Appendix 7-2:
Water Framework Directive Assessment Report

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ORIEL WIND FARM PROJECT

Environmental Impact Assessment Report
Appendix 7-2: Water Framework Directive Compliance Assessment

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1 INTRODUCTION

1.1 Background

The completion of a Water Framework Directive (WFD) Compliance Assessment (hereafter referred to as 'WFD Assessment') is a staged process. Data i.e. the study area and proposed works on the Oriel Wind Farm Project (hereafter referred to as 'the Project') are assessed with respect to the requirements of the WFD. The assessment identifies if the Project, will, or will not, have a detrimental impact on the status of water bodies that traverse the Project. If the assessment concludes, after taking account of the measures included in the Project, that the Project may either result in;

- A deterioration of the status of the water bodies; or
- Prevent them from reaching their environmental objectives;

then, this represents a failure to achieve the WFD objectives and the Project should not proceed unless justification for the proposed works is demonstrated under Article 4.7 in the context of new modifications.

Whilst Environmental Assessment is an efficient mechanism to gather the relevant information for WFD compliance assessment, it still needs to be interpreted in relation to the WFD objectives and the potential impacts on biology, chemistry and hydromorphology. The WFD objectives and the biology, chemistry and hydromorphology need to be considered in relation to WFD status classes and reported under a specific WFD section in any environmental impact assessment report (EIAR) or report produced or in a separate WFD compliance report (Environment Agency, 2010).

Therefore, a WFD Assessment has been undertaken to assess the potential impacts of the Project in the context of the environmental objectives of any affected WFD surface water and groundwater bodies.

The WFD Assessment also offers the opportunity to inform the management of the Project to avoid, minimise, mitigate, or compensate for the risks to the environmental objectives of WFD surface water receptors where the risk assessment determines that the activities have the potential to:

i. Cause a surface water body to deteriorate from one WFD status class to another or cause significant localised impacts that could contribute to this happening; and

ii. Prevent or undermine action to get surface water bodies to good status (e.g. compromise the programme of measures put in place to achieve the ultimate water body objective).

1.2 WFD study area

For the purposes of this WFD Assessment, water bodies that are within, intersect or which are hydrologically connected to the onshore and offshore elements of the Project have been identified and considered as relevant water bodies for the different stages of the WFD compliance assessment (i.e. the WFD assessment study area, hereafter referred to as "WFD Study Area").

As identified in volume 2A, chapter 5: Project Description of the EIAR, the Project is divided into the following main elements:

- The offshore wind farm area: This is where the offshore wind farm infrastructure will be located. This area will include the offshore Wind Turbine Generators (WTGs) including their foundations, the offshore substation (OSS) and its foundation, the inter array cables (between each of the WTGs) and a short section of the offshore cable;
- The offshore cable corridor: This is where the offshore cable will be largely located. The offshore cable extends from the offshore wind farm area to a landfall location south of Dunany Point;
- The onshore cable route: This is where the onshore underground cables and associated underground components (joint bays and link boxes) will be located; and
- The onshore substation site: This is where the onshore substation as well as the connections to the existing electricity transmission system (i.e. the National Grid) will be located.

For the offshore elements, i.e. the offshore wind farm area and the offshore cable corridor, the selection of the water bodies screened into the WFD assessment uses the extent of one spring tidal excursion (i.e.

maximum tidal excursion of 3.5 km based on typical tidal conditions) as illustrated in Figure 1-1. The tidal excursion was quantified by utilising the calibrated numerical model described in volume 2B, appendix 7-1: Marine Processes Technical Report. Specifically, neutrally buoyant particles were released across the extent of the offshore wind farm area and offshore cable corridor. The excursion of these particles was examined over the course of a typical spring tide cycle and represents the maximum extent of possible effects based on typical tidal conditions. i.e. maximum tidal excursion of 3.5 km. On this basis, the coastal waterbodies screened in for the WFD assessment include those that intersect with this tidal excursion boundary, i.e. the Louth Coast (IE_NB_025_0000) and Outer Dundalk Bay (IE_NB_040_0000).

For the onshore elements, i.e. the onshore cable route and the onshore substation, the river water bodies that are traversed by the cable corridor are the Dee_080 (IE_NB_06D011000), Dee_090 (IE_NB_06D011100) and the Slieveboy_010 (IE_NB_06S160790). These river water bodies are therefore included within the study area.

The schedule of water course crossing points (CP) and the WFD waterbodies within which they occur are provided in Table 1-1. The preferred crossing method and aquatic ecology survey site reference number are also included where relevant. The onshore substation site is located within the Dee_080 also adjacent to a tributary of the Dee, the Broadlough Stream (aquatic survey site - A11).

Surface water bodies downstream of these water bodies are also screened into the WFD assessment due to the hydrological connectivity, therefore the Glyde Estuary (IE_NB_040_0500) is screened into the WFD assessment. The Glyde Estuary also discharges into the Outer Dundalk Bay coastal water body which is already screened into the study area as it will be potentially affected by the offshore elements of the Project. Figure 1-1 illustrates the WFD study area for the surface water bodies.

The onshore cable route traverses two groundwater bodies, the Louth (IEGBNI_NB_G_019) groundwater body and the Clogher Head Gravels (IE_NB_G_023) groundwater body. The location of these water bodies in relation to the onshore cable route is illustrated in Figure 1-2.

The impact of the different project components on these water bodies is considered in this WFD compliance assessment.

Table 1-1: Schedule of water course crossings and WFD water bodies.

Crossing Reference	Aquatic Survey Site	Water feature	Location	Preferred Crossing Method	WFD Water Body
CP1	A1	Rock Stream (tributary of River Dee)	0.8 km east of the onshore substation site	Install above existing culvert on hard shoulder of the N33 carriageway	Dee_080 (IE_NB_06D011000)
CP2	A2	River Dee	Richardstown, N33	Horizontal Directional Drill (HDD) Method (Field)	
CP3	-	Drainage ditch	0.8 km west of Joint Bay 13	Open Trench Method	
CP4	A3	River Dee	Drumcar	HDD Method (Field)	
CP5	A4	Newhall Stream	Tullydonnel	Open Trench Method	Dee_090 (IE_NB_06D011100)
CP6	A9	Port Stream	Clonmore	Open Trench Method (Field)	Slieveboy_010 (IE_NB_06S160790)
CP7	A10	Port Stream & Arballan Stream	Togher	HDD Method (Field)	
CP8	A8	Salterstown Stream	Salterstown	HDD Method (Road)	

1.3 Information sources

The information sources used in the preparation of this appendix is set out in Table 1-2.

Table 1-2: Information Sources.

Source	Data	Information consulted/provided
EPA	WFD data tables https://wfd.edenireland.ie/data (accessed January 2024)	*Water body status, objectives, hydro-morphology, protected areas, sensitive habitats*
	Water body data pages on Eden WFD application https://wfd.edenireland.ie/ (accessed January 2024)	*Water body classification, overall status, ecological status, biological elements, physio-chemical elements, hydro-morphology, and chemical classification*
		WFD objectives for water bodies
		WFD Cycle 3 Report – Newry, Fane Glyde and Dee Catchment (HA 06) *WFD Cycle 2 Report - Newry, Fane, Glyde and Dee Sub-catchment Report (Burren_SC_10 Code 06_14)*
	Interactive maps https://gis.epa.ie/EDENMaps/WFD (accessed January 2024)	*Maps of water bodies, habitats, and protected areas.*

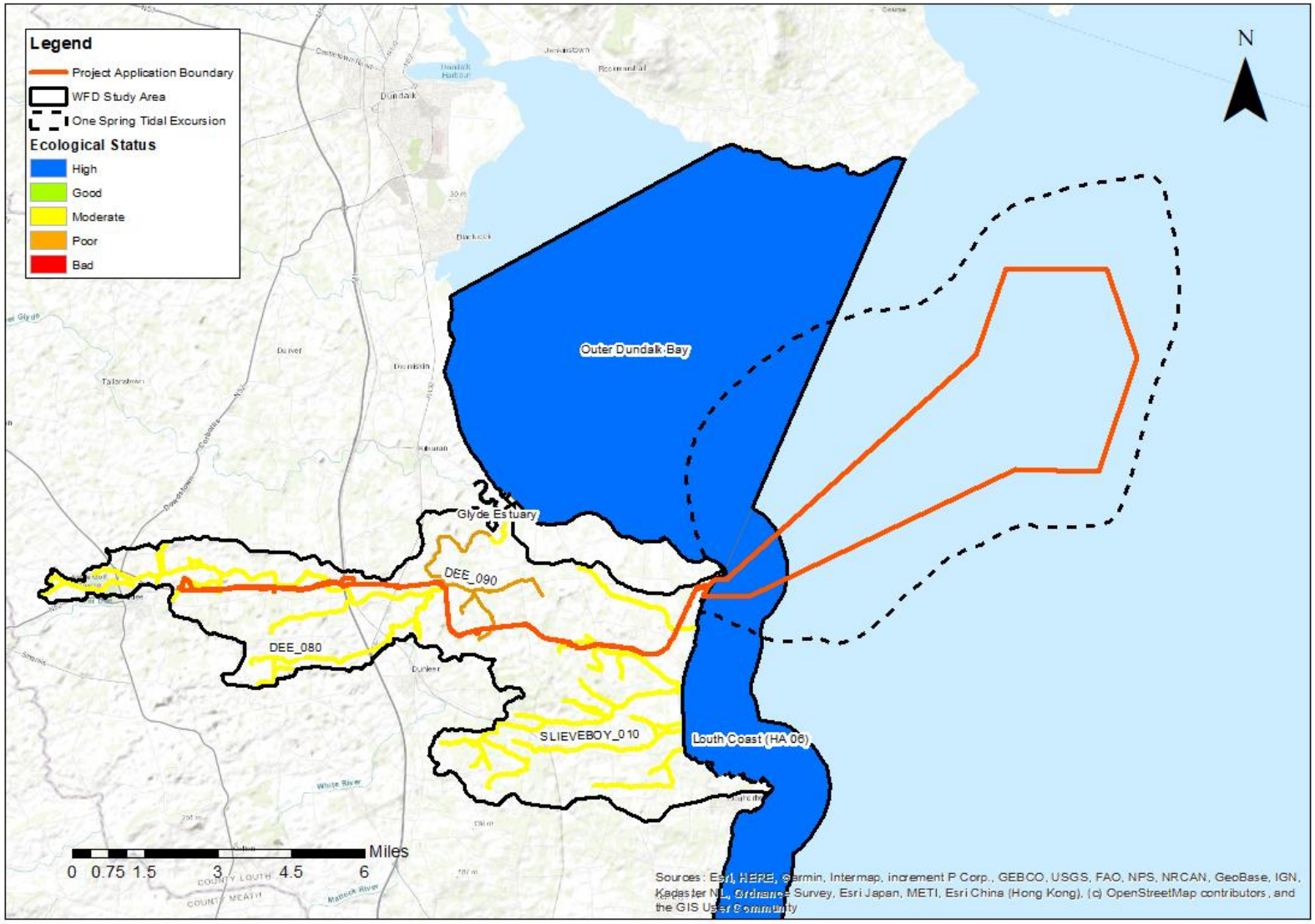

Figure 1-1: WFD Study Area with relevant surface water bodies.

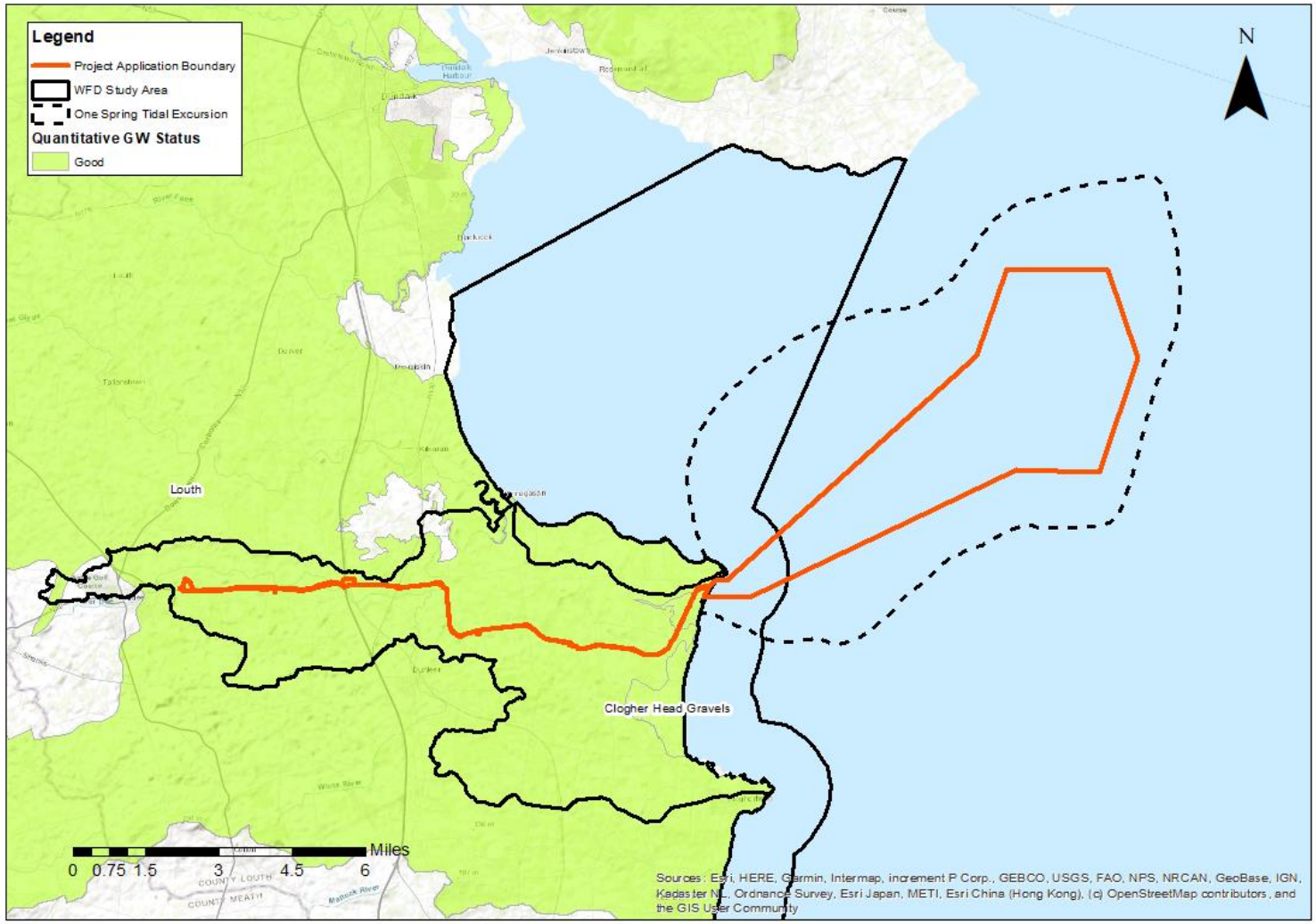

Figure 1-2: WFD Study Area with relevant groundwater bodies.

2 LEGISLATION AND GUIDANCE

2.1 Water Framework Directive

The WFD (Council Directive 2000/60/EC establishing a framework for community action in the field of water policy) was adopted by the European Commission in December 2000. The WFD requires that all European Union Member States prevent deterioration and protect, enhance, and restore all bodies of water. This means that Member States must ensure that new schemes do not adversely impact upon the status of aquatic ecosystems, and that they must address historical modifications that are already impacting a water body.

The WFD was transposed into Irish law through the European Communities (Water Policy) Regulations 2003 (S.I. 722/2003) (as amended) in respect of the duties on all public authorities to exercise their functions in a manner consistent with achieving the objectives of the WFD. European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. 272/2009) (as amended) and the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. 9/2010) (as amended) give further effect to the WFD in Ireland. Article 5 of both these regulations provide that public authorities must not undertake their functions in a manner that knowingly causes or allows deterioration in the status of water body.

The WFD is given general effect in planning legislation in Section 1A of the Planning and Development Act 2000 (S.I. 30/2000), as amended; and specifically, through amendments made in 2010 which sought to improve how water management and the planning system are integrated.

2.2 Compliance with the WFD

Member states must meet the conditions of the WFD unless they meet the criteria laid out in Article 4.7 of the Directive. The Water Policy Regulations require the assessment of impacts of a project on WFD waterbodies as proposals for plans or new developments have the potential to prevent compliance with the WFD objectives i.e. will they cause a deterioration of the status of a water body and / or prevent future attainment of good surface water status/potential and good groundwater status where not already achieved.

Development proposals within, or that could affect the water environment must demonstrate that they will not cause a deterioration of the status of water bodies in their zone of influence, or that they will not inhibit their future achievement of “good” status. In some situations, it will be clear that a development proposal would not compromise the achievement of the WFD objectives and therefore no further assessment will be required. However, in other situations, the potential to compromise the achievement of the objectives may be identified or there may be uncertainty and the development proposal will need to undergo a WFD Assessment to inform decision making by the planning authority.

Opportunities to include pro-active design measures to avoid and mitigate impacts will become the norm for developers in order to reduce the scope and extent of the WFD Assessment necessary in any application. These proactive measures will include for example, use of Nature based Sustainable Urban Drainage Systems, riparian zone improvements, and improvement in flow dynamics etc.

2.3 Steps in the WFD assessment process

Whilst guidance for undertaking a WFD Assessment is being prepared for Planning Authorities in Ireland, it is not yet published and therefore the UK Planning Inspectorate Guidance Note 18: The Water Framework Directive (Planning Inspectorate, 2017) has been followed. This requires that a WFD Assessment is undertaken in four stages:

- **Stage 1 Screening** – excludes any activities that do not need to go through the scoping or impact assessment stages
- **Stage 2 Scoping** – to identify potential risks associated with a development proposal on the relevant water bodies and their water quality elements.

- **Stage 3 Impact assessment** – to undertake a detailed assessment of water bodies, their quality elements and activities carried forward from the scoping stage.
- **Stage 4 Justification or Exemption** - rigorous assessment of the appropriateness, or otherwise, of particular developments that, for various reasons, are being considered despite failure to comply with the objectives of the WFD, as laid down in Article 4(7).

The key steps in the development stage process are briefly outlined in Table 2-1.

Table 2-1: Key steps in the water status impact assessment process.

WFD Assessment Steps	Development Management
Screening	Screening is required to determine whether a development proposal would screen in / out for more detailed consideration of WFD objectives.
Scoping & Consultation	Once a development proposal is screened in it will rely on the professional expertise of the applicant's specialist consultants and, if/as required, the Environment Section of the planning authority and other bodies to engage in more specific pre-application consultation in relation to the requirements and to agree the scope of the assessment. The scope of the WFD Assessment must be proportionate to the type and scale of development and the sensitivity of the water body(s).
Assessment & Reporting	Applications for development proposals which have screened in for detailed consideration of WFD / River Basin Management Plan (RBMP) objectives, must clearly demonstrate that the proposal is compliant with the objectives of the WFD i.e. it will not cause or contribute to deterioration of status or jeopardise the water body achieving good status. Where the competent authority concludes that significant negative impacts on a water body cannot be fully avoided (i.e. with the potential to cause deterioration of its status or jeopardise its attaining good status), or uncertainty remains of the extent of impact, it is required to refuse consent, unless a derogation under article 4 (7) is sought and justified under the strict conditions of the WFD for new modifications. Where water quality is an issue (but not so as to cause the deterioration of the status of any body of water or jeopardise its attaining good status), the competent authority shall consider granting permission subject to conditions to deal with any residual risk and must be guided by the development management objectives set out in the development plan. Where potential for significant effects is identified, a mitigation and monitoring strategy shall be presented. This can align with EIAR requirements if screened in for EIA. Otherwise, a mitigation and monitoring strategy should be agreed with the planning authority and the developer to ensure no unforeseen effects from the construction or operation of the development.
Justification or WFD Exception	Where a development proposal is considered likely to cause deterioration of the status (or potential) of a surface or groundwater body or prevents the achievement of good groundwater status, good ecological status / potential for water bodies currently failing to achieve this status / potential, Article 4(7) of the WFD provides a derogation whereby a Member State will not be in breach of the Directive provided all the conditions set out in Article 4(7) are met.

