water and Biodiversity chapters of the EIAR.

Biological quality elements consider the impacts to aquatic flora, benthic invertebrate fauna and fish fauna (Table 10).

Table 10:Potential effects to WFD biological quality elements through four scenarios

Scenario	Possible impacts to biological quality elements
Do nothing scenario	Under the do-nothing scenario, it is likely that the baseline conditions of the proposed development would continue to exist as they are under the current land uses and continue to provide suitable habitat for WFD biological quality elements.
Construction phase	Construction phase impacts that could result in potentially significant impacts on WFD biological quality elements include: Disturbance and displacement of fauna. Spread of non-native invasive species.
Operational phase	No operational phase impacts are predicted on WFD biological quality elements.
Decommissioning phase	The above assessment of potential impacts identified under baseline applies in a decommissioning scenario.

4.6.1.3 Surface Water Quality

This section must be read alongside the Water and Biodiversity chapters of the EIAR.

Water quality elements consider the amount of priority substances, priority hazardous substances and other pollutants in the aquatic environment (Table 11).

Table 11:Potential effects to WFD chemical quality elements through four scenarios

Scenario	Possible impacts to water quality elements
Do nothing scenario	Under the do-nothing scenario, it is likely that the baseline conditions of the proposed development would continue to exist as they are under the current land uses and continue to influence WFD chemical quality elements.
Construction phase	Construction phase impacts that could result in potentially significant impacts on WFD chemical quality elements include: Water quality impacts arising from surface water run-off of sediments and/or pollutants. Water quality impacts arising from HDD drilling.
Operational phase	Operational phase impacts that could result in potentially significant impacts on WFD chemical quality elements include: Surface water run-off of sediment and/or pollutants at hardstanding locations (i.e., substations).

Scenario	Possible impacts to water quality elements
Decommissioning phase	The above assessment of potential impacts identified under baseline applies in a decommissioning scenario.

4.6.1.4 Chemical Status

There are no chemical discharges proposed for any phase of the proposed development. Some substances may be accidentally released/spilled into the environment during construction/routine maintenance activities, such as oil, fuel, anti-fouling paints.

The Biodiversity chapter notes that with HDD, there is a risk of frac-out in the watercourse bed which results in the return of drilling fluids to the surface during HDD and release of these fluids into the watercourse, however it remains the most preferred method as it does not involve instream works. Section 23.6.1 of the Biodiversity chapter provides details on protection from HDD operations and frac-out in order to minimise impacts at the watercourse crossings where HDD is proposed.

The Developer is committed to implementing standard guidance and best-practice techniques throughout all construction, operation and maintenance (O&M) and decommissioning activities. This commitment (as referenced in the Mitigation and Monitoring Measures sections of the Water and Biodiversity chapters ensure suitable preventative measures are implemented.

4.6.1.5 EU Protected Areas

This section should be read alongside Volume 3, Chapter 22: Water and Chapter 23: Biodiversity of the EIAR.

Potential source-pathway-receptor links of connectivity have been identified between the proposed development and European and national designated sites (Table 12).

Table 12:Potential effects to EU protected area elements through four scenarios

Scenario	Possible impacts to protected areas
Do nothing scenario	Under the do-nothing scenario, it is likely that the baseline conditions of the proposed development would continue to exist as they are under the current land uses and continue to influence protected areas.
Construction phase	The Malahide Estuary SAC, Rogerstown Estuary SAC, Baldoyle Bay SAC, North-West Irish Sea SPA, Malahide Estuary SPA, Rogerstown Estuary SPA, Baldoyle Bay SPA are considered at risk under the construction phase.
Operational phase	No operational phase impacts are predicted on protected areas.
Decommissioning phase	The above assessment of potential impacts identified under baseline applies in a decommissioning scenario.

4.6.2 Groundwater WFD Waterbodies

4.6.2.1 Groundwater Quantity

This section must be read alongside the Land and Soils chapter of the EIAR.

Groundwater quantity elements consider the impact to aquifer groundwater availability (Table 13).

