



Celtic Interconnector

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Water Framework Directive Assessment

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1 Background

1.1 Introduction

This report presents an assessment pursuant to Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (the Water Framework Directive, or WFD). The Directive has been transposed into Irish Law by the by European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) (as amended) (the ‘Regulations’; see Section 1.2). In accordance with the WFD, proposals that have the potential to impact ‘water bodies’ as designated by the WFD are required to demonstrate that actions would not result in a deterioration in ‘Good’ status. This report screens for coastal and transitional water bodies that have the potential to be impacted by the Celtic Interconnector Project (hereafter ‘the Proposed Development’) in Irish waters. Based on the ‘stages’ set out in UK guidance (in the absence of an equivalent in Ireland), this report provides a **Stage One** (screening) and **Stage Two** (scoping) WFD assessment for the Proposed Development to identify the requirements of a **Stage Three** (detailed impact assessment) WFD assessment.

A WFD assessment for the Proposed Development has been carried out to provide the regulators with an overview of possible effects that may occur during the installation, operation, and decommissioning of the proposed interconnector cable.

The WFD considers both the environmental status of surface waters, including that of estuarine and coastal water bodies (known as ‘transitional’ and ‘coastal’ water bodies, respectively). This report has been produced in support of the foreshore consent application for the Proposed Development and it therefore focuses on transitional and coastal water bodies. WFD assessment reporting for surface waters in the onshore environment is found in Volume 3C – EIAR Ireland Onshore of the EIAR.

This report is separated into seven main sections:

- Section 1: Background;
- Section 2: Assessment method;
- Section 3: Project description;
- Section 4: Stage One: Screening;
- Section 5: Stage Two: Scoping;
- Section 6: Stage Three: Detailed WFD Assessment; and
- Section 7: References.

1.2 Legislative context

The WFD has been transposed into Irish law by the ‘Regulations. These Regulations cover governance, the characterisation of WFD river basins and the development of River Basin Management Plans (RBMP), environmental objectives and programmes of measures for

achieving the latter, and criteria for determining quality standards. The Regulations provide for the implementation of the WFD in Ireland, providing for the designation of all surface waters (rivers, lakes, estuarine waters, transitional coastal waters, and groundwaters) as water bodies, and setting objectives for the achievement of Good Ecological Status (GES) or Good Ecological Potential (GEP) and Good Chemical Status (GCS).

The WFD applies to all bodies of water within one nautical mile (nm) from the coastline in Ireland for GES and out to 12nm for GCS (see Section 4.3, Figure 4.1). These bodies of water are separated into spatial units referred to as 'water bodies' and those that are man-made. Therefore, the consideration of proposals under the WFD applies to all surface and groundwater bodies that have the potential to be impacted by the Proposed Development.

1.3 Water Framework Directive objectives

There are two principal objectives of the WFD:

- The first objective requires that all water bodies must reach at least 'good' overall status by 2027, at the latest. For surface waters including coastal and transitional waters, good status is a combination of good ecological status (or potential) and good chemical status.
- The second objective requires that the status of each water body, including all the quality elements which make up overall status, must not deteriorate relative to the baseline reported in the relevant RBMP.

The current baseline quality (referred to as the current 'status') of all water bodies is reported every six years as part of the RBMP cycle in Ireland. The first RBMP cycle in Ireland covered the period 2009 to 2015. The second cycle plan covers the period 2018-2021 and was published by the Government on 17 April 2018. A new third cycle RBMP covering the period 2022-2027 was launched for public consultation in 2020, with a view to being released as a draft publication in 2021. The third cycle RBMP documents available to date do not revise the second cycle WFD water body statuses or programmes of measures. The third cycle RBMP is due for final publication by December 2021, and it will set out "*clear objectives for the water environment and the strategies for meeting them*" (DHPLG, 2021).

The data concerning water body status available from the EPA relates to the first-cycle RBMP (2009-2015), with some data specified as relating to 2013-2015 and other specified as 2013-2018. The assessment presented in this report relies upon these water body statuses, making reference to additional detail provided in the later RBMPs where relevant.

1.4 Water Framework Directive classification

The overall status of surface waters including transitional and coastal water bodies is classified using information on the biological, physico-chemical and hydromorphological quality of the body of water. For a water body to be in overall 'good' status, both ecological and chemical status must be at least 'good'.

The ecological status of a surface water body is assessed according to:

- The condition of biological elements, for example fish, benthic invertebrates and other aquatic flora;
- The condition of supporting physico-chemical elements, for example nutrient and oxygenation conditions;
- Concentrations of river-basin specific pollutants such as metals or acidification; and,
- The condition of the hydromorphological quality elements, including flow and tidal conditions and the morphological conditions including substrate.

The Environmental Protection Agency (EPA, 2021) refers to five status classes for water quality: high, good, moderate, poor, and bad. 'High status' is the 'reference condition' and it is defined as the biological, chemical, and morphological conditions associated with no or very low human pressure. The reference condition is considered to be the best status achievable or benchmark for a given water body. The reference conditions will vary depending on the water body type, whether it is man-made or natural (or a combination of the two), and the local biodiversity of the region.

The ecological status classification for the water body, and the confidence in this, is determined from the worst scoring quality element. This means that the condition of a single quality element can cause a water body to fail to reach its WFD classification objectives.

The current status and measures designed to achieve the water body objectives are set out by the EPA in the second and current RBMP (2018-2021). For this RBMP cycle, a single national River Basin District has been defined for Ireland. This is broken down into 46 catchment management units and the Proposed Development, with its landfall at Claycastle Beach falls within Catchment 19 (Lee, Cork Harbour and Youghal Bay).

Chemical status is assessed by compliance with environmental standards for chemicals that are listed in the EC Environmental Quality Standards Directive (2008/105/EC); transposed in Ireland by the European Communities Environmental Objectives (Surface Waters) Regulations 2009 S.I. No. 272/2009 (as amended). These chemicals include priority substances, priority hazardous substances, and eight other pollutants carried over from earlier (or 'daughter') directives, notably Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community and Council Directive 86/280/EEC of 12 June 1986 on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC. Further limit values are set in Council Directives 82/176/EEC and 84/156/EEC (mercury), 83/513/EEC (cadmium), 84/491/EEC (hexachlorocyclohexane), 86/280/EEC (Dichlorodiphenyltrichloroethane or 'DDT', carbon tetrachloride, and pentachlorophenol), 88/347/EEC (aldrin, dieldrin, endrin, and isodrin), and 90/415/EEC (1,2-dichloroethane, trichloroethane, perchloroethane, and trichlorobenzene). Chemical status is recorded as 'good' or 'fail'. The chemical status classification for the water body is determined by the worst scoring chemical.

Where the hydromorphology of a surface water body has been significantly altered for anthropogenic purposes, such as water supply, flood protection or navigation, it can be designated as an Artificial or Heavily Modified Water Body (A/HMWB). An alternative environmental objective, Good Ecological Potential (GEP) applies in these cases. In practice, this means that the ecology must be as close as possible to that of a similar natural water body, but without compromising its human use. The water bodies of relevance to the Proposed Development are not classified as A/HMWB so the classification of these is not discussed further.

Some surface waters in Ireland require special protection under other European legislation. The WFD, therefore, brings together the processes and aims of a range of other European Directives, such as the Revised Bathing Water Directive (2006/7/EC), the Shellfish Directive (2006/113/EC) and the Conservation of Natural Habitats and of Wild Fauna and Flora Directive (92/43/EEC). These Directives establish protected areas to manage water, nutrients, chemicals, economically significant species, and wildlife, and have been brought in line with the planning timescales of the WFD.

1.5 Compliance with the Water Framework Directive

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

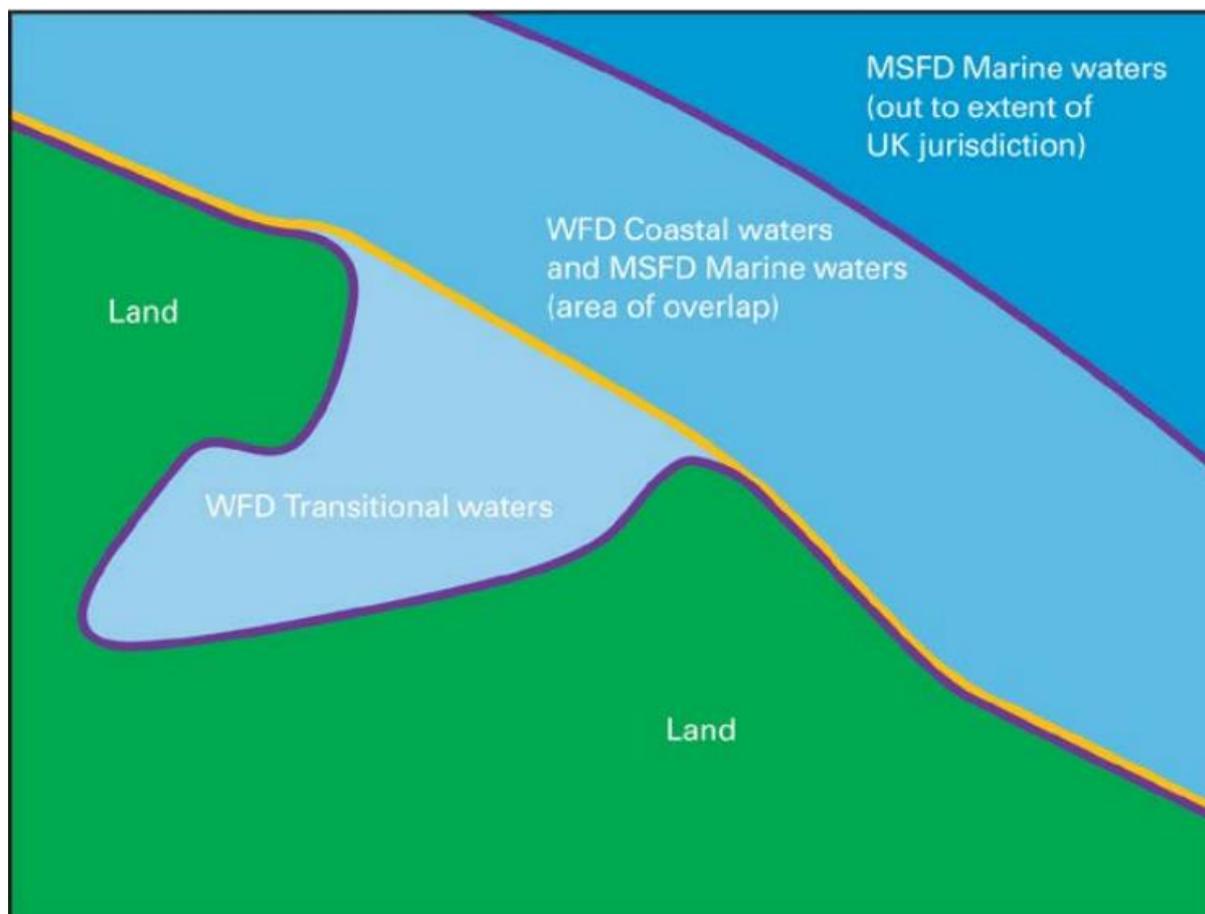
This current report presents the findings of the WFD assessment process undertaken for the Celtic Interconnector Project.