2.3.1 Stage 1 – screening

Where a development requires mandatory EIA, or it is screened in for EIA if it is not mandatory, water environment is a prescribed environmental factor to be addressed in the EIAR. The development would therefore automatically screen in for WFD assessment and a WFD Compliance report should be prepared by a suitably qualified professional and submitted with the application.

In some situations, it will be clear that a proposed development could not cause deterioration or compromise the achievement of good status / potential and it should screen out for WFD Assessment. For example, where the nature, scale, timing, duration and location of a development is entirely unconnected to a water body or will not contribute to a further deterioration of the water body's current status. These instances will generally be small developments, for example signage or changes of use or extensions to existing buildings in serviced urban areas.

Other development proposals may require further consideration for screening. In these situations, the source-pathway- receptor (S-P-R) model will be useful in terms of considering the potential risk of a proposed development causing further deterioration of the water body's current status, for example, if the proposed development includes a source (e.g. risk of pollution), is there a pathway (i.e.

hydrological connectivity [including flood risk] via water body or groundwater) and is there a receptor (i.e. water body at risk).

2.3.2 Stage 2 – scoping

Scoping considers how a development proposal could affect the different WFD quality elements. Each aspect or activity associated with the development with the potential to impact the achievement of the WFD should be considered and then summarised in table form for each water body.

WFD scoping should involve:

- Undertaking an initial assessment to identify the risks from the development proposal to receptors (within the zone of influence) based on the relevant water bodies and their water quality elements; and
- Identification of those water bodies where a more detailed impact assessment is required.

This will require that the types of impact be identified, e.g. on what quality element; whether the effects are short, medium or long-term and, construction, operational or decommissioning related.

2.3.3 Stage 3 – impact assessment

The Stage 3 assessment process is focused on assessing the potential for the proposed development to impact on the objectives of the WFD and the RBMP. This can be an iterative process and the objective should be to find an appropriate solution wherever possible – this may include assessment and amending the design and/or including measures to mitigate the particular elements of the development that posed the risk.

The particular elements of the proposed project that have the potential to adversely affect the quality of a water body must be examined with respect to the specific objectives of the WFD and the RBMP. The information collected should facilitate:

1. The identification and description of those aspects of the project that may affect a water body;
2. A description of the characteristics of relevant water body, including their WFD objectives and an understanding of factors which either maintain or threaten those objectives;
3. An assessment of the impact of the proposed development on the relevant objectives; and
4. To conclude whether the proposed development will:
    a. Cause or contribute to deterioration of status; or
    b. Jeopardise the water body achieving *good status (or high status in the case of a waterbody with a high-status objective).*

2.3.4 Stage 4 - Justification or WFD Exception

Where a development proposal is considered likely to cause deterioration of the status (or potential) of a surface or groundwater body or prevents the achievement of good groundwater status, good ecological status / potential for water bodies currently failing to achieve this status / potential, Article 4(7) of the WFD provides a derogation whereby a Member State will not be in breach of the Directive provided all the conditions set out in Article 4(7) are met. In the case of the Project the assessment stage has concluded that there is no risk of deterioration in the WFD status of any water bodies affected and that the Project will not compromise the achievement of the environmental objectives of these water bodies under the WFD. Therefore for this Project the assessment ends at Stage 3.

2.4 Water body classification

The WFD specifies the quality elements that are used to assess the ecological and chemical status of a water body. Quality elements are generally biological (e.g. fish, invertebrates, macrophytes) or chemical (e.g. heavy metals, pesticides, nutrients). Classifications indicate where the quality of the environment is good, where it may need improvement, and what may need to be improved. They can also be used, over the years, to plan improvements, show trends and to monitor the effectiveness of

the programme of measures identified. There are two status classifications which are commonly reported, ecological and chemical.

Chemical status is assessed from compliance with environmental standards for chemicals that are priority substances and/or priority hazardous substances. These are known as 'Annex X' substances as they were originally listed in Annex X of the Water Framework Directive, which has now been superseded by the Environmental Quality Standards Directive (2008/105/EC). Chemical status is recorded as 'good' or 'fail'. Chemical status for a water body is determined by the worst scoring chemical (one-out-all-out approach).

Ecological status classifications can be composed of up to four different assessments:

- An assessment of status indicated by a biological quality element such as fish, invertebrates or algae. The presence of invasive species is also assessed as a separate test;
- An assessment of compliance with environmental standards for supporting physio-chemical conditions, such as dissolved oxygen, phosphorus or ammonia;
- An assessment of compliance with environmental standards for concentrations of specific pollutants, such as zinc, cypermethrin or arsenic (these are known as 'Annex VIII' substances); and
- In determining high status only: A series of tests to make sure that hydromorphology is largely undisturbed.

Ecological status is recorded as high, good, moderate, poor or bad. 'High' represents 'largely undisturbed conditions'. Other classes show increasing deviation from undisturbed or reference conditions. This deviation must be expressed as an ecological quality ratio (EQR) which ranges from zero for bad status to one for high status. As with chemical status, ecological status is determined by the worst scoring component (one-out-all-out approach).

Biological status is a sub-set of ecological status where the results of the biological quality elements are assessed (and so ignore physio-chemical and Annex VIII substances and hydromorphology). The one-out-all-out rule is applied again here to give a biological status classification.

Overall, status is a composite measure that looks at both ecological status and chemical status. So, it considers all four assessment types under ecological status (biology, physio-chemical, Annex VIII substances and hydromorphology) as well as incorporating the results of the chemical status assessment (priority substances). The one-out-all-out rule is applied again here, so a water body must be good or better ecological status, and good (pass) chemical status assessment to be given a good overall status.

2.5 Water body objectives

The completion of a WFD assessment is a staged process where data on the study area and work proposals are assessed with respect to the requirements of the WFD to ascertain if the proposals will, or will not, have a detrimental impact on the status of water bodies associated with that site. If the assessment concludes, after taking account of the mitigation proposed, that the proposal may either reduce the quality status of the water bodies or prevent them from reaching the required status, then this represents a failure to achieve the WFD objectives and it should not go ahead unless justification for the new modification can be justified under Article 4.7 of the Directive.

The four objectives of the WFD Assessment are:

1. Objective 1: To prevent deterioration in the status of the water body;
2. Objective 2: To prevent the introduction of impediment to the attainment of Good WFD status for the water body;
3. Objective 3: To ensure the attainment of the WFD objectives for the water body are not compromised; and
4. Objective 4: To ensure the achievement of WFD objectives in other water bodies within the same catchment are not permanently excluded or compromised.

3 BASELINE ENVIRONMENT

The fundamental objectives of the WFD are to maintain “high status” of surface waters where it exists, prevent deterioration in the existing status of waters, and achieve at least “good status” in relation to all waters by the end of the current river basin management cycle unless a water body is subject to an extended deadline under Article 4(7) of the Directive. A water body must achieve both good ‘ecological status’ and good ‘chemical status’ before it can be considered to be at good overall status. An assessment of the risks to the achievement of these objectives for water bodies has been undertaken by the EPA through the extensive characterisation of water bodies and the key pressures acting upon them. This characterisation process allows the development of a programme of measures to aid the achievement of the WFD objectives.

A Programme of Measures (POMs) outlines the steps that will be taken to meet WFD objectives applicable to each water body. This Programme is contained within an overarching River Basin Management Plan (RBMP). These measures will require implementation at strategic level but also at regional and local level through the establishment of Regional Integrated Catchment Management Programmes. Areas for Action are areas where focused action will be carried out in the river basin management cycle. The Areas for Action were selected based on the priorities in the draft river basin management plan, the evidence from the Water Framework Directive characterisation process, and the expertise, data and knowledge of public body staff with responsibilities for water and the different pressure types. All of the waterbodies within the WFD Study area have been included in an Area for Action in the third River Basin Management Cycle with a restore environmental objective. The DEE_080 and Dee_090 river water bodies are within the Dee (Louth) Area for Action which where the lead Authority is LAWPRO, whilst the Slieveboy_010 river water body is located in the Grangebellew Group Water Scheme (GWS) Area for Action where the lead Authority in the National Federation of Group Water Schemes. It is noted that measures required to ensure compliance with existing legislation will be implemented during this river basin management cycle.

Environmental Quality Standards (EQSs) for classifying surface water status are established in the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (SI No. 272 of 2009), as amended. These regulations set standards for biological quality elements, physio-chemical conditions supporting biological elements (including general conditions and specific pollutants), priority substances and priority hazardous substances.

As shown in Figure 3-1, the ‘ecological status’ of a water body is established according to compliance with the EQSs for biological quality elements, physio-chemical conditions supporting biological elements and relevant pollutants and hydromorphological quality elements. The ‘chemical status’ of a water body is established according to compliance with the EQSs for priority substances and priority hazardous substances.

In addition to achieving good ecological and chemical status, a water body must achieve compliance with standards and objectives specified for protected areas, which include areas designated by the Bathing Water Directive; the Urban Waste Water Treatment Directive; the Shellfish Waters Directive; the Habitats Directive and the Birds Directive. Waters bodies that are compliant with WFD standards, but that contain protected areas that are non-compliant with protected area standards are downgraded to ‘less than good’ status.

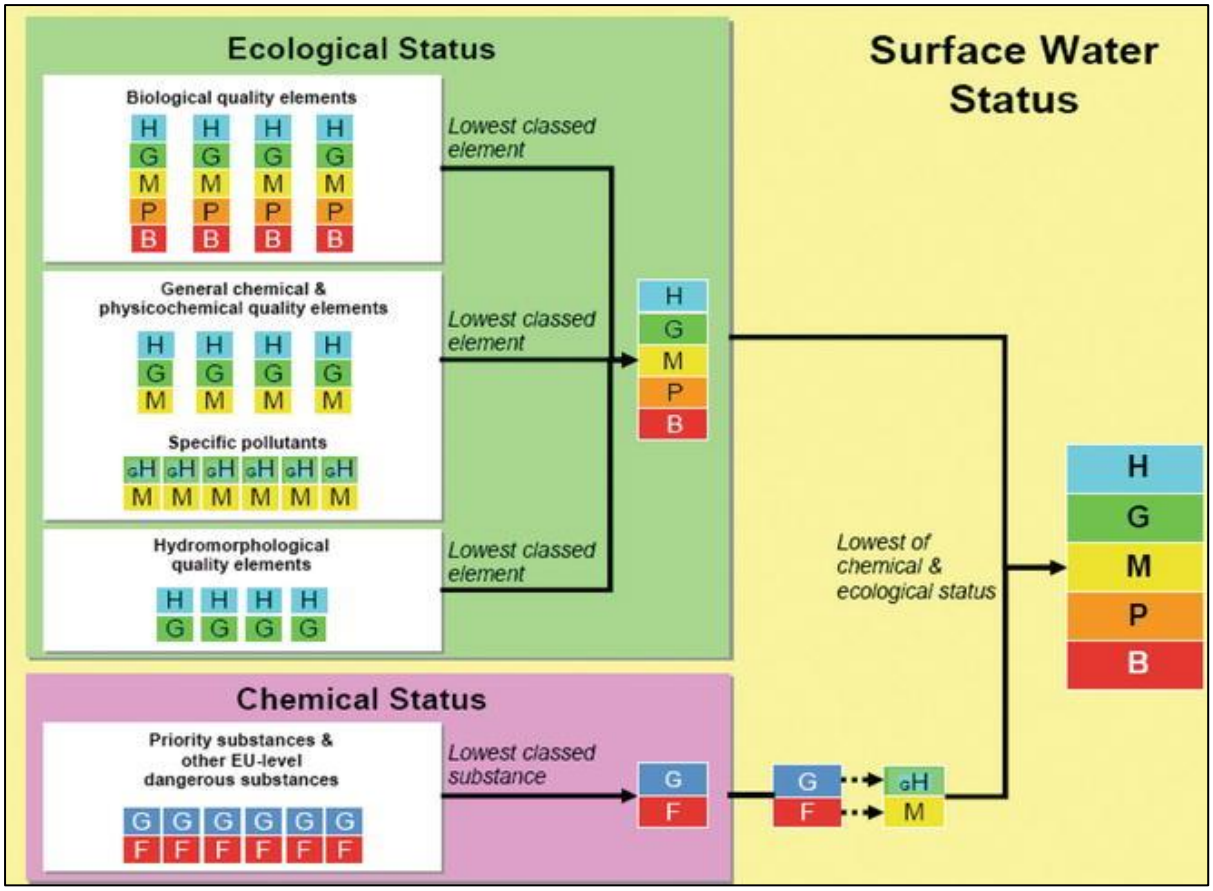

Figure 3-1: Elements of the Water Framework Directive Status.

3.1 Catchment physical setting

The Newry Fane, Glyde and Dee catchment, within which the Project is located, includes the area drained by the Newry, Fane, Glyde and Dee rivers, and by all streams entering tidal water between Murlough Upper and The Haven, Co. Louth. This is a cross border catchment with a surface area of 2,125 km², 1390 km² of which is located within the Republic of Ireland (RoI). The largest urban centre is Dundalk. The other main urban centres are Carrickmacross, Ardee, Kingscourt, Dunleer and Castleblaney and the total population (in the RoI) is approximately 115,900, with a population density of 83 people per km². The catchment is characterised by the upland area of the Carlingford Peninsula, which is underlain by granites and other igneous rocks, and undulating land to the south, and a heavily drumlinised (lenticular, steep sloped hills) landscape in the western half of the catchment. There are extensive gravel deposits along much of the coast in this catchment, which are an important local groundwater resource.

The subcatchments across which the onshore cable route traverses are the Dee_SC_040 and the Burren_SC_010.

3.1.1 Dee_SC_040 subcatchment

The main population centres in this subcatchment are Dunleer, Tinure and part of Ardee. Land use is predominantly comprised of about equal parts pastures and non-irrigated arable land (approximately 87%), followed by patches of other agricultural land uses, some forestry and urban fabric.

The terrain in this subcatchment is fairly hummocky, and hillier towards the south around the southern subcatchment boundary. The bedrock is poorly productive, and all aquifers underlying the subcatchment are classed as either Pu (Poor Aquifer, unproductive) or Pl (Poor Aquifer, productive only in local zones). There is a good depth of subsoil coverage which are mostly low permeability, which a patch of high permeability subsoils just south of Castlebellingham where the overlying soils are also shallow and well-drained. Surface water/groundwater interactions are very limited in this

subcatchment and it is only here that nitrate is likely to become mobilised in the groundwater pathway as susceptibility to the groundwater pathway is rated as very high here. Overland flow to surface waters is the most significant pathway in this subcatchment. There are extensive deep poorly-drained gley soils across the southern and eastern parts of the subcatchment, across the White River and Dee_100 river sub-basins. Here phosphorus is kept to the surface by the water-logged soils and corresponding susceptibility of phosphate to the surface water pathway is therefore high across these river subbasins, and either side of the Dee main channel also (alluvial soil). High nitrate susceptibility to surface waters is more patchy, but is very high around the south-eastern subcatchment boundary adjacent to the White River headwaters and to the east of the White_020 where the soils are shallow and well-drained.

3.1.2 BURREN_SC_010 subcatchment

The main population centres in this subcatchment are Annagassan, Togher, Grangebellow, Clogherhead and Termonfeckin. Land use is predominantly comprised of pasture (approximately 47%), followed by non-irrigated arable land (about 41%) as well as patches of other agricultural land uses, some forestry, urban fabric and beach/marine deposits.

The terrain in this subcatchment is low-lying but fairly hummocky, slightly more hilly along the western subcatchment boundary. The bedrock is poorly productive, with the majority of aquifers underlying the subcatchment classed as either Pu or Pl; a strip of Rkd aquifer (Regionally Important Aquifer - Karstified (diffuse)) is found only under the most downstream part of the Termonfeckin River. There is a good depth of poorly-drained gley soil coverage which overlies mostly low permeability subsoil. Well-drained soils with high permeability subsoils are found along the western subcatchment boundary and around Clogherhead; there are sand dunes along the coast. Surface water/groundwater interactions are therefore quite limited in this subcatchment; nitrate is likely to become mobilised right at the coast where susceptibility to the groundwater pathway is rated as very high. Overland flow to surface waters is the most significant pathway in this subcatchment. The deep poorly-drained gley soils keeps phosphorus to the surface and the susceptibility of phosphate to the surface water pathway is therefore high across much of the subcatchment. Pathways for nitrate to surface waters is more patchy, but is very high around the uppermost reaches of the Termonfeckin_010 and 020, and around Nicholastown in the Slieveboy subbasin where the soils are shallow and well-drained.

3.2 WFD status classification

As outlined in section 3.1, the onshore cable route transverses the Dee_080, Dee_090 and the Slieveboy_010 rivers waterbodies and the Louth Coast (HA 06) coastal waterbody. The Glyde Estuary is hydrologically linked to the Dee_090 river waterbody. In addition, the Outer Dundalk Bay is within the WFD study area and the offshore cable corridor is located close to this waterbody. The underlying groundwater bodies are Louth, and Clogher Head Gravels.

Based on monitoring information and data from 2016 to 2021, the current WFD status classification of water bodies potentially affected by the Project is illustrated in Figure 1-1. The Dee_080, Dee_090 and Slieveboy_010 river waterbodies are currently assigned moderate, poor, and moderate ecological status respectively, under the 2016-2021 monitoring programme. The Louth (HA 06) coastal waterbody is currently assigned high under the 2016-2021 monitoring programme. The Dee_080, Dee_090 and Slieveboy_010 river waterbodies are not achieving their WFD objectives of at least good ecological status. A summary of all waterbody statuses is provided in Table 3-1 with more detail included in the following sub sections.

Table 3-1: WFD waterbodies close to the proposed development (WFD Status 2016-2021).

Water body (WFD Code)	Waterbody Type	Overall Status	Ecological status (Quantitative Status for GW)	Chemical status	WFD Risk
Dee_080 (IE_NB_06D011000)	River	Moderate	Moderate	Not Available	At risk
Dee_090 (IE_NB_06D011100)	River	Poor	Poor	Not Available	At Risk
Slieveboy_010 (IE_NB_06S160790)	River	Moderate	Moderate	Not Available	Under Review
Louth Coast (HA 06) (IE_NB_025_0000)	Coastal	High	High	Not Available	Not at Risk
Outer Dundalk Bay (IE_NB_040_0000)	Coastal	High	High	Not Available	Not at Risk
Glyde Estuary (IE_NB_040_0500)	Transitional	Moderate	Moderate	Not Available	Under Review
Louth (IEGBNI_NB_G_019)	Groundwater	Good	Good	Good	Not at risk
Clogher Head Gravels (IE_NB_G_023)	Groundwater	Good	Good	Good	Not at risk

3.2.1 Dee_080 (IE_NB_06D011000)

Biological quality elements – The WFD operational monitoring station for this water body is the Dee River at Drumcar Bridge (Station Code - RS06D011000), which is one of the HDD for the onshore cable route (CP4). The most recent macroinvertebrate monitoring undertaken by the EPA for WFD classification based on Q-value classification system (Toner *et al.* 2005) was in 2020. Based on the EPA assessment the biological elements were given a classification of good for invertebrates which was an improvement from the previous EPA monitoring undertaken in 2018 which indicated the biological elements were indicative of moderate ecological status (Q-value 3-4). Aquatic surveys undertaken as part of the Project baseline data collection, presented in volume 2C, appendix 19.1: Onshore Biodiversity – Supporting Information at Drumcar Bridge inferred a moderate status as part freshwater aquatic invertebrate results. The habitat at this location has been established to be very good for spawning and nursery stages of the salmonid and lamprey life cycles, however the condition of the habitat is suboptimal.

Conditions for undertaking fish habitat appraisals during the aquatic ecology survey at the River Dee on the N33 Road Bridge were suboptimal due to high flow conditions and poor visibility. Nevertheless, some instream habitats were visible so a tentative assessment was made. Salmonid and lamprey adult and spawning habitat was assessed as 'Fair' due to the presence of some gravel habitat as well as deep pool and glide habitat for resting adults. Juvenile salmonid habitat was rated as 'Fair' due to the presence of suitable cover and coarse substrate. As the survey was carried out from a bridge, possible lamprey nursery habitat (e.g. silty deposits along the river margins) was difficult to see so an assessment was not made.