Table 13: Potential effects to WFD groundwater quantity elements through four scenarios

Scenario	Possible impacts to water quality elements
Do nothing scenario	Under the do-nothing scenario, it is likely that the baseline conditions of the proposed development would continue to exist as they are under the current land uses and continue to influence WFD groundwater quantity elements.
Construction phase	Construction phase impacts that could result in potentially significant impacts on WFD groundwater quantity elements include: Loss or damage of proportion of aquifer for grid facility. Change to groundwater regime.

Scenario	Possible impacts to water quality elements
Operational phase	No operational phase impacts are predicted on groundwater quantity.
Decommissioning phase	The above assessment of potential impacts identified under baseline applies in a decommissioning scenario.

4.6.2.2 Chemical Status

This section must be read alongside the Land and Soils chapter of the EIAR.

Groundwater quantity elements consider the impact to aquifer groundwater quality (Table 14).

Table 14:Potential effects to WFD groundwater chemical quality elements through four scenarios

Scenario	Possible impacts to water quality elements
Do nothing scenario	Under the do-nothing scenario, it is likely that the baseline conditions of the proposed development would continue to exist as they are under the current land uses and continue to influence WFD groundwater quantity elements.
Construction phase	Construction phase impacts that could result in potentially significant impacts on WFD groundwater quantity elements include: Loss or damage of proportion of aquifer for grid facility Change to groundwater regime
Operational phase	No operational phase impacts are predicted on groundwater quantity.
Decommissioning phase	The above assessment of potential impacts identified under baseline applies in a decommissioning scenario.

4.6.2.3 Chemical Status

This section must be read alongside the Land and Soils chapter of the EIAR.

Groundwater quantity elements consider the impact to aquifer groundwater quality (Table 15).

Table 15:Potential effects to WFD groundwater chemical quality elements through four scenarios

Scenario	Possible impacts to water quality elements
Do nothing scenario	Under the do-nothing scenario, it is likely that the baseline conditions of the proposed development would continue to exist as they are under the current land uses and continue to influence WFD groundwater quality elements.
Construction phase	Construction phase impacts that could result in potentially significant impacts on WFD groundwater quality elements include: Damage of the aquifer due to accidental spills
Operational phase	No operational phase impacts are predicted on groundwater quality.
Decommissioning phase	The above assessment of potential impacts identified under baseline applies in a decommissioning scenario.

4.7 STAGE 1 Assessment

In total 25 no. watercourses will be crossed with the installation of the onshore cable route (**Error! Reference source not found.**) in order of preference. As described in the Onshore Construction chapter, four different crossing methods have been considered for each watercourse crossing and, in some instances, multiple crossing methods have been included in this planning application. However, at the detailed design/construction stage just one of these methods at each watercourse crossing will be chosen as a preferred option. It is assumed that the offline watercourse crossings will be located anywhere within the proposed development boundary.

A variety of crossing techniques will be used each resulting in a different suite of potential impacts. The most relevant impact to surface waterbody WFD elements is habitat loss and fragmentation, habitat degradation and downstream water quality impacts arising from the construction phase of the proposed

development. Only the offline open-cut trench method for Wx10, Wx13, Wx20, Wx22 and Wx25 was considered for the Stage 2 assessment.

- **Offline Open Cut Trench**

There is potential for five (Wx10, Wx13, Wx20, Wx22 and Wx25) of the watercourse crossings to involve instream works through offline open cut trenches. Instream works would temporarily divert the water by pumping it overground, to create a dry works area facilitating the open-cut trench to lay the cable, and then redirect the water flow back into the watercourse channel downstream of the dry works area.

Creating a dry works area will result in temporary habitat loss for fish and aquatic species, it can temporarily alter the watercourse substrate structure until naturally regaining its previous condition, and on re-wetting the dry works area can result in downstream water quality impacts from the suspension of siltation and sediments. In-stream works can also result in habitat degradation downstream aquatic habitats such as estuarine habitat due to water quality impacts through siltation, sediments, and/or pollutants. Further assessment required in Stage 2 for direct and indirect effects on hydromorphology element, physico-chemical supporting element and biological quality element.