1.6 Relation to Marine Strategy Framework Directive Assessment

Due to their consideration of potential effects on the aquatic environment, there is some overlap between the jurisdictions and objectives of the WFD and the Marine Strategy Framework Directive (MSFD) 2008/56/EC of the European Parliament and of the Council adopted on 17 June 2008, which established a framework for community action in the field of marine environmental policy. The MSFD was transposed into Irish law by the European Communities (Marine Strategy Framework) Regulations S.I. No. 249 of 2011 (as amended).

The MSFD includes coastal waters, but not WFD transitional waters (e.g. estuaries, sea lochs or coastal lagoons). The line between the two directives is the 'bay closing line' or the seaward limit of transitional waters as defined under the WFD. This is presented in **Figure 1.1**.

Figure 1.1 Extent of MSFD / WFD boundaries (noting example is from UK documentation)¹



¹ Defra (2014) Marine Strategy Part Two: UK Marine Monitoring Programmes. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/341146/msfd-part-2-final.pdf. [Accessed 26 May 2021].

2 Assessment Method

2.1 Introduction

Any activity that is part of the Proposed Development and that could have the potential to lower the status of any of the quality elements of a water body or preclude the measures necessary to achieve good status must be assessed to determine its compliance with the WFD.

This section sets out the approach to WFD assessment for the foreshore and marine components of the Proposed Development. For each of the stages, a description of the process adopted is provided, together with initial relevant information that may facilitate early decision-making.

2.1.1 Approach to assessing Water Framework Directive compliance

Published methodologies for the assessment of plans or projects in relation to undertaking WFD assessments across all types of water bodies that are specific to Ireland are currently not available. There is however an EU-level guidance document of relevance titled “Water Framework Directive Project assessment checklist tool” (2018), published by the Joint Assistance to Support Projects in European Regions (JASPERS).

There are also several guidance documents from the UK that have been developed in relation to undertaking such assessments for the different water body types, predominantly written by the UK’s Environment Agency. Those considered to be the most relevant to the Proposed Development are:

- Planning Inspectorate Advice Note 18: The WFD (PINS, 2017), which provides an overview of the WFD and provides an outline methodology for considering the WFD as part of the DCO process; and
- Clearing the Waters for All (Environment Agency, 2016), which has been produced to assist in the assessment of marine activities against the requirements of the WFD.

The WFD compliance process sets out the approach to developing and providing the information required for the WFD assessment. However, the process is iterative and will be revised as is appropriate in response to stakeholder comments. Necessary updates will be made as the assessment progresses.

The WFD assessment process consists of a preparatory stage followed by five assessment stages as follows:

- Preparatory Stage: Assessment method (description) and Project (description);
- Stage One: Screening;
- Stage Two: Scoping;
- Stage Three: Detailed Impact assessment;

- Stage Four: Identification and Evaluation of Measures; and
- Stage Five: Article 4.7 Derogation (if the assessment results in a conclusion that the Proposed Development is not compliant with the objectives of the WFD).

2.2 Stage One: Screening

This stage aims to determine if the Proposed Development has impact pathways to WFD water bodies. This includes collating available information on the project and baseline environment of the water bodies which could potentially be impacted.

2.2.1 Method for the baseline collation stage

Stage One requires the following main tasks to be undertaken:

- Initial screening to identify relevant water bodies in the study area. The following criteria are used to select water bodies for inclusion in the early stages of the assessment:
 - all surface water bodies that could potentially be directly impacted by the Proposed Development;
 - any surface water bodies that have direct connectivity (e.g. upstream and/or downstream from the Proposed Development) and could therefore potentially be indirectly affected by the proposed works; and
 - any groundwater bodies that underlie the Proposed Development and therefore have the potential for direct impacts, and any hydraulically connected groundwater bodies that may receive indirect impacts.
- Review the RBMP for Ireland and agree the water bodies to be included in the assessment area in consultation with the EPA;
- Collection of water body baseline data, including details of the status of each quality element (where available from the EPA) and, if appropriate, reasons for not achieving good status and mitigation measures or other measures identified to attain good status. These data have been collated from the Lee-Cork Harbour Catchment Assessment (EPA, 2018) and are presented in Table 4.2; and
- Collection of information in respect of the Proposed Development, broken down in sufficient detail so that the compliance of each activity can be considered in the assessment.

2.2.2 Identifying activities

The screening process will consider the potential risk to WFD objectives as a result of the Proposed Development. The screening assessment will draw on the relevant information concerning the design and implementation proposals for the Proposed Development and the WFD baseline data from the data collation stage.

In line with the UK's Environment Agency guidance 'Clearing the Waters for All', the Proposed Development will be separated into activities, which include the various

installation, operational and decommissioning elements described in Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 5: Description of the Landfall and Chapter 6: Description of the Offshore Cable. This helps with the assessment process to identify which WFD parameters of any given water body could potentially be at risk.

Where possible, the activities will be grouped for scoping if their potential effects on the water environment are similar and would occur within the same water body.

The screening will be based on a qualitative assessment utilising expert knowledge to assess potential risks from elements of the Proposed Development to WFD objectives. The screening results will be presented in an overview showing the different activities and the relevant individual water body quality elements that could be impacted.

2.3 Stage Two: Scoping

2.3.1 Aim of Stage Two

This stage identifies whether there is a potential risk to any of the water bodies identified in Stage One and is undertaken separately for each water body and each activity (or group of activities).

Water bodies and activities can be scoped out of the impact assessment if it can be satisfactorily demonstrated that there is no risk to the water body. If a risk is identified, then it will be necessary to undertake a Stage Three detailed impact assessment.

2.3.2 Scoping method

The scoping stage considers:

- The potential risk to surface water body status (within and between status classes) by adversely affecting biological, hydromorphological and/or physico-chemical quality elements;
- The potential for activities to prevent delivery of WFD status objectives by impacting upon proposed improvement measures;
- The potential to incorporate the measures required to deliver status objectives included in the RBMP for Ireland;
- The potential risk to sensitive habitats, including designated sites and habitats with particular ecological importance and
- The potential risk to protected areas such as Bathing Waters.

2.3.3 Scoping questions

The scope of this Chapter informs the foreshore consent application and as such is focused on transitional and coastal waters only. Consideration of the WFD in relation to surface water bodies is provided in Volume 3C, Chapter 7 of the EIAR. The scoping process considers the potential for each activity (or group of activities) to affect each quality element in turn.

The scoping stage is deliberately designed such that the spatial extent of any risk associated with the activity (e.g. the likelihood and severity of any potential impact) is not central to the decision. If any risk is identified, the quality element will be taken through to Stage Three for a detailed impact assessment.

In all cases, the water body and activity under assessment will be progressed to the detailed impact assessment (Stage Three) if the answer to one or more of the scoping questions is 'yes', but only for those quality elements that could potentially be impacted. Conversely, if the answer to a scoping question is 'no', the quality element is scoped out of the impact assessment. Note that activities will only be scoped out if there is clear, definitive evidence that there is no risk to a specific quality element or that a pathway for such an impact does not exist.

The decisions recorded in the scoping tables are based on expert judgement, informed by available data. The result of Stage Two will be a list of water bodies, activities and quality elements to be carried forward for further consideration in the Stage Three detailed impact assessment.

For transitional and coastal water bodies, the series of quality element specific 'trigger questions' for the quality elements that are applicable in each type of water body– and which needs to be answered in order to guide the decision-making process– are presented in Table 2.1.

Table 2.1 Scoping questions for transitional and coastal water bodies

Parameter	Scoping questions
Biology	
Habitats ²	Will the footprint of the activity cover an area of 0.5km ² or larger ³ ?
	Will the footprint of the activity cover 1% or more of the total water body area?
	Will the footprint of the activity be within 500m of any higher sensitivity habitat?
	Will the footprint of the activity cover 1% of lower sensitivity habitats in the water body?

² Habitats include 'Lower' and 'Higher' sensitivity habitats. Higher sensitivity habitats are defined in the 'Clearing the Waters for All' guidance to include: chalk reef, clam, cockle and oyster beds, intertidal seagrass, maerl, mussel beds, including blue and horse mussel, polychaete reef, saltmarsh, subtidal kelp beds and subtidal seagrass. Lower sensitivity habitats include all other habitats potentially present, such as cobbles, gravel and shingle, intertidal soft sediments like sand and mud, rocky shore, subtidal boulder fields, subtidal rocky reef and subtidal soft sediments.

³ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Parameter	Scoping questions
Fish (transitional water bodies only)	Is the activity in an estuary and could it affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary?
	Could the activity impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)?
	Could the activity cause entrainment or impingement of fish?
Hydromorphology	
Hydromorphology	Could the activity impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status?
	Could the activity significantly impact the hydromorphology of any water body?
	Is the activity in a water body that is heavily modified for the same use as the activity?
Water Quality	
Physicochemical (and phytoplankton)	Could the activity affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)?
	Is the activity in a water body with a phytoplankton status of moderate, poor or bad?
	Is the activity in a water body with a history of harmful algae?
Chemistry	Could the activity release chemicals that are on the Environmental Quality Standards Directive (EQSD) list?
	Will the activity disturb sediment with contaminants above Cefas Action Level 1?
	If the activity has a mixing zone, are the chemicals released on the EQSD List?
Protected Areas	
Protected Areas	Is the activity within 2km of a protected area?
Invasive Non-native Species (INNS)	
INNS	Could the activity introduce or spread INNS to a water body?

2.4 Stage Three: Detailed impact assessment

This section describes the process that has been followed for all quality elements scoped in for any specific water body.