Good spawning substrates were not present at the Rock Stream survey site within this water body. Salmonid and lamprey spawning habitat was rated as 'None' due to high siltation, no riffle/ glide /pool habitat sequence present and no gravels. The stream has been modified into a drainage ditch with no habitat characteristics suitable for adult salmonid or lamprey spawning. No macroinvertebrate sampling was undertaken as conditions were not suitable.

Physio-chemical supporting elements – The supporting physio-chemical elements that are monitored in this water body include nutrients, pH, dissolved oxygen and BOD. In terms of nutrients ammonia concentrations are consistent with high ecological status however both nitrate and phosphorus concentrations are failing to achieve the environmental quality standards required to support good ecological status and have been classified as moderate. There is a statistically significant upward trend in the phosphorus concentrations which is also considered by the EPA to be environmentally significant in that if the trend continues will result in a further deterioration in the ecological status of this water body. Acidification (pH) and oxygenation conditions (DO - Dissolved Oxygen; and BOD – Biological Oxygen Demand) are consistent with at least good ecological status.

Hydromorphology – The EPA have identified 'engineering works - channelisation' as a suspected cause for the less than good status as the substrate conditions are not favourable for invertebrates. The Glyde & Dee Arterial Drainage Scheme (major/minor works) is present covering all of the Dee and its tributaries in this area. The hydromorphological assessment for this water body has classified the supporting hydromorphological conditions as moderate with channel modification due to the drainage scheme being the significant pressure.

Chemical status – Priority and priority hazardous substances are not assessed in the Dee_080.

Characterisation - The characterisation of this water body undertaken by EPA has identified diffuse sources from agriculture as the major contributor to the less than good nutrient conditions with impacts from the upstream water body, White (Louth)_030, also impacting this waterbody.

***Overall water body status* – Moderate.**

3.2.2 Dee_090 (IE_NB_06D011100)

Biological quality elements – The WFD operational monitoring station for this water body is the Dee River at Williamstown House (Station Code - RS06D011100), which is more than 3 km downstream of the crossing of the river Dee at Drumcar (CP4). The most recent macroinvertebrate monitoring undertaken by the EPA for WFD classification based on Q-value classification system (Toner *et al.* 2005) was in 2020. Based on the EPA assessment the biological elements were given a classification of poor for invertebrates (Q-value 3) which is consistent with all EPA monitoring undertaken at this site since 2012. Aquatic surveys undertaken as part of the Project baseline data collection, presented in volume 2C, appendix 19.1: Onshore Biodiversity – Supporting Information noted that the biological conditions at the nearest survey site on the River Dee at Drumcar Bridge inferred a moderate status as part freshwater aquatic invertebrate results. There is therefore additional pressures in the Dee_090 downstream of the onshore cable route that are resulting in a further deterioration in the ecological status.

The Newhall Stream (aquatic survey site A4 and CP5) is a tributary of the River Dee, the Dee-090 river water body. Salmonid and lamprey spawning habitat was assigned a rating of 'None-Poor' in the Aquatic Survey undertaken as part of the EIA. Juvenile salmonid habitat was rated as 'Fair', due to the presence of fast flowing water over coarse substrate, and cover in the form of overhanging vegetation. It should be noted that water quality at this stream (at risk) is likely to affect juvenile salmonids and lamprey should they occur in this stream. Lamprey nursery habitat potential was assigned a rating of 'None-Poor'. A Q-value assessment was not appropriate in this small 1st order stream and therefore an SSRS was deemed more suitable. A score of 3.2 was calculated indicating that the stream is "At Risk" of failing to achieve good ecological status.

Physio-chemical supporting elements – The supporting physio-chemical elements that are monitored in this water body include nutrients, pH, dissolved oxygen, and BOD. In terms of nutrients ammonia concentrations are consistent with high ecological status however both nitrate and phosphorus concentrations are failing to achieve the environmental quality standards required to support good ecological status and have been classified as moderate. As with the Dee_080 river water body there is a statistically significant upward trend in the phosphorus concentrations which is also considered by the EPA to be environmentally significant in that if the trend continues will result in a further deterioration in the ecological status of this water body. Acidification (pH) and oxygenation conditions (DO and BOD) are consistent with at least good ecological status.

Hydromorphology – The EPA have identified 'engineering works - channelisation' as a suspected cause for the less than good status as the substrate conditions are not favourable for invertebrates. The Glyde & Dee Arterial Drainage Scheme (major/minor works) is present covering all of the Dee

and its tributaries in this area. The hydromorphological assessment for this water body has classified the supporting hydromorphological conditions as moderate with channel modification due to the drainage scheme being the significant pressure.

Chemical status – Priority and priority hazardous substances are not assessed in the Dee_090.

Characterisation - The characterisation of this water body undertaken by EPA has identified diffuse sources from agriculture as the major contributor to the less than good nutrient conditions with the pollution impact potential classed as the highest level, rank1, as there is a significant diffuse source of P from agricultural areas and the land is susceptible to losses.

***Overall water body status* – Poor.**

3.2.3 Slieveboy_010 (IE_NB_06S160790)

Biological quality elements – This water body is not monitored for biology by the EPA, however both cable crossings of the Port Stream have been assessed in the aquatic ecology survey for the Project as presented in volume 2C, appendix 19-1: Onshore Biodiversity – Supporting Information, of the EIAR.

The Port stream at Togher (aquatic survey site A10 and CP7) was not suitable for Q-value assessment, however as glide habitat was recorded within the stream an SSRS was calculated. A score of 0.8 was calculated indicating that the stream is “At Risk”. Given the absence of riffle habitat sampled (where sensitive taxa are likely to be found), this score should be interpreted with caution. Notwithstanding this limitation, based on satellite imagery the Port Stream appears to be slow-flowing and drain-like throughout its length, and therefore the habitat surveyed at this site is likely to be representative of the habitat throughout the system. This is supported by the conditions in the Port Stream at Clonmore (aquatic survey site A10 and CP6) where a macroinvertebrate survey was not possible due to the overgrown channel vegetation, extremely soft silted substrate and stagnant flow recorded.

Fisheries habitat surveys at the Port Stream at Togher (aquatic survey site A10 and CP7) established that there was no salmonid and lamprey adult and spawning habitat. The stream was heavily vegetated and silted, with no suitable spawning habitat. The substrate was 100% silt. Juvenile salmonid habitat was also assigned a rating of ’None’ due to the slow flowing and silty nature of the stream. Lamprey nursery habitat was assigned a rating of ’Good’ due to the presence of a deep silt layer in the channel and slow flowing water. Whether lamprey actually occur within the channel is questionable, however, as no suitable spawning habitat was noted. The Port Stream at Clonmore (aquatic survey site A9 and CP6) has no potential for salmonids or lamprey at any life stage at the site surveyed and a habitat rating of None was assigned. The stream was stagnant, drain-like and choked with aquatic vegetation.

Physio-chemical supporting elements – There is one investigative monitoring point on this water body on the Slieveboy River of which the Port Stream is a tributary. Physio-chemical monitoring data is available for the year 2023 on the Slieveboy River at the R166 road bridge. As with the Dee_080 and Dee_090 acidification (pH) and oxygenation conditions (DO and BOD) are consistent with at least good ecological status. In terms of nutrients, ammonia concentrations are consistent with high ecological status however both nitrate and phosphorus concentrations are failing to achieve the environmental quality standards required to support good ecological status.

Hydromorphology – there is no information available on the hydromorphology of the water body on the EPA catchments.ie website however habitat surveys undertaken as part of this project have established that the stream at Togher (A9 and CP7) appears to have been historically straightened. The channel was choked with aquatic vegetation and where visible, the substrate consisted of 100% silt, and a silt layer approximately 0.15m deep was recorded in the channel. Velocity was slow, and flow discharge was normal. The Port Stream at Clonmore (A10 and CP6) was straightened and choked with vegetation. In both instances the hydromorphological conditions are not capable of supporting good ecological status.

Chemical status – Priority and priority hazardous substances are not assessed in the Slieveboy_010.

Characterisation - The characterisation of this water body undertaken by EPA has identified diffuse sources from agriculture as the major contributor to the less than good nutrient conditions with the pollution impact potential classed as the highest level(i.e. rank1) as there is a significant diffuse

source of phosphorus from agricultural areas and the land is susceptible to losses. Nutrient pressures from agriculture are the main reason this water body is not achieving its environmental objectives.

***Overall water body status* – Moderate.**

3.2.4 Glyde Estuary (IE_NB_040_0500)

Biological quality elements - There is no monitoring information available for the biological elements.

Physio-chemical supporting elements - There is no monitoring information available for the Physio Chemical elements.

Hydromorphology - There is no monitoring information available for the Physio Chemical elements.

Chemical Status - There is no monitoring information available for priority and priority hazardous substances.

Characterisation – the water body is under review for the risk of failing to achieve its environmental objectives. Unknown anthropogenic pressures are currently undergoing investigations to establish the significant pressures in this water body.

Overall water body status – Moderate, the EPA have assigned a moderate ecological status classification to the Glyde Estuary transitional water body based on the status of Inner Dundalk Bay.

3.2.5 Louth Coast (HA 06) (IE_NB_025_0000)

Biological quality elements - There is no monitoring information available for the biological elements.

Physio-chemical supporting elements - There is no monitoring information available for the Physico Chemical elements.

Hydromorphology - There is no monitoring information available for the supporting hydromorphology.

Chemical Status - There is no monitoring information available for priority and priority hazardous substances.

Characterisation – the water body is not at risk of failing to achieve the objectives of the WFD and there are no significant pressures on status identified.

Overall water body status – High, the EPA have assigned a high ecological status to the Louth Coast Water Body based on a modelling approach.

3.2.6 Outer Dundalk Bay (IE_NB_040_0000)

Biological quality elements - There is monitoring information available for the phytoplankton and macroinvertebrate elements of biological status, both of which are indicative of high ecological status for the Outer Dundalk Bay coastal water body.

Physio-chemical supporting elements – Dissolved inorganic nitrogen and orthophosphate conditions Outer Dundalk Bay are indicative of conditions suitable for high ecological status. Chlorophyll a is also consistent with conditions for high ecological potential and all parameters are on a downward trend although these trends are not statistically significant.

Hydromorphology - There is no monitoring information available for the supporting hydromorphological elements.

Chemical Status - There is no monitoring information available for priority and priority hazardous substances.

3.2.7 Louth (IEGBNI_NB_G_019)

Quantitative Groundwater Status – The quantitative groundwater status is based on a number of tests to establish if the water body is at good status. The following tests have been applied by the EPA and in all cases are indicative of good quantitative status:

- Saline (or Other) Intrusions Test;

- Impact of Groundwater on Surface Water Ecological/Quantitative Status Test;
- Groundwater Dependent Ecosystems (GWDTE) – Quantitative Assessment Test; and
- Water Balance Test.

Chemical Groundwater Status - The chemical groundwater status is based on a number of tests to establish if the water body is at good status. The following tests have been applied by the EPA and in all cases are indicative of good chemical status:

- Saline (or Other) Intrusions Test;
- Impact of Groundwater on Surface Water Ecological/Chemical Status Test;
- Groundwater Dependent Ecosystems (GWDTE) - Chemical Assessment Test;
- Drinking Water Protected Area Test; and
- General Chemical Assessment Test.

Groundwater monitoring is also available for the Louth groundwater body which has a surveillance monitoring station at Kilmainhamwood. All parameters measured are indicative of good chemical status with the latest monitoring results available for 2023.

Overall groundwater status – Good.

3.2.8 Clogher Head Gravels (IE_NB_G_023)

Quantitative Groundwater Status – The quantitative groundwater status is based on a number of tests to establish if the water body is at good status. The following tests have been applied by the EPA and in all cases are indicative of good quantitative status:

- Saline (or Other) Intrusions Test;
- Impact of Groundwater on Surface Water Ecological/Quantitative Status Test;
- Groundwater Dependent Ecosystems (GWDTE) – Quantitative Assessment Test; and
- Water Balance Test.

Chemical Groundwater Status - The chemical groundwater status is based on a number of tests to establish if the water body is at good status. The following tests have been applied by the EPA and in all cases are indicative of good chemical status:

- Saline (or Other) Intrusions Test;
- Impact of Groundwater on Surface Water Ecological/Chemical Status Test;
- Groundwater Dependent Ecosystems (GWDTE) - Chemical Assessment Test;
- Drinking Water Protected Area Test; and
- General Chemical Assessment Test.

Overall groundwater status – *Good.*

3.3 Register of Protected Areas

A significant proportion of the area of Dundalk Bay is protected under existing EU legislation requiring special protection due to the sensitivity to pollution or are of particular environmental importance. All areas requiring special protection in the Irish River Basin District have been identified by EPA, mapped, and are listed in a national register of protected areas (required under Article 6 of the WFD Directive). The register of protected areas includes:

- Areas designated for the abstraction of water for human consumption (Drinking Water Protected Areas);
- Areas designated for the protection of economically significant aquatic species, i.e. Freshwater Fish and Shellfish;

- Bodies of water designated as recreational waters, including areas designated as bathing waters;
- Nutrient-sensitive areas, including areas identified as Nitrate Vulnerable Zones under the Nitrates Directive or areas designated as sensitive under Urban Waste Water Treatment Directive; as well as
- 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 Special Protection Areas (SPAs) and Special Areas of Conservation (SACs).

These protected areas have their own monitoring and assessment requirements to determine their condition. They are often assessed for additional pollutants or requirements relevant to their designation. The water dependent protected areas within the WFD Study area are illustrated in Figure 3-2.

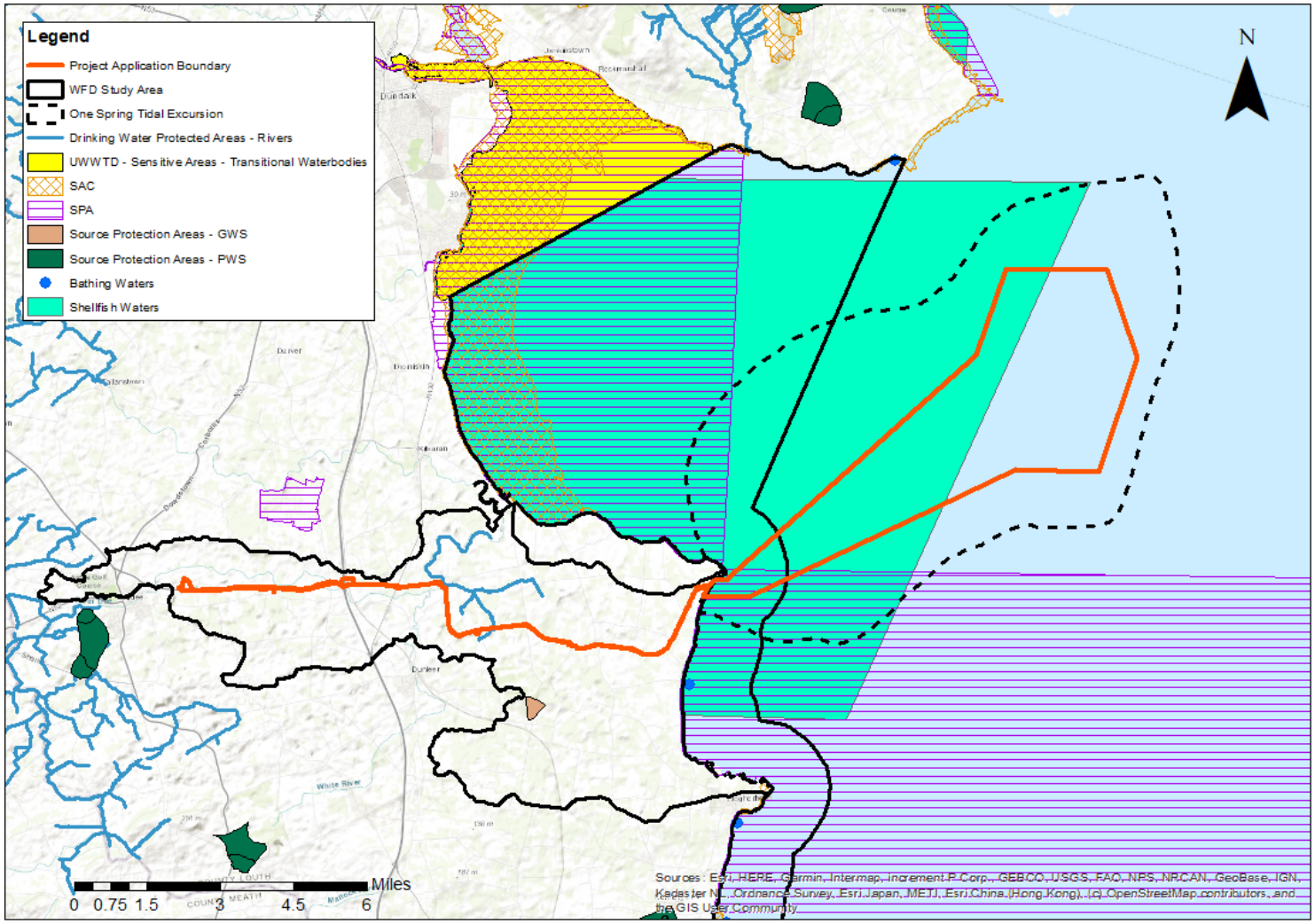

Figure 3-2: WFD Main Study Area and water dependent protected areas.

3.3.1 Drinking Waters

The Dee_090 river water body, including the reach of the Newhall Stream traversed by the onshore cable route, is designated as a drinking water river (Ref: IEPA1_NB_06D011100) in accordance with European Communities (Drinking Water) (No. 2) Regulations 2007 (SI no. 278/2007). Therefore it will be important to ensure that the cable crossing at this location does not impact on the quality of the raw water source of this drinking water. The proposed crossing (CP5) will be undertaken by open cut trench across the Newhall Stream Tributary and therefore it will be important to ensure the installation of the cable ducts are undertaken in dry conditions to ensure that suspended sediment and other pollutants are not transported downstream.

The Louth groundwater body is also designated as a Drinking water ground water body delineated in accordance with European Communities (Drinking Water) (No. 2) Regulations 2007 (SI no. 278/2007).

Areas surrounding individual groundwater sources are termed source protection areas (SPAs). Two source protection areas are recommended for delineation: Inner Protection Area (SI); Outer Protection Area (SO), encompassing the remainder of the source catchment area or Zone of Contribution (ZOC). Inner Protection Area (SI) is designed to protect against the effects of human activities that might have an immediate effect on the source and, in particular, against microbial pollution. Groundwater sources, particularly public, group scheme and industrial supplies, are of critical importance in many regions. Consequently, the objective of source protection zones is to provide protection by placing tighter controls on activities within all or part of the ZOC of the source.

This nearest groundwater supply and its ZOC is located in a separate sub-basin within the Slieveboy_010 river water body. The outer boundary of the ZOC is great than 2 km away from the onshore cable route, therefore there is no potential for the Project to impact on this source protection area.

3.3.2 Salmonid Waters

The River Boyne is classified as a salmonid waters under the WFD Register of Protected Areas, established under Article 6 of the WFD, as the river is designated for Atlantic Salmon. The River Boyne is not located within or near to the Project. The River Boyne Salmonid waters is located 15 km from the Project.

3.3.3 Shellfish Waters

Shellfish waters are designated under the Water Framework Directive (2006/113/EC) and all shellfish protected waters will be assigned an objective under this directive. The directive is transposed into Irish law under the European Communities (Quality of Shellfish Water) Regulations 2006 (SI No 268 of 2006), which was further amended in 2009. It is essential that ‘good’ water quality is maintained within these areas to ensure the production of high-quality shellfish.

The Project is located within the Dundalk Bay Shellfish Waters designated area. The Carlingford Shellfish Waters designated area is located 6 km from the closest point of the Project to this area.

The significant pressures on the Shellfish Designation are from urban wastewater (Blackrock, Dundalk, Annagassan agglomerations), Domestic wastewater treatment systems (DWWTS) Agriculture (pasture) and Agriculture (arable).