- **In-road Open Cut Trench**

The in-road open cut trench crossing technique is included as an option for the majority of the 25 watercourse crossings except for a couple of watercourses (Refer to Table 25.16 for details). Should this option be chosen as the preferred option, it will not involve in-stream works and will avoid direct impacts on watercourses by staying within the road infrastructure. Potential impacts associated with near stream works will still apply for these crossing options, however the magnitude of these indirect near stream impacts are considerably lower compared to potential impacts arising from in-stream works. Indirect near stream impacts include potential water quality impacts from siltation, sediments and/or a pollution event, and can lead to downstream degradation of suitable fish habitat. No further assessment required for indirect effect on physico-chemical supporting element and biological quality element.

- **In-road and Offline HDD**

The in-road HDD or Offline HDD is also included as an option for the majority of the 25 watercourse crossings except for a couple of watercourses (Refer to Table 16 for details). Should these options be chosen as the preferred option, it will not involve in-stream works and will avoid direct impacts on watercourses by HDD under the watercourse within the alignment of the road or outside the alignment of the road in an offline section of the onshore cable route. Potential impacts with HDD are a risk of fracking in the watercourse bed, however it remains a preferred method as it does not involve instream works. No further assessment required for indirect effect on physico-chemical supporting element and biological quality element. Section 23.6.1 of the Biodiversity chapter provides details on protection from offline HDD operations and frac-out in order to minimise impacts at the watercourse crossings where offline HDD is proposed.

Table 16:WFD compliance assessment of cause-and-effect mechanisms for river waterbodies

WFD ID	Description	Water crossing	Crossing option	Screened In/Out	Reason
Matt_010	Poor WFD Status. >5km from SAC/SPA.	Wx01 Bremore	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx02 Bracken	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx03 Knock	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.

WFD ID	Description	Water crossing	Crossing option	Screened In/Out	Reason
		Wx04 Balrothery	Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx05 Balrickard	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx06 Rowans Big	In-road OCT	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx07 Rowans Little	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
Ballough Stream_010	Moderate WFD Status. Direct hydrological connection to SAC/SPA.	Wx08 Courtlough	In-road OCT	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx09 Oberstown	Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
			Offline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx10 Aldrumman	Offline OCT	In	Potential for direct impact on hydromorphology, physico-chemical supporting element and biological element
Ballough Stream_020	Moderate WFD Status. Direct hydrological connection to SAC/SPA.	Wx11 Ballough	Offline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
Ballyboghill_010	Poor WFD Status. Direct hydrological connection to SAC/SPA.	Wx12 Deanestown	Inline HDD (combined with Wx13)	Out	No direct impact on physico-chemical supporting element and biological element.
			Offline HDD (combined with Wx13)	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx13 Ballyboughill	Offline OCT	In	Potential for direct impact on hydromorphology, physico-chemical supporting element and biological element
Turvey_010	Poor WFD Status. Direct hydrological connection to SAC/SPA	Wx14 Turvey	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx15 Staffordstown	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
Broadmeadow_040	Poor WFD Status. Direct	Wx16	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.

WFD ID	Description	Water crossing	Crossing option	Screened In/Out	Reason
	hydrological connection to SAC/SPA	Broadmeadow	Inline HDD (combined with Wx17)	Out	No direct impact on physico-chemical supporting element and biological element.
Ward_040	Poor WFD Status. Direct hydrological connection to SAC/SPA.	Wx17 Ward	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD (combined with Wx16)	Out	No direct impact on physico-chemical supporting element and biological element.
Gaybrook_010	Poor WFD Status. Direct hydrological connection to SAC/SPA.	Wx18 Seapoint	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx19 Greenfields	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx20 Gaybrook	Offline OCT	In	Potential for direct impact on hydromorphology, physico-chemical supporting element and biological element
Sluice_010	Poor WFD Status. Direct hydrological connection to SAC/SPA.	Wx21 Hazelbrook	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx22 Sluice	Offline OCT	In	Potential for direct impact on hydromorphology, physico-chemical supporting element and biological element
Mayne_010	Poor WFD Status. Direct hydrological connection to SAC/SPA.	Wx23a Cuckoo	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx23b Cuckoo	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx23c Cuckoo	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD (combined with Wx24c)	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx24a Mayne	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx24b Mayne	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.
		Wx24c Mayne	In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.
			Inline HDD	Out	No direct impact on physico-chemical supporting element and biological element.