2.4.1 Aim of Stage Three

The Stage Three detailed impact assessment determines whether the activities that have been put forward from the Stage Two scoping process are likely to cause deterioration and whether this deterioration will have a significant non-temporary effect on the status of one or more WFD quality elements at the water body scale. For priority substances, the process requires the assessment to consider whether the activity is likely to cause failure of good chemical status. **Appendix B** lists the 45 priority substances in the field of water policy, including those that are considered hazardous priority substances.

An approach that quantifies the spatial scale of impacts that may occur from the Proposed Development within a WFD water body is necessary in order to make an initial judgement on the extent of the impact in respect to the scale of the WFD water body. Understanding spatial impact also facilitates a clear definition of the spatial extent of mitigation that may be required in order to manage likely impacts to an acceptable level such that they would not result in significant deterioration.

If it is established that an activity is likely to affect water status at water body level (that is, by causing deterioration in status or by preventing achievement of WFD objectives (including those for Protected Areas) and the implementation of mitigation measures for Heavily Modified Water Bodies (HMWBs)), or that an opportunity may exist to contribute to improving status at a water body level, potential measures to avoid the effect or achieve improvement are investigated. This stage considers such measures and, where necessary, evaluates them in terms of cost and proportionality.

2.4.2 Method for the detailed impact assessment

The end result of Stage Two is a final list of water bodies, project activities and quality elements to be carried forward for a detailed impact assessment. The Stage Three detailed impact assessment then considers the potential for status deterioration associated with each activity (i.e. not the project as a whole) on the biological, hydromorphological and physico-chemical and chemical quality elements of each relevant surface water body, and the quantitative and chemical quality elements of each relevant groundwater body. The assessment conclusions of Stage Two include consideration of embedded mitigations where appropriate.

The assessment establishes whether the project activities will:

- cause deterioration within a water body;
- prevent WFD status objectives (i.e. GES or GEP) being achieved, including prevention of the delivery of mitigation measures identified in the RBMP; and / or
- prevent status objectives being achieved in any other water bodies, including prevention of the delivery of mitigation measures identified in the RBMP.

Following the broad principles of the WFD, the project is considered to be non-compliant if any of the activities are likely to cause a non-temporary deterioration in any of the quality elements individually or cumulatively at a water body level.

Impacts of the project on other European legislation, for example the Habitats Directive, Birds Directive, Shellfish Waters Directive, and Revised Bathing Water Directive, will also be considered in line with Articles 4.8 and 4.9 of the WFD. Where necessary, reference will be made to supporting information contained in the relevant chapters of the EIAR, and in the case of Natura 2000 protected areas, the AA Screening and Natura Impact Statement ('the NIS assessment').

2.4.3 Determination of deterioration

Any deterioration will be considered within the context of the water body, in terms of the scale and magnitude of the impact as well as the timescales over which the impact would occur. The detailed assessment will therefore differ depending on the nature of the water body.

2.4.4 Protected areas

The WFD specifies that areas requiring special protection under other directives be identified as protected areas. These areas have their own objectives and standards. Where the water body boundaries overlap with protected areas, the most stringent objective applies – that is, the requirements of one particular directive should not undermine the requirements of another. The types of protected areas potentially relevant to the Proposed Development include bathing waters, shellfish waters, European sites comprising Special Areas of Conservation (SACs), candidate SACs (cSACs), and Special Protection Areas (SPAs), and waters relevant to the Nitrates Directive, (i.e. waters that are at risk of nitrate pollution and that are referred to in Ireland's Nitrates Action Programme).

2.5 Stage Four: Identification of mitigation measures

If, at the end of the Stage Three, adverse impacts are identified, Stage Four will then consider measures (in addition to embedded mitigations considered in Stage Two) to mitigate the impacts of relevant activities and, if possible, improve the state of the water environment. Where possible, multiple benefits will be sought from each measure (for example, across different water bodies or improving more than one quality element) in line with the RBMP for Ireland.

2.6 Stage Five: Article 4.7 Derogation

Where measures cannot be identified that result in WFD compliance, and no suitable alternatives can be identified, the provisions of Article 4.7 of the Directive would need to be invoked. The provisions of Article 4.7 would only apply where there is a:

- Failure to meet good groundwater status, GES or GEP or to prevent deterioration in status arises from new modifications to the physical characteristics of the water body or alteration of groundwater levels; or

- Failure to prevent deterioration from high to good overall status of a surface water body is the result of new sustainable human development activities.

An Article 4.7 derogation would then need to demonstrate that the following conditions are met:

- All practicable mitigation has been incorporated;
- There are no significantly better environmental options;
- The project is of overriding public interest and/or the benefits of the project outweigh the benefits of WFD compliance; and
- The reasons for the modifications to the water body are reported in the next RBMP.

Should an Article 4.7 derogation be required, the appropriate authority will be responsible for advising whether the Article 4.7 conditions have been met, in order for the regulators to decide on whether to grant consent. Such a decision may necessitate the requirement for post-consent measures to be implemented such as monitoring and reporting of WFD impacts during the installation phase.

3 Project Description

Volume 3D Part 2 EIAR for Ireland Offshore (Technical Chapters) - Chapter 5: Description of the Landfall and Chapter 6: Description of the Offshore Cable provide a detailed account of the Proposed Development for the landfall at Claycastle Beach, the foreshore, and works in the wider marine environment of Irish Territorial Waters out to 12nm. A bullet-point summary is provided below, against which the potential impacts of the Proposed Development in terms of WFD compliance are assessed. In addition, embedded mitigation measures are presented within individual chapters of Volume 3D Part 2 EIAR for Ireland Offshore (Technical Chapters).

3.1 Landfall installation (Phase 1)

- Open cut trenching across Claycastle Beach;
- Installation of landfall compound;
- Installation of temporary causeway;
- Installation of cofferdam with sheet piling;
- Excavation of cofferdam and removal of sediment to installation compound;
- Installation of conduits into trench and replacement of spoil; and
- Installation of temporary winch platform and winch.

3.2 Landfall installation (Phase 2)

- Excavation of receiver pit;
- Arrival of submarine cables on cable lay vessel and transferral of messenger wire to cable laying vessel;
- Cable pull-in by winch, from cable laying vessel through conduit to the Transition Joint Bay;
- Offshore cable burial commences by cable laying vessel with plough; and
- Reinstatement of receiving pit, beach, and landfall area

3.3 Marine installation (Phase 3)

The marine installation noted below includes activities relevant to works within the 12nm of Irish Territorial Waters and therefore of relevance to the WFD. Activities relevant to works beyond that limit are detailed in Volume 3D1 – Project description but are not included here.

- Contractor survey, route engineering and finalisation;
- Geophysical survey in relation to unexploded ordnance (UXO) intervention campaign;
- Pre-lay grapnel runs;

- Pre-lay route survey; and
- Cable lay, burial and post-lay and post-burial survey.

All works will be undertaken in line with international good practice, such as adherence to the International Convention for the Prevention of Pollution from Ships (the MARPOL Convention), which is the main convention covering pollution prevention in the marine environment, including from operational or accidental causes.

3.4 Installation phasing

The first phase of the construction sequence would be completed in the winter months from October 2024 to April 2025, to avoid the bathing season at Claycastle beach and involves the installation of pre-installed conduits within a trench excavated across the beach. The estimated duration for phase one is anticipated to take approximately 10 weeks and is detailed as follows:

- Mobilisation / Site Preparation – 1 week;
- Landfall Civil Works – 4 weeks;
- Conduit stringing and Installation – 3 weeks; and
- Backfilling and Site Reinstatement – 2 weeks.

The durations of the works provided above are indicative only and based on a working week Monday to Friday 7am to 7pm and Saturday from 7am to 2pm. Safety requirements for the installation operations / procedures and weather condition may ultimately dictate the final programme.

4 Stage One: Screening

4.1 Purpose of this section

This section divides the proposed works for the Proposed Development in the foreshore and marine environment into activities for assessment and identifies the WFD water bodies that are potentially at risk from these activities. It uses the most up to date Project Description information and the information concerning water body extent and classification available from the Environmental Protection Agency.

4.2 Identification of activities

The works proposed for the Proposed Development have been separated into activities in line with the requirements of 'Clearing the Waters for All' (Environment Agency, 2016) and general WFD assessment good practice.

These activities are listed in Table 4.1.

Table 4.1: Foreshore and Marine Works Associated for the Proposed Development

Reference	Activity	Sub-Activities included
Installation		
IP 1.0	Beach preparation, excavations, and reinstatement	Open cut trenching across Claycastle Beach Installation of temporary causeway Installation of cofferdam with sheet piling Excavation of cofferdam and removal of sediment to installation compound Installation of conduits into trench and replacement of spoil Installation of temporary winch platform and winch Excavation of receiver pit Reinstatement of receiving pit and beach
IP 2.0	Cable pull-in	Arrival of submarine cables on cable lay vessel and transferral of messenger wire to cable laying vessel Cable pull-in by winch, from cable laying vessel through conduit to the Transition Joint Bay Offshore cable burial commences by cable laying vessel with plough
IP 3.1	Surveys and seabed preparation	Contractor survey, route engineering and finalisation UXO intervention campaign (pre-lay route survey) Pre-lay grapnel runs
IP 3.2	Cable lay	Cable lay Post-lay survey Cable burial Post-burial survey
Operation		
O1	Surveys	Maintenance surveys

The operational life of the equipment and apparatus of the Proposed Development is expected to be 40 years. The WFD status of the water bodies of interest are likely to have changed within a 40-year timescale so the potential for decommissioning activities to affect the WFD status of Irish water bodies is not included in this assessment.

4.3 Water body identification

Figure 4.1 shows the WFD surface water bodies screened in for the scoping stage, while Table 4.2 provides a screening appraisal of all water bodies that coincide with or could be connected to the Proposed Development.