3.3.4 Bathing Waters

The Bathing Water Directive (2006/7/EC) came into force in March 2006, and was transposed into Irish law by the Bathing Water Quality Regulations, 2008, as amended. The previous 1976 Directive was repealed with effect from 31 December 2014. Since 2014, the annual water quality classification (rating) of a beach or lake has been based on water quality results covering a four-year period rather than a single previous season’s data. Water quality at beaches and lakes is classified as Excellent; Good, Sufficient or Poor (table 3-2). This approach is common across all EU Member States and there is a requirement to ensure that bathing waters are of ‘Sufficient’ standard or better. Any ‘Poor’ bathing water requires a programme of adequate management measures to be implemented. A minimum of 16 samples are required for formal annual assessment.

Table 3-2: Annual assessment criteria for bathing waters.

Parameter	Excellent	Good	Sufficient
E. coli (Freshwater) cfu/100 ml	500*	1000*	900**
E. coli (Coastal) cfu/100 ml	250*	500*	500**
Intestinal enterococci (Freshwater) cfu/100 ml	200*	400*	330**
Intestinal enterococci (Coastal) cfu/100 ml	100*	200*	185**

*based on 95-percentile value

**based on 90-percentile value

There are five designated bathing waters within close proximity to the Project. The closest bathing waters are Port-Lurganboy (1.4 km to the Project) and Shelling Hill/Templetown (5 km to the Project) which currently have excellent bathing water status.

3.3.5 Nutrient Sensitive Waters

The Urban Waste Water Treatment Regulations 2001, as amended (which transpose the Urban Wastewater Treatment Directive (91/271/EEC) into Irish law and update the Environmental Protection Agency Act, 1992 (Urban Waste Water Treatment) Regulations 1994, as amended) list nutrient sensitive waters in the Third Schedule. Inner Dundalk Bay is 10 km from the Project and the Boyne Estuary is 14 km from the Project.

3.3.6 Natura 2000 Protected Areas

Natura 2000 is a European network of important ecological sites. The EU Habitats Directive (92/43/EEC) places an obligation on Member States of the EU to establish the Natura 2000 network. The network is made up of Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC), and Special Areas of Conservation (SACs), established under the Habitats Directive itself.

As illustrated in Figure 3-2, the Project is adjacent to Natura 2000 sites (i.e. SPAs or SACs). The Project may therefore have an indirect impact on the Natura 2000 site. There is the potential for water dependent protected areas downstream of the Project and where the onshore cable route and offshore cable corridor transverses, to be indirectly affected in the event of water pollution, in the absence of mitigation. One of the main purposes of the water quality assessment is to ascertain whether the Project will cause significant effects on the ecological status of the water bodies affected having regard to the environmental objectives for the water bodies, including conservation objectives for qualifying features of the downstream Natura 2000 network. It should also be noted that potential effects on Natura 2000 or “European” sites is provided under separate cover within the Natura Impact Statement.

The Project is adjacent to the following protected areas as outlined in Table 3-3

Table 3-3: Distance form each designated site to the Project.

Designated Site (Site Code)	Closest Distance to offshore wind farm area (km)	Closest Distance to offshore cable corridor (km)
Dundalk Bay SAC (000455)	9.3	4.4
Dundalk SPA (004026)	8.0	0.1
North West Irish Sea cSPA (004236)	3.5	A 2 km section of the offshore cable corridor crosses through this designation
Clogher Head SAC (004159)	13.1	5.9
Carlingford Shore SAC (001459)	4.5	6.5
Carlingford Lough SPA (004078)	5.7	8.6

4 PROJECT DESCRIPTION

A brief description of the offshore and onshore elements of the Project are provided below. More detail is provided in volume 2A, chapter 5: Project Description of the EIAR.

4.1 Offshore infrastructure

- Wind Turbines - The Project will comprise of 25 wind turbines (also referred to as wind turbine generators (WTGs) located within the offshore wind farm area. These wind turbines will be mounted on foundations which will be fixed to the seabed.
- Monopile foundations - A monopile foundation for each wind turbine and the offshore substation (OSS) is proposed. This foundation type was selected based on the site geology.
- Inter-array cables - The WTGs will be connected by a network of 41 km of 66kV subsea inter-array cables to an offshore substation also located within the offshore wind farm area.
- Offshore substation - The offshore substation (OSS) will be mounted on a fixed monopile foundation. The OSS will transform the generated electricity from 66 kV to 220 kV High Voltage Alternating Current (HVAC).
- Offshore cable - A single offshore cable consisting of three internal cores will export the power from the OSS through to the proposed landfall, located 700m south of Dunany Point.

4.2 Onshore infrastructure

- Landfall – Transition Joint Bay (TJB) - The offshore cable will be connected to three separate land-based cables also operating at 220 kV HVAC in an underground TJB located close to the landfall and above the HWM.
- Onshore cables - Three onshore cables will be installed in a single trench which will be routed principally along public roads to a new ‘loop-in’ onshore substation located below the existing 220 kV overhead power line (OHL) from Louth to Woodland. The onshore cables will divert off the public road at five locations to enable the cables to pass below major crossing points, namely:
    i. the Port Stream at Togher (tributary of Slieveboy_010),
    ii. the Port Stream at Clonmore (tributary of Slieveboy_010),
    iii. the River Dee at Drumcar (tributary of Dee_090),
    iv. the M1 motorway and the Dublin to Belfast rail line and
    v. the River Dee at Richardstown (tributary of Dee_080) on the N33.

  The crossing of the Salterstown Stream at Mitchelstown (tributary of Slieveboy_010) will be undertaken within the public road.
- The infrastructure to allow the cables to pass below these locations will be installed using horizontal directional drilling. The Port Stream at Clonmore will be crossed by trenching methods.

Onshore substation - The onshore substation will consist of two compounds: Compound 1 will contain Gas Insulated Switchgear (GIS) located inside a building. This will be owned by EirGrid and operated by the ESB Networks as Transmission System Operator. Compound 2 will contain outdoor Air Insulated Switchgear (AIS) and will form part of the grid to the offshore substation which will be owned and operated by EirGrid. Transmission cables from the GIS substation in Compound 1 will connect to the existing overhead power lines through two new Line Cable Interface Masts (LCIM). An existing 220 kV ESB mast adjacent to the substation compounds will be replaced by the two ‘loop-in’ masts to enable this connection.

5 WFD ASSESSMENT

5.1 Stage 1: Screening

In line with the Planning Inspectorate guidance (2017), the Project has been screened for WFD Assessment on the basis of the source pathway receptor model.

Source – The nature of the works will result in a direct impact on Dee_080, Dee_090 and Slieveboy_010 river water bodies and Louth Coast (HA 06) coastal waterbody and the types of activities proposed could potentially have an impact on the environmental objectives of the water body.

Pathway – As the activities are proposed near or within these waterbodies, there is a direct pathway to the receptor;

Receptor – There are a number of the contributing elements of ecological status that could be impacted, particularly the chemical status, the physiochemical and hydro morphological supporting conditions and the biological elements.

Based on the S-P-R model the Project has been **screened in** for WFD Assessment.

5.2 Stage 2: Scoping

This section summarises the potential impacts associated with the Project. The potential risks to each of the key receptor groups are considered.

5.2.1 Project design parameters

The project description is provided in volume 2A, chapter 5: Project Description. Table 5-1 outlines the project design parameters that have been used to inform the assessment of potential impacts of the construction, operational and maintenance and decommissioning phases of the Project on the environmental objectives of the WFD water bodies within the WFD Study Area.

The potential impacts include:

- Habitat disturbance – habitat disturbance has the potential to effect the supporting hydromorphological conditions of water bodies during the construction, operational and maintenance and decommissioning of the Project;
- Pollution – pollution of water bodies caused by accidental spills/ contaminant release has the potential to effect the physico-chemical, biological and chemical status of water bodies during the construction, operational and maintenance and decommissioning of the Project;
- Suspended sediment – suspended sediment has the potential to effect the physico-chemical, biological and chemical status of water bodies, and also has the potential to impact on the physical features of water bodies due to construction, operational and maintenance and/or decommissioning related activities;
- Spread of Invasive and Non-native Species (INNS) – INNS has the potential to effect the status of native protected or notable habitats and species within water bodies and presents a risk in the achievement of the environmental objectives of the water bodies during the construction and decommissioning phase of the Project;
- Electromagnetic Fields (EMFs) – EMF from cabling during the operational and maintenance phase has the potential to effect fish populations within water bodies such as Atlantic Salmon and may result in impairment of their migration and navigation;
- Port Facilities to facilitate the construction of the Project – pre-assembly operations could impact on supporting physico-chemical conditions in the water bodies within which the Port or Ports are located. Changes to these water body supporting conditions could impact on the biological elements and ultimately the ecological status of these water bodies.

Table 5-1: **Project design parameters used for the assessment of potential impacts for WFD Assessment.**

Potential impact	Phase* C	O	D	Project Design Parameters	Justification
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies during construction, operational and maintenance and decommissioning of the Project.	×	×	×	**Offshore Wind Farm Area** The wind turbines, monopile foundations, inter-array cables and offshore substation will be located within this area which is remote from the coastal water bodies within the WFD study area. This area is scoped out of the WFD Assessment	The spring tidal excursion for the offshore wind farm area of 3.5 km will not intersect with these coastal water bodies therefore, any impacts on supporting hydromorphological conditions during the construction, operational and decommissioning phases for these elements of the Project are scoped out of the WFD Assessment.
	✓	✓	✓	**Offshore cable route** This is where the offshore cable will be largely located. The offshore cable corridor extends from the offshore wind farm area to a landfall location south of Dunany Point. **Construction phase** Site preparation activities will require sand wave clearance of 10% of the offshore cable corridor with a clearance width 15 m. Installation of offshore cable: • Offshore cable length 16 km; and • Disturbance of seabed material from a 3 m wide and 3 m deep trench. Offshore cable installation duration over a period of fifteen months. Marine Process Modelling assumes that the cable corridor extend over areas of sand and muddy sand which mobilised the greatest volume of sediment. **Operational and maintenance phase** Cable repair/reburial activities: • Offshore cable: 3 repair events and 3 reburial events for subtidal and intertidal region; • Disturbance of seabed material from a 3 m wide and 3 m deep trench; and • Operational phase of 40 years.	This operation is to be undertaken by plough dredging or jetting which mobilises a small amount of sediment into suspension at the seabed; sediment plume concentrations and extents are reduced compared to other types of dredging activities. In reality ploughing (and to a certain extent jetting) moves material rather than bringing it fully into suspension therefore the assumption that the seabed is fluidised was used for modelled simulations. Cable routes include areas of gravel, sand and muddy sand along with exposed rock. Sections of the routes which mobilise material that has the potential to move beyond the immediate vicinity has been examined (see appendix 7-1: Marine Processes Technical Report). It is proposed that installation in the intertidal zone will be undertaken using land-based techniques with smaller trenches and a reduction in sediment release. However, the intertidal zone at the landfall location experiences a high rate of natural morphological change from mudslides and cliff collapses. Furthermore, the period of disruption during the trenching will be short and the beach will be reinstated, therefore the possible impact on supporting hydromorphology in the intertidal zone has been scoped out.

Potential impact	Phase* C	O	D	Project Design Parameters	Justification
				Decommissioning phase Removal of inter-array and offshore cables: • Disturbance of seabed material from a 3 m wide and 3 m deep trench.	
	×	×	×	**<u>Landfall</u>** **Construction phase** A transition joint bay (TJB), which is a buried chamber, is required to connect the single offshore cable to three onshore land cables. There are two options for the location of the TJB. The two options are in close proximity and approximately 40 m from each other. • Option 1 is close to the beach at Dunany above the high water mark. • Option 2 is in an agricultural field adjacent to the beach. Cable installation at the landfall via open trenching and pulley or winch system.	The TJB will be set back from the High-Water Mark (HWM) and will be installed subsurface without any potential to impact on the supporting hydromorphological conditions of the Louth Coast coastal water body. The landfall will result in a temporary impact on the intertidal area which will be reinstated on burial of the onshore cable. There are a number of trenching methods that can be used which are described in volume 2A, chapter 5: Project Description of the EIAR. In all instances the cable will transition across the intertidal area to the TJB by a cable layout machine, or excavated trench with the cable pulled through from a winch in the general location of the TJB. The cable route would be reinstated with existing vegetation species and the footprint would be of a scale that would not significantly impact on the hydromorphological supporting conditions of the Louth Coast coastal water body.
				Operational and maintenance phase It is not expected that the TJB will need to be accessed during the operation of Project.	The TJB will not be accessible during the operational and maintenance phase and has no potential to impact on the supporting hydromorphological conditions.
				Decommissioning phase To minimise environmental disturbance in the intertidal area it is proposed is to leave cables buried in place in the ground with the cable ends cut, sealed and securely buried as a precautionary measure. Alternatively, partial removal of the cable may be achieved by pulling the cables back out of the ducts. This may be preferred to	The decommissioning phase for the landfall will not result in any impact on the Louth Coast coastal water body form accidental spills/ contaminant release. The landfall has therefore been scoped out for any significant impact to the hydromorphological supporting conditions of the water bodies affected.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				recover and recycle the copper and/or aluminium and steel within them.	
	✓	×	×	**<u>Onshore Cable Route</u>** **Construction phase** The areas of the onshore cable corridor that are subject to disturbance across the 20 km trench length are set out below. The key potential for disturbance will result from the watercourse crossings. *Open cut trenching along the onshore cable corridor:* The onshore cable construction will be located along the public road for the most part and therefore will not have any direct impact on the supporting hydromorphological conditions of the water course traversed. However, there are a number of crossing points where the cable route will cross water courses. As outlined in Table 1-2 there are two water courses that will be crossed using open cut methods; the Newhall Stream (CP5) in the Dee_090 river water body and the Port Stream at Clonmore (CP6) in the Slieveboy_010 river water body. These crossing present the highest risk to the supporting hydromorphological conditions of these water bodies. All other water course crossings will be undertaken by HDD and will be set back from the water body with full reinstatement on completion so will not have the potential to impact on the supporting hydromorphological conditions. Prior to work commencing, temporary constructions and site access roads will be set up at six locations along the onshore cable route. *Horizontal Directional Drilling* HDD methods is proposed for crossing watercourses and other obstacles (e.g. rivers, motorways, rail line) using drilling rig located in onshore cable construction corridor. Long boreholes are drilled approximately 600-900 mm in diameter underneath obstacles. A predetermined profile analyses the ground conditions and installation requirements for drill entry and exit pits at both ends while drilling is conducted at shallow angle. Once the pilot hole is widened by larger drilling heads, cable ducts are placed through the hole. Bentonite is	The highest risk of impact from the onshore cable route on the water environment will occur at watercourse crossings. Typical methods of crossing watercourses fall into two categories - open-cut trenching and trenchless methods, in the case of the Project Horizontal Directional Drilling (HDD). The degree of risk may be considered higher for open cut because it involves direct disturbance of the watercourse and requires closer proximity of plant machinery to the watercourse. Given that the onshore cable will mainly be constructed in the road existing road bridges will be used to access either side of the crossing therefore temporary haul roads across the water course will not be required. Installation of the cables by open cut means across watercourses has the potential to impact on the hydromorphology of the river water body in the short to medium term through disturbance of the riparian zone, banks and channel adversely impacting the morphology and bank stability. Trenchless techniques such as HDD could result in the escape to the watercourse of pressurised drilling fluids (bentonite/mud) through break out of drilling fluids from the underlying bed material or from surface run-off caused by drilling fluid returns at tunnel entry and exit points. However, this occurs very infrequently as the drilling process is closely monitored and managed. These drilling fluids may be considered a type of fine sediment with similar general potential impacts to the general construction however the source and magnitude of impact is different given the fine particle size and the potential to infiltrate river substrate and sensitive habitats and thus, in the absence of mitigation, could directly and indirectly have a negative

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				pumped to the drilling head during the drilling process to stabilise the hole to prevent collapse. Prior to drilling, an exit pit may be excavated passed the obstacle within the onshore cable route in order for the HDD profile and ducts to stop at the required depth for the cable. **Operational and maintenance phase** The onshore operation and maintenance requirements for the onshore cable will be largely corrective (because there is limited requirement for preventative maintenance on the onshore cable), accompanied by infrequent on-site inspections of the onshore cable (approximately every 3 years). The onshore cable will be consistently monitored remotely by EirGrid. **Decommissioning phase** It is expected that onshore cables would be removed by disconnecting each section at the joint bay and pulling them through the cable ducts. The structures of the joint bays will be removed only if it is feasible with minimal environmental disturbance or if their removal is required to return the land to its current use.	impact on supporting hydromorphology and the therefore the biological quality elements. Maintenance during the operational and maintenance phase represents limited potential for disturbance for hydromorphological supporting conditions. The onshore cable route shall remain in situ during the decommissioning phase with only the link boxes needing removal. The maximum area of these represents the maximum area that will be subject to disturbance during decommissioning of the project but the location of the joint bays is remote from any water course and there will be no potential for impact to the hydrological supporting conditions.
	×	×	×	**<u>Onshore Substation</u>** **Construction phase** The construction of the onshore substation will not directly impact on the Broadlough Stream within the Dee_080 river water body. **Operational and maintenance phase** Operational and maintenance requirements for the onshore substation will be both preventative and corrective. The onshore infrastructure will be consistently monitored remotely, and there will be operational and maintenance staff visiting the onshore substation to undertake works on a regular basis. Operations at the onshore substation will involve six to eight visits per month by ESB personnel, a quarterly inspection site visit and maintenance visits when required.	The extent of the permanent onshore substation is set back from the stream, as is the temporary construction compound. There will be no potential for the onshore substation to impact on the hydromorphological supporting conditions of the Dee_080 river water body during the construction, operation or decommissioning phases.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				These visits will result in one vehicle (van) requiring access to the onshore substation. **Decommissioning phase** The components of the onshore substation have varying life expectancies. Transformers typically have a useful life up to 50 years, and some components' lives can be extended beyond this period. The case for decommissioning the onshore substation will be reviewed in discussion with the Transmission System Operators (TSO) and the regulator in the light of any other existing or proposed future use of the onshore substation. If complete decommissioning is required, then all of the electrical infrastructure will be removed, and any waste will be taken off site by a licenced waste contractor and managed in accordance with the waste hierarchy and where required to be disposed, this will be done under licence from the appropriate authority. Foundations will be broken up and the site reinstated to its original condition.	
	✓	×	×	**Construction compounds** **Construction phase** Seven construction compounds for HDD, storage and welfare will be required with suitable surfacing such as stone, secured with fencing, lockable gates with appropriate drainage. Measures include treatment prior to pumping of tanker for disposal offsite at a waste licensed facility to control surface runoff from construction compounds. The construction compounds will require hard standing suitable for the temporary placement of site facilities (such as offices, briefing rooms, catering facilities, storage etc. typically housed in port-a-cabins) and to allow plant and materials to be stored safely and securely. Temporary access tracks for construction traffic will be required to provide access to the landfall, onshore substation site and to the HDD locations. All construction compounds will be removed and sites restored to their original condition when the construction phase has been completed.	The construction compounds will be set back from watercourses to ensure no direct impact or loss of habitat or the supporting hydromorphological conditions of the water bodies affected.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
The impact of pollution caused by accidental spills/contaminant release during construction, operational and maintenance and decommissioning of the Project	×	×	×	**Offshore Wind Farm Area** The wind turbines, monopile foundations, inter-array cables and offshore substation will be located within this area which is remote from the coastal water bodies within the WFD study area. This area is scoped out of the WFD Assessment	The spring tidal excursion for the Offshore wind farm area of 3.5 km will not intersect with these coastal water bodies therefore any impacts on supporting physio-chemical conditions, biology or chemical status from pollution caused by accidental spillage or contaminant release during the construction, operational and maintenance and decommissioning phases for these elements of the Project are scoped out of the WFD Assessment.
	✓	✓	✓	**Offshore cable corridor** This is where the offshore cable will be largely located. The offshore cable extends from the offshore wind farm area to a landfall location south of Dunany Point. **Construction phase** Site preparation activities will require sand wave clearance of 10% of offshore cable corridor with a clearance width 15 m. Installation of offshore cable: • Offshore cable length 16 km; and • Disturbance of seabed material from a 3 m wide and 3 m deep trench. Offshore cable installation duration over a period of up to fifteen months where marine construction vessels and equipment will be working in the intertidal and subtidal area. **Operational and maintenance phase** Marine vessels and equipment required for cable repair/reburial activities over the operational phase of 40 years. **Decommissioning phase** Marine vessels and equipment required for removal of offshore cables.	The main source of pollution and contaminant spills will be from hydrocarbons associated with the Project including Marine Gas Oil (MGO) or Intermediate Fuel Oil (IFO), lubricant oil and hydraulic oil from marine construction vessels. The potential worst-case spill scenario associated with the Project would be a complete loss of fuel inventory from two large vessels as a result of collision, or where a passing vessel collides with a wind farm vessel or structure. It must be noted that for larger vessels, even following a significant collision, it is unlikely that all fuel onboard would enter the water due to location of bunker tanks. Once spilled in the marine environment, oil immediately begins to undergo weathering, a term used to describe many natural, physical, chemical and biological changes. The changes that the oil undergoes will often influence the effectiveness of response options. Prevailing meteorological and oceanographic conditions, as well as the type of oil spilled, will determine its ultimate fate.
	✓	×	✓	**Landfall** **Construction phase**	Oils and petroleum in particular from construction machinery and vessels used during the construction