WFD ID	Description	Water crossing	Crossing option	Screened In/Out	Reason
		Wx25 Mayne	Offline OCT	In	Direct impact on hydromorphology, physico-chemical supporting element and biological element
			In-road OCT*	Out	No direct impact on physico-chemical supporting element and biological element.

* OCT – Open Cut Trench

The most relevant impact to groundwater body WFD elements is loss or damage of a proportion of aquifer, change in groundwater regime and damage to the aquifer due to accidental spills. Indirect impacts to the quantity groundwater WFD element are considered of imperceptible significance, but damage to the aquifer due to accidental spillage is considered to have a moderate significance. Groundwater WFD waterbodies are screened out and will not be taken into Stage 2 assessment. The WFD Groundwater waterbodies are all in a 'good' status, which needs to be maintained.

Table 17:WFD compliance assessment of cause-and-effect mechanisms for groundwater bodies

Water Feature	European Code	Description	Screened in/out	Why
Balrothery GWB	IE_EA_G_043	Good WFD Status.	Out	Only possible indirect effect on quantitative and qualitative status
Balbriggan GWB	IE_EA_G_039	Good WFD Status.	Out	Only possible indirect effect on quantitative and qualitative status
Dublin GWB	IE_EA_G_008	Good WFD Status.	Out	Only possible indirect effect on quantitative and qualitative status
Lusk-Bog on the rig GWB	IE_EA_G_014	Good WFD Status	Out	Only possible indirect effect on quantitative and qualitative status
Swords GWB	IE_EA_G_011	Good WFD Status	Out	Only possible indirect effect on quantitative and qualitative status

The proposed development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of the Malahide Estuary SAC, Rogerstown Estuary SAC, Baldoyle Bay SAC, North-West Irish Sea SPA, Malahide Estuary SPA, Rogerstown Estuary SPA, Baldoyle Bay SPA, (Table 18**Error! Reference source not found.**). There are no other European sites at risk of hydrological effects from the proposed development.

Table 18:WFD compliance assessment of cause-and-effect mechanisms for protected areas connected to WFD waterbodies.

Water Feature	Code	Description	Screened in/out	Reason
Baldoyle Bay	000199	pNHA and SAC site	In	Direct hydrological connection to water body.
Sluice River Marsh	001763	pNHA site	In	Direct hydrological connection to watercourse crossing.
Northwest Irish Sea SPA	004236	SPA	In	Adjacent to landfall
Malahide Estuary	000205	pNHA and SAC site – also overlaps with Broadmeadow Estuary UWWTD site	In	Direct hydrological connection to water body.
Rogerstown Estuary	000208	pNHA and SAC site – also includes 2 shellfish areas in Balbriggan / Skerries & Malahide	In	Direct hydrological connection to water body.

Water Feature	Code	Description	Screened in/out	Reason
Knock Lake	001203	pNHA site	Out	No direct hydrological connection to the water body
Bog of the Ring	001204	pNHA site	Out	No direct hydrological connection to the water body

5. STAGE 2: Scoping

This section brought forward those WFD water bodies and protected areas screened in the Stage 1: Screening assessment to determine which water bodies and protected areas may require further assessment as part of the Stage 3: Detailed Assessment.

The most significant impact of the proposed development will be during the construction phase crossing watercourses using the offline open cut trench method. From the water bodies and crossing locations identified, only the offline open-cut trench method for Wx10, Wx13, Wx20, Wx22 and Wx25 were brought forward for further assessment at Stage 2 assessment (Table 19). The Stage 2 assessment considered the impacts of the offline open-cut trench method on individual WFD river waterbody elements, as presented in Section 4.6.