Figure 4.1 Water Framework Directive Water Bodies in the vicinity of the Proposed Development

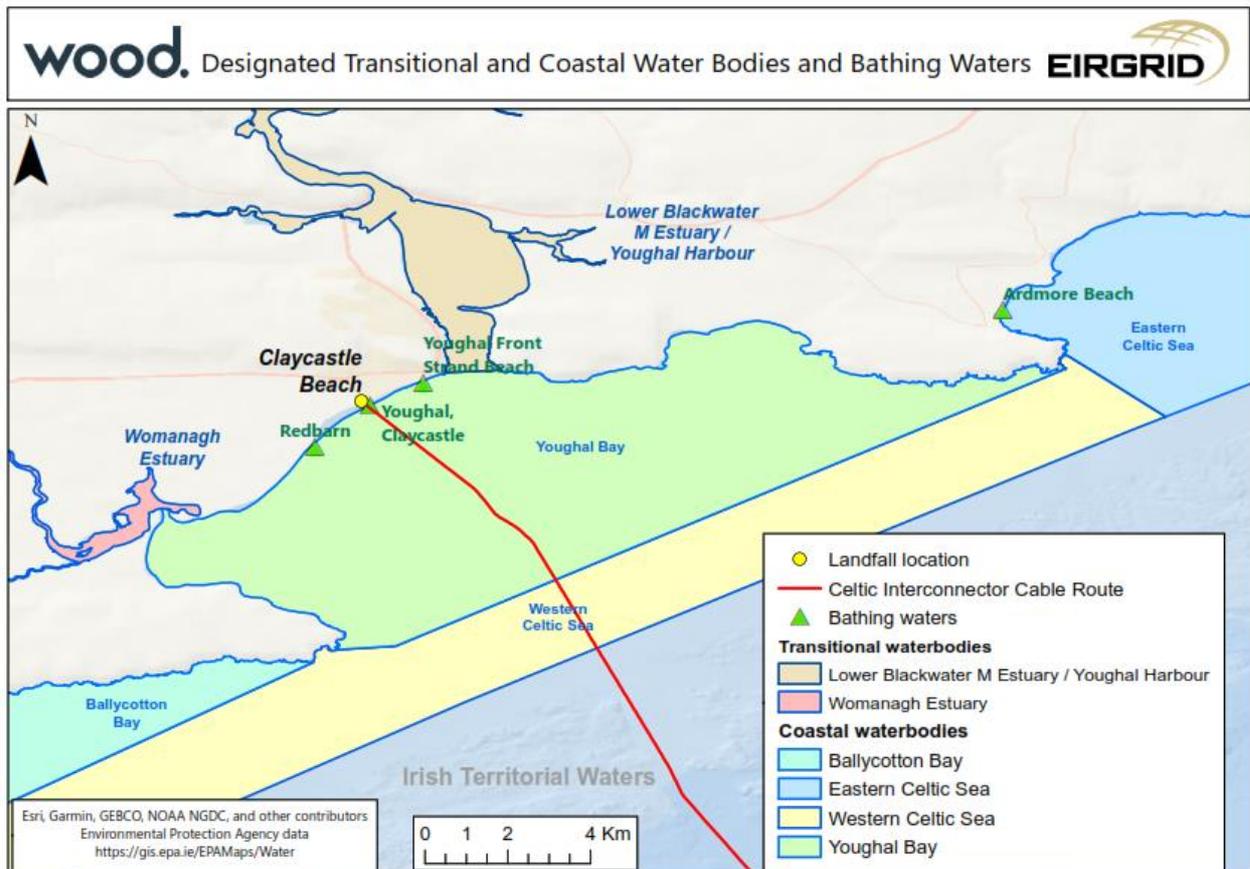


Table 4.2 Results of screening exercise for the identification of Water Framework Directive water bodies potentially impacted by the Proposed Development. Waterbodies screened-in identified as grey rows

Water body name and ID number	Type	Description	Screening Outcome	Justification
Lower Blackwater M Estuary / Youghal Harbour IE_SW_020_0100	Transitional	<p>Overall water body assessment status: Moderate (2013-2018).</p> <p>Ecological status: Moderate</p> <p>Chemical status: Moderate</p> <p>Nutrient conditions: High</p> <p>At Risk of not meeting its water quality objectives in the 2013-2015 and 2013-2018 monitoring periods. It was assessed as needing measures to improve the water quality outcomes.</p>	Screened out	<p>Screened out on the basis that there are no physical works within this water body and activities relating to the landfall works at the foreshore and for cable laying works within the 12nm limit of Irish Territorial Waters are approximately 2km across open marine waters from the closest boundary of this water body.</p> <p>Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 12: Marine Water Quality describes how the majority (of sediment deposition occurs within tens of metres from a cable route (OSPAR, 2009). Based on the dominant composition of the marine sediments described in Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 10: Marine Sediment Quality (i.e. gravelly muddy sand, as per Folk, 1954), it is anticipated that 90% would be deposited within 1km of the cable route (BERR, 2008; Aquind, 2019).</p> <p>Fine sediments such as clay and silts can remain in suspension for longer and therefore be transported over a wider area, but these quickly become undiscernible above the natural variation of background loads.</p> <p>The secondary effect of this on fish has been assessed in Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 13: Biodiversity as</p>

Water body name and ID number	Type	Description	Screening Outcome	Justification
				<p>negligible to minor, and as minor in relation to fish spawning and nursery grounds, and diadromous fish.</p> <p>Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 12: Marine Water Quality concludes that effects on water quality as a result of changes to turbidity or the release of contaminants are not significant.</p> <p>Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 10: Marine Sediment Quality identifies that concentrations of heavy and trace metals are consistently low along the cable route in Irish waters, with only one exceptional sampling station (approximately 5km from shore) that exhibited slightly elevated levels of mercury, lead and arsenic.</p> <p>The levels identified would not give rise to significant effects on water quality or biodiversity. The changes identified are not likely to result in a deterioration in 'ecological status' in relation to hydromorphology, water quality (including nutrient loading), or biological receptors that inhabit the water body.</p>
Womanagh Estuary IE_SW_030_0100	Transitional	The water body has a current overall water body assessment status of Unassigned (2013-2018).	Screened out	Screened out on the basis that activities relating to the landfall works at the foreshore and to cable laying works within the 12nm limit of Irish Territorial Waters are approximately 4km from the closest boundary of this water body. Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 12: Marine

Water body name and ID number	Type	Description	Screening Outcome	Justification
				<p>Water Quality describes how the majority (of sediment deposition occurs within tens of meters from a cable route (OSPAR, 2009).</p> <p>Based on the dominant composition of the marine sediments described in Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 10: Marine Sediment Quality (i.e. gravelly muddy sand, as per Folk, 1954), it is anticipated that 90% would be deposited within 1km of the cable route. Fine sediments such as clay and silts can remain in suspension for longer and therefore be transported over a wider area, but these quickly become indiscernible above the natural variation of background loads.</p> <p>The secondary effect of this on fish has been assessed in Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 13 Biodiversity as negligible to minor, and as minor in relation to fish spawning and nursery grounds, and diadromous fish.</p> <p>Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 8 Marine Water Quality concludes that effects on water quality as a result of changes to turbidity or the release of contaminants are not significant.</p> <p>Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 10: Marine Sediment Quality identifies that concentrations of heavy and trace</p>

Water body name and ID number	Type	Description	Screening Outcome	Justification
				<p>metals are consistently low along the cable route in Irish waters, with only one exceptional sampling station (approximately 5km from shore) that exhibited slightly elevated levels of mercury, lead, and arsenic. The levels identified would not give rise to significant effects on water quality or biodiversity.</p> <p>The changes identified are not likely to result in a deterioration in 'ecological status' in relation to the hydromorphology, water quality, or biological receptors that inhabit the water body.</p>
Youghal Bay IE_SW_020_0000	Coastal	<p>Overall water body assessment status: Moderate (2013-2018).</p> <p>Ecological status: Good</p> <p>Chemical status: Moderate</p> <p>Nutrient conditions: High</p> <p>There was an increase in nitrogen loads and opportunistic macroalgae during the 2013-2015 monitoring period. This has improved in the 2013-2018 RBMP cycle.</p> <p>Youghal Front Strand Beach failed to meet its environmental objectives in the</p>	Screened in	Screened in as the landfall works at the foreshore and the nearshore cable laying works are undertaken within this water body. It is therefore the receiving water body for all potential hydromorphological, water quality and biological impacts from the landfall works at the foreshore and for cable laying works where they occur up to the limit within this water body.

Water body name and ID number	Type	Description	Screening Outcome	Justification
		<p>due to bacteriological water quality in the 2012-2015 monitoring period. It did not qualify for Blue Flag Status in 2016 based on water quality results for the four-year assessment period 2012-2015. More recent data is not available.</p> <p>Water quality at Youghal Bay is <i>At Risk</i> due to the pressure of pastural agriculture. Youghal Bay failed the environmental quality standard for dissolved oxygen but passed the environmental quality standard for dissolved inorganic nitrogen in the 2013-2018 RBMP cycle.</p>		
Western Celtic Sea (HA 19) IE_SW_010_0000	Coastal	<p>The water body has a current overall water body assessment status of Unassigned (2013-2018)</p> <p>Water quality is <i>Not at Risk</i></p>	Screened in	Screened in as the offshore cable laying works are undertaken within this water body. It is therefore the receiving water body for all potential hydromorphological, water quality and biological impacts from the cable laying works within the 12nm limit of Irish Territorial Waters.

The water bodies taken forward for scoping are Youghal Bay and Western Celtic Sea.

5 Stage Two: Scoping

5.1 Purpose of this section

This section presents the results of the scoping assessment undertaken on the water bodies that have been screened in for scoping, as identified in Section 4.3 of this report, using the method outlined in Section 2.

The scoping stage considers the following WFD water bodies:

- Youghal Bay: IE_SW_020_0000
- Western Celtic Sea: IE_SW_010_0000

This assessment examines the potential for the Proposed Development to impact upon WFD water bodies and their quality elements. The results of this scoping stage determine which water bodies and quality elements may require further assessment as part of the Stage Three detailed impact assessment.

It may be possible to scope out some activities during Stage Two of the WFD assessment process. However, to do so requires sufficient project information to be available to allow reasoned and clear conclusions to be reached. Where there is uncertainty over the potential for an activity to have an impact, then a precautionary view has been taken, and the activity scoped in for the Stage Three detailed impact assessment.

5.2 Possible impacts of project activities on water body quality elements

The scoping exercise has identified the 2013-2018 status of the screened in water bodies. An overview of the current status using the EPA Catchment map is presented in **Appendix A Table A.1**.

The scoping stage reviews the project description against the following quality elements:

- Habitats;
- Hydromorphology;
- Water quality; and
- Introduction, spread, or dispersal of Invasive Non-Native species (INNS).