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				A transition joint bay (TJB), which is a buried chamber, is required to connect the single offshore cable to three onshore land cables. There are two options for the location of the TJB. The two options are in close proximity and approximately 40 m from each other. • Option 1 is close to the beach at Dunany above the high-water mark. • Option 2 is in an agricultural field adjacent to the beach. Cable installation at the landfall via open trenching and pulley or winch system. **Operational and maintenance phase** It is not expected that the TJB will need to be accessed during the operation of Project. **Decommissioning phase** To minimise environmental disturbance in the intertidal area it is proposed is to leave cables buried in place in the ground with the cable ends cut, sealed, and securely buried as a precautionary measure. Alternatively, partial removal of the cable may be achieved by pulling the cables back out of the ducts. This may be preferred to recover and recycle the copper and/or aluminium and steel within them.	and decommissioning of the export cable landfall and the TJB land fall and can have large impacts on aquatic species, and depending on the extent of a spill, may reduce respiration rates by altering oxygen exchange at the water-air interface or cause complete elimination of invertebrates and fish from streams. Pollution can impact on the biological, physico-chemical, and chemical supporting elements of water bodies. There the construction phase for the landfall has been scoped in to the WFD Assessment. Pollution prevention measures to address the risk from accidental spills and measures for mitigating spills should they occur are included in supporting management plans outlined in Table 5-6. The export cables and the TJB will not be accessible during the operational and maintenance phase and has no potential to impact on the Louth Coast coastal waterbody. The decommissioning phase for the landfall may result not result in pollution caused by accidental spills/ contaminant release to the Louth Coast coastal water body. The landfall has therefore been scoped in for any significant impact to Louth Coast coastal waterbody .
	✓	×	✓	**<u>Onshore Cable Route</u>** **Construction phase** The areas of the onshore cable route that are subject to disturbance across the 20.1 km trench length are set out below. The key potential for disturbance will result from the water course crossings. *Open cut trenching along the onshore cable corridor:*	Activities required for the construction and decommissioning phases of the Project may result in accidental spills/contaminant release which could adversely affect protected or notable habitats and species. Concrete will be used during the construction process at the TJB, joint bays, link boxes, and as foundations for built structures at the onshore substation.

Potential impact	Phase* C	O	D	Project Design Parameters	Justification
				The onshore cable route will be largely located along the public road. The laying of the cable in the road will require excavation and import of material which will require construction machinery and equipment including excavators, dumper trucks, flat bed lorries, cutting equipment, and hand-held tools. This may give rise to material which if inappropriately managed could result in sediment laden run-off from material stockpiles. In addition, dewatering of trenches can generate large quantities of sediment laden water which will need to be appropriately treated. There are a number of crossing points where the onshore cable route will traverse watercourses. As outlined in Table 1-2 there are two watercourses that will be traversed using open cut methods; the Newhall Stream (CP5) in the Dee_090 river water body and the Port Stream at Clonmore (CP6) in the Slieveboy_010 river water body. These crossings present the highest risk to pollution caused by accidental spills and contaminant release. All other watercourse crossings will be undertaken using HDD and will be set back from the water body. Small construction compounds required for the installation of the cable by HDD which will require drilling rig, excavators for site preparation, dumper trucks and delivery trucks. Prior to work commencing, temporary construction compounds and site access roads will be set up at six locations along the onshore cable route. **Operational and maintenance phase** The onshore operational and maintenance requirements for the onshore cable will be largely corrective (because there is limited requirement for preventative maintenance on the onshore cable), accompanied by infrequent on-site inspections of the onshore cable (approximately every 3 years). The onshore cable will be consistently monitored remotely by EirGrid. **Decommissioning phase** It is expected that onshore cables would be removed by disconnecting each section at the joint bay and pulling them through the cable ducts. This operation would be a reverse of the installation and result in the same impacts. The structures of the jointing bays	The use of cement and concrete in the construction of the hardstanding areas and associated infrastructure has the potential to impact upon water quality. Fresh concrete and cement is highly alkaline and therefore is likely to affect water quality if washed into the water courses along the onshore cable route. Construction of onshore infrastructure involve the use of plant and machinery as well as the associated temporary storage of construction materials, oils, fuels and chemicals in designated areas within the temporary site compounds. There is the potential for spillage or release of fuel oil and other dangerous substances which could impact on the surface water bodies associated with the working area. It is also possible that small residue amounts left on site may be mobilised by surface run-off and washed into the receiving waterbodies. Any use of concrete, for example, to cover cable conduits in open cut watercourse crossings poses a risk to aquatic species such as invertebrates and fish. There will be no potential for impacts form the onshore cable route from accidental spills and contaminant release. During the decommissioning phase, the dismantling of the onshore substation and link boxes has the potential to cause adverse impacts on surrounding watercourses and receptors. The use of heavy vehicles and the removal of the infrastructure may lead to an increased risk of contaminated run-off, reducing

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				and link boxes will be removed only if it is feasible with minimal environmental disturbance or if their removal is required to return the land to its current use.	the water quality (in turn WFD classification) in surrounding watercourses.
	✓	×	✓	**<u>Onshore Substation</u>** **Construction phase** The substation (containing Compound 1, Compound 2 and an entrance compound) and two new line cable interface masts (LCIMs) and palisade fence are bounded within a post and rail property fence 1.4 m in height, with a separation distance of 5 m from the palisade fence. The substation entrance will facilitate space for a prefabricated telecommunications structure with a bunded back-up diesel generator. A single main entrance to these areas will utilise the existing access route off the N33 national road. Existing vegetation on either side of the entrance will be trimmed back to achieve the required sightlines. **Operational and maintenance phase** The onshore substation will comprise of the following main elements: **Compound 1 (GIS) (Onshore Transmission Connection):** The entire compound has an area of approximately 4,600 m^2. Development associated within the compound will include a lattice steel communications tower of approximately 36 m in height and six lightning finials of approximately 3 m in height located on the parapet of the GIS building. **Compound 2 (AIS) (Offshore Transmission System):** The compound will contain a control building with up to six lightning finials of approximately 3 m in height located on the parapet of the building. The compound will also contain 220 kV Air Insulated Switchgear (AIS) for the TSO's control in accordance with the grid connection offer. The compound has an area of approximately 17,200 m^2. 12 lightning monopoles of approximately 20 m in height will be placed	The same potential impacts outlined above for the construction of the onshore cable route are applicable to the construction of the onshore substation. The proposed electrical transformer and the diesel generator in Compound 2 are oil filled equipment and as such are placed within impermeable bunds. In order to provide for treatment of surface water generated in the bunds, it is proposed to install an 'Entexol SCS001' or equivalent approved oil sensitive bund dewatering system with a 1 litre per second low shear vortex pump and oil separation detection within each bund. The bunds will also include an 'Entexol SCS002' Integrated Class 1 Full Retention Oil Separator. This system will ensure only non-contaminated water enters the site surface water drainage network. The bund dewatering system will be fitted with a high oil level alarm and will be connected back to the station control panel which is connected to a manned control centre via the station's Supervisory Control and Data Acquisition (SCADA) telecom relay system. This oil sensitive bund dewatering system shall forward surface water to a new Class 1 Full Retention Oil Separator, providing a further level of treatment prior

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				within the compound for lightning protection and will include a lattice steel communications tower of approximately 36 m in height. Operations at the onshore substation will involve six to eight visits per month by ESB personnel, a quarterly inspection site visit and maintenance visits when required. These visits will result in one vehicle (van) requiring access to the onshore substation. **Decommissioning phase** If complete decommissioning is required, then all of the electrical infrastructure will be removed, and any waste will be taken off site by a licenced waste contractor and managed in accordance with the waste hierarchy and where required to be disposed, this will be done under licence from the appropriate authority. Foundations will be broken up and the site reinstated to its original condition	to discharge to the proposed surface water drainage network. Collected stormwater runoff from bunded areas and access tracks will pass through a full retention oil separator prior to discharging to ground through a proposed stormwater attenuation / infiltration system. The infiltration rates will be determined by soakaway tests carried out in accordance with BRE Digest 365. This system will be designed to ensure sufficient capacity for the 1:100-year storm event (as defined by Met Éireann) including an additional 20% allowance for climate change to ensure no overflow from the infiltration system shall be required. With these measures included in the Project there is no potential for impact from accidental spills/contaminant release during the operational and maintenance phase of the Project. The movement of plant and the removal of foundations, and reinstatement of the lands back to the current land use does have the potential for pollution of the Broadlough Stream within the Dee_080 river waterbody due to accidental spills/contaminant release.
	✓	×	×	**<u>Construction compounds</u>** **Construction phase** Seven construction compounds for HDD, storage and welfar will be required with suitable surfacing such as stone, secured with fencing, lockable gates with appropriate drainage. Measures include treatment prior to pumping of tanker for disposal offsite at a waste licensed facility to control surface runoff from construction compounds. The construction compounds will require hard standing suitable for the temporary placement of site facilities (such as offices,	The construction compounds will be set back from watercourses. However, the potential for accidental spillages/contaminant release from refuelling of storage areas cannot be ruled out and therefore run-off from the construction compound could become contaminated with hydrocarbons/chemicals which

Potential impact	Phase* C	O	D	Project Design Parameters	Justification
				briefing rooms, catering facilities, storage etc. typically housed in port-a-cabins) and to allow plant and materials to be stored safely and securely. Temporary access tracks for construction traffic will be required to provide access to the landfall, onshore substation site and to the HDD locations. All construction compounds will be removed and sites restored to their original condition when the construction phase of the project has been completed.	could impact on water quality in the water courses that will be traversed.
Increase in suspended sediments due to construction, operational and maintenance and/or decommissioning related activities, and the potential impact to physical features.	×	×	×	**Offshore Wind Farm Area** The wind turbines, monopile foundations, inter-array cables and offshore substation will be located within this area which is remote from the coastal water bodies within the WFD study area. This area is scoped out of the WFD Assessment	The spring tidal excursion for the offshore wind farm area of 3.5 km will not intersect with these coastal water bodies. Therefore, any impacts on supporting physio-chemical conditions, biology or hydromorphology due to increased suspended sediments during the construction, operational and maintenance and decommissioning phases for these elements of the Project are scoped out of the WFD Assessment.
	×	×	×	**Offshore cable corridor** This is where the offshore cable will be largely located. The offshore cable extends from the offshore wind farm area to a landfall location south of Dunany Point. **Construction phase** Site preparation activities will require sand wave clearance of 10% of the offshore cable corridor with a clearance width 15 m. Installation of offshore cable: • Offshore cable length 16 km; and • Disturbance of seabed material from a 3 m wide and 3 m deep trench. Offshore cable installation duration over a period of up to fifteen months. Marine Process Modelling assumes that the cable corridor extend over areas of sand and muddy sand which mobilised the greatest volume of sediment.	This operation is to be undertaken by plough dredging or jetting which mobilises a small amount of sediment into suspension at the seabed; sediment plume concentrations and extents are reduced compared to other types of dredging activities. In reality ploughing (and to a certain extent jetting) moves material rather than bringing it fully into suspension therefore, the assumption that the seabed is fluidised was used for modelled simulations. Cable corridors include areas of gravel, sand and muddy sand along with exposed rock. Sections of the corridor which mobilise material that has the potential to move beyond the immediate vicinity has been examined (see appendix 7-1: Marine Processes Technical Report). It is proposed that installation in the intertidal zone will be undertaken using land-based techniques with smaller trenches and a reduction in sediment release.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				Operational and maintenance phase Cable repair/reburial activities: • Offshore cable: 3 repair events and 3 reburial events for subtidal and intertidal region; • Disturbance of seabed material from a 3 m wide and 3 m deep trench; and • Operational phase of 40 years. **Decommissioning phase** Removal of inter-array and offshore cables: • Disturbance of seabed material from a 3 m wide and 3 m deep trench.	Cable corridors include areas of gravel, sand and muddy sand along with exposed rock. Sections of the routes which mobilise material that has the potential to move beyond the immediate vicinity has been examined (see appendix 7-1: Marine Processes Technical Report). However, the intertidal zone at the landfall location experiences a high rate of natural morphological change from mudslides and cliff collapses. Furthermore, the period of disruption during the trenching will be short and the beach will be reinstated, therefore the possible impact on supporting hydromorphology in the intertidal zone has been scoped out.
	×	×	×	**Landfall** **Construction phase** A TJB, which is a buried chamber, is required to connect the single offshore cable to the onshore cable. here are two options for the location of the TJB. The two options are in close proximity and approximately 40 m from each other. • Option 1 is close to the beach at Dunany above the high water mark. • Option 2 is in an agricultural field adjacent to the beach. Cable installation at the landfall via open trenching and pulley or winch system.	The landfall will result in a temporary impact on the intertidal area which will be reinstated on burial of the onshore cable. There are a number of trenching methods that can be used which are described in volume 2, chapter 5: Project Description of the EIAR. In all instances the cable will transition across the intertidal area to the TJB by a cable layout machine, or excavated trench with the cable pulled through from a winch in the general location of the TJB. The cable route would be reinstated with existing vegetation species and the footprint will be of a scale that would not significantly impact on the suspended sediment conditions of the Louth Coast coastal water body as the intertidal zone at the landfall location experiences a high rate of natural morphological change from mudslides and cliff collapses. Furthermore, the period of disruption during the trenching will be short and the beach will be reinstated.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				Operation and maintenance phase It is not expected that the TJB will need to be accessed during the operation of Project. **Decommissioning phase** To minimise environmental disturbance in the intertidal area it is proposed is to leave cables buried in place in the ground with the cable ends cut, sealed and securely buried as a precautionary measure. Alternatively, partial removal of the cable may be achieved by pulling the cables back out of the ducts. This may be preferred to recover and recycle the copper and/or aluminium and steel within them.	The TJB will not be accessed during the operational and maintenance phase and has no potential to impact on suspended solids loading to the marine or freshwater environment. The decommissioning phase for the landfall will not result in any impact on the suspended solids as the cables will be left in situ or pulled back out of the ducts and therefore there will be no requirement to excavate the landfall area and therefore impact the Louth Coast coastal water body.
	✓	×	✓	**<u>Onshore Cable Route</u>** **Construction phase** The areas of the onshore cable route that are subject to disturbance are set out below. The key potential for disturbance will result from the water course crossing. *Open cut trenching along the onshore cable route:* The onshore cable route will largely be located along the public road. The laying of the cable in the road will require excavation of material which if inappropriately managed could result in sediment laden run-off from material stockpiles. In addition, dewatering of trenches can generate large quantities of sediment laden water which will need to be appropriately treated. There are a number of crossing points where the cable route will traverse watercourses. As outlined in Table 1-2 are two watercourses that will be traversed using open cut methods; the Newhall Stream (CP5) in the Dee_090 river water body and the Port Stream at Clonmore (CP6) in the Slieveboy_010 river water body. These crossing present the highest risk to suspended sediment release. All other water course crossings will be undertaken by Horizontal Directional Drilling (HDD) and will be set back from the waterbody. Small construction compounds required for the installation of the	Installation of the cables by open cut means there is the to generate significant suspended solids in the river waterbody in the short term through disturbance of the riparian zone, banks and channel adversely impacting on water quality. Trenchless techniques such as HDD could result in the escape to the watercourse of pressurised drilling fluids (bentonite/mud) through break out of drilling fluids from the underlying bed material or from surface run-off caused by drilling fluid returns at tunnel entry and exit points. However, this occurs very infrequently as the drilling process is closely monitored and managed. Potential impacts associated with pollution from mobilised suspended solids (sediment) is generally considered a significant risk to water bodies. Suspended sediment due to run off from stripped construction areas and excavations can have a negative impact on water quality, water dependant habitats and aquatic ecology. This is particularly true in sloping areas with underlying clay following topsoil stripping as well as areas of moderate to high rainfall.

Potential impact	Phase* C	O	D	Project Design Parameters	Justification
				cable by HDD will require some topsoil stripping and stockpiling of material which could result in suspended solids mobilising in run-off to the nearby water courses. Prior to work commencing, temporary constructions and site access roads will be set up at six locations along the onshore cable route. *Horizontal Directional Drilling* HDD methods proposed for crossing watercourses and other obstacles (e.g. rivers, motorways, rail line) using drilling rig located in onshore cable construction corridor. Long boreholes are drilled approximately 600-900 mm in diameter underneath obstacles. A predetermined profile analyses the ground conditions and installation requirements for drill entry and exit pits at both ends while drilling is conducted at shallow angle. Once the pilot hole is widened by larger drilling heads, cable ducts are placed through the hole. Bentonite is pumped to the drilling head during the drilling process to stabilise the hole to prevent collapse. Prior to drilling, an exit pit may be excavated passed the obstacle within the onshore cable construction corridor in order for the HDD profile and ducts to stop at the required depth for the cable. **Operational and maintenance phase** The onshore operational and maintenance requirements for the onshore cable will be largely corrective (because there is limited requirement for preventative maintenance on the onshore cable), accompanied by infrequent on-site inspections of the onshore cable (approximately every 3 years). The onshore cable will be consistently monitored remotely by EirGrid. Decommissioning phase It is expected that onshore cables would be removed by disconnecting each section at the joint bay and pulling them through the cable ducts. The structures of the jointing bays and link boxes will be removed only if it is feasible with minimal environmental disturbance or if their removal is required to return the land to its current use.	Potential sources of fine sediment during the construction phase include: • Topsoil stripping/soil and vegetation clearance; • Trench excavation and backfilling across watercourses (open-cut only); • Bank disturbance caused by plant equipment; • Run-off from topsoil and subsoil storage; • Construction of dams and over pumping to divert flow and allow excavation of the pipeline trench under dry conditions in the channel; • Water over-pumping and discharge of sediment laden water back to the watercourse; • Reinstatement of bank soils and vegetation; and • Mud break out during HDD installation. Maintenance of the onshore cable route during the operational and maintenance phase represents limited potential for disturbance for suspended solids and will result in limited impact. The onshore cable route shall remain in situ in the decommissioning phase with only the link boxes needing removal. The maximum area of these represents the maximum area that will be subject to disturbance during the decommissioning phase of the Project but the location of the link boxes is remote from any watercourse and there will be limited