Table 19:WFD compliance assessment scoping table for offline OCT crossing method for WFD river waterbodies

WFD ID	Water crossing	Hydromorphology element	Physico-chemical supporting element	Biological quality element	Protected Areas	Screened in/out	Reason
Ballough Stream_010	Wx10 Aldrumman	In-stream works would temporarily divert water. This will result in direct temporary insignificant impact to hydrology and river continuity. Creating a dry works area will result in a change and removal of substrate structure until regaining its natural state post construction. This will result in direct temporary insignificant to riverbed morphology and riparian zone structure.	In-stream works would have a direct insignificant impact through temporary introduction of construction chemicals (i.e., oils, petrol). On re-wetting there may be downstream water quality impacts from suspended sediments.	In-stream works would have a direct temporary insignificant impact to macrophytes and phytobentos, benthic invertebrate fauna and fish fauna	In-stream works can result in habitat degradation of downstream aquatic habitats such as estuarine habitat due to water quality impacts through siltation, sediments, and/or pollutants.	Out	The water body is in Poor Status. Although there appears to be hydrological connection to SAC/SPA the activity has been screened out by Biodiversity Chapter after mitigation.
Ballyboghill_010	Wx13 Ballyboghill	In-stream works would temporarily divert water. This will result in direct temporary insignificant impact to hydrology and river continuity. Creating a dry works area will result in a change and removal of substrate structure until regaining its natural state post construction. This will result in direct temporary insignificant to riverbed morphology and riparian zone structure.	In-stream works would have a direct insignificant impact through temporary introduction of construction chemicals (i.e., oils, petrol). On re-wetting there may be downstream water quality impacts from suspended sediments.	In-stream works would have a direct temporary insignificant impact to macrophytes and phytobentos, benthic invertebrate fauna and fish fauna	Yes. Rogerstown Estuary SAC is immediately adjacent, and the SPA is hydrologically connected.	Out	The water body is in Poor Status. Screened out of Biodiversity chapter after mitigation.

WFD ID	Water crossing	Hydromorphology element	Physico-chemical supporting element	Biological quality element	Protected Areas	Screened in/out	Reason
Gaybrook_010	Wx20 Gaybrook	In-stream works would temporarily divert water. This will result in direct temporary insignificant impact to hydrology and river continuity. Creating a dry works area will result in a change and removal of substrate structure until regaining its natural state post construction. This will result in direct temporary insignificant to riverbed morphology and riparian zone structure.	In-stream works would have a direct insignificant impact through temporary introduction of construction chemicals (i.e., oils, petrol). On re-wetting there may be downstream water quality impacts from suspended sediments.	In-stream works would have a direct temporary insignificant impact to macrophytes and phytobentos, benthic invertebrate fauna and fish fauna	In-stream works can result in habitat degradation of downstream aquatic habitats such as estuarine habitat due to water quality impacts through siltation, sediments, and/or pollutants.	Out	The water body is in Poor Status. Although there appears to be hydrological connection to SAC/SPA the activity has been screened out by Biodiversity Chapter after mitigation.
Sluice_010	Wx22 Sluice	In-stream works would temporarily divert water. This will result in direct temporary insignificant impact to hydrology and river continuity. Creating a dry works area will result in a change and removal of substrate structure until regaining its natural state post construction. This will result in direct temporary insignificant to riverbed morphology and riparian zone structure.	In-stream works would have a direct insignificant impact through temporary introduction of construction chemicals (i.e., oils, petrol). On re-wetting there may be downstream water quality impacts from suspended sediments.	In-stream works would have a direct temporary insignificant impact to macrophytes and phytobentos, benthic invertebrate fauna and fish fauna	Crossing is Baldoyle Bay SAC/SPA therefore impact is considered insignificant.	Out	The water body is in Poor Status. Screened out of Biodiversity chapter after mitigation.
Mayne_010	Wx25	In-stream works would temporarily divert	In-stream works would have a direct insignificant impact	In-stream works would have a direct temporary	In-stream works can result in habitat	Out	The water body is in Poor Status. Although