5.2.1 Assessment of potential mechanisms for impact to quality elements

For the water bodies that have been screened into Stage Two, Table 5.1 shows the proposed installation and/or operational activities that occur within each water body and that may directly impact a specific quality element. The scoping questions presented in Table 2.1 have then been applied to each water body individually for each of the installation and operational stage activities listed in Table 4.1 (noting that decommissioning is excluded on the basis that the WFD status of the water bodies of interest may have changed in the 40-year period of the operational life of the Proposed Development). The results of this scoping assessment are provided in Table 5.1.

5.3 Potential impacts of the Proposed Development on protected areas

Protected areas within each of the WFD water bodies identified during the screening phase are listed in **Appendix A** Table A.2. This demonstrates that there are a variety of areas protected under the Nitrates Directive (91/676/EEC), EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC), EC Directive on the Conservation of Wild Birds (2009/147/EC), Bathing Water Directive (2006/7/EC) and Shellfish Water Directive (79/923/EEC) associated with the water bodies that have been scoped into this assessment.

5.3.1 Assessment of potential mechanisms for impact

Several European sites for nature conservation have been scoped into the assessment. WFD assessments require the consideration of the potential effects on WFD quality elements (i.e. hydromorphological, physico-chemical, chemical, and biological), many of which support ecological designated interest features of the European sites. Volume 4A – NIS for Ireland Offshore (the NIS) informs and builds on the output of this assessment to assess the potential effects on designated site interest features. It is beyond the scope of the WFD assessment to consider impacts on the designated site interest features themselves there are not considered here, but they are assessed in the relevant sections of the NIS and EIAR. Signposting is made in the following sections to the NIS and supporting EIAR chapters.

5.4 Impacts of activities associated with the Proposed Development on the RBMP improvements and mitigation measures

The RBMP for Ireland 2018-2021 does not set out specific improvements or mitigation measures for any specific water bodies. Instead, it sets out broad evidence-based priorities that are to be adopted across Ireland to facilitate the broad delivery of objectives of the WFD. In order to inform the assessment of how the Proposed Development could influence the RBMP objectives, an extract from the RBMP for Ireland that summarises these is presented in the following section.

5.4.1 Summary of RBMP programme of measures

The potential for the Proposed Development to compromise the delivery of the improvements and mitigation measures set out in the RBMP for Ireland is presented in Table 5.1. For reference, a high-level summary of the RBMP programme of measures is presented here. In line with the pressures identified through the RBMP characterisation process, and the priorities mentioned above, the following are the evidence-based priorities aimed at moving towards meeting the environmental objectives of the WFD in Ireland. It is notable that none of these measures relate specifically to the marine environment or to the water bodies intersected by the Proposed Development:

- An Agricultural Sustainability Support and Advisory Programme will be established. The Advisors will work on a one-to-one basis with farmers to bring about behavioural change through improved agricultural practices in areas which have identified pressures on water bodies;

- Local authorities are putting in place Support and Advisory Teams to carry out scientific assessments and to drive the implementation of mitigation measures at local level;
- Agri-environment schemes will be implemented through the Rural Development Programme (RDP);
- Compliance with the Good Agriculture Practice Regulations will be improved through implementation of the enhanced Nitrates Action Programme (NAP) for 2018–2021 and of the associated inspection regime;
- Knowledge-transfer programmes within the agriculture sector will be used to promote better nutrient management and point source-pollution management on the farm. The approach to this will have three strands: The National Dairy Sustainability Forum; a knowledge transfer programme for farmers; and an on-line nutrient-management planning system will be rolled out for use by all farmers;
- The National Inspection Plan 2018–21 for domestic waste-water treatment systems, currently being finalised by the EPA, will use the outputs of the catchment characterisation work to further improve the risk-based approach to inspection of septic tanks;
- There is significant planned investment in urban waste-water collection and treatment infrastructure;
- Forestry regulations and policy have been re-aligned to contribute to achieving water quality objectives, and these will be fully implemented. Forestry funding schemes and other resources will be promoted and strategically deployed to protect and improve water quality;
- For peat extraction, new legislation is to be introduced to improve the environmental regulation of large and small-scale commercial peat harvesting;
- The Relevant EU regulation(s) with regard to Invasive Alien Species (IAS) will be implemented, along with specific plans for priority IAS. Clear governance and co-ordination structures across relevant bodies will be developed, and community engagement harnessed to ensure the long-term sustainability of projects aimed at preventing and mitigating pressures from IAS;
- To work to address significant pressures arising from hydromorphology, the EPA and Inland Fisheries Ireland will improve assessment methods and knowledge in relation to the physical condition of rivers, lakes, and marine coastal waters to inform and support future management measures;
- In addition, the feasibility of implementing measures to improve fish connectivity in the Lower Shannon catchment will be assessed; and
- The DPHLG (now DHLGH) will establish a register of water abstractions and will consult on a proportionate and risk-based framework for the regulation of abstractions

to ensure continued sustainable use of our water resources. To protect and restore our high-status waters.

For protected areas:

- Around 350 public drinking water source risk assessments will be completed by 2021, with the remaining assessments to be completed by 2027;
- Urban waste water pressures in four of the currently non-compliant bathing waters will be addressed through the aforementioned Irish Water Investment Plan;
- Urban waste water discharges in the vicinity of shellfish waters will continue to be assessed to determine whether they are contributing to failures in shellfish water objectives and, in turn, whether additional waste-water treatment is required; and
- Also, through the Irish Water Investment Plan, and in accordance with the requirements of the Urban Waste Water Treatment Directive, more stringent treatment will be provided for eight currently non-compliant urban areas discharging to designated nutrient sensitive areas.

5.5 Summary of scoping results

Table 5.1 Summary of scoping results: presenting the activities at the MDS that potentially affect water body quality elements and status. The responses below relate to the scoping questions in Table 2-1.

Activity	Water body	Quality element scoping responses in respect of the scoping questions set out in Table 2.1	Adjacent water bodies where potential indirect effects may occur
IP 1.0 Beach preparation, excavations and reinstatement	Youghal Bay IE_SW_020_0000	<p>Habitats: No – the footprint of beach preparations and excavations will not exceed 0.5km². The temporary land take of 2,860m², which represents 0.00286km² is therefore less than 0.5km² of the water body. Reinstatement will return the sandy beach habitat to its original state within approximately 10 weeks with no permanent habitat loss or footprint.</p>	None
		<p>Hydromorphology: No – significant permanent impacts to hydromorphology are not anticipated. Any effects will be temporary and short-term during the installation phase of approximately ten weeks.</p>	
		<p>Water quality: Yes – landfall works are over a period of approximately 10 weeks and therefore longer than 14 days or a spring neap tidal cycle. However, beach sediments are not contaminated, and any elevated suspended sediment once works are complete will be short-term (i.e. less than a spring neap tidal cycle). Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 13: Biodiversity concludes that sensitive diadromous (or migratory) fish species will not be significantly affected by the temporary disturbance to sediments or water quality resulting from the Proposed Development.</p>	
		<p>Protected areas: Yes – Ballymacoda SPA is 1.7km from the installation site. However, the NIS (Volume 4A – NIS for Ireland Offshore) has concluded that there will be no adverse effects on the site integrity of the Ballymacoda SPA, or any other protected areas. The Ballymacoda SPA is designated for its coastal habitats and wintering waterbird assemblage. The NIS concludes no adverse effects on this SPA because the potential effects of the Proposed Development are not of a scale (spatially or temporally) to affect the fitness of the designated features of the wider populations of the relevant species. In line with the WFD assessment criteria however, due to its proximity to the Proposed Development, the Ballymacoda SPA is the only site taken forward to the next stage of assessment.</p>	

Activity	Water body	Quality element scoping responses in respect of the scoping questions set out in Table 2.1	Adjacent water bodies where potential indirect effects may occur
		<p>INNS: No – vessels will be from European providers and will adhere to the International Convention for the Control and Management of Ships Ballast Water & Sediments D-2 Standard (Ballast Water Performance standards). There is no credible pathway for INNS from the activity.</p> <p>Mitigation measures: No – the mitigation measures for the RBMP for Ireland as summarised in Section 5.4 are not specific to this water body. They relate largely to policy changes, improvement to regulatory compliance, and the implementation of knowledge transfer. The Proposed Development will not adversely impact the implementation of these measures across Ireland or in County Cork specifically.</p>	
IP 2.0 Cable pull-in		<p>Habitats: No – this activity is non-intrusive and there is no footprint of this activity that affects marine habitats.</p> <p>Hydromorphology: No – this activity does not interact with the seabed, currents, waves or tides and there is therefore no credible pathway for impacts to hydromorphology from this activity.</p> <p>Protected areas: Yes – Ballymacoda SPA is 1.7km from the installation site. However, the NIS (Volume 4A – NIS for Ireland Offshore) has concluded that there is no potential for adverse effects on the site integrity of the Ballymacoda SPA and that its conservation objectives will not be challenged by the Proposed Development.</p> <p>Water quality: No – this activity does not interact with water quality so there is no credible pathway for impacts to water quality from this activity.</p> <p>INNS: No – see rationale for IP 1.0.</p> <p>Mitigation measures: No – see rationale for IP 1.0.</p>	None

Activity	Water body	Quality element scoping responses in respect of the scoping questions set out in Table 2.1	Adjacent water bodies where potential indirect effects may occur
IP 3.1 Surveys and seabed preparation		<p>Habitats: Yes – the linear footprint of the cable lay within Youghal Bay including the indicative cable installation corridor will be approximately 1.25km². This represents approximately 2.5% of the total seabed area of the Youghal Bay water body, and therefore exceeding the 1% threshold set out in the scoping questions. However, Volume 3D Part 2 EIA for Ireland Offshore (Specialist Chapters) - Chapter 13: Biodiversity reports on the EUNIS habitat classifications at Claycastle Beach and the seabed along the cable route. Habitats include littoral sand and muddy sand, and littoral mixed sediment. The EIA has concluded that there will be no significant impacts to intertidal and benthic habitats as a result of the Proposed Development. Following cable burial, the seabed will quickly reinstate to previous conditions through wave and tidal action, with no permanent habitat loss footprint. There will therefore be no risk to the habitats' quality element.</p> <p>Hydromorphology: No – the seabed preparation within Youghal Bay will be minimal, as there are no sandwaves, and the cable route follows a channel.</p> <p>Water quality: No – seabed sediments are not contaminated and any elevated suspended sediment due to the minimal seabed preparation required will be short-term (less than a spring neap tidal cycle).</p> <p>Protected areas: No – surveys and seabed preparation in the marine environment will occur more than 2km away from the nearest protected area (Ballymacoda SPA).</p> <p>INNS: No – see rationale for IP 1.0.</p> <p>Mitigation measures: No – see rationale for IP 1.0.</p>	None
IP 3.2 Cable lay		<p>Habitats: Yes – as stated for IP 3.1, the linear footprint of the cable lay within Youghal Bay including the indicative cable installation corridor will be approximately 1.25km². This represents approximately 2.6% of the total seabed area of the Youghal Bay water body. However, Volume 3D Part 2 EIA for Ireland Offshore (Specialist Chapters) - Chapter 13: Biodiversity reports on the EUNIS habitat classifications at Claycastle</p>	None