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
					potential for from suspended solids from the onshore cable during decommissioning.
	✓	×	✓	**<u>Onshore Substation</u>** **Construction phase** The substation (containing Compound 1, Compound 2 and a common access area) and two new line cable interface masts (LCIMs) and palisade fence are bounded within a post and rail property fence 1.4 m in height, with a separation distance of 5 m from the palisade fence. The common substation entrance will facilitate space for ancillary car parking, a prefabricated telecommunications structure with a bunded back-up diesel generator. A single main entrance to these areas will utilise the existing access route off the N33 national road. Existing vegetation on either side of the entrance will be trimmed back to achieve the required sightlines. The onshore substation will comprise of the following main elements: **Compound 1 (GIS) (Onshore Transmission Connection):** The entire compound has an area of approximately 4,600 m^2. Development associated within the compound will include a lattice steel communications tower of approximately 36 m in height and six lightning finials of approximately 3 m in height located on the parapet of the GIS building. **Compound 2 (AIS) (Offshore Transmission System):** The compound will contain a control building with up to six lightning finials of approximately 3 m in height located on the parapet of the building. The compound will also contain 220 kV Air Insulated Switchgear (AIS) for the TSO's control in accordance with the grid connection offer. The compound has an area of approximately 17,200 m^2. 12 lightning monopoles of approximately 20 m in height will be placed within the compound for lightning protection and will include a lattice steel communications tower of approximately 36 m in height.	Potential impacts associated with pollution from mobilised suspended solids (sediment) is generally considered a significant risk to water bodies. Suspended sediment due to run off from stripped construction areas and excavations during substation construction can have a negative impact on water quality, water dependant habitats and aquatic ecology. This is particularly true in areas with underlying clay following topsoil stripping as well as areas of moderate to high rainfall. There is also a potential to impact on drainage with the pathway to water courses and drainage ditches shortened resulting in faster delivery of water from the working area to watercourses with possible changes to the flow regime which could result in impacts to biology and morphology through pressures such as scouring and additional sediment loading. During decommissioning, the dismantling of the onshore substation and each link box has the potential to cause adverse impacts on surrounding watercourses and receptors. The use of heavy vehicles and the removal of the infrastructure may lead to an increase in turbid runoff, reducing the water quality (in turn WFD classification) in surrounding watercourses.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
				Operational and maintenance phase Operations at the onshore substation will involve six to eight visits per month by ESB personnel, a quarterly inspection site visit and maintenance visits when required. These visits will result in one vehicle (van) requiring access to the onshore substation. **Decommissioning phase** If complete decommissioning is required, then all of the electrical infrastructure will be removed, and any waste will be taken off site by a licenced waste contractor and managed in accordance with the waste hierarchy and where required to be disposed, this will be done under licence from the appropriate authority. Foundations will be broken up and the site reinstated to its original condition	During the operational and maintenance phase, site drainage could carry sediment and particulate matter from the hard surfaces to the substation drainage system. Collected stormwater runoff from bunded areas and access tracks will pass through a full retention oil separator prior to discharging to ground through a proposed stormwater attenuation / infiltration system. Therefore, with these embedded mitigation measures there should be no impact from the operational and maintenance phase due to suspended sediment. The movement of plant and the removal of foundations, and reinstatement of het lands back to the current land use does have the potential to generate suspended solids that could be mobilised to the Broadlough Stream within the Dee_080 river waterbody.
	✓	×	×	**<u>Construction compounds</u>** **Construction** Seven construction compounds for HDD, storage and welfare will be required with suitable surfacing such as stone, secured with fencing, lockable gates with appropriate drainage. Measures include treatment prior to pumping of tanker for disposal offsite at a waste licensed facility to control surface runoff from construction compounds. The construction compounds will require hard standing suitable for the temporary placement of site facilities (such as offices, briefing rooms, catering facilities, storage etc. typically housed in port-a-cabins) and to allow plant and materials to be stored safely and securely. Temporary access tracks for construction traffic will be required to provide access to the landfall, onshore substation site and to the HDD locations. All construction compounds will be removed and sites restored to their original condition when construction and commissioning of the project has been completed.	The construction compounds will be set back from watercourses. However, the potential for run-off from stripped areas and stockpiles cannot be ruled out and therefore, there is the potential for suspended solids to impact on water quality in the water courses that will be traversed, given the proximity of the compounds to the water courses crossing points.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
The impact of spreading Invasive and Non-native Species (INNS) during the construction and decommissioning phases of the Project.	✓	✓	✓	**Offshore Windfarm Area** The wind turbines, monopile foundations, inter-array cables and offshore substation will be located within this area which is remote from the coastal water bodies within the WFD study area. This area is scoped out of the WFD Assessment.	The spring tidal excursion for the Project area of 3.5 km will not intersect with these coastal water bodies therefore, any impacts of INNS on the coastal water bodies are scoped out of the WFD Assessment.
	✓	✓	✓	**Offshore cable corridor** This is where the offshore cable will be largely located. The offshore cable extends from the offshore wind farm area to a landfall location south of Dunany Point. **Construction phase** Site preparation activities will require sand wave clearance of 10% of the offshore cable corridor with a clearance width 15 m. Installation of offshore cable: • Offshore cable length 16 km; and • Disturbance of seabed material from a 3 m wide and 3 m deep trench. Offshore cable installation duration over a period of up to fifteen months where marine construction vessels and equipment will be working in the intertidal and subtidal area. **Operational and maintenance phase** Marine vessels and equipment required for cable repair/reburial activities over the operational phase of 40 years. **Decommissioning phase** Marine vessels and equipment required for removal of offshore cables	No INNS have been recorded within the offshore wind farm area. The Aquafact site specific surveys (2019) and NBN data (2022) indicated no INNS present within the offshore wind farm area at the sites sampled. The use of vessels from outside the wind farm area for the installation of the offshore cable, manmade structures for cable protection and any temporary moorings present a risk of introducing or spreading INNS during construction to the Louth Coast and Outer Dundalk Bay coastal water bodies. The use of vessels from outside the offshore cable corridor and the presence of manmade structures for the cable protection during the operational and maintenance phase may increase the risk of introducing or spreading INNS to the Louth Coast and Outer Dundalk Bay coastal water bodies. The use of vessels from outside the offshore cable corridor and the removal of manmade structures for the cable protection during the decommissioning phase may increase the risk of introducing or spreading INNS to the Louth Coast and Outer Dundalk Bay coastal water bodies

Potential impact	Phase* C	O	D	Project Design Parameters	Justification
	✓	×	✓	**Landfall** **Construction phase** A TJB, which is a buried chamber, is required to connect the single offshore cable to three onshore land cables. There are two options for the location of the TJB. The two options are in close proximity and approximately 40 m from each other. • Option 1 is close to the beach at Dunany above the high water mark. • Option 2 is in an agricultural field adjacent to the beach. Cable installation at the landfall via open trenching and pulley or winch system. **Operation and maintenance phase** It is not expected that the TJB will need to be accessed during the operational and maintenance phase of Project. **Decommissioning phase** To minimise environmental disturbance in the intertidal area it is proposed is to leave cables buried in place in the ground with the cable ends cut, sealed and securely buried as a precautionary measure. Alternatively, partial removal of the cable may be achieved by pulling the cables back out of the ducts. This may be preferred to recover and recycle the copper and/or aluminium and steel within them.	There are no invasive species recorded during the habitat surveys undertaken in the general location of the landfall. There is a risk that machinery and equipment brought to site during construction could result in the introduction of INNS to the area. Therefore construction and decommissioning of the of the landfall may cause the spread of INNS, which could adversely affect the status of native protected or notable habitats and species and present a risk in the achievement of the environmental objectives of the water bodies affected. There will be no activities during the operational and maintenance phase of the landfall that would present a significant risk to the spread of INNS. As above for construction phase.
	✓	×	✓	**Onshore Cable Route** **Construction phase** The onshore cable corridor will be largely located along the public road. The laying of the cable in the road will require excavation of material and the temporary installation of passing bays at 15 locations. This could result in interaction with existing stands of INNS	Construction and decommissioning of the onshore cable may cause the spread of INNS, which could adversely affect the status of native protected or notable habitats and species and present a risk in the

Potential impact	Phase* C	O	D	Project Design Parameters	Justification
				which could result in the spread of Japanese Knotweed during construction.	achievement of the environmental objectives of the water bodies affected.
				There are a number of crossing points where the onshore cable will traverse watercourses within the cable route. As outlined in Table 1-2 there are two water courses that will be crossed using open cut methods; the Newhall Stream (CP5) in the Dee_090 river water body and the Port Stream at Clonmore (CP6) in the Slieveboy_010 river water body. These crossing present a risk to the spread of invasive species as Japanese Knotweed has been recorded at a number of crossing locations.	The use of open cut trenching methods for water course crossings along the onshore cable route represent the greatest potential for spreading INNS given the location of the recorded INNS during habitat surveys at a number of crossing points (see volume 2C: appendix 19-1: Onshore Biodiversity – Supporting Information of the EIAR).
				All other water course crossings will be undertaken by HDD and will be set back from the water body. However, there is still a rise of INNS spread as Japanese Knotweed has been recorded at 2 trenchless crossings, Dee at Drumcar and the Salterstown Stream.	
				Operational and maintenance phase	
				The onshore operational and maintenance requirements for the onshore cable will be largely corrective (because there is limited requirement for preventative maintenance on the onshore cable), accompanied by infrequent on-site inspections of the onshore cable (approximately every 3 years). The onshore cable will be consistently monitored remotely by EirGrid.	The operational and maintenance phase of the onshore cable will not present a significant risk to the spread of invasive species.
				Decommissioning phase	
				It is expected that onshore cables would be removed by disconnecting each section at the joint bay and pulling them through the cable ducts. The structures of the jointing bays and link boxes will be removed only if it is feasible with minimal environmental disturbance or if their removal is required to return the land to its current use.	As above for construction phase.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
	×	×	×	**Onshore Substation** **Construction phase** The substation (containing Compound 1, Compound 2 and a common access area) and two new LCIMs and palisade fence are bounded within a post and rail property fence 1.4 m in height, with a separation distance of 5 m from the palisade fence. The common substation entrance will facilitate space for ancillary car parking, a prefabricated telecommunications structure with a bunded back-up diesel generator. A single main entrance to these areas will utilise the existing access route off the N33 national road. Existing vegetation on either side of the entrance will be trimmed back to achieve the required sightlines. **Operational and maintenance phase** Operations at the substation will involve six to eight visits per month by ESB personnel, a quarterly inspection site visit and maintenance visits when required. These visits will result in one vehicle (van) requiring access to the onshore substation. **Decommissioning phase** If complete decommissioning is required, then all of the electrical infrastructure will be removed, and any waste will be taken off site by a licenced waste contractor and managed in accordance with the waste hierarchy and where required to be disposed, this will be done under licence from the appropriate authority. Foundations will be broken up and the site reinstated to its original condition.	There are no INNS recorded within the footprint of the onshore substation however, Water fern *Azolla filiculoides* was recorded in the Broadlough Stream which is adjacent to the site. There should be no requirement for in channel works as there are no outfalls from the site drainage to the Broadlough Stream. Collected stormwater runoff from bunded areas and access tracks will pass through a full retention oil separator prior to discharging to ground through a proposed stormwater attenuation / infiltration system The movement of plant and the removal of foundations, and reinstatement of the lands back to the current land use should not result in the spread of INNS as there are none in the footprint of the substation.
	✓	×	×	**Construction compounds** Seven construction compounds for HDD, storage and welfare will be required with suitable surfacing such as stone, secured with fencing, lockable gates with appropriate drainage.	As with the construction of the onshore cable route some of the construction compounds are close to recorded INNS particularly at watercourse crossing points. Therefore, there is a risk of the spread of invasive species from these compounds during construction.

Potential impact	Phase*			Project Design Parameters	Justification
	C	O	D		
Electromagnetic Fields (EMFs) from cabling during the operational and maintenance phase	×	✓	×	**Offshore Cable** **Operational phase** The offshore cable length is 16 km. The offshore cable will consist of three conductor cores surrounded by layers of solid insulating material as well as material to armour the cable for protection from damage and material to keep the cable watertight. **Onshore Cable** The onshore cable route length is 20.1 km with three conductor cables, each in a separate duct.	The potential for EMF from power cables to impact fish and other aquatic species has been studied extensively, particularly the interference with species such as Atlantic Salmon and the impairment of migration and navigation. The key operational impact on water bodies from EMFs is from the offshore cable corridor and the onshore cable route.
Port Facilities to facilitate the construction of the Project	×	×	×	**Construction phase** A marshalling harbour will be required to stockpile and pre-assemble components for the foundations and wind turbines. The fabricated components will be delivered to the marshalling harbour by ship, before pre-assembly and then delivery by ship directly to the offshore wind farm area for installation/final assembly. Space in a construction port can only be contracted when the construction programme is finalised and timelines are known and therefore the final construction port will not be known at the time of Application. A port that has the required facilities and consents/permissions for the pre-assembly operations, will be used. There are suitable ports that are being considered for the Project within the Irish Sea and Celtic Sea including those with existing consents such as Belfast Port or Mostyn Harbour (Wales) and ports with proposed development plans for offshore wind pre-assembly facilities such as Rosslare Europort and Port of Cork. **Operational and maintenance phase** Operational and maintenance activities will be planned, controlled and monitored from an onshore operations and maintenance (O&M) base located at an existing harbour in County Louth or County Down. Three harbours (Kilkeel, Warrenpoint and Greenore) have suitable facilities and are approximately one hour sailing time from the offshore wind farm area.	Given that the Port for the pre-assembly operations and onshore operations and maintenance (O&M) base will be selected on the basis that it will have the necessary facilities and consents for such operations, it is not anticipated that there will be any impact on water bodies designated under the Water Framework Directive. In addition, any of the Ports under consideration for pre-assembly are all located with Heavily Modified Water Bodies (HMWBs) where navigation and ports are the specified use for the water body. There will be no impact on the environmental objectives of these HMWBs. i.e. Belfast Harbour – Belfast Harbour HMWB Moystn Port – Clwyd Estuary HMWB Rosslare Europort – Rosslare Harbour HMWB Port of Cork – Cork Harbour HMWB

C - Construction, O – Operation, D - Decommissioning

5.2.2 Measures included in the Project

As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on the environmental objectives of the water bodies within the WFD Study area. These measures include designed-in and management measures (controls). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Project and have therefore been considered in the scoping assessment presented in section 5.2.4 below. These are included in measures are considered standard industry practice for this type of development.

Table 5-2: Measures included in the Project.

Measures included in the Project	Justification
Burial and protection of cables	The cables will be buried below the seabed wherever possible, to a minimum burial depth of 0.5 m and a maximum burial depth of up to 3 m. The appointed contractor will be required prior to the construction phase to submit details on the cable specification and installation methodology. This will include details on the cable laying, including geotechnical data, cable laying techniques and a cable burial risk assessment. Also, in advance of any cable repair, the contractor will be required to submit details on the parameters of the repair or reburial activities and the proposed methodology.
Use of trench reinstatement in the intertidal zone	The offshore cable will be installed through the intertidal zone using open cut trenching methods. The material will be excavated and reinstated on a layer-by-layer basis to minimise impacts on sediment structure and profile.
An Environmental Management Plan (EMP) (see volume 2A, appendix 5-2) will be implemented during the construction, operation and maintenance and decommissioning phases of the Project.	The EMP includes project specific measures and commitments and a Marine Pollution Contingency Plan (MPCP (see volume 2A, appendix 5-2 (Annex 2)). Measures also include designated areas for refuelling where spillages can be easily contained, storage of chemicals in secure designated areas in line with appropriate regulations and guidelines, double skinning of pipes and tanks containing hazardous substances, and storage of these substances in impenetrable bunds. To ensure that the potential for release of pollutants from construction, operational and maintenance, and decommissioning plant is minimised. In this manner, accidental release of contaminants from vessels will be strictly controlled, thus providing protection for marine life across all phases of the Project development.
A Marine Invasive Non-Indigenous Species Management Plan (volume 2A, appendix 5-3: Marine Invasive Non-Native Species Management Plan) will be implemented.	The plan outline measures to ensure vessels comply with the International Maritime Organisation (IMO) ballast water management guidelines, it will consider the origin of vessels and contain standard housekeeping measures for such vessels as well as measures to be adopted in the event that a high alert species is recorded. To manage and minimise the risk of potential introduction and spread of Invasive Non-Indigenous Species.
Marine Pollution Contingency Plan (MPCP) (see volume 2A, appendix 5-2 (Annex 2)):	This MPCP provides the pollution response arrangements for the Project during both the construction and operational and maintenance, and decommissioning phases of the offshore infrastructure. The overall objective of the MPCP is to outline procedures to safeguard the marine environment and respond to an accidental pollution event during the construction and operation of the Project
Emergency Response Co-operation Plan (see volume 2A, appendix 5-8: Emergency	The ERCoP addresses emergency response and coordination arrangements for the construction and operational and maintenance of the offshore infrastructure of the Project (i.e. all infrastructure below the High Water Mark including the Wind Turbine Generators (WTGs), the offshore substation and offshore cable).

Measures included in the Project	Justification
Response Co-operation Plan)	This plan describes the actions to be taken in an emergency during both construction and operation, details the resources available to support those actions, and provides emergency contact details.
Construction Environmental Management Plan (see volume 2A, Appendix 5-1)	The remit of the CEMP is for the Project activities taking place landward of the High-Water Mark (HWM). The CEMP is applicable to all OWL personnel, contractors and subcontractors carrying out construction and operational and maintenance activities associated with the Project. The principal objective of this document is to detail appropriate measures in the avoidance, minimisation and control of adverse environmental impacts associated with construction of the onshore infrastructure of the Project. Furthermore, this document defines good practice as well as detailing specific commitments relating to environmental protection as identified in the EIAR and the Natura Impact Statement (NIS) and a future version of this document will detail any planning conditions associated with a future planning consent, when they are known.
The use of Horizontal Directional Drilling for most of the water course crossings	The use of HDD methods is proposed for crossings of watercourse and other obstacles as it allows installation of the onshore underneath the watercourse / obstacle thereby avoiding direct impact. Although there is potential for runoff from the HDD works on either side of the crossings, measures will be put in place to minimise such impacts as outlined in volume 2C, chapter 19: Onshore Biodiversity and chapter 22: Hydrology and Flood Risk.
Onshore Substation Design has been undertaken to ensure that secondary containment and pollution control measures are implemented within he drainage design to protect water resources	The 220kV / MV power transformer within the Statcom Bay in the onshore substation (Compound 2 (AIS) will be located within an oil retention bund of approximately 12 m by 18 m and enclosed by 8.5 m high reinforced concrete blast walls to the north and south the transformer. The transformer contains approximately 78,400 kg of mineral oil insulation use to insulate and cool the transformer cores. The 220 kV reactor will be located within an oil retention bund of approximately 13 m by 13.5 m and enclosed by 8 m high reinforced concrete blast walls to the north and south the rector. The reactor contains approximately 27,250 kg of mineral oil insulation use to insulate and cool the transformer cores. The entrance to the substation is shared by Compound 1 and Compound 2 within an area of approximately 600 square meters. Associated development in the area includes a prefabricated telecommunications building and associated backup bunded diesel generator. Collected stormwater runoff from bunded areas and access tracks will pass through a full retention oil separator prior to discharging to ground through a proposed stormwater attenuation / infiltration system. The infiltration rates will be determined by soakaway tests carried out in accordance with BRE Digest 365. This system will be designed to ensure sufficient capacity for the 1:100-year storm event (as defined by Met Éireann) including an additional 20% allowance for climate change to ensure no overflow from the infiltration system shall be required. The proposed electrical transformer, 220kV reactor and the diesel generator in the facility are oil filled equipment and as such are placed within impermeable bunds. In order to provide for treatment of surface water generated in the bunds, it is proposed to install an ‘Entexol SCS001’ or equivalent approved oil sensitive bund dewatering system with a 1 litre per second low shear vortex pump and oil separation detection within each bund. The bunds will also include an ‘Entexol SCS002’ Integrated Class 1 Full Retention Oil Separator. This system will ensure only non-contaminated water enters the site surface water drainage network. The bund dewatering system will be fitted with a high oil level alarm and will be connected back to the station control panel which is connected to a manned control centre via the station’s Supervisory Control and Data Acquisition (SCADA) telecom relay system. This oil sensitive bund dewatering system shall forward surface water to a new Class 1 Full Retention Oil Separator, providing a further level of treatment prior to discharge to the proposed surface water drainage network.

5.2.3 Impacts scoped out of the assessment

On the basis of the baseline environment, the measures included in the Project (Table 5-2) and the project description outlined in volume 2A, chapter 5: Project Description, a number of impacts are proposed to be scoped out of the assessment. These impacts are outlined, together with a justification for the scoping out decision, in Table 5-3.

Table 5-3: Impacts scoped out of the WFD assessment.