WFD ID	Water crossing	Hydromorphology element	Physico-chemical supporting element	Biological quality element	Protected Areas	Screened in/out	Reason
	Mayne	water. This will result in direct temporary insignificant impact to hydrology and river continuity. Creating a dry works area will result in a change and removal of substrate structure until regaining its natural state post construction. This will result in direct temporary insignificant to riverbed morphology and riparian zone structure.	through temporary introduction of construction chemicals (i.e., oils, petrol). On re-wetting there may be downstream water quality impacts from suspended sediments.	insignificant impact to macrophytes and phytobentos, benthic invertebrate fauna and fish fauna	degradation of downstream aquatic habitats such as estuarine habitat due to water quality impacts through siltation, sediments, and/or pollutants.		there appears to be a hydrological connection to SAC/SPA the activity has been screened out by Biodiversity Chapter after mitigation.

Although the Biodiversity chapter did not rule out the possibility of the proposed development posing a risk of adversely affecting (either directly or indirectly) the integrity of the Malahide Estuary SAC/SPA, Rogerstown Estuary SAC/SPA, Northwest Irish SPA, Baldoyle Bay SAC/SPA and Sluice River Marsh (Table 20). This was ruled out following implementation of mitigation measures.

Table 20:WFD compliance assessment scoping table for protected areas connected to WFD waterbodies.

Water Feature	Code	Description	WFD element	Screened in/out	Reason
Baldoyle Bay	000199	pNHA and SAC site	In-stream works can result in habitat degradation of downstream aquatic habitats such as estuarine habitat due to water quality impacts through siltation, sediments, and/or pollutants.	Out	Although there appears to be a hydrological connection to SAC the activity has been screened out by Biodiversity Chapter after mitigation.
Northwest Irish SPA	004236	SPA	Adjacent to landfall	Out	
Sluice River Marsh	001763	pNHA site	In-stream works can result in habitat degradation of downstream aquatic habitats such as estuarine habitat due to water quality impacts through siltation, sediments, and/or pollutants.	Out	Although there appears to be a hydrological connection to pNHA the activity has been screened out by Biodiversity Chapter after mitigation.
Malahide Estuary	000205	pNHA and SAC site – also overlaps with Broadmeadow Estuary UWWTD site	In-stream works can result in habitat degradation of downstream aquatic habitats such as estuarine habitat due to water quality impacts through siltation, sediments, and/or pollutants.	Out	Although there appears to be a hydrological connection to SAC the activity has been screened out by Biodiversity Chapter after mitigation.
Rogerstown Estuary	000208	pNHA and SAC site – also includes 2 shellfish areas in Balbriggan / Skerries & Malahide	In-stream works can result in habitat degradation of downstream aquatic habitats such as estuarine habitat due to water quality impacts through siltation, sediments, and/or pollutants.	Out	Although there appears to be a hydrological connection to SAC the activity has been screened out by Biodiversity Chapter after mitigation.

6. STAGE 3: Detailed Assessment

The Stage 2 Scoping assessment for the proposed development did not indicate any of the activities and components of would result in deterioration of the WFD water bodies or prevent them from achieving the objectives by 2027. Therefore, no further assessment is required for Stage 2 Scoped activities as no risk was identified that would result in a deterioration of the WFD waterbody elements. Best practice construction methods and other mitigation measures outlined in the EIAR are considered adequate to ensure that construction impacts are reduced to acceptable level.

7. Conclusions

The detailed assessments presented in this WFD assessment indicated that there is a low risk that the proposed development will cause a deterioration within the Matt_010, Ballough Stream_010, Ballough Stream_020, Ballyboghill_010, Tuvrvey_010, Broadmeadow_040, Ward_040, Gaybrook_010, Sluice_010 and Mayne_010 WFD river water bodies; Balrothery, Balbriggan, Dublin, Lusk-Bog of the Ring and Swords WFD groundwater bodies; and downstream protected areas. There is also low risk that the proposed development could prevent these waterbodies from achieving or maintaining their WFD objectives by the required date of 2027. Furthermore, there is low risk of either deterioration within adjacent water bodies, or of the mitigation measures identified in the RBMP for Ireland being prevented by the proposed development. As such, it is concluded that there is no risk of non-compliance of WFD as a result of the proposed development.

8. References

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