Activity	Water body	Quality element scoping responses in respect of the scoping questions set out in Table 2.1	Adjacent water bodies where potential indirect effects may occur
		<p>Beach and the seabed along the cable route. Habitats include littoral sand and muddy sand, and littoral mixed sediment. The EIAR has concluded that there will be no significant impacts to intertidal and benthic habitats as a result of the Proposed Development. Following cable burial, the seabed will quickly reinstate to previous conditions through wave and tidal action, with no permanent habitat loss footprint.</p> <p>Hydromorphology: No – the water body is not high status and Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 11: Marine Physical Processes concludes that there are no significant impacts to hydromorphology as a result of disturbance to or loss of seabed features as a result of the proposed installation methods.</p> <p>Water quality: No – seabed sediments are not contaminated, and any elevated suspended sediment will be short-term (less than a spring neap tidal cycle).</p> <p>Protected areas: No – cable lay in the marine environment will occur >2km from the nearest protected area (Ballymacoda SPA).</p> <p>INNS: No – see rationale for IP 1.0.</p> <p>Mitigation measures: No – see rationale for IP 1.0.</p>	
O1 Surveys		<p>Habitats: No – this activity is non-intrusive and there is no footprint of this activity that affects marine habitats.</p> <p>Hydromorphology: No – there is no credible pathway for impacts to hydromorphology from these survey activities.</p> <p>Water quality: No – there is no credible pathway for impacts to water quality from these survey activities.</p> <p>Protected areas: No, surveys will be undertaken in the marine environment more than 2km away from the nearest protected area (Ballymacoda SPA).</p>	None

Activity	Water body	Quality element scoping responses in respect of the scoping questions set out in Table 2.1	Adjacent water bodies where potential indirect effects may occur
		<p>INNS: No – see rationale for IP 1.0.</p> <p>Mitigation measures: No – see rationale for IP 1.0.</p>	
IP 1.0 Beach preparation, excavations and reinstatement	Western Celtic Sea (HA 19) IE_SW_010_0000	This activity does not occur in this water body so there are no credible pathways for impacts to any of the quality elements set out in the scoping questions.	None
IP 2.0 Cable pull-in		This activity does not occur in this water body so there are no credible pathways for impacts to any of the quality elements set out in the scoping questions.	None
IP 3.1 Surveys and seabed preparation		<p>Habitats: No – the linear footprint of the cable lay within the offshore marine environment of the Western Celtic Sea water body including the indicative cable installation corridor will be approximately 1km². This represents 0.19% of the total seabed habitat available within the Western Celtic Sea. Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 13: Biodiversity reports on the EUNIS habitat classifications along the cable route in the offshore environment. Habitats include shallow circalittoral rock and deep circalittoral muddy sand. The EIAR has concluded that there will be no significant impacts to intertidal and benthic habitats as a result of the Proposed Development. Following cable burial, the seabed will quickly reinstate to previous conditions through wave and tidal action, with no permanent habitat loss footprint.</p> <p>Hydromorphology: No – the water body is not high status and Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 11: Marine Physical Processes concludes that there are no significant impacts to hydromorphology as a result of disturbance to or loss of seabed features as a result of the proposed installation methods.</p> <p>Water quality: No – seabed sediments are not contaminated, and any elevated suspended sediment will be short-term (less than a spring neap tidal cycle).</p>	None

Activity	Water body	Quality element scoping responses in respect of the scoping questions set out in Table 2.1	Adjacent water bodies where potential indirect effects may occur
		<p>Protected areas: No – these works will be undertaken in the marine environment more than 2km away from the nearest protected area (Ballymacoda SPA).</p> <p>INNS: No – vessels will be from European providers and will adhere to the International Convention for the Control and Management of Ships Ballast Water & Sediments D-2 Standard (Ballast Water Performance standards).</p> <p>Mitigation measures: The mitigation measures for the RBMP for Ireland as summarised in Section 5.4 are not specific to this water body. They relate largely to policy changes, improvement to regulatory compliance, and the implementation of knowledge transfer. The Proposed Development will not adversely impact the implementation of these measures across Ireland or in County Cork specifically.</p>	
IP 3.2 Cable lay		<p>Habitats: No – See rationale for IP 3.1.</p> <p>Hydromorphology: No - the water body is not high status and Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 11: Marine Physical Processes concludes that there are no significant impacts to hydromorphology as a result of disturbance to or loss of seabed features as a result of the proposed installation methods.</p> <p>Water quality: No – seabed sediments are not contaminated, and any elevated suspended sediment will be short-term (less than a spring neap tidal cycle).</p> <p>Protected areas: No – these works will be undertaken in the marine environment more than 2km away from the nearest protected area (Ballymacoda SPA).</p> <p>INNS: No – see rationale for IP 3.1</p> <p>Mitigation measures: No – see rationale for IP 3.1</p>	None
O1 Surveys		<p>Habitats: No – this activity is non-intrusive and there is no footprint of this activity that affects marine habitats.</p>	None

Activity	Water body	Quality element scoping responses in respect of the scoping questions set out in Table 2.1	Adjacent water bodies where potential indirect effects may occur
		<p>Hydromorphology: No – there is no credible pathway for impacts to hydromorphology from these survey activities.</p> <p>Water quality: No – there is no credible pathway for impacts to water quality from these survey activities.</p> <p>Protected areas: No – these works will be undertaken in the marine environment more than 2km away from the nearest protected area (Ballymacoda SPA).</p> <p>INNS: No – see rationale for IP 3.1</p> <p>Mitigation measures: No – see rationale for IP 3.1</p>	

5.6 Summary of the Stage Two scoping

In view of the rationales described above and the detailed assessments presented in the wider EIAR, there is no risk that the Proposed Development will cause a deterioration within the Youghal Bay or Western Celtic Sea water bodies. There is also no risk that the Proposed Development could prevent the Youghal Bay or Western Celtic Sea from achieving their WFD objectives by the required date of 2027. Furthermore, there is no risk of either deterioration within adjacent water bodies, or of the mitigation measures identified in the RBMP for Ireland being prevented by the landfall and offshore activities of the Proposed Development in Irish waters. As such, it is concluded that there is no risk of non-compliance of WFD as a result of the Proposed Development.

However, the analysis of the proposed works against the scoping questions defined by the UK's Environment Agency guidance 'Clearing the Waters for All' resulted in a positive scoping result for the following aspects of the Youghal Bay water body:

- IP 1.0 for water quality due to the duration of landfall works;
- IP 1.0 and IP 2.0 for protected areas due to the proximity to Ballymacoda Bay SPA; and
- IP 3.1 and IP 3.2 for habitats due to the percentage area of the available habitat affected.

The guidance upon which this analysis has been undertaken indicates that a Stage Three assessment should be taken to further assess the potential for these activities to affect WFD compliance against the relevant aspects.

6 Stage Three: Detailed WFD Assessment

6.1 Introduction

Given the conclusions of Stage Two, the UK's Environment Agency guidance 'Clearing the Waters for All' recommends that a Stage Three assessment is undertaken in relation to water quality, habitats, and protected areas within the Youghal Bay water body.

A Stage Three assessment has, therefore, been carried out to determine whether the WFD status and objectives of the Youghal Bay water body would be deteriorated or otherwise compromised by the Proposed Development. The Stage Three assessment is presented in the following sections, and has drawn on the conclusions drawn in Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 12: Marine Water Quality and Chapter 13: Biodiversity, as well as those of Volume 4A NIS for Ireland Offshore.

6.2 Purpose of this section

The Stage Two analysis of the proposed works against the scoping questions defined by the UK's Environment Agency guidance 'Clearing the Waters for All' resulted in a positive scoping for the following aspects of the Youghal Bay water body:

- IP 1.0 for water quality due to the duration of landfall works;
- IP 1.0 and IP 2.0 for protected areas due to the proximity to Ballymacoda Bay SPA; and
- IP 3.1 and IP 3.2 for habitats due to the percentage area of the available habitat affected.

This section presents the results of the compliance assessment undertaken on the Youghal Bay water body. This assessment draws on the detailed assessments presented in Volume 3D EIAR Ireland Offshore (Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 12: Marine Water Quality and Chapter 13: Biodiversity, as well as those of Volume 4A NIS for Ireland Offshore. The assessment determines whether the activities and/or components of the Proposed Development, put forward from the Stage Two scoping assessment, would cause deterioration and whether this would have a significant non-temporary effect on the status of one or more WFD quality elements at water body level.

6.2.1 Activity IP 1.0 for water quality due to the duration of landfall works

Introduction

The construction phase of the Proposed Development comprises landfall works, which are expected to last for approximately 10 weeks. These works will have an impact on the seabed and may therefore also have an impact on water quality.

Potential impacts of project activities on water body quality elements

During the installation phase of the Proposed Development, surficial sediments will be disturbed at both the landfall at Claycastle Beach and along the marine cable route. Seabed

sediments will be resuspended into the water column increasing turbidity and creating sediment plumes that can have an effect, either positive or negative, on habitats and species (Dernie *et al.*, 2003).

The nature of this disturbance will be temporary and only for the duration of the installation works, with the seabed expected to return to its original state afterwards.