Potential impact	Justification
Offshore Wind Farm Area	The wind turbines, monopile foundations, inter-array cables and offshore substation will be located within this area which is remote from the coastal water bodies within the WFD study area. This area is scoped out of the WFD Assessment
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies. **Offshore cable corridor and the landfall during all phases of the Project (see Table 5-1).**	The construction phase of the Project will result in disturbance to intertidal features at the landfall. However, the intertidal zone at the landfall location experiences a high rate of natural morphological change from mudslides and cliff collapses. Furthermore, the period of disruption during the trenching will be short and the beach will be reinstated. The TJB will not be accessed during the operational and maintenance phase and has no potential to impact on suspended solids loading to the marine or freshwater environment.
Increase in suspended sediments due to construction, operational and maintenance and/or decommissioning related activities, and the potential impact to physical features **Offshore cable corridor and the landfall during all phases of the Project (see Table 5-1).**	The decommissioning phase for the landfall will not result in any impact on the suspended solids as the cables will be left in situ or pulled back out of the ducts and therefore there will be no requirement to excavate the landfall area and therefore impact the Louth Coast coastal water body.
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies. **Onshore cable route during operation and decommissioning phased of the Project (see Table 5-1).**	Maintenance during the operational and maintenance phase represents limited potential for disturbance for hydromorphological supporting conditions. The onshore cable route shall remain in situ in decommissioning phase with only the joint bays potentially requiring removal. The maximum area of these represents the maximum area that will be subject to disturbance during decommissioning of the Project but the location of the link boxes is remote from any watercourse and there will be no potential for impact to the hydrological supporting conditions.
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies. **Onshore substation during all phases of the Project (see Table 5 1).**	The extent of the permanent onshore substation is set back from the stream, as is the temporary construction compound. There will be no potential for the onshore substation to impact on the hydromorphological supporting conditions of the Dee_080 river water body during the construction, operation or decommissioning phases.
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies. **Temporary Construction Compounds during the construction phase of the Project (see Table 5 1).**	The construction compounds will be set back from water courses to ensure no direct impact or loss of habitat or the supporting hydromorphological conditions of the water bodies affected.
Water quality impact to surface waters due to accidental spillages/discharge of chemicals/fuel during the operational and maintenance phase.	The proposed drainage system for the onshore substation site and its access road is designed to include for a petrol interceptor to intercept and treat accidental spillages/ discharges of chemicals prior to discharge to surface waters. Hence, there will be no untreated accidental spillages/ discharges of chemicals/ fuels to surface waters from the onshore substation site.
Use of Port Facilities to facilitate the construction of the Project.	Given that the Port for the pre-assembly operations and for operation and maintenance of the Project will be selected on the basis that it will have the necessary facilities and consents for such operations, it is not anticipated that there will be any impact water bodies designated under the Water Framework Directive. In addition, any of the Ports under consideration are all located with HMWBs where navigation and ports are the specified use for the water body there will be no impact on the environmental objectives of these HMWB, i.e. • Belfast Harbour – Belfast Harbour HMWB

Potential impact	Justification
	• Moystn Port – Clwyd Estuary HMWB • Rosslare Europort – Rosslare Harbour HMWB • Port of Cork – Cork Harbour HMWB

5.2.4 Scoping summary

The scoping assessment has been applied for the proposed works identified in volume 2A, chapter 5: Project Description. The potential impacts for each activity have informed the selection of the activities which are scoped into the assessment.

It is necessary to identify links between the Project and every WFD Status quality element that could be affected. For all activities, the scoping phase involves considering each WFD quality element to identify where a possible causal link between the quality element and the activity exists. That is, where water body status or objectives could be affected at water body level by the proposed activities. Table 5-4 and Table 5-5 provide a summary of the scoping assessment undertaken for the Project.

Table 5-4: Potential impacts associated with the Project and outcome of scoping assessment for the WFD compliance assessment for onshore surface water bodies in the WFD study area.

Potential impact	Biological supporting elements			Hydro-morphological supporting elements		Physio-chemical supporting elements	Chemical	
	Fish	Invertebrates	Phytoplankton	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies during construction, operational and maintenance and decommissioning of the Project	**Scoped in** The onshore cable route during construction phase has the potential to cause a deterioration in the biological elements which could result in a deterioration in the overall status or prevent the water body from achieving its environmental objective under set out in the River Basin Management Plan.			**Scoped in** As outlined in Table 5-1, the crossing of the water courses within the Dee_080, Dee_090 and Slieveboy_010 river water bodies could impact on the supporting hydromorphological conditions.		**Scoped in** Changes in supporting hydromorphological conditions can impact on oxygenation conditions, nutrients and temperature	**Scoped out** Habitat disturbance should not result in release of any priority or priority hazardous substances	
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning of the Project	**Scoped in (see Table 5-1)** • All phases - Offshore cable corridor and landfall (all phases) • Construction and decommissioning - Onshore cable route works and onshore substation • Construction - Construction compounds			**Scoped out** There will not be any impact on the physical attributes of the water bodies		**Scoped in** As per Biological elements	**Scoped in** As per Biological elements	
Increase in suspended sediments due to construction, operational and maintenance and/or decommissioning related activities, and the potential impact to physical features.	**Scoped in (see Table 5-1),** sediment run-off can impact on substrate and biological elements that rely on channel habitat that with clean substrate can be impacted. • Construction and decommissioning – onshore cable route works and onshore substation • Construction – Construction compounds			**Scoped in** As outlined in Table 5-1, the crossing of the water courses within the Dee_080, Dee_090 and Slieveboy_010 river water bodies could result in sediment run-off to water courses which can impact on the morphology of the channel impacting on the supporting hydromorphological conditions.		**Scoped in** Sediment run-off to water bodies can impact on oxygenation conditions, nutrients and temperature	**Scoped in** • Construction and decommissioning – Onshore cable works and Ooshore Substation • Construction – Construction compounds Hazardous substances from fuel residues and oils/lubricants can be carried on particulate matter from construction surfaces and therefore has been scoped in	
The impact of spreading INNS during construction and decommissioning of the Project	**Scoped in – See Table 5-1** • All phases – Offshore cable corridor (all phases) • Construction and decommissioning – Landfall, onshore cable route works • Construction – Construction compounds			**Scoped in – See Table 5-1** INNS can impact on the supporting hydromorphology particularly where the y proliferate in the riparian zone of in the case of aquatic plants, the cannel. This can change the supporting hydromorphological conditions of the channel and bank of the water body.		**Scoped in** INNS can change the supporting physio-chemical conditions particularly nutrient oxygen levels	**Scoped out** INNS will not result in an increase in priority or priority hazardous substances	
Electromagnetic Fields (EMFs) from cabling during the operational and maintenance of the Project	**Scoped out** The potential for EMF to impact fish and other aquatic species has been studied extensively, particularly the interference with species such as Atlantic Salmon and the impairment of migration and navigation (see volume 2B, chapter 9: Fish and Shellfish Ecology). The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes. A study by the U.S. Department of the Interior, Bureau of Ocean Energy Management within the south New England area found Negligible effects, if any, on bottom-dwelling species and no negative effects on pelagic species are expected due to their distance from the power cables buried in the seafloor or under main rivers and the level of magnetic field generated from AC cables (CSA Ocean Sciences Inc. and Exponent. 2019). Furthermore, fish and eel surveys undertaken for the watercourses traversed by the Mona onshore development area			**Scoped out** EMFs will not impact on the hydromorphology of the water bodies affected		**Scoped out** EMFs will not impact on the physio-chemical supporting elements of the water bodies affected	**Scoped out** EMFs will not impact on the chemical status of the water bodies affected	

Potential impact	Biological supporting elements			Hydro-morphological supporting elements		Physio-chemical supporting elements	Chemical	
	Fish	Invertebrates	Phytoplankton	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
	identified only two watercourses that contain European eel and no watercourses with fish.							
Port Facilities to facilitate the construction of the Project	Given that the Port for the pre-assembly operations and the O&M base will be selected on the basis that it will have the necessary facilities and consents for such operations, it is not anticipated that there will be any impact water bodies designated under the Water Framework Directive. In addition, any of the Ports under consideration for pre-assembly are all located with HMWBs where navigation and ports are the specified use for the water body there will be no impact on the environmental objectives of these HMWBs, i.e. • Belfast Harbour – Belfast Harbour HMWB • Moystn Port – Clwyd Estuary HMWB • Rosslare Europort – Rosslare Harbour HMWB • Port of Cork – Cork Harbour HMWB							

Table 5-5: Potential impacts associated with Project and outcome of scoping assessment for the WFD compliance assessment for groundwater bodies in the WFD assessment study area.

Potential impact	Quantitative Status				Chemical Status					
	Groundwater Dependent Terrestrial Ecosystems test	Dependent surface water body status	Saline Intrusion	Water Balance	Drinking Water Protected Area	General Chemical Test	Groundwater Dependent Terrestrial Ecosystems test	Dependent Surface Water Body Status	Saline Intrusion	Trend Assessment - Groundwater supporting element
Deterioration in groundwater quality in Clogherhead superficial gravels and bedrock aquifers through the disturbance and mobilisation of existing areas of contaminated land associated with recent or historical land-use.	**Scoped out** (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR) There are no protected sites with groundwater dependent habitats within the Soils, Geology and Hydrogeology Study Area	**Scoped out** (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR) Mineral, poorly drained (mainly acidic) soils, derived mainly from non-calcareous parent materials are predominately covering the Soils, Geology and Hydrogeology Study Area including the onshore substation site. Surface water/groundwater interactions are limited in the subcatchments crossed by the onshore cable route and the onshore substation.	**Scoped Out** (Saline Intrusion not identified as a potential impact (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR)	**Scoped out** (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR) The historic Ordnance Survey Ireland (OSi) six-inch mapping indicates the presence of an unnamed sand pit at Drumcar which directly intersects the onshore cable route, east of the onshore substation site. The area is comprised of a greywacke, mudstone and conglomerate bedrock, low permeability subsoil and low groundwater vulnerability. There are no known mineral localities close to the site. As sand will most likely contain non-hazardous material, it is therefore considered a low-risk site in regard to soils, geology and hydrogeology	**Scoped Out** (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR) All active, licensed, groundwater abstractions are at low risk of any impact resulting from the construction, operation and decommissioning of the transmission assets. The Grangebellew Group Scheme Preliminary Source Protection Area is located outside of the Soils, Geology and Hydrogeology Study Area approximately 2 km south of the onshore cable route at Grangebellew and the closest public supply Outer Source Protection area is Ardee Public Water Supply (PWS), located approximately 3.5 km west of the onshore substation site in Stickillin, within the Ardee townland. These sources are located up-gradient of the Project.	**Scoped out** (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR) The historic Ordnance Survey Ireland (OSi) six-inch mapping indicates the presence of an unnamed sand pit at Drumcar which directly intersects the onshore cable route, east of the onshore substation site. The area is comprised of a greywacke, mudstone and conglomerate bedrock, low permeability subsoil and low groundwater vulnerability. There are no known mineral localities close to the site. As sand will most likely contain non-hazardous material, it is therefore considered a low-risk site in regard to soils, geology and hydrogeology	**Scoped out** (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR) There are no protected sites with groundwater dependent habitats within the Soils, Geology and Hydrogeology Study Area.	**Scoped out** (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR) Mineral, poorly drained (mainly acidic) soils, derived mainly from non-calcareous parent materials are predominately covering the Soils, Geology and Hydrogeology Study Area including the onshore substation site. Surface water/groundwater interactions are limited in the subcatchments crossed by the onshore cable route and the onshore substation. The historic Ordnance Survey Ireland (OSi) six-inch mapping indicates the presence of an unnamed sand pit at Drumcar which directly intersects the onshore cable route, east of the onshore substation site. The area is comprised of a greywacke, mudstone and conglomerate bedrock, low permeability subsoil and low groundwater vulnerability. There are no known mineral localities close to the site. As sand will most likely contain non-hazardous material, it is therefore considered a low-risk site in regard to soils, geology and hydrogeology	**Scoped Out** (Saline Intrusion not identified as a potential impact (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR)	**Scoped out** Construction, operation and decommissioning of the Onshore assets should not impact on the long term trends in the groundwater given the assessment undertaken (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR)
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning						Scoped out (see volume 2, chapter 21: Soils, Geology and Hydrogeology of the EIAR). Chapter 21 concluded that the magnitude of the impact is deemed to be moderate adverse and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of slight significance, which is not significant in EIA terms when the embedded measures outlined in Table 5-2 are considered.				
Alteration to groundwater quantity or quality in the superficial gravels and bedrock aquifers.				Scoped out (volume 2, Chapter 21: Soils, Geology and Hydrogeology of the EIAR) Change to groundwater level or flow paths have the potential to occur during excavation of HDD pits at the crossings and where soil compaction occurs during construction. However the assessment in chapter 21 of the EIAR concluded that the impact is of imperceptible significance, which is not significant in EIA terms.						

5.3 Stage 3: Impact Assessment

Based on the outcomes of the Stage 2 scoping assessment, this impact assessment establishes whether the activities associated with the proposed works will:

- Prevent the achievement of WFD status objectives;
- Cause deterioration in water body status; and/or
- Impinge upon protected areas designated under the European Directives listed in Article 5 of the WFD.

This is the stage of the assessment where evidence is provided to demonstrate that the proposed works are compliant. Specifically, for each quality element it must be shown that the activities scoped into the assessment will not cause a deterioration in status of any of the contributing quality elements nor prevent the achievement of WFD status objectives. Where appropriate, it is also the stage where design mitigation, aimed at reducing the effect of an activity, is discussed.

The assessment looks at each individual water body traversed by Project in the context of its status, the main contributing elements to the status classification, the objective of the water body and scoped in activities.

For the purposes of the WFD Assessment process, the term 'measures included in the project' is used to include the following measures (adapted from IEMA, 2016):

- Measures included in the project design. These include modifications to the location or design of the Project which are integrated into the application for consent. These measures are secured through the consent itself through the description of the development and the parameters secured in the consent and/or marine licences (referred to as primary mitigation in IEMA, 2016)
- Measures required to meet legislative requirements, or actions that are generally standard practice used to manage commonly occurring environmental effects and are secured through the planning condition requirements and/or the conditions of the marine licences (referred to as tertiary mitigation in IEMA, 2016).

A number of measures (primary and tertiary) have been adopted as part of the Project to reduce the potential for impacts on the environmental objectives of the water bodies that could potentially be affected by the Project. These are outlined in Table 5-2. As there is a commitment to implementing these measures, they are considered inherently part of the design of the Project and have therefore been considered in the assessment (i.e. the determination of potential impact on a water body's objective, including protected area objectives, assumes implementation of these measures).

5.3.1 Deterioration in water body status

As part of the project design process, a number of designed-in measures have been proposed to reduce the potential impacts for the water environment. As there is a commitment to implementing these measures, they are considered inherently part of the design of the Project and have therefore, been considered in the assessment presented in this detailed WFD compliance assessment. These measures are considered standard industry practice for this type of development. The measures set out below are contained within the following suite of project management plans:

1. Construction Environmental Management Plan (volume 2A, appendix 5.1 of the EIAR) - This document provides information relating to the environmental management during the construction of the onshore infrastructure of the Project;
2. Environmental Management Plan (volume 2A ,appendix 5.2 of the EIAR) - The EMP provides information relating to the environmental management during the construction of the offshore infrastructure of the Project;
3. Marine Pollution Contingency Plan (MPCP) (volume 2A, appendix 5.2, Annex 2 of the EIAR) - The MPCP provides the pollution response arrangements for the Project during both the construction, operation and maintenance, and decommissioning phases of the offshore infrastructure;
4. Marine Invasive Non-Native Species Management Plan (MINNSMP) (volume 2A appendix 5.3 of the EIAR) - The MINNSMP plan considers the installation, operation and maintenance, and

decommissioning of the offshore infrastructure within the waters to the east of Dundalk Bay, County Louth; and

5. Emergency Response Co-operation Plan (volume 2A,appendix 5.8 of the EIAR) - The ERCoP addresses emergency response and coordination arrangements for the construction and operational and maintenance of the offshore infrastructure of the Project

The latest status reporting period is based on data from 2016-2021 and was published in 2023. This water body classification is the baseline from which deterioration is not permitted and therefore, this is the status classification that must not deteriorate when considering the impact of Project on the 'no deterioration of water body status objective.

The detailed assessment demonstrates that taking into consideration the mitigation measures committed to through the various management plans outlined above will ensure that there will be no deterioration in the individual elements of ecological and chemical status and therefore, no deterioration in the overall WFD status classification outlined in section 3.2 of this report.

Table 5-6 provides the justification for this assessment for surface water bodies based on the different quality elements, the potential impacts scoped into the WFD assessment and mitigation measures for the Project. All potential impacts on groundwater tests for the two groundwater bodies encountered have been scoped out of the WFD compliance assessment based on the measures incorporated in the Project (Table 5-2) and the detailed assessment undertaken in volume 2C, chapter 21: Soils, Geology and Hydrogeology of the EIAR and summarised in Table 5-5.

5.3.2 Protected area objectives

A number of protected areas, listed on the register are located within the WFD assessment study area of the Project. These protected areas have their own monitoring and assessment requirements to determine their condition. They are often assessed for additional pollutants or requirements relevant to their designation. For example, faecal coliform levels are assessed within shellfish and bathing waters. Therefore, it is important that the standards required for these protected areas are also met. If they are not met, a water body which would otherwise meet the requirements of the WFD, may have the status reduced to 'less than good' as it is not meeting the protected area objectives. The water bodies within the Project study area that contain protected areas listed in the register of protected areas are detailed in Table 3-3.

As outlined in section 3.3 and illustrated in Figure 3-2, the protected areas linked to the water bodies within the WFD assessment study area for the Project area include drinking waters in the groundwaters, bathing waters in the Louth Coast coastal water body, shellfish waters in Outer Dundalk Bay and Lough Coast coastal water bodies and European sites in the Louth Coast and Outer Dundalk Bay coastal water bodies.

5.3.2.1 Drinking Water Protected Areas (DrWPAs)

As outlined in volume 2C, chapter 21: Soils, Geology and Hydrogeology of the EIAR there will be no direct impact on licensed abstractions or existing SPZs given that they are remote from the Project Area.

The Grangebellew Group Scheme Preliminary Source Protection Area is located outside of the Soils, Geology and Hydrogeology Study Area approximately 2 km south of the onshore cable route at Grangebellew and the closest public supply Outer Source Protection area is Ardee Public Water Supply (PWS), located approximately 3.5 km west of the onshore substation site in Stickillin, within the Ardee townland. These sources are located up-gradient of the Project.

Any direct impacts on the drinking water sources are avoided and with the mitigation strategy developed during the design of the project and laid out in the Table 5-2 will ensure the quality of the drinking water sources will not be compromised by the Project.

Table 5-6: Summary of mitigation measures to ensure the surface water body status does not deteriorate.