The disturbance will affect a narrow strip of seabed, normally within an area of 2-3m either side of the cable (Bald *et al.*, 2014; Carter *et al.*, 2009), or in the order of 10m width, if the cable is ploughed into the seabed (OSPAR, 2009). **For the purposes of the current assessment, a worst case of 15m corridor width has been assumed.**

During landfall works, a trench will be cut, removing approximately 4,000m³ of beach sediment. This spoil will be stored within the compound on the hard standing to allow the site to be restored to its previous condition following installation of the conduits. The spoil will be adequately covered to prevent exposure to the elements. This, combined with use of the cofferdam, will help to prevent disturbed sediment from entering the marine water environment. Due to the highly mobile nature of the sediments at Claycastle Beach and in the local coastal waterbody, as well as the regular disturbance of these sediments due to tidal currents and storms, **it is considered likely that there is already high natural dispersion and diffusion of low-level contaminants that may be present.**

Installation of cable protection has the potential to impact marine water quality through the release of hazardous substances through loss of chemicals/fuels from installation vessels. The marine environment is highly sensitive to hydrocarbon and chemical spills, which can have significant adverse ecological effects. The magnitude of the potential effect is low to high and is dependent on the nature and size of the spill. Standard mitigation measures are therefore required to remove the risk of an accidental hydrocarbon or chemical spill. To minimise risks of pollution incidents international good practice will be followed, for example adherence to the MARPOL Convention. These will limit the likelihood and size of leaks or spills and provide measures to contain accidental releases such that they cannot discharge into the environment. Further, Project-specific requirements and procedures will be outlined in the Draft Construction Environmental Management Plan (CEMP) (**Appendix 5A**).

Overall, following the implementation of mitigation, a hydrocarbon or chemical release is considered unlikely. Additionally, the presence of cable installation vessels will only marginally increase the number of vessels in the marine environment, and therefore there is very little change to the risk of a pollution incident. The impacts of loss of chemicals or fuels from installation vessels at landfall on water body quality are therefore considered not significant.

As mentioned previously, the installation of the cable including landfall works will cause disturbance to the seabed in the area. The seabed sediments in Irish Territorial Waters and EEZ are sand dominated, with maximum sand content levels of approximately 90% recorded at sampling stations. Sand particles suspended by the installation process typically settle quickly, however the finer silt and clay component may remain suspended and be prevented from settling by tidal currents or wave action. Any sediment plume resulting from the cable lay may temporarily impair foraging of some species within the immediate footprint of the

mobile operation. However, both juvenile and adult fish are likely to disperse and relocate when sediment load is increased (Henley et al., 2000) and **the sensitivity of these fish to disturbance is assessed as negligible. Therefore, the effect of temporary disturbance will be not significant.**

Summary of impacts on water body status

As indicated in Table 5.1, the period for landfall works is longer than 14 days or a spring neap tidal cycle. However, the beach sediments are not contaminated, and any elevated suspended sediment once works are complete will be short-term (i.e. less than a spring neap tidal cycle). Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) - Chapter 12: Marine Water Quality concludes that loss of chemicals or fuels from installation vessels at landfall are considered unlikely to significantly impact water body quality. Moreover, Volume 3D Part 2 EIAR for Ireland Offshore (Specialist Chapters) – Chapter 13: Biodiversity concludes that sensitive diadromous (or migratory) fish species will not be significantly affected by the temporary disturbance to sediments or water quality resulting from the Proposed Development. **The effects of landfall works on water body quality and diadromous fish species are therefore considered to be not significant.**

The Proposed Development will therefore not have a contributory effect that would cause deterioration in the overall current status of the Youghal Bay water body, and nor will it have an effect that would prevent the achievement of the future status objectives. This is because there would be no change to the concentrations of river-basin specific pollutants, and **the Proposed Development would not affect the condition of the biological elements and the supporting physico-chemical elements that support the ecological status.**

6.2.2 Activity IP 1.0 and IP 2.0 for protected areas due to the proximity to Ballymacoda Bay SPA

Introduction

The Ballymacoda SPA does not overlap with the installation site, but it is within the 2km scoping criteria (1.7km), and has therefore been scoped in for further assessment.

Potential impacts of the Project on protected areas

Species that are features of Ballymacoda Bay SPA include bar-tailed godwit and sanderling. Both of these were recorded in notable numbers on one or more occasion during surveys in 2019/2020 at the undesignated habitat on Redbarn-Claycastle beach and the intertidal area. The distribution of records suggests that wading birds favour areas of intertidal habitat more than 200m from the proposed cable route with bar-tailed godwit in particular only occurring more than 700m to the south west.

Given the availability of other suitable habitat in the wider area and the observed distribution and counts of designated features of Ballymacoda Bay SPA, it is concluded that there is no potential for adverse effects on site integrity at either site as the site's conservation objectives will not be challenged.

Summary of impacts on water body status

The previous section has demonstrated that the Proposed Development will not adversely impact the integrity of any SPA site.

The Proposed Development will therefore neither have a contributory effect that would cause a reduction in the availability of habitats or affect the hydromorphological quality of the Youghal Bay water body, and nor will it have an effect that would prevent the achievement of the future status objectives. This is because the loss of habitat and the disturbance to species of interest would be temporary, and the seabed would return to its original state after installation. The Proposed Development will therefore neither affect the conservation objectives nor the integrity of the Ballymacoda SPA.

6.2.3 Activity IP 3.1 and IP 3.2 for habitats due to the percentage area of the available habitat affected

Introduction

The linear footprint of the cable lay within Youghal Bay will be approximately 1.25km² including the indicative cable installation corridor. This represents approximately 2.5% of the total seabed area of the Youghal Bay water body, and therefore exceeds the 1% threshold set out in the scoping questions. This may lead to loss or disturbance of intertidal or benthic habitats from disturbance of the seabed during installation.

Potential impacts of project activities on habitats

Temporary loss or disturbance of intertidal habitat would occur as a result of the excavation of the open cut trench across the intertidal foreshore, and from placement of an adjacent temporary causeway for plant access. The trench would be excavated using land-based equipment (such as long arm excavators) with the aid of a temporary sheet piled cofferdam to ensure trench stability. The trench will be backfilled, and site reinstated to its original condition following installation of the pre-installed conduits.

Installation of the cofferdam and dewatering of the trench will result in the loss of any trapped fish and shellfish not displaced by site disruption and noise. Cryptic species such as juvenile flatfish and sessile species are more at risk than mobile and pelagic species of fish and crustacean, which have more potential to relocate to alternative habitats nearby during installation and may return once the temporary works are complete.

The loss or disturbance of intertidal habitat during the installation operation will however be localised, representing only a very small footprint of the wider bay and coastal waters. Juvenile fish typically move offshore during the winter months to warmer waters, or on recruitment to the adult stock. It is anticipated that the intertidal work will take place between the months of October and April minimising impact on summer nursery grounds.

The sensitivity of fish and shellfish to disturbance and habitat loss has been assessed as Low. The magnitude of this effect is considered to be Low due to any impacts being localised and temporary for fish and shellfish populations. **The magnitude of the effect on fish and shellfish from loss or disturbance to intertidal habitat is therefore assessed as Minor and not significant.**

Summary of impacts on water body status

The previous section has demonstrated that there will be no significant impacts to intertidal and benthic habitats as a result of the Proposed Development. Following cable installation, the seabed will quickly reinstate to its original state through wave and tidal action, with no permanent habitat loss footprint.

The Proposed Development will therefore not have a contributory effect that would cause a reduction in the availability of habitats or affect the hydromorphological quality of the Youghal Bay water body, and nor will it have an effect that would prevent the achievement of the future status objectives. This is because the loss of habitat and the disturbance to species of interest would be temporary, and the alternative habitat would be available. On completion of the works, the inter-tidal area would return to its original state after installation. Additionally, the Proposed Development would not affect the condition of the biological elements and the supporting physico-chemical elements that support the ecological status. The Proposed Development will therefore neither affect the conservation objectives nor the integrity of the Ballymacoda SPA, or any other European sites.

6.3 Summary and Conclusions

The WFD screening and scoping exercise has focused on the installation and operational phases of the proposed development, decommissioning activities having been scoped out as the project life is 40yrs and the future status of the affected waters cannot be known. The elements of the Proposed Development assessed are from the landfall at the foreshore of Claycastle Beach and along the cable route through nearshore and coastal waters to the WFD limit of 12nm. The exercise screened two coastal WFD water bodies into the Stage Two scoping exercise; Youghal Bay and the Western Celtic Sea.

Stage Two concluded that the environmental aspects of water quality, habitats and protected areas require consideration in relation to the Youghal Bay water body, and that a Stage Three assessment is required for these.

The Stage Three assessment followed the UK's Environment Agency guidance 'Clearing the Waters for All' in the absence of an equivalent methodology in Ireland.

The Stage Three assessment has drawn on the findings of the EIAR and NIS, which provide evidence from environmental assessments to conclude that the WFD status and objectives of these water bodies will not be deteriorated or otherwise compromised by the Proposed Development. The Stage Three assessment has demonstrated that the Proposed Development would not adversely affect habitats, hydromorphology, or water quality, and nor would it result in the introduction of non-native species and prevent the implementation of the mitigation measures in the RBMP for Ireland 2018-2021.

The assessment has also identified that there is unlikely to be any introduction of INNS. This is because the vessels used for the installation works will be from European providers and will adhere to the International Convention for the Control and Management of Ships Ballast Water & Sediments D-2 Standard (Ballast Water Performance standards). No credible pathway has been identified for the introduction of INNS from the activity.

As summarised in Section 5.4, the mitigation measures for the RBMP for Ireland 2018-2021 are not specific to the Youghal Bay water body. They relate largely to policy changes, improvement to regulatory compliance, and the implementation of knowledge transfer. Notwithstanding, the Proposed Development will not adversely affect the implementation of these measures across Ireland or in County Cork specifically.

The Stage Three assessment has demonstrated there is therefore no risk that the Youghal Bay water body would either fail to comply with its WFD objectives, or that there would be any compromise to the delivery of the programme of measures set out in the RBMP for Ireland 2018-2021, as a result of the Proposed Development, alone or cumulatively with other projects.

7 References

Aquind Limited (2019). Aquind Interconnector Environmental Statement, November 2019.

Bald, J., Hernández, C., Galparsoro, I., Germaán Rodrigues, J., Muxika, I., Enciso, Y.T. and Marina, D. (2014). Environmental impacts over the seabed and benthic communities of submarine cable installation in the Biscay marine energy platform. Proceedings of the 2nd international conference on environmental interactions of marine renewable energy technologies (EIMR2014622), 28 April – 02 May 2014, Stornoway, Isle of Lewis, Outer Hebrides, Scotland.

BERR (2008). Department for Business Enterprise & Regulatory Reform. Review of cabling techniques and environmental effects applicable to the offshore wind farm industry. Technical Report. January 2008.