Potential impact	Biological supporting elements			Hydro-morphological supporting elements		Physio-chemical supporting elements	Chemical	
	Fish	Invertebrates	Phytoplankton	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies during construction, operational and maintenance and decommissioning phases of the Project	**Scoped in (see Table 5-1)** *Onshore cable installation* The preparation of the temporary working corridor has the potential to increase suspended sediment load to water courses and ultimately to downstream transitional and coastal water bodies with the associated impacts that this can have on the biological quality elements. The potential for the spread of invasive non-native species is also a significant risk. Measures will be set in place to minimise the potential for pollution from sediment deposition into watercourses and from works vehicles, including measures to prevent transfer of invasive plant or animal species between watercourses. All construction work will be undertaken in accordance with good environmental practice based on legal responsibilities and guidance in accordance with the general overarching guidance on good environmental management. The method of achieving this will be through the Construction Environmental Management Plan (volume 2A, appendix 5.1 of the EIAR) and associated management plans (as listed in section 5.3.1) will ensure that the Project will not result in a deterioration in the status of biological supporting elements using 2021 as the baseline status. *Watercourse crossings* The method that will be used to cross each watercourse is set out in Table 5-1. The majority watercourses will be traversed by trenchless techniques methods thereby avoiding direct impact on the hydromorphology of the water body and the biological elements. Only two watercourses (Port Stream at Clonmore, a tributary in the Slieveboy_010 river water body and the Newhall Stream a tributary of the Dee_090 river water body) have the potential to be crossed using trenched construction methodologies but these have been assessed as low sensitivity, heavily modified and incapable of supporting fish (see Section 3.2.2 and Section 3.2.3). Chapter 5: Project Description of the EIAR, includes the methodologies for watercourse crossings to avoid significant impact of both open cut and trenchless crossings. The CEMP outlines how field drainage will be managed during construction and reinstated post construction. The onshore substation will result in the construction of low permeability surfacing, increasing the rate of surface water run-off from the site. However the design has been undertaken to ensure that there will be no direct discharge to surface waters that could impact on the supporting hydromorphological supporting conditions and the biological elements. All surface water drainage will discharge to ground via a series of pollution prevention measures, i.e. appropriate bunding and oil interceptors. The measures included into the Project have been outlined in Table 5-2. With the implementation of these measures the onshore cable installation and water course crossings should not result in a significant impact or deterioration in the baseline status as a result of habitat disturbance from water course crossings to the biological elements and the supporting hydromorphological conditions.					**Scoped in (see Table 5-1)** Habitat disturbance and changes in supporting hydromorphological conditions can impact on oxygenation conditions, nutrients and temperature. Given the mitigation measures outlined in the CEMP and discussed under the biological and hydromorphological supporting conditions there will be no impact on the supporting physio-chemical conditions and the ecological status of the water bodies affected.	**Scoped out (see Table 5-3)** Habitat disturbance should not result in release of any priority or priority hazardous substances	
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning of the Project	**Scoped in (see Table 5-1)** • Offshore cable corridor (all phases) and landfall • Construction and decommissioning - onshore cable route works and onshore substation • Construction - construction compounds Oils and petroleum in particular from construction machinery and vessels used during all phases of the offshore cable, the construction and decommissioning of the land fall and onshore cable route can have large impacts on aquatic species, and depending on the extent of a spill, may reduce respiration rates by altering oxygen exchange at the water-air interface or cause complete elimination of invertebrates and fish from streams. Pollution prevention measures to address the risk from accidental spills and measures for mitigating spills should they occur are included in the following supporting management plans: • Construction Environmental Management Plan (Appendix 5.1 of the EIAR);			**Scoped out (see Table 5-3)** There will not be any impact on the physical attributes of the water bodies from accidental spills or contaminant release		**Scoped in (see Table 5-1)** As per Biological elements	**Scoped in (see Table 5-1)** As per Biological elements	

Potential impact	Biological supporting elements			Hydro-morphological supporting elements		Physio-chemical supporting elements	Chemical	
	Fish	Invertebrates	Phytoplankton	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
	• Environmental Management Plan (Appendix 5.2 of the EIAR) • Marine Pollution Contingency Plan (MPCP) (appendix 5.2, Annex 2 of the EIAR) • Emergency Response Co-operation Plan (appendix 5.7 of the EIAR) The design of the drainage system at the onshore substation during the operational and maintenance will be in accordance with industry standards for pollution prevention as set out in volume 2A, chapter 5: Project Description. Provided these measures are adopted, there should be no risk of the Project causing a deterioration in the overall water body status. Furthermore, the Project will not introduce impediments that would prevent the improvement of the water body status to achieve its environmental objective as outlined in the River Basin Management Plan (see Table 5-7).							
Increase in suspended sediments due to construction, operational and maintenance and/or decommissioning related activities, and the potential impact to physical features	**Scoped in (see Table 5-1),** sediment run-off can impact on channel substrate. The biological elements that rely on habitat with clean substrate can therefore be impacted. • Construction and decommissioning - onshore cable route and onshore substation • Construction - construction compounds *Onshore cable corridor installation* The preparation of the temporary working corridor has the potential to increase suspended sediment load to water courses and ultimately to downstream transitional and coastal water bodies with the associated impacts that this can have on the biological quality elements. Measures will be set in place to minimise the potential for pollution from sediment deposition into watercourses and from works vehicles. All construction work will be undertaken in accordance with good environmental practice based on legal responsibilities and guidance in accordance with the general overarching guidance on good environmental management. The method of achieving this will be through the Construction Environmental Management Plan (Appendix 5.1 of the EIAR) and associated management plans (as listed in Section 5.3.1) will ensure that the Project will not result in a deterioration in the status of biological supporting elements using 2021 as the baseline status. *Watercourse crossings* The method that will be used to cross each watercourse is set out in Table 1 2. The majority watercourses will be traversed by trenchless techniques methods thereby avoiding direct impact on the hydromorphology of the water body and the biological elements. Only two watercourses (Port Stream at Clonmore), a tributary in the Slieveboy_010 river water body and the Newhall Stream a tributary of the Dee_090 river water body) have the potential to be crossed using trenched construction methodologies but these have been assessed as low sensitivity, heavily modified and incapable of supporting fish (see Section 3.2.2 and Section 3.2.3). Chapter 5, Project Description of the EIAR, includes the methodologies for watercourse crossings to avoid significant impact of both open cut and trenchless crossings. The measures embedded into the Project have been outlined in Table 5 2. With the implementation of these measures the onshore cable route installation and water course crossings should not result in a significant impact			**Scoped in (see Table 5-1)** As outlined in Table 5 1, the crossing of the water courses within the Dee_080, Dee_090 and Slieveboy_010 river water bodies could result in sediment run-off to water courses which can impact on the morphology of the channel impacting on the supporting hydromorphological conditions.		**Scoped in (see Table 5-1)** Sediment run-off to water bodies can impact on oxygenation conditions, nutrients and temperature. Control measures as per Biological elements. The impacts supporting physio-chemical conditions will not be significant and will not present a risk to the biological elements and ecological status through sediment mobilisation and subsequent deposition.	**Scoped in (see Table 5-1)** • Construction and decommissioning - onshore cable route works and onshore substation • Construction - Construction compounds Hazardous substances from fuel residues and oils/lubricants can be carried on particulate matter from construction surfaces Control measures as per Biological elements will ensure there is no impact on the chemical status of the water body.	

Potential impact	Biological supporting elements			Hydro-morphological supporting elements		Physio-chemical supporting elements	Chemical	
	Fish	Invertebrates	Phytoplankton	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
	or deterioration in the baseline status as a result of sediment loading to water bodies affected by the Project.							
The impact of spreading INNS during construction and decommissioning phases of the Project.	**Scoped in – Se**e Table 5-1 • All phases - Offshore cable corridor (all phases) • Construction and decommissioning – Landfall, onshore cable route works • Construction - Construction compounds INNS can negatively affect the health of our water environment and are a direct threat to the ecological objectives of a water body. INNS are also considered to be one of the main threats to biodiversity worldwide.			**Scoped in** – **See Table 5-1** INNS can impact on the supporting hydromorphology particularly where the y proliferate in the riparian zone of in the case of aquatic plants, the channel. This can change the supporting hydromorphological conditions of the channel and bank of the water body.		**Scoped in (see Table 5-1)** INNS can change the supporting physio-chemical conditions particularly nutrient oxygen levels	**Scoped out (see Table 5-3)** INNS will not result in an increase in priority or priority hazardous substances	
	The full implementation of a Biosecurity Protocol as outlined in volume 2A, Appendix 5-3 Marine Invasive Non-Native Species Management Plan and volume 2A, Appendix 5-1: Construction Environmental Management Plan will ensure that the Project will not result in a deterioration in the biological elements as a result of INNS.							

5.3.2.2 Recreational Waters (Bathing Waters)

The closest bathing waters are Port-Lurganboy (1.4km to the boundary of Project) and Shelling Hill/Templetown (5km to boundary of the Project) which currently have excellent bathing water status.

Pathogens are unlikely to be a source of contamination as the working area will be fenced off in advance of construction and the land application of slurry and manures in the working area will not occur in advance of construction. The location of septic tanks and their percolation area is not considered as a significant risk to bathing waters as these will be avoided during the construction, operation and decommissioning. Any potential for septic tanks and their percolation area to be located within the construction area will be noted in pre-construction site investigation surveys and protective measures taken to ensure that they are not impacted. On this basis, there will be no pathogen source within the working area during the construction period and therefore no potential to impact on the downstream coastal and transitional water bodies and associated bathing waters.

Nutrient export from the Project during construction will be limited with welfare facilities at the main compound and secondary compounds adequately managed through the CEMP. At the onshore substation during the operational and maintenance phase, foul water will be discharged to a proprietary wastewater holding tank and collected periodically for off-site treatment by a licensed waste disposal contractor.

Particulate phosphorus export from sediment laden water will be adequately managed through soil management measures and pollution prevention measures to ensure no impact on the Urban Waste Water Treatment Directive sensitive areas within the Inner Dundalk Bay transitional water body.

5.3.2.3 Economically Significant Waters (Shellfish Waters)

The Project is located within the Dundalk Bay Shellfish Waters designated area. The Carlingford Shellfish Waters designated area is located 6 km from the closest point of the Project boundary to this area.

The significant pressures on the Shellfish Designation are from urban wastewater (Blackrock, Dundalk, Annagassan agglomerations), Domestic wastewater treatment systems (DWWTS) Agriculture (pasture) and Agriculture (arable). As per the bathing waters there are no significant sources of pathogens, nutrients priority hazardous substances associated with the elements of the project that could impact shellfish waters, therefore the standards for shellfish waters as set out in the European Communities (Quality of Shellfish Water) Regulations 2006 (SI No 268 of 2006), as amended will not be compromised by the construction, operational and maintenance or decommissioning of the Project.

5.3.2.4 Nutrient Sensitive Areas

The Urban Waste Water Treatment Regulations 2001, as amended (which transpose the Urban Wastewater Treatment Directive (91/271/EEC) into Irish law and update the Environmental Protection Agency Act, 1992 (Urban Waste Water Treatment) Regulations 1994, as amended) list nutrient sensitive waters in the Third Schedule. Inner Dundalk Bay is 10 km from the Oriel wind farm area boundary and the Boyne Estuary is 14km from the Oriel wind farm area boundary. Neither these designations will be significantly impacted by the Project given the separation distance, the zone of influence of the Project (one spring tidal excursion) and the nature of the wastewater pressures during construction and operation which will be managed through the CEMP and the Project design in the context of the substation.

5.3.2.5 Natura 2000 Protected Areas

Natura 2000 is a European network of important ecological sites. The EU Habitats Directive (92/43/EEC) places an obligation on Member States of the EU to establish the Natura 2000 network. The network is made up of Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC), and Special Areas of Conservation (SACs), established under the Habitats Directive itself.

As illustrated in section 3.3.6, the Project is adjacent to and within Natura 2000 sites (i.e. SPAs or SACs). The Project may therefore have an indirect impact on the Natura 2000 site. There is the potential for water dependent protected areas downstream of the Project and where the cable route transverses, to be indirectly affected in the event of water pollution, in the absence of mitigation. One of the main purposes of the water quality assessment is to ascertain whether the Project will cause significant effects on the ecological status of the water bodies affected having regard to the environmental objectives for the water bodies, including

conservation objectives for qualifying features of the downstream Natura 2000 network. It should also be noted that potential effects on Natura 2000 or "European" sites will be considered extensively in the appropriate assessment process.

The provisions of the WFD only relate to water dependent habitats and species. The objective is to protect and, where necessary, improve the water environment to work towards achieving the conservation objectives for the water dependent features of these sites.

The North West Irish Sea cSPA is within the Louth Coast coastal water body. The Project will traverse this protected area. A review of the conservation objectives have established that the qualifying features are water dependent but as concluded in the NIS, which accompanies the planning application for the Project. There will be no likely significant effects provided the Project mitigation as outlined in the NIS is implemented.

Dundalk Bay SAC/SPA is located within the Outer Dundalk Bay coastal water body. The Site Improvement Plan (SIP) for this SPA notes that water pollution from Shipping and Industry, particularly oil spills, represents a potential threat to the conservation status of the waterbird assemblage. Potential impacts from the Project on surface water and groundwater status have been assessed in Table 5-4 and Table 5-5. The mitigation measures proposed will not compromise the achievement of the conservation objectives of this European Site.

On this basis, the Project will not compromise the protected area objectives for the water bodies impacted and therefore will not cause any deterioration in status or compromise the achievement of the objectives for the water bodies in question.

5.3.3 Achievement of the WFD objectives

During the River Basin Management cycle characterisation of the water bodies to establish the key pressures and associated pathways that are resulting in a status classification of less than good status were determined. A programme of measures is then put in place to assist in the achievement of the WFD objectives. The key objective of the WFD was to achieve good ecological status or potential by 2015, however extended timelines can apply where there are justifiable reasons (e.g. due to issues with disproportionate cost, affordability, technical difficulties). In these instances, the objective of the achievement of good status may be the end of the second river basin management cycle in 2021, or the third river basin management cycle in 2027. Where good status is unlikely to be achieved then less stringent objectives can apply to a water body.

Table 5-7 outlines the objectives for each water body within the WFD study area of the Project and the key quality elements driving the status. The Significant Water Management Issues or significant pressures, where known, resulting in a status of less than good are summarised and the measures that are recommended in the draft RBMP to achieve the WFD objectives are identified. Currently there are a number of the water bodies that are not achieving good status, as highlighted in Table 5-7, but the current environmental objectives are to achieve good status by the end of the third river basin management cycle, (i.e. 2027). The final column of Table 5-7 assesses the potential impact on the achievement of the WFD objectives and concludes for all water bodies that the Project will not prevent the achievement of the WFD objectives.

Table 5-7: Significant Water Management Issues (SWMI), Source, Programme of measures and assessment of impact of the project on the WFD objectives.

Water Body Name	Type	Overall Status	Driving Element	Significant Water Management Issue	Source Activity	RBMP Measures	Objective	Derogation Type	Reason	Impact on WFD Objectives
Dee_080	River	Moderate	Phosphorus, Nitrates	Diffuse sources from agriculture	Agriculture pressures in White (Louth)_030 impacting this waterbody	A review and revision of the Nitrates Action Programme, the development of the new Common Agricultural Policy (CAP) Strategic Plan and the implementation of the additional measures including web-based Farm Sustainability Plan, compliance assurance (including enforcement) actions for agricultural activities will be further enhanced and ensure that there is an increased targeting of inspections by local authorities based on water quality results, critical source areas and the EPA's Pollution Impact Potential (PIP) Maps	Good by 2027	Extended	Article4(4) - Technical feasibility	The significant pressures for this water body is phosphate levels from diffuse (agriculture) and hydromorphological pressures from the arterial drainage scheme. Measures have been recommended to achieve the WFD objective of good status by the end of the third river basin management cycle (2027). It should also be noted that the EPA have proposed to designate the Dee_080 and the Dee_090 as heavily Modified Water Bodies (HMWBs) in the Public consultation on the designation of heavily modified waterbodies for the third cycle River Basin Management Plan. The construction of the onshore infrastructure of the Project will not prevent the implementation or effectiveness of these measures given the design mitigation and the pollution prevention measures as outlined in Table 5-2 and Table 5-6.
				Channelisation	Glyde & Dee Arterial Drainage Scheme	Develop a new Controlled Activities for the Protection of Waters regime to address pressures on the physical condition of waters. Establish a restoration programme to mitigate the negative impact of past construction in or near water bodies				
Dee_090	River	Poor	Invertebrates	Diffuse sources with high pollution impact potential for near surface phosphates from agriculture	Pasture	A review and revision of the Nitrates Action Programme, the development of the new CAP Strategic Plan and the implementation of the additional measures including web-based Farm Sustainability Plan, compliance assurance (including enforcement) actions for agricultural activities will be further enhanced and ensure that there is an increased targeting of inspections by local authorities based on water quality results, critical source areas and the EPA's PIP Maps	Good by 2027	Extended	Article4(4) - Technical feasibility	The significant pressures for this water body is phosphate levels from diffuse (agriculture) and hydromorphological pressures from the arterial drainage scheme. Measures have been recommended to achieve the WFD objective of good status by the end of the third river basin management cycle (2027. It should also be noted that the EPA have proposed to designate the Dee_080 and the Dee_090 as heavily Modified Water Bodies (HMWBs) in the Public consultation on the designation of heavily modified waterbodies for the third cycle River Basin Management Plan. The construction of the onshore infrastructure of the Project will not prevent the implementation or effectiveness of these measures given the design mitigation and the pollution prevention measures as outlined in Table 5-2 and Table 5-6.
				Diffuse sources with high pollution impact potential for near surface phosphates from agriculture	Arable					
				Channelisation	Glyde & Dee Arterial Drainage Scheme	Develop a new Controlled Activities for the Protection of Waters regime to address pressures on the physical condition of waters. Establish a restoration programme to mitigate the negative impact of past construction in or near water bodies				
Slieveboy_010	River	Moderate	Nutrients	Diffuse sources with high pollution impact potential for near surface phosphates from agriculture	Pasture	As above	Good by 2027	Extended	Article4(4) – Technical feasibility	The significant pressures for this water body preventing it from achieving good ecological status are nutrient levels from diffuse agricultural sources. Measures

Water Body Name	Type	Overall Status	Driving Element	Significant Water Management Issue	Source Activity	RBMP Measures	Objective	Derogation Type	Reason	Impact on WFD Objectives
				Diffuse sources with high pollution impact potential for near surface phosphates from agriculture	Arable	As above				have been recommended to ensure the achievement of the WFD objective of good status by the end of the third river basin management cycle (2027. The construction of the onshore infrastructure of the Project will not prevent the implementation or effectiveness of these measures given the design mitigation and the pollution prevention measures as outlined in Table 5-2 and Table 5-6.
Louth Coast	Coastal	High		No significant pressures – water body is achieving its environmental objective	n/a	Protect	High	n/a	n/a	This water body is currently achieving its environmental objective so the focus will be on ensuring it does not deteriorate in status. The construction, operation and decommissioning of the Project will not increase the risk of deterioration in the water body status given the design mitigation and the pollution prevention measures as outlined in Table 5-2 and **Table** 5-6.
Outer Dundalk Bay	Coastal	High	Not at Risk	No significant pressures – water body is achieving its environmental objective	n/a	Protect	High	n/a	n/a	This water body is currently achieving its environmental objective so the focus will be on ensuring it does not deteriorate in status. The construction, operation and decommissioning of the Project will not increase the risk of deterioration in the water body status given the design mitigation and the pollution prevention measures as outlined in Table 5-2 and Table 5-6.
Clogher Head Gravels	Groundwater	Good	Not at Risk	No significant pressures – water body is achieving its environmental objective	n/a	Protect	Good	n/a	n/a	This water body is currently achieving its environmental objective so the focus will be on ensuring it does not deteriorate in status. The construction, operation and decommissioning of the Project will not increase the risk of deterioration in the water body status given the design mitigation and the pollution prevention measures as outlined in Table 5-2.
Louth	Groundwater	Good	Not at Risk	No significant pressures – water body is achieving its environmental objective	n/a	Protect	Good	n/a	n/a	This water body is currently achieving its environmental objective so the focus will be on ensuring it does not deteriorate in status. The construction, operation and decommissioning of the Project will not increase the risk of deterioration in the water body status given the design mitigation and the pollution prevention measures as outlined in Table 5-2.

6 SUMMARY

A WFD assessment has been undertaken for the Oriel Wind Farm Project. The assessment is based on guidance developed by the Environment Agency and Planning Inspectorate and is undertaken in a staged approach to ensure that those components of the project and the associated activities are assessed in the context of the quality elements that contribute to overall WFD status.

The key focus of the assessment was to ensure that the offshore and onshore infrastructure of the Project do not result in a deterioration in the current WFD status of the water bodies within the WFD study area, based on the 2021 baseline as reported by the EPA based on the 2016-2021 WFD monitoring programme, and also to ensure that the project does not compromise the achievement of the WFD objectives for the improvement in the overall status of these water bodies. The assessment also considers the protected areas linked to the water bodies in question and ensures that the protected area objectives are also unaffected.

The scoping stage of the WFD compliance assessment has concluded that there were a number of components and activities associated with the Project that represented a risk to the WFD status and objectives and therefore were scoped into the assessment. The relevant quality elements contributing to the overall status were considered and how each potential impact could affect these.

The overall conclusion of the WFD compliance assessment is that there will be *no risk of deterioration* in status or the prevention of the achievement of the objectives for the relevant water bodies nor will the protected area objectives be compromised.

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