Carter, L., Burnett, D., Drew, S., Marle, G., Hagadorn, L., Bartlett-McNeil, D. and Irvine, N. (2009). Submarine cables and the oceans: connecting the world. UNEP-WCMC Biodiversity Series No. 31. ICPC/UNEP/UNEP-WCMC, 64pp.

Catchments.ie Maps, Environmental Protection Agency [online]. Available at: <https://gis.epa.ie/EPAMaps/Water>

Cathments.ie Maps, Environmental Protection Agency, Lower Blackwater M Estuary / Youghal Harbour [online]. Available at: https://www.catchments.ie/data/#/waterbody/IE_SW_020_0100?_k=bgc4jq

Cathments.ie Maps, Environmental Protection Agency, Western Celtic Sea (HAs 18;19;20) [online]. Available at: https://www.catchments.ie/data/#/waterbody/IE_SW_010_0000?_k=5j8p3f

Cathments.ie Maps, Environmental Protection Agency, Womanagh Estuary [online]. Available at: https://www.catchments.ie/data/#/waterbody/IE_SW_030_0100?_k=ob1u78

Catchments.ie, Waterbody East Ballyvergan_010 [Online]. Available from: https://www.catchments.ie/data/#/waterbody/IE_SW_19E040700?_k=mvg892

Department for Environment, Food and Rural Affairs. Environment Agency. Flood and Coastal Erosion Risk Management R&D Programme. WFD Expert Assessment of Flood Management Impacts. 2009.

Department of Housing, Local Government and Heritage website [online]. Available at: https://www.housing.gov.ie/sites/default/files/publications/files/rbmp_report_english_web_version_final_0.pdf

DHPLG, 2021. Department of Housing, Planning and Local Government. Public Consultation: Timetable and Work Programme for the Third-Cycle River Basin Management Plan 2022-2027. [Online]. Available from: <https://www.catchments.ie/public-consultation-significant-water-management-issues-for-irelands-2022-2027-river-basin-management-plan/>

- Dernie, K.M., Kaiser, M.J. and Warwick, R.M. (2003). Recovery rates of benthic communities following physical disturbance. *Journal of Animal Ecology*, 72(6): 1043-1056
- Environment Agency, 2016. Department for Environment, Food and Rural Affairs. Environment Agency. Clearing the Waters for All. 2016. (Online) Available from: <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters> (Accessed 5 April 2020).
- Environmental Protection Agency, An approach to characterisation as part of implementation of the Water Framework Directive. Online available from: [http://epa.ie/pubs/reports/water/other/WFD%20Characterisation%20Approach%20\(May%202015\).pdf](http://epa.ie/pubs/reports/water/other/WFD%20Characterisation%20Approach%20(May%202015).pdf) ECJ, 2015.
- Environmental Protection Agency. The Water Framework Directive – A new management approach. Online available from: <https://www.epa.ie/pubs/reports/indicators/irlenv/43366%20EPA%20report%20chap%205.pdf>
- Environmental Protection Agency Water Quality in Ireland 2013 – 2018 [online]. Available at: [http://www.epa.ie/pubs/reports/water/waterqua/Water%20Quality%20in%20Ireland%202013-2018%20\(web\).pdf](http://www.epa.ie/pubs/reports/water/waterqua/Water%20Quality%20in%20Ireland%202013-2018%20(web).pdf)
- EPA, 2021. Environmental Protection Agency Water Framework Directive Classification website [online]. Available at: <https://www.epa.ie/water/watmg/wfd/classification/>
- Environmental Protection Agency Lee-Cork Harbour Catchments Assessment 2010-2015 [online]. Available at: <https://catchments.ie/wp-content/files/catchmentassessments/19%20Lee,%20Cork%20Harbour%20and%20Yougha%20Bay%20Catchment%20Summary%20WFD%20Cycle%202.pdf>
- European Commission, Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). 1992.
- European Commission, Conservation of Wild Birds (2009/147/EC). 2009.
- European Commission, Priority Substances Directive 2008/105/EC. 2008.
- European Commission. Common Implementation Strategy for the Water Framework Directive (2000/60/EC). 2000.
- European Commission. Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). 1992.
- European Commission. Revised Bathing Waters Directive 2006/113/EC. 2006.
- Folk, R.L. (1954). The distinction between grain size and mineral composition in sedimentary rock nomenclature. *Journal of Geology*, 62: 344-349. OSPAR (2009). Assessment of the environmental impacts of cables. OSPAR Commission. 19 pp
- Henley, W.F., Patterson, M. A., Neves, R. J., & Lemly, A. D. (2000). Effects of Sedimentation and Turbidity on Lotic Food Webs: A Concise Review for Natural Resource

Managers. *Reviews in Fisheries Science*, 8(2):125–139. IBSG (Irish Basking Shark Group), 2019. <https://www.baskingshark.ie/> [Accessed 18 Jan 2021]

Joint Association to Support Projects in European Regions (JASPERS) Water Framework Directive Project assessment checklist tool. 2008. Available at: <http://www.jaspersnetwork.org/plugins/servlet/documentRepository/displayDocumentDetails?documentId=441>

Ordnance Survey Ireland, WFD Cycle 2 Catchment Lee, Cork Harbour and Youghal Bay Subcatchment Womagh_SC_010 [online]. Available at: https://catchments.ie/wp-content/files/subcatchmentassessments/19_16%20Womagh_SC_010%20Subcatchment%20Assessment%20WFD%20Cycle%202.pdf

OSPAR (2009). Assessment of the environmental impacts of cables. OSPAR Commission. 19 pp.

PINS, 2017. Planning Inspectorate. Advice Note 18: The Water Framework Directive. London: Planning Inspectorate, 2017. (Online) Available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2017/06/advice_note_18.pdf

Appendix A

Table A.1 Detailed background information for the screened in water bodies relevant to the Proposed Development

Water body name ¹	Information relevant to the WFD screening stage
WFD water body name	Youghal Bay (19 Lee, Cork Harbour and Youghal Bay)
Water body ID	IE_SW_020_0000
River basin district name	Ireland
Water body type (estuarine or coastal)	Coastal
Water body total area (km ²)	46.88
Overall water body status (2018)	Moderate
Ecological status/potential	Moderate
Chemical status	Moderate
Target water body status and deadline	Good by 2021
Hydromorphology status of water body	Not assessed
Heavily modified water body and for what use	N/A
Higher sensitivity habitats present	Yes, saltmarsh and seagrass (area data not available)
Lower sensitivity habitats present	No data
Phytoplankton status	High potential
History of harmful algae	Yes
WFD protected areas within 2km	Yes:
WFD water body name	Western Celtic Sea (HA 19)
Water body ID	IE SW 010 0000
River basin district name	Ireland
Water body type (estuarine or coastal)	Coastal
Water body total area (km ²)	514.82
Overall water body status (2018)	Unassigned
Ecological status/potential	Unassigned
Chemical status	Unassigned
Target water body status and deadline	Unassigned
Hydromorphology status of water body	Unassigned
Heavily modified water body and for what use	N/A
Higher sensitivity habitats present	No data
Lower sensitivity habitats present	No data
Phytoplankton status	Moderate
History of harmful algae	Yes
WFD protected areas within 2km	No

¹Water body information can be found in the Environmental Protection Agency's catchment data explorer and the water body summary table <https://www.catchments.ie/data/#/?k=uebcg6>

Table A.2 List of Protected areas within each WFD water body

Water body name and ID number	Protected Area Driver	Protected area name/reference
Youghal Bay (19 Lee, Cork Harbour and Youghal Bay) IE_SW_020_0000	Shellfish Water Directive	None
	EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora	Ballymacoda (Clonpriest And Pillmore) SAC (Site code 000077) Great Island Channel SAC (Site code 001058) Mullaghanish Bog SAC (Site code 001890) St. Gobnet's Wood SAC (Site code 000106) The Gearagh SAC (Site code 000108) Salmonids (outside SACs)
	EC Directive on the Conservation of Wild Birds	Ballycotton Bay SPA (Site code 004022) Ballymacoda Bay SPA (Site code 004023) Cork Harbour SPA (Site code 004030) Mullaghanish to Musheramore Mountains SPA (Site code 004162) The Gearagh SPA (Site code 004109)
	Bathing Water Directive	Youghal, Claycastle (within 2 km) Youghal Front Strand Beach (within 2 km) Redbarn (approximately 2.5km to the south)
Western Celtic Sea (HA 19) IE SW 010 0000	Nitrates Directive	None
	EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora	None
	EC Directive on the Conservation of Wild Birds	None
	Urban Wastewater Treatment Directive	None
	Shellfish Water Directive	None

Appendix B

Table B.1 Priority Substances in the Field of Water Policy

Number	Priority Substance Name	Priority Hazardous Substances
1	Alachor	
2	Anthracene	X
3	Atrazine	
4	Benzene	
5	Brominated diphenylethers	X
6	Cadmium and its compounds	X
7	Chloroalkanes	X
8	Chlorfenvinphos	
9	Chlorpyrifos (Chlorpyrifos-ethyl)	
10	1,2-dichloroethane	
11	Dichloromethane	
12	Di(2-ethylhexyl)phthalate (DEHP)	X
13	Diuron	
14	Endosulfan	X
15	Fluoranthene	
16	Hexachlorobenzene	X
17	Hexachlorobutadiene	X
18	Hexachlorocyclohexane	X
19	Isoproturon	
20	Lead and its compounds	
21	Mercury and its compounds	X
22	Naphthalene	
23	Nickel and its compounds	
24	Nonylphenols	X
25	Octylphenols	
26	Pentachlorobenzene	X
27	Pentachlorophenol	
28	Polyaromatic hydrocarbons (PAH)	X
29	Simazine	
30	Tributyltin compounds	X
31	Trichlorobenzenes	
32	Trichloromethane (chloroform)	
33	Trifluralin	X
34	Dicofol	X
35	Perfluorooctane sulfonic acid and its derivatives (PFOS)	X
36	Quinoxifen	X
37	Dioxins and dioxin-like compounds	X
38	Aclonifen	
39	Bifenox	
40	Cybutryne	
41	Cypermethrin	
42	Dichlorvos	
43	Hexabromocyclododecanes (HBCDD)	X

Number	Priority Substance Name	Priority Hazardous Substances
44	Heptachlor and heptachlor epoxide	X
45	Terbutryn	

NB: Content as per Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy.