Celtic Interconnector

Screening Report and Natura Impact Statement

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Executive summary

The Celtic Interconnector Project ('the Project') is a proposed electrical link between Ireland and France that will enable the import and export of electricity between the two countries. It will be the first direct energy link between Ireland and France and is being jointly developed by EirGrid plc (EirGrid) and Réseau de Transport d'Électricité (RTE) ('the Project Promoters'), the Transmission System Operators (TSOs) in Ireland and France, respectively.

The Celtic Interconnector cable route will pass through Ireland's Territorial Waters, the Irish Exclusive Economic Zone (EEZ), the United Kingdom's (UK's) EEZ, the French EEZ, and French Territorial Waters. The landfall locations are in County Cork on the south coast of Ireland and on the coast of Brittany in north west France (Nord-Finistère).

Under the EU Regulation for the Trans-European Energy Infrastructure (2013/347/EU) (hereafter referred to as the TEN-E Regulation), the Project must comply with the consenting processes of all relevant jurisdictions. This includes the need to determine whether or not the Celtic Interconnector Project could have an adverse effect on the integrity of one or more European sites. This Natura Impact Statement (NIS) provides the necessary information for the public authority to discharge their duties under the European Communities (Birds and Natural Habitats) Regulations 2011-2015 when determining the application.

Purpose of this report

This report has been produced for the purpose of providing the public authority with the information necessary to determine the need for an appropriate assessment for the marine elements of the Project (those below mean High Water Mark HWM)), and if a need is identified the information to underpin an appropriate assessment (AA).

This report addresses Likely Significant Effects (LSEs) of the full extent of the Project on European sites[1] in Ireland only associated with the Celtic Interconnector Project as it passes through UK, French and Irish waters; European sites in the UK and France are covered in Volume 11: HRA for UK Offshore and Volume XX: Évaluation des incidences Natura 2000 respectively.

Commented [JW1]: Placeholder: Text around final wording and approach regarding European sites in other jurisdictions to be confirmed and finalized prior to submission of final Application File.

Summary

The proposed Celtic Interconnector will require the installation of cable protection in specific sections where the burial depth of the cable cannot be guaranteed due to the nature of the seabed (e.g. where outcropping rock occurs), or where the cable must cross existing infrastructure (e.g. third party cables) and structures to enable the subsea cable and the onshore cables to be connected. Once installed, the cable will transmit electricity using high voltage direct current (HVDC) technology between Ireland and France. The interconnector will require regular surveys to monitor the asset and if required, maintenance to be carried out to ensure asset availability over its operational life.

Potential environmental changes that could result from the installation and operational phases of the Celtic Interconnector have been considered to determine whether LSE on

[1] European sites include, due to protection through legislation, Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSACs), Special Protection Areas (SPAs).

European sites can be excluded on the basis of objective information; from the Celtic Interconnector individually, or in-combination with other plans or projects. The following potential environmental changes were considered:

1. Habitat damage / degradation (including from smothering);
2. Disturbance or displacement of marine mammals, migratory fish or birds;
3. Reduction in foraging efficiency/success of marine mammals, migratory fish or birds;
4. Collision of marine mammals with vessels;
5. Pollution events (including disturbance of polluted sediments, pollutant escape from vessels and marine litter); and
6. Barriers to the movement of migratory fish.

[Placeholder for agreed decommissioning approach text here]

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The AA screening process concluded that Likely Significant Effects on European sites cannot be excluded for the Celtic Interconnector alone, or in-combination with other plans or projects for the Ballymacoda Bay SPA and the Blackwater Estuary SPA. However, further assessment within the NIS has led to the conclusion that the Celtic Interconnector will not, either alone, or in-combination with other plans or projects, adversely affect the integrity of any European sites in light of their conservation objectives. Therefore, there will be no adverse effects on the integrity of any European sites, from the Project alone, or in combination with other plans or projects.

Table of Contents

1 Introduction

1.1 Overview

The Celtic Interconnector is a joint project being developed by EirGrid plc (EirGrid) and Réseau de Transport d'Electricité (RTE) (the 'Project Promoters') and is being supported by the European Union's Connecting Europe Facility (CEF). It is also a European Union Project of Common Interest (PCI) and a designated e-Highway 2050 project. The Project aims to construct and operate a subsea electrical interconnector between County Cork on the south coast of Ireland and the coast of Brittany in north west France (Nord-Finistère). This infrastructure passes through Irish Territorial Waters, the Irish Exclusive Economic Zone (EEZ), the UK EEZ, French EEZ and French Territorial Waters. The cable route is proposed to come ashore on the Irish side at Claycastle approximately 2km south west of the town of Youghal where it will be connected to onshore infrastructure.

Commented [JW3]: Placeholder: Definitions of each jurisdiction and its applicability / coverage to be included prior to submission of final Application File, and aligned across all project documentation.

This AA Screening Report and Natura Impact Statement (hereafter 'NIS') has been produced for the purpose of providing the public authority with the information necessary to enable compliance with its duties under Regulations 27 and 28 of the European Communities (Birds and Natural Habitats) Regulations 2011-2015.

This NIS relates to Project components within the Irish EEZ, Irish Territorial Waters, UK EEZ and French Territorial Waters, but only reports potential effects relating to European sites within Ireland; separate reports considering European sites within UK and French jurisdictions are provided in Volume 11: HRA for UK Offshore and Volume 4D: Évaluation des incidences Natura 2000 respectively. This approach ensures that a given potential effect on any single European site is only considered once for the Celtic Interconnector Project, but that the information required to consider all European sites (regardless of jurisdiction) is available to all public authorities.

This NIS provides the methodology used to define the scope of the screening assessment and identify potential effects on European sites associated with the proposed development individually, and in-combination with other plans or projects (Stage 1: screening) and further provides an appropriate assessment (AA) for each site for which a Likely Significant Effect (LSE) could not be ruled out at the screening stage (Stage 2: appropriate assessment).

European sites include, due to protection through legislation, Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs).

1.2 Legislative Overview

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) provides, inter alia, a framework for the protection of European sites. The Habitats Directive is transposed into Irish legislation for areas within the Irish EEZ and Territorial Waters by the European Communities (Birds and Natural Habitats) Regulations, 2011-2015.

The European Commission's methodological guidance (European Commission 2001, 2018) promotes a four-stage process for the assessment of the implications of plans or projects on European sites. This process is termed the appropriate assessment and advice in completing it is outlined in 'Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning

Authorities' published by the Department of Environment, Heritage and Local Government (2009) (referred to hereafter as the 'Irish Article 6(3) Guidance' for brevity).

In exercising their duty, the public authority must comply with Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations 2011-2015:

"A screening for appropriate assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in-combination with other plans or projects is likely to have a significant effect on the European site." and

"A Natura Impact Statement shall, in addition to addressing the issues referred to in the interpretation contained in Regulation 2(1), include such information or data as the public authority considers necessary, and specifies in a notice given under paragraph (3), to enable it to ascertain if the plan or project will affect the integrity of the site."

The appropriate assessment is a staged process that is described in the Irish Article 6(3) Guidance as:

- Stage 1 - Screening: Screening for LSE. If no LSE are identified, then an appropriate assessment will not be required;
- Stage 2 - Appropriate assessment: If Stage 1 identifies LSE, it is necessary to assess the implications of the Project on the affected site(s)' conservation objectives.

Both Stages are covered by Regulation 42 (as stated above).

The Project Promoters are required to provide the public authority with such information as they reasonably require for the purpose of assessment or to enable it to determine whether an appropriate assessment is required, as outlined in Regulation 42 (3);

> *"At any time following an application for consent for a plan or project, a public authority may give a notice in writing to the applicant, directing him or her to—*
>
> *(a) furnish a Natura Impact Statement and the applicant shall furnish the statement within the period specified in the notice, and*
>
> *(b) furnish any additional information that the public authority considers necessary for the purposes of this Regulation."*

1.3 Structure of this report

This report provides the information necessary to enable the public authority to undertake an appropriate assessment for the Celtic Interconnector Project, with reference to European sites located within the jurisdiction of Ireland (this includes the potential for installation or operational activities outside of the Irish EEZ and Territorial Waters to affect European sites within the Irish jurisdiction). The remainder of the report provides:

- the methodology used for informing the screening and appropriate assessment of the Celtic Interconnector alone (Section 1.4);

- the methodology used for informing the screening and appropriate assessment of the Celtic Interconnector in-combination with other plans and projects (Section 1.4);
- determination of whether the Project is necessary for the management of any European site (Section 2.1);
- a description of the receiving environment (Section 2.2);
- a description of the Project (Section 2.3);
- the identification of potential effects associated with the Project and the zones of influence within which they may operate (Section 2.4);
- an assessment to determine the presence of LSE (Section 2.5); and
- an appropriate assessment of LSE identified at the screening stage (Section 3).

1.4 Methodology

1.4.1 Screening Process Outline

The applicable test of the screening stage was documented within the decision for Waddenzee (C-127/02 – Paragraph 3a): “In the light of the precautionary principle, a risk of significant effects exists if it cannot be excluded on the basis of objective information that the plan or project will have significant effects on the conservation objectives of the site concerned; in case of doubt as to the absence of significant effects an appropriate assessment must be carried out. All aspects of the plan or project which can, either individually or in-combination with other plans or projects, affect those objectives must be identified in the light of the best scientific knowledge in the field.”

The screening stage has been characterised by the European Commission Guidance (2001, 2018) as follows; ‘Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC’ (“the European Commission Guidance”)’ as a four-step process. These steps are:

1. determining whether the project or plan is directly connected with or necessary to the management of any European site(s);
2. describing the project or plan and the description and characterisation of other projects or plans that in-combination have the potential for having significant effects on a European site (s);
3. identifying the potential effects on a European site(s); and
4. assessing the significance of any effects on a European site(s).

When each of these steps has been worked through there are three potential outcomes:

- The Project or plan is directly connected with or necessary to the management of a European site(s) and therefore does not require appropriate assessment (Stage 2).
- One or more LSEs on designated features of European sites are identified and the Project requires an appropriate assessment.

- No LSEs on designated features of European sites are identified as there is no pathway by which such effects could occur, or they can be excluded on the basis of objective information and therefore there is no requirement for an appropriate assessment.

The originator of the plan or project must provide sufficient information to the public authority to enable any LSEs to be identified, to determine if an appropriate assessment is required.

In order to determine whether a plan or project is capable of resulting in one or more LSEs on a European site(s) it is necessary to understand the activities associated with the installation, operation and maintenance and decommissioning of a project (e.g. the positioning of external cable protection), the potential changes that may occur in the environment as a result (e.g. the production of installation noise), and the effects that this may have on designated features of European sites (e.g. disturbance of marine mammals resulting in increased energy expenditure and reduced energy intake resulting in potential lower survival and productivity rates).

Through the use of this *activity – change – effect* concept, it is possible to identify European sites (and their qualifying features) that may be subject to LSEs through the determination of a series of search parameters. These search parameters can then be extended to identify the other plans and projects that require consideration within the assessment of in-combination effects.

1.4.2 Methodology – identification of the European sites that could be affected by a project

The European sites that should be considered within the screening process are those where, in light of the precautionary principle, the risk of significant effects from the Project alone and/or in-combination with other plans and projects cannot be excluded on the basis of objective evidence.

Key to determining which European sites are included within this consideration is an understanding of the activities associated with a project, the geographical scale over which changes due to the different activities may be detectable and the types of receptors (in other words designated features) susceptible to them[2]. An effective and efficient way to determine these relationships in a structured and transparent way is through the use of an *activity – change – effect* model.

Central to the identification of European sites for consideration within the screening process, is the ability to define evidence-based search parameters. In order to achieve this, the following steps are followed (see Table 2.1 for further detail):

- identification of the Project activities associated with the installation, operation and maintenance phases that have the potential to result in changes to background environmental parameters (for example seabed damage);
- determination of the changes that could occur as a result of the activities identified;
- determination of the distance over which these changes may occur based on published literature, outputs from the ecological assessment process and/or professional judgement; and

[2] This includes habitats and species that are not designated features but help underpin the conservation objectives of a European site (for example habitats supporting designated features).

- identification of the potential designated features (based on Annex II species listed on the Habitats Directive and Annex I birds listed on the Birds Directive, including functional habitat requirements) that may be affected by the identified changes.

Key documents used through this process included the following references:

- Cutts, N.D, Hemingway, K., and Spencer, J. (2013). Waterbird Disturbances Mitigation Toolkit: Informing Estuarine Planning & Installation Projects. Institute of Estuarine & Coastal Studies, University of Hull.
- Cutts, N.D., Phelps, A., and Burdon, D, (2009). Installation and waterfowl: Defining sensitivity, response, impacts and guidance. Report to Humber INCA, Institute of Estuarine & Coastal Studies, University of Hull
- Sea Mammal Research Unit (SMRU) (2011) Scientific Committee On Seals (SCOS) Scientific advice on matters related to the management of seal populations: 2011.
- Thompson, P. M., McConnell, B. J., Tollit, D. J., MacKay, A., Hunter C., and Racey. P. A. (1996) Comparative distribution, movements and diet of harbour and grey seals from Moray Firth, NE Scotland. Journal of Applied Ecology, 33(6):1572-1584.
- Woodward, I., Thaxter, C. B., Owen, E., Cook, A. S. C. P. (2019). Desk-based revision of seabird foraging ranges used for HRA screening. BTO Research Report No. 724
- Taormina, B., Bald, J., Want, A., Thouzeau, G., Lejart, M., Desroy, N., & Carlier, A. (2018). A review of potential impacts of submarine power cables on the marine environment: Knowledge gaps, recommendations and future directions. Renewable and Sustainable Energy Reviews, 96, 380-391.

The outcome of these steps is a series of search parameters based on potential pathways of effect that can then be used to determine both the European sites for inclusion within the process, due to their physical proximity to the Project site, and those linked by way of mobile fauna and associated functional habitat.

Information on European sites within Ireland has been gathered using the National Parks and Wildlife Service (NPWS) website and map viewer.

1.4.3 Methodology – Identifying in-combination effects and other plans or projects for inclusion

Effects on European sites may result from a proposed development alone and/or in-combination with other plans or projects. Within the published literature the main references that provide relevant and current guidance are European Commission(2001 and 2018a, 2018b, 2020) and Ospar Commision (2012). These sources have informed the methods used for the in-combination assessment in the case of the Project.

The identification of plans and projects to include within the in-combination assessment follows the same methodology as that outlined above for the identification of European sites relevant to the Project. Key to the inclusion of other plans and projects within the assessment are the spatial and temporal overlaps that may occur due to the scale of potential changes (for example overlaps in the zones of disturbance caused by simultaneous installation activity) or the areas over which

potential receptors may travel (for example a bird may pass through several areas where development is proposed when moving between roosting and feeding grounds in or between designated sites). Existing activities in the area of the Celtic Interconnector Project including shipping and commercial fishing activities are unlikely to change significantly during the duration of the installation activities (where vessel presence is directly relevant) and is therefore considered to be part of the baseline situation.

Within the search areas the types of projects and plans included within the assessment of in-combination effects are:

- projects that are under installation;
- permitted application(s) not yet implemented;
- submitted application(s) not yet determined;
- all refusals subject to appeal procedures not yet determined; and
- projects identified in land-use plans including the relevant development plan.

Following the identification of plans and projects within the search areas, an initial screening is then undertaken to filter out:

- minor proposals (e.g. installation of marker buoys, removal of marine litter / minor dropped objects, minor maintenance of existing structures) with no potential to cause LSE in-combination; and
- proposals with no potential to overlap with a project due to differing timescales.

Those that are to be included within the in-combination assessment are then considered with regard to the identified potential effects.

The above approach has been undertaken in the case of the NIS for the Project. Appendix A lists the plans and projects included in the assessment of in-combination effects for the Project.

1.4.4 Methodology for determining Potential Significant Effects

The AA screening process uses the threshold of LSE to determine whether effects on European sites should be the subject of further assessment. The Habitats Directive do not define the term LSE. However, in the Waddenzee case (Case C-127/02) the European Court of Justice found that an LSE exists if it cannot be excluded on the basis of objective information that the plan or project will have significant effects on the conservation objectives of the site concerned, whether alone or in-combination with any other project.

For the purposes of this screening stage, an LSE is defined as any identified effect that is capable of resulting in a change that is contrary to the conservation objectives of one or more designated features of a European site after all aspects of the plan or project have been considered alone and in-combination with other plans and projects.

This screening assessment does not consider any measures intended to avoid or reduce harmful effects on European sites.

Within this screening assessment, each potential effect is considered using best available scientific knowledge, and objective information, and specifically information from surveys, published literature (where available), other available baseline data, the Project design and professional judgement (informed by CIEEM, 2018). Where a potential effect has been identified but no LSE is predicted the evidence and reason for reaching this conclusion is provided (see Table 2.7 and Table 2.8).

2 Screening for appropriate assessment

2.1 Relationship of the Project to the conservation management of European sites

Step 1 seeks to determine whether or not a plan or project is directly connected to or necessary for the management of a European site (s).

The European Commission Guidance (2001, 2018) states that, in order to conclude that a plan or project is directly connected or necessary for the management of a European site, it must relate solely to conservation actions and not be a direct or indirect consequence of other actions.

In this instance, the Project is not connected to, or necessary for, the management of any European site.

2.2 Description of the receiving environment

2.2.1 Intertidal and Benthic Habitats

In 2018, detailed intertidal surveys were undertaken of the three potential Irish landfall sites being considered at that stage (Ballinwilling Strand, Redbarn Beach and Claycastle Beach). Habitats were classified based on the European EUNIS classification, combining the general environment, nature of sub-strata, littoral zonation, and flora/fauna species present at the site being assessed.

The broad categories, and associated sub-categories of habitat, recorded at Claycastle Beach were as follows:

- A1.2 – Moderate energy littoral rock:
    - A1.212: *Fucus spiralis* on full salinity exposed to moderately exposed upper eulittoral rock. This sub-habitat was identified on the existing pipe outfall at Claycastle Beach, with species present including limpets, winkles and barnacles. Ephemeral green seaweed is often common during summer months and was recorded during the Project-specific surveys.
- A1.4 – Feature of littoral rock for example, ephemeral algae in the intertidal zone:
    - A1.45: Ephemeral green or red seaweeds (freshwater of sand-influenced) on non-mobile substrata. Although ephemeral green seaweeds were recorded at Claycastle Beach, the littoral rockpool communities which can be a feature of the habitat were mainly absent.
- A2.2 – Littoral sand and muddy sand: In general, across all sand sub-habitats, limited shell debris was recorded on the sediment surface, with slight rippled patterns as a result of wave action and tidal currents. Species present included communities of amphipods and polychaetes, as well as some barren areas at Claycastle Beach. Sand mason worms were recorded in the lower littoral zones.
    - A2.22: Barren or amphipod-dominated mobile sand shores.

- A2.23: Polychaete / amphipod-dominated fine sand shores.
- A2.245: *Lanice conchilega* in littoral sand.

- A2.4 – Littoral mixed sediment: Areas of A2.43 were observed beneath the drift line at Claycastle Beach, with areas of A2.431 in the midlittoral zone. The underlying substratum for both comprised rock and boulders, with coarse sand also present.
  - A2.43: Species-poor mixed sediment shores.
  - A2.431: Barnacles and *Littorina* spp. on unstable eulittoral rock.
- B1 – Coastal dunes and sandy shores:
  - B1.2: Sand beaches above the driftline. This was recorded at Claycastle Beach, above the high water mark, formed as a result of sands brought up the beach by wave and wind action.
- B2 – Coastal shingle:
  - B2.1: Shingle beach driftlines.

In addition, clay outcrops were observed at all three intertidal locations surveyed, with fossilised wood at two sites and peat outcrops at one.

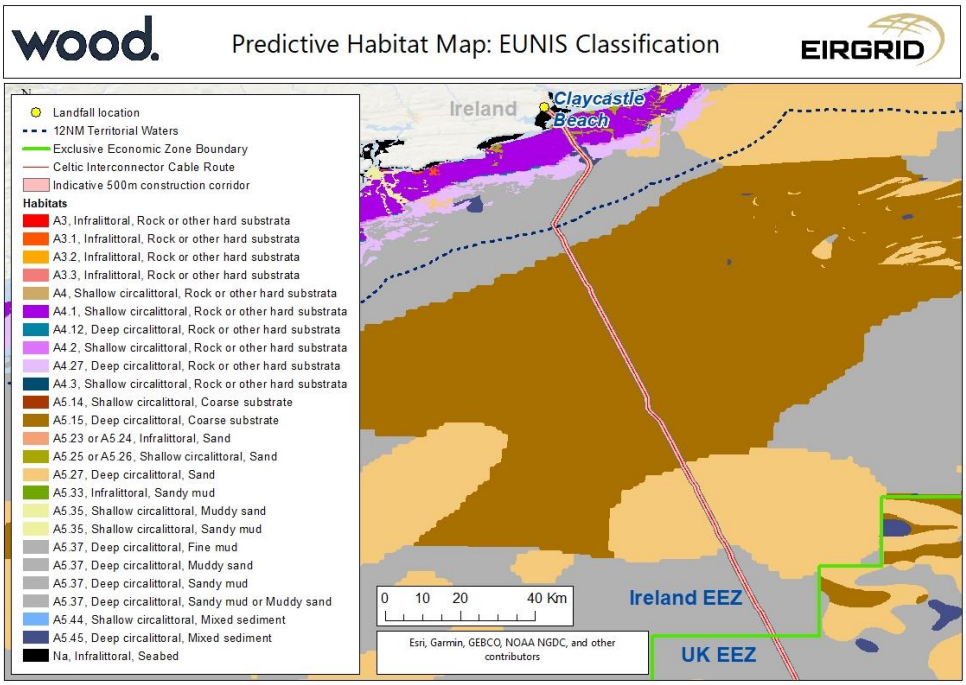
Further offshore, detailed surveys conducted in both Irish Territorial Waters and the Irish Exclusive Economic Zone (EEZ) during 2015 identified a range of habitats along the cable corridor, as presented in Figure 2.1 and Table 2.1.

Table 2.1: Summary of habitats along the route of the Celtic Interconnector

EUNIS Code	Biozone	Substrate	Length present along cable route (km)
A5.15	Deep circalittoral	Coarse substrate	61.1
A5.37	Deep circalittoral	Fine mud	24.9
A5.45	Deep circalittoral	Mixed sediment	5.5
A5.44	Shallow circalittoral	Mixed sediment	1.1
A5.37	Deep circalittoral	Muddy sand	22.3
A4.27	Deep circalittoral	Rock or other hard substrata	1.1
A5.27	Deep circalittoral	Sand	22.7
A5.25 / A5.26	Shallow circalittoral	Sand	6.8
A5.37	Deep circalittoral	Sandy mud	1.4
N/A	Infralittoral	Seabed	1.9
N/A	Shallow circalittoral	Seabed	1.9

The distribution of these, and other habitats in the vicinity of the Celtic Interconnector, is shown Figure 2.1.

Figure 2.1 Predictive Habitat Map of EUNIS Classifications



The sediment type observed during survey within the Irish Territorial Waters and Irish EEZ showed substrate was variable, ranging from areas of soft rippled sand to large rocks and cobbles. Epifauna was also relatively variable reflecting substrate type with reasonably low abundance in the sandy regions, increasing in areas of cobbles and boulders where a hard substrate was present for encrusting fauna.

The habitats identified through detailed surveys of the cable route are associated with a number of intertidal and subtidal communities.

Along the cable route on the approach to Claycastle Beach, the benthic community is characterised by the presence of species groups including cnidaria, nemertea, annelida, arthorpoda, mollusca, phoronida, and echinodermata. These form important elements of complex marine and coastal foodwebs, providing prey species for fish populations, and subsequently birds and marine mammals. Surveys along the route's entirety did not identify any environmental sensitive habitats or benthic communities, or the presence of confirmed or potential areas of Annex I habitats, as listed under the EC Habitats Directive (such as

biogenic reefs, or subtidal pockmark features). However, one area of medium-stony reefiness was identified on the approach to Claycastle Beach; such reefs can form key habitats for other species and may develop in importance over time.

Surveys completed in 2020 indicated the intertidal region is formed from sandy sediments. Further offshore the sandy sediments form a channel which is bordered by rocky outcrops. The depth of the sediment is greater than 3m.

Commented [JW4]: Placeholder: Additional data and information from intertidal and benthic surveys during 2019 and 2020 to be incorporated here, prior to submission of the final Application File.

The intertidal region is approximately 200m long with a sloping gradient of approximately 4 degrees. Beyond the intertidal zone the seabed profile is relatively flat with gentle gradients leading to an uninterrupted smooth progression to the 10m water depth at approximately Kilometre Point 2.9. both erosion and deposition occur on this beach. Evidence for this lies with attempts in the past to control longshore drift by building groynes and dumping rock. A sediment transfer study was undertaken for the Claycastle landfall in 2018 (Ref TBC). The report indicated that changes in the seabed levels are driven by wave driven currents. The seabed at Claycastle is considered relatively stable.

Commented [JW5]: Placeholder: Full reference details to be included and checked throughout document prior to submission of final Application File.

Designated Sites

The proposed cable route, landfall and associated infrastructure do not interact directly with any designated sites. Having regard for the potential value of national sites to European site integrity, Table 2.2 identifies all designated sites within 10km of the proposed cable route and working areas, including European sites, statutory designated national sites (Nature Reserves), and non-statutory designated national sites (proposed Natural Heritage Areas). A full screening for European Sites is provided in Section 2.7.

Commented [JW6]: Placeholder: Approach to such sites, and consideration of 'ex situ' habitat for species, to be confirmed and aligned across project documentation prior to submission of final Application File.

Table 2.2 Summary of designated sites within 10km of the Celtic Interconnector

Site Name/Code	Distance from Celtic Interconnector (km)	Summary of designated features
Ballyvergan Marsh pNHA - 000078	<1	Wetland habitats, breeding and non-breeding birds, otter
Ballymacoda (Clonpriest and Pillmore) SAC – 000077	1	Coastal habitats
Ballymacoda Bay SPA - 004023	1	Wintering waterbird assemblage
Ballymacoda (Clonpriest and Pillmore) pNHA – 000077	1	Coastal habitats – overlaps with Ballymacoda (Clonpriest and Pillmore SAC)
Blackwater River (Cork/Waterford) SAC - 002170	1.4	Coastal and riparian habitats, migratory fish, freshwater invertebrates and plants, otter
Blackwater River and	1.4	Coastal and riparian habitats –

Site Name/Code	Distance from Celtic Interconnector (km)	Summary of designated features
Estuary pNHA - 000072		overlaps with Blackwater River SAC
Capel Island and Knockadoon Head Nature Reserve and pNHA– 000083	2	Coastal headland and island
Blackwater Estuary SPA - 004028	2.6	Wintering waterbird assemblage
River Barrow and River Nore SAC - 002162	6.5	Coastal and riparian habitats, migratory fish, freshwater invertebrates and plants, otter
Ardmore Head SAC - 002123	8.3	Sea cliffs and heaths

Commented [SM7]: Placeholder: Status of pNHA to be confirmed and aligned prior to submission of final Application File.

These designated sites and other areas of non-designated habitat adjacent to or overlapping with the proposed cable route and landfall area, support a wide range of different species and species groups. These include:

- Marine mammals (including grey seal *Halichoerus grypus*, harbour porpoise *Phocoena phocoena* and bottlenose dolphins *Tursiops truncatus*);
- Seabirds (including fulmar *Fulmarus glacialis*, gannet *Morus bassanus*, storm petrel *Hydrobates pelagicus*, gull species);
- Fish species (including migratory fish species such as Atlantic salmon *Salmo salar*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, and twaite shad *Alosa fallax* which utilise marine and freshwater habitats and marine species such as basking shark *Cetorhinus maximus*);
- Coastal birds (including waders such as curlew *Numenius arquata*, sanderling *Calidris alba*, bar-tailed godwit *Limosa lapponica*).

Full consideration of mobile species and the potential for impacts on designated sites and species which are remote to the proposed cable route is provided in Section 2.7.

2.3 Description of the Proposed Development

Commented [JW8]: Placeholder: The project description shall be reviewed and revised, subject to minor changes, prior to submission of final Application File. This will include alignment of detail across all project deliverables.

This AA Screening and NIS assesses the submarine cable and landfall points only, including the cable route within UK and French waters. The LSE associated with Project elements above the mean HWM in Ireland and France are respectively considered in Volume 4B – NIS for Ireland Onshore, and Volume 4D - Évaluation des incidences Natura 2000.

No elements of the Project described below are intended to avoid or reduce harmful effects on European sites. They are constituent elements that are in place regardless of the presence of European sites or the mobile features for which they are designated.

The Project involves the installation of an electrical circuit between Ireland and France using HVDC technology. The interconnector would have a capacity of 700MW and measure

approximately 575km in length. The longest spatial element of the Celtic Interconnector would be the submarine circuit, which measures approximately 497km out of the total 575km.

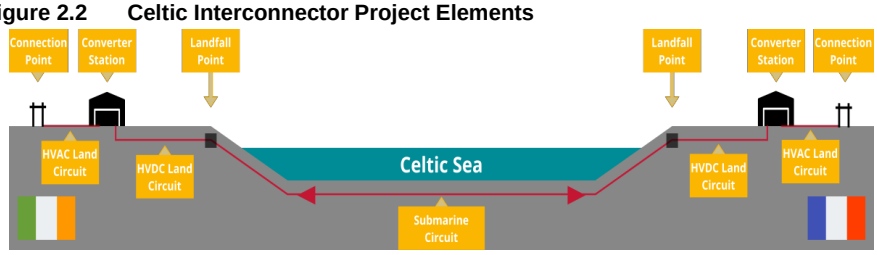
The main elements of the interconnector are illustrated in Figure 2.2. The sections considered in this assessment consist of:

- a submarine circuit (including a fibre optic cable laid along the route), approximately 497km in length placed on or beneath the seabed between France and Ireland. The submarine circuit will pass through the Territorial Waters of Ireland and France and through the EEZs of Ireland, the UK and France, as shown in Figure 2.3;
- the cable route within the Irish EEZ runs north westerly from the UK EEZ covering a distance of approximately 211km; and
- a landfall point at Claycastle Beach in County Cork, Ireland.

Other elements of the cable route that are considered in-combination include the following features:

- HVDC land circuits between the landfall point and a converter station, in Ireland and France;
- the landfall point where the submarine circuit comes onshore at Kerradénec in Finistère, France;
- converter stations in Ireland and France, to convert the electricity from HVDC to High Voltage Alternating Current (HVAC), which is used on the respective transmission grids in each country;
- HVAC land circuits between converter stations and the connection points to the grid, in France and Ireland. These circuits are proposed using underground technology; and
- Connection points to existing substations on the transmission grids, in France and Ireland.

Figure 2.2 Celtic Interconnector Project Elements



2.3.1 Offshore cable installation

The submarine cable is comprised of a pair of electrical cables as well as associated fibre optic cables. The purpose of the fibre optic cables is to enable communication and operational control between both converter stations. It is anticipated that each electrical cable will have a diameter of between 10cm and 15cm and the fibre optic cable will have a dimension of approximately 20mm.

Each electrical cable will use HVDC technology between the respective converter stations in Ireland and France. HVDC is the global standard for the transfer of electricity over long distances in the submarine environment.

The submarine cables will be comprised of a number of elements including a central metallic conductor made of copper or aluminium that is surrounded by insulation. A lead alloy sheath would be located outside of the insulation layer and this would then in turn be surrounded by armouring that is made of galvanised steel wires, all contained within an external protection layer. The operational life of the electrical cables is expected to be approximately 40 years at least. At the end of life these cables would be left in-situ.

The installation of the submarine cable will typically follow a sequence similar to the following:

- Contractor survey, route engineering and finalisation;
- Unexploded Ordnance (UXO) intervention campaign;
- Boulder clearance;
- Sand wave pre-sweeping;
- Pre-lay grapnel runs;
- Installation of infrastructure crossings;
- Pre-lay route survey;
- Cable lay;
- Post-lay survey;
- Cable burial;
- External / Secondary protection; and
- Post-burial survey.

Commented [JW9]: **Placeholder: An appendix, considering and assessing the presence and handling of UXO, is currently in preparation, and will be ready for submission with the final Application File. Within the current EIAR, the approach has been to not include UXO within impact assessments, on the assumption that the chance of encountering them during works is low.**

A full description of each of these stages and other information relevant to the installation offshore is provided in Appendix B

2.3.2 Landfall cable installation and connection

The proposed landfall location at Claycastle is location approximately 2km south west of the town of Youghal. The landfall is formed by a gently sloping sandy beach and intertidal area below the mean HWM. Above this the proposed route passes through areas of sand dune and amenity grassland (that form an embankment at the top of the beach) and hardstanding in the car parking area immediately adjacent to this.

To minimise disruption in the summer a two-phased installation campaign is required. If a single summer installation campaign were undertaken this would result in reduced access to the beach, increased noise, and traffic disruption for an extended period. The two phases of construction are currently planned as follows;

- The first phase of the installation sequence would be completed in the winter months (October to April), and involve the installation of infrastructure required to facilitate the cable connections.
- The second phase of the installation sequence would coincide with the offshore cable installation works, anticipated to take place during the summer months.

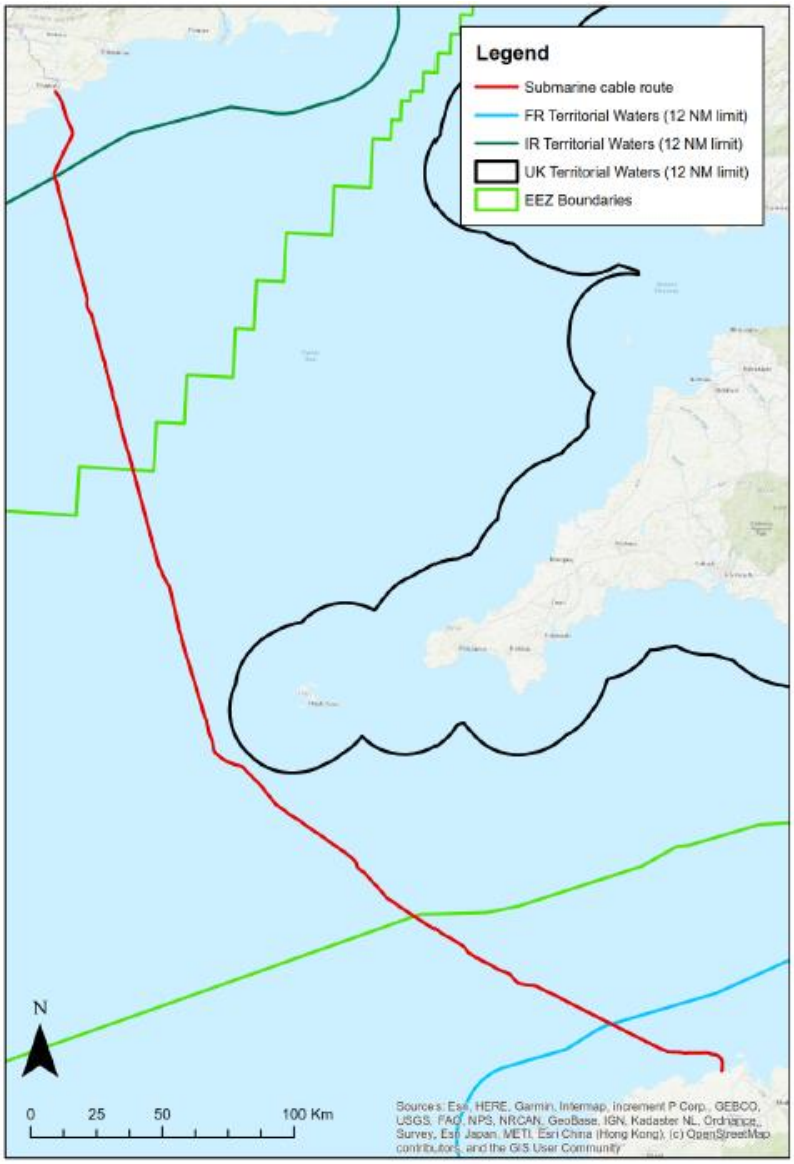
There are currently two options being considered for the landfall connection which could affect the level of disruption in each of the two phases.

- Option 1 involves construction of a cofferdam and trench to enable installation of conduits for the proposed cables across the beach areas which requires the excavation of a 14m x 3m deep trench. This is currently proposed to occur during winter period, avoiding the need to disrupt the beach during summer months for an extended period. This results in an estimated construction period in the intertidal area of approximately 10 weeks.
- Option 2 proposes the use of a “plough trenching” methodology which avoids the needs for open trenching and any major construction in the intertidal area during Phase 1 but would require more construction during the summer season (Phase 2).

Full descriptions of the landfall installation methods and sequencing are detailed in Appendix B.

For the purposes of this assessment, Option 1, which is likely to have a greater impact on environmental receptors has been considered as the “worst-case scenario”. In the event that Option 2 is taken forward, impacts would be reduced.

Figure 2.3 Celtic Interconnector Submarine Cable Route Map



2.4.1 Identification of the Potential Effects on European sites and the assessment of Likely Significant Effects

In Step 3 the European sites that could be affected by the installation and operation of the Project either alone or in-combination with other plans or projects are identified.

To determine which European sites, require consideration within the AA screening for the Project, it is necessary to understand:

- the types of activities may be associated with the installation, operation and maintenance, and decommissioning of the Project (see Tables 2.3, 2.4 and 2.5);
- the designated features (and associated habitats where applicable)[3] that may be affected by the potential effects identified (based on Annex I habitats and Annex II species listed on the Habitats Directive and Annex I birds listed on the Birds Directive and regularly occurring migratory bird species); and
- the geographic extent over which the potential effects could manifest (see Table 2.3, 2.4, 2.5 and 2.6 for details).

The activities, potential changes, designated features and potential effects that have been identified are outlined in Tables 2.3, 2.4 and 2.5, alongside search parameters or references for species specific information. The parameters provide a mechanism for the identification of European sites. Searches, using the parameters in Table 2.3, 2.4, 2.5 and 2.6, have then been undertaken using the NPWS website and map viewer and associated spatial data sets in ArcGIS. Table 2.4 provides a summary of the species-specific distances used to inform search distances. The results of these searches are provided in Tables 2.7 and 2.8.

[3] Note that all Annex II species that could be affected if they were present are included in the consideration. At this stage, no determination of likelihood of presence based on distribution, habitat type etc. is made, in order to avoid bias in the definition of search terms. However, where no SACs designated for Annex II species are located within the Zone of Influence these have not been considered in Table 2.1

Table 2.3 Identification of activities and potential effects associated with offshore route preparation, cable laying and burial and search parameters used for AA screening of the Project

Activity	Potential change	Potential effect	Geographic extent or Zone of Influence
Offshore route preparation, cable laying and burial.	Physical interaction altering seabed form.	Habitat loss / degradation. Reduction in prey availability for birds, marine mammals, and migratory fish due to habitat change.	Directly along the cable laying route. Although the geographic extent of the habitat change is localised, the mobile designated features of European sites may interact with it when remote from the relevant European site; see footnote for details.[4]
Offshore route preparation, cable laying and burial.	Increases in suspended sediment concentrations created by burial activity.	Reduction in foraging efficiency for birds, marine mammals, and migratory fish due to both direct (e.g. reduction in visual acuity) and indirect effects (e.g. changes in the behaviour of prey). Barrier to movement of migratory fish.	Applying a precautionary approach, the geographic extent of any increase in suspended sediment concentration due to cable burial is not expected to extend more than 10km away from the construction area, with the majority of particles (over 90%) being deposited within 1km (e.g. BERR 2008). The sediment is expected to have settled out within a few hours. Although the geographic extent of the habitat change is localised, the mobile designated features of European sites may interact with it when remote from the relevant European site; see footnote for details.[4]

[4] For seabirds, the mean maximum foraging distances from Woodward et al. 2019 are used to identify relevant European sites. For cetaceans, the relevant management units covering the Irish and Celtic seas have been applied (IAMMWG, 2015); whereas a distance of 145km has been applied for grey seal (Thompson et al. 1996) and 120km for common seal (SMRU 2011). For migratory fish, a precautionary search area 100km from the cable route has been applied.

Activity	Potential change	Potential effect	Geographic extent or Zone of Influence
Offshore route preparation, cable laying and burial.	Deposition of sediments (smothering) settling out following burial activity.	Smothering of habitats leading to habitat loss / degradation. Reduction in prey availability for birds, marine mammals, and migratory fish due to habitat change	Within 1km of the cable laying route (based on findings reported in ABP Research & Consultancy, 1999[5]). Although the geographic extent of the habitat change is localised, the mobile designated features of European sites may interact with it when remote from the relevant European site; see footnote for details.**Error! Bookmark not defined.**
Offshore route preparation, cable laying and burial.	Accidental loss of pollutants, such as fuel or machine oils, during cable laying and burial activity.	Direct toxic/injurious effects of pollutants including hydrocarbons and marine litter.	Due to the dilution effects any pollutant loss would not be expected to be detectable more than 500m from the location of the incident. Although the geographic extent of the habitat change is localised, the mobile designated features of European sites may interact with it when remote from the relevant European site; see footnote for details.[4]
Offshore route preparation, cable laying and burial.	Dispersal of pollutants potentially within sediments during construction activity.	Direct toxic effects of pollutants including hydrocarbons.	The geographic extent of any increase in suspended sediment concentration due to cable burial is not expected to extend more than 10km away from the construction area, with the majority (over 90%) being deposited within 1km (e.g. BERR, 2008). The sediment is expected to have settled out within a few hours.

[5] ABP Research & Consultancy (1999) Good practise guidelines for ports and harbours operating within or near UK European marine sites. Available online at: http://ukmpa.marinebiodiversity.org/uk_sacs/pdfs/guidelines.pdf. [Accessed 8 February 2021]

Activity	Potential change	Potential effect	Geographic extent or Zone of Influence
			Although the geographic extent of the habitat change is localised, the mobile designated features of European sites may interact with it when remote from the relevant European site; see footnote for details.[4]
Offshore route preparation, cable laying and burial.	Production of aural and visual stimuli due to noise and vibration and movement created during survey and construction.	Disturbance / displacement of marine mammals, migratory fish, and birds with effects on fitness due to reduced foraging efficiency and increased energy expenditure to avoid source.	Although the geographic extent of the habitat change is localised, the mobile designated features of European sites may interact with it when remote from the relevant European site; see footnote for details.[4]
Offshore route preparation, cable laying and burial.	Increase in vessel movements.	Collision risk to marine mammals due to vessel movements resulting in injury or death.	Although the geographic extent of the habitat change is localised, the mobile designated features of European sites may interact with it when remote from the relevant European site; see footnote for details.[4]

Table 2.4 Identification of activities and potential effects associated with landfall route infrastructure (including site preparation, construction, installation and reinstatement) and search parameters used for AA screening of the Project

Activity	Potential change	Potential effect	Geographic extent or Zone of Influence
Landfall route infrastructure preparation, construction, installation, and reinstatement.	Physical interaction resulting in temporary changes to habitats.	Habitat loss / degradation. Reduction in prey availability and roosting/resting habitat for wintering birds, due to habitat change.	Directly along cable route and construction area. During Phase One of construction approximately 6,220 m^2 of land take is required including areas of the beach, car park and grass areas (avoiding all areas of Annex I sand dune habitat) on the landward side of the beach. This also includes approximately 2,860m^2 of intertidal habitats which are required for the construction of the sheet pile cofferdam and temporary causeway. Although the geographic extent of the construction and habitat loss is localised, the mobile features of nearby European sites, such as wintering birds may use the habitats present (in particular the intertidal habitats) as additional habitat. Therefore, a search radius of up to 5km (informed by Chapman and Tyldesley 2016) has been applied to identify sites with features known to use the beach and intertidal zone (as identified during baseline surveys completed in 2019/20).
Landfall route infrastructure preparation, construction, installation, and reinstatement.	Production of aural and visual stimuli due to noise and vibration and movement created during survey and construction.	Disturbance / displacement of marine mammals and birds with effects on fitness due to reduced foraging efficiency and	Directly along cable route and construction area plus an additional 250m either side due to disturbance (based on Cutts *et al* 2009). Although the geographic extent of the construction and disturbance is localised, mobile features of nearby European sites, such as wintering birds, may use the habitats present (in particular the intertidal habitats) as additional habitat. Therefore, a search radius of up to 5km (informed by Chapman and Tyldesley 2016) has been applied to identify sites with features known to use the beach and intertidal zone (as identified

Activity	Potential change	Potential effect	Geographic extent or Zone of Influence
		increased energy expenditure to avoid source.	during baseline surveys completed in 2019/20).
Landfall route infrastructure preparation, construction, installation, and reinstatement.	Accidental loss of pollutants during cable laying and burial activity.	Direct toxic/injurious effects of pollutants including hydrocarbons and marine litter.	The geographic extent of any pollution effects would be restricted to the cable route and supporting construction areas plus an additional buffer of 500m. Although the geographic extent of the construction and potential pollution is localised mobile features of nearby European sites, such as wintering birds, may use the habitats present (in particular the intertidal habitats) as additional habitat. Therefore, a search radius of up to 5km (informed by Chapman and Tyldesley 2016) has been applied to identify sites with features known to use the beach and intertidal zone (as identified during baseline surveys completed in 2019/20).
Landfall route infrastructure preparation, construction, installation, and reinstatement.	Dispersal of pollutants currently within sediments during construction activity.	Direct toxic effects of pollutants including hydrocarbons.	The geographic extent of any pollution effects would be restricted to the cable route, marine construction area, plus an additional buffer of 500m. Although the geographic extent of the construction and potential pollution is localised mobile features of nearby European sites, such as wintering birds, may use the habitats present (in particular the intertidal habitats) as additional habitat. Therefore, a search radius of up to 5km (informed by Chapman and Tyldesley 2016) has been applied to identify sites with features known to use the beach and intertidal zone (as identified during baseline surveys completed in 2019/20).

Table 2.5 Identification of activities and potential effects associated with operation (including survey, maintenance and electricity transmission) and search parameters used for AA screening of the Project

Activity	Potential change	Potential effect	Geographic extent or Zone of Influence
Operational phase – survey, maintenance and electricity transmission.	Production of aural and visual stimuli due to noise and vibration and movement created during survey and operation.	Disturbance / displacement of marine mammals, migratory fish, and birds with effects on fitness due to reduced foraging efficiency and increased energy expenditure to avoid source.	Although the geographic extent of the habitat change is localised, the mobile designated features of European sites may interact with it when remote from the relevant European site; see footnote for details.[10] Maintenance or other works during operation at the landfall location have the potential to cause disturbance events local to the cable route and other associated infrastructure. For wintering birds, the presence of personnel and/or plant on or close to intertidal habitats has previously been identified as causing “High” or “Moderate” levels of disturbance within 250m (Cutts *et al* 2009), displacing birds from foraging or resting areas. The approach for identifying effects on European sites follows the approach considered for disturbance during the construction phase and a search radius of up to 5km (informed by Chapman and Tyldesley 2016) has been applied to identify any European sites with mobile features which may use the proposed landfall location (and surrounding habitat) as additional habitat.
Operational phase – survey, maintenance and electricity transmission.	Increase in vessel movements.	Collision risk to marine mammals due to vessel movements resulting in injury or death.	Although the geographic extent of the vessel movements is localised, mobile designated features of European sites may interact with it when remote from the relevant European site.**Error! Bookmark not defined.**

Activity	Potential change	Potential effect	Geographic extent or Zone of Influence
Operational phase – survey, maintenance. And electricity transmission	Electro-magnetic fields (EMF) created during cable operation.	Interference in the behaviour of migratory fish and marine mammals.	Although the geographic extent of EMF is localised (within 20m of the cable – Taormina *et al*., 2018), the mobile designated features of European sites may interact with it when remote from the relevant European site.**Error! Bookmark not defined.**

Table 2.6 Summary of species-specific search distances and source information used to identify potential effects on European Sites

Species	Approximate search distance	Source
Black-headed gull	19km	Woodward et al (2019), 'Desk-based revision of seabird foraging ranges used for HRA screening', BTO research report no.724, BTO
Common gull	50km	
Lesser Black backed	127km	
Herring Gull	59km	
Cormorant	26km	
Manx Shearwater	1387km	
Kittiwake	156km	
Fulmar	542km	
Gannet	315km	
Puffin	137km	

Species	Approximate search distance	Source
Storm Petrel	336km	
Leach's Storm Petrel	657km*	
Non-breeding water birds	5km	Chapman, C. & Tyldesley, D. (2016).Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions. Natural England Commissioned Reports, Number 207
Grey Seal	145km	Sea Mammal Research Unit (SMRU) (2011) Scientific Committee On Seals (SCOS) Scientific advice on matters related to the management of seal populations: 2011. Thompson, P. M., McConnell, B. J., Tollit, D. J., MacKay, A., Hunter C., and Racey. P. A. (1996) Comparative distribution, movements and diet of harbour and grey seals from Moray Firth, NE Scotland. Journal of Applied Ecology, 33(6):1572-1584.
Common Seal	120km	
Harbour Porpoise	All sites which include Harbour Porpoise within the Celtic Sea Management Unit for Cetaceans	IAMMWG, (2015), Management Units for cetaceans in UK waters (January 2015), JNCC Report No. 547, JNCC, Peterborough, ISSN 0963-8091.
Bottlenose Dolphin	All sites which include Bottlenose dolphin within the Offshore Channel, Celtic Sea and South West England Management Unit for Cetaceans	IAMMWG, (2015), Management Units for cetaceans in UK waters (January 2015), JNCC Report No. 547, JNCC, Peterborough, ISSN 0963-8091.
Migratory Fish	100km	TBC

Species	Approximate search distance	Source
species		

*Only a mean figure is available for Leach's Storm Petrel based on a single study.

2.5 Summary of AA Screening Assessment

Tables 2.7 (SACs) and Table 2.8 (SPAs) list the European sites identified using the search parameters laid out in Tables 2.3, 2.4, 2.5 and 2.6 (full designation information for each of the listed is provided in Appendix C. Conservation objectives for European sites for while LSE cannot be ruled out are provided in Appendix D).

In addition, Tables 2.7 and 2.8 identify the potential effects on each European site as a result of the Celtic Interconnector Project and outlines the results of the AA Screening assessment.

Table 2.7 Potential effects of the Project on Special Areas of Conservation in Ireland

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
Blackwater River (Cork/Waterford) SAC - 002170	1.4	NPWS (2012a): Qualifying Interests potentially within the ZoI of identified effects Sea Lamprey	Habitat loss / degradation. Disturbance / displacement due to aural and visual stimuli.	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized	No LSE in-combination with other plans and projects. None of the potential effects for the project

[6] Designated features in **BOLD** are those within the zone(s) of influence (i.e. those features that could be subject to an effect due to the Celtic Interconnector project).

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		River Lamprey Twaite Shad Atlantic Salmon Other Qualifying Interests included in site conservation objectives Estuaries* (* indicates Annex 1 habitat types) Mudflats and sandflats not covered by seawater at low tide Perennial vegetation of stony banks* Salicornia and other annuals colonising mud and sand* Atlantic salt meadows (*Glauco-Puccinellietalia*	Disturbance of migratory pathway. Displacement from foraging grounds. Direct toxic effects of pollutants including hydrocarbons. EMF.	effects and the European Site. The cable route occupies a very small area of the seabed which could intersect with the potential range of the highlighted features of the European site. The disturbance to the seabed will be temporary in particular in the sand and gravel substrates which are present along the majority of the route. As the substate would re-establish rapidly following installation (RPS 2019) this effect is not expected to result in a marked change in the locality either during construction (even allowing for the temporary suspension of sediments) or operation. In locations where rock and mattress protection	alone are considered likely to affect the fitness of individual migratory fish or the wider population. They are of a scale (both spatially and temporally) that additive effects (i.e. in-combination) will not occur.

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		maritimae)* Mediterranean salt meadows (*Juncetalia maritimi*)* Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation Old sessile oak woods with Ilex and Blechnum in the British Isles Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* Freshwater Pearl Mussel *Margaritifera*		needs to be deployed this will not have a detrimental impact to the species listed. Suspended sediments would largely be deposited from the water column close to the works (90% within 1km) and within a few hours of disturbance. This would occur in a highly localised area. Given the modest progress of the cabling vessel, it will be easy for individual fish and/or mammal species to pass through or avoid without altering foraging ability and therefore energy intake noticeably. Waterborne noise generated by cable laying vessels, cable burial and cable protection placement does not occur at levels (155 to 180 dB re 1 µPa @ 1m	

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		margaritifera Brook Lamprey *Lampetra planeri* White-clawed Crayfish *Austropotamobius pallipes* Otter *Lutra lutra* Killarney Fern *Trichomanes speciosum*		depending on vessel type) great enough to result in either temporary or permanent auditory or non-auditory effects (Inch Cape Offshore Limited 2013, Niras 2015, Natural Power 2018). Waterborne noise however from activities such as placement of rock for cable protection and route clearance may result in localised and temporary behavioural effects (such as displacement). The presence of cable laying and support vessels is considered unlikely to alter the baseline situation for the individuals present in the area given the level of vessel traffic already present. The freeing of contaminated	

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				sediments is not predicted given the location of the cable route away from port areas or anchorages, and the low levels of contaminants recorded in seabed sediments during site-specific surveys along the cable route in 2015. The risk of the loss of pollutants (including hydrocarbons and litter) from the vessels installing or maintaining the cable is low, as all vessels will be required to adhere to relevant guidelines, such as those of the MARPOL Convention. However, even should this occur the geographic extent of any effect would be highly localised due to the dilution effect. The EMF produced by an	

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				operational cable has the potential to interfere with navigation and foraging efficiency of migratory fish species. However, Subsea cable interactions with the marine environment: expert review and recommendations report (Andrulewicz et al. 2003) recorded no difference to natural background levels within 20m of the SwePol link cable, a 254km HVDC cable in the Baltic Sea. On this basis the effect of the Celtic Interconnector would be highly localised, in waters deep enough to allow a modest change in individuals' swim profile (their location within the water column) to enable crossing in an unaffected area	

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				and would not result in a marked change in foraging or navigational ability. Collision with vessels is not considered to present a risk to fish or mammal species due to the slow progress of the vessels laying the cable (20 to 300m per hour dependent on substrate), its predictable path, and the agility of the species in question. This aligns with the literature published on this issue such as Palka & Hammond 2001.	
River Barrow and River Nore SAC - 002162	6.5	NPWS (2012b): Qualifying Interests potentially within the ZoI of identified effects Sea Lamprey	Habitat loss / degradation. Disturbance / displacement due to aural and visual stimuli. Disturbance of migratory	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized	No LSE in-combination with other plans and projects. See Blackwater River

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		River Lamprey Twaite Shad Atlantic Salmon Other Qualifying Interests included in site conservation objectives Estuaries* Mudflats and sandflats not covered by seawater at low tide Reefs* Salicornia and other annuals colonising mud and sand* Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)* Mediterranean salt	pathway. Displacement from foraging grounds. Direct toxic effects of pollutants including hydrocarbons. EMF.	effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	(Cork/Waterford) SAC for justification with regard to effects on designated features highlighted

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		meadows (*Juncetalia maritimi*)* Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation European dry heaths* Hydrophilous tall herb* fringe communities of plains and of the montane to alpine levels Petrifying springs with tufa formation (Cratoneurion)* Old sessile oak woods with Ilex and Blechnum in the British Isles Alluvial forests with			

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* Desmoulin''s Whorl Snail *Vertigo moulinsiana* Freshwater Pearl Mussel White-clawed Crayfish Brook Lamprey Otter Killarney Fern Nore Pearl Mussel *Margaritifera durrovensis*			
Lower River Suir SAC - 002137	37.5	NPWS (2012c): Qualifying Interests potentially within the ZoI of identified effects	Habitat loss / degradation. Disturbance / displacement due to aural and visual stimuli.	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the	No LSE in-combination with other plans and projects. See Blackwater

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Sea Lamprey River Lamprey Twaite Shad Atlantic Salmon Other Qualifying Interests included in site conservation objectives Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)* Mediterranean salt meadows (*Juncetalia maritimi*)* Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation	Disturbance of migratory pathway. Displacement from foraging grounds. Direct toxic effects of pollutants including hydrocarbons. EMF.	distance between localized effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels* Old sessile oak woods with Ilex and Blechnum in the British Isles Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae, Salicion albae*)* *Taxus baccata* woods of the British Isles* Freshwater Pearl Mussel White-clawed Crayfish Brook Lamprey			

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Otter			
Lower River Shannon SAC - 002165	76	NPWS (2012d): Qualifying Interests potentially within the ZoI of identified effects Bottlenose Dolphin Other Qualifying Interests included in site conservation objectives Freshwater Pearl Mussel Sea Lamprey Brook Lamprey River Lamprey Atlantic Salmon Sandbanks which are slight covered by sea water all the time*	Habitat loss / degradation. Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons. EMF. Collision with vessels.	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	No LSE in-combination with other plans and projects. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Estuaries* Mudflats and sandflats not covered by seawater at low tide Coastal lagoons* Large shallow inlets and bays* Reefs* Perennial vegetation of stony banks* Vegetated sea cliffs of the Atlantic and Baltic coasts* *Salicornia* and other annuals colonizing mud and sand Atlantic salt meadows (*Glauco-puccinellietalia*			

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		maritimae)* Otter Mediterranean salt meadows (*Juncetalia*)* Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho - Batrachion* vegetation *Molinia* meadows on calcareous, peaty of clayey-silt-laden soils (*Molinion caeruleae)** Alluvial forests with *Alnus glutinosa* and *Franxinus excelsior (Alno-Padion, Alnion incanae, Salicion abae)**			
Saltee Islands	78	NPWS (2012e):	Habitat loss /	No LSE.	No LSE in-

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
SAC - 000707		Qualifying Interests potentially within the ZoI of identified effects Grey seal Other Qualifying Interests included in site conservation objectives Mudflats and sandflats not covered by seawater at low tide Large shallow inlets and bays* Reefs* Vegetated sea cliffs of the Atlantic and Baltic coasts* Submerged or partially submerged sea caves*	degradation. Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons. EMF. Collision with vessels.	The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	combination with other plans and projects See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
Slaney River Valley SAC - 000781	96	NPWS (2012f): Qualifying Interests potentially within the ZoI of identified effects Sea Lamprey River Lamprey Twaite Shad Atlantic Salmon Common Seal *Phoca vitulina* Other Qualifying Interests included in site conservation objectives Estuaries* Mudflats and sandflats not covered by seawater at low tide	Habitat loss / degradation. Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Disturbance of migratory pathways. Displacement from foraging grounds. Direct toxic effects of pollutants including hydrocarbons.	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	No LSE. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)* Mediterranean salt meadows (*Juncetalia maritimi*)* Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation Old sessile oak woods with Ilex and Blechnum in the British Isles Alluvial forests with Alnus glutinosa and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae, Salicion albae*)*	EMF. Collision with vessels.		

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Freshwater Pearl Mussel Brook Lamprey			
Roaring water Bay and Islands SAC 000101	107	NPWS (2012g): Qualifying Interests potentially within the ZoI of identified effects Harbour Porpoise Grey Seal Other Qualifying Interests included in site conservation objectives Large shallow inlets and bays* Reefs* Vegetated sea cliffs of the Atlantic and Baltic coasts*	Habitat loss / degradation. Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons. EMF.	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	No LSE in-combination with other plans and projects. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		European dry heaths* Submerged or partially submerged sea caves* Otter	Collision with vessels.		
Blasket Islands SAC - 002172	179	NPWS (2012h): Qualifying Interests potentially within the ZoI of identified effects Harbour Porpoise Other Qualifying Interests included in site conservation objectives Reefs* Vegetated sea cliffs of the Atlantic and Baltic coasts* European dry heaths* Submerged or partially	Habitat loss / degradation. Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons.	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	No LSE in-combination with other plans and projects. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		submerged sea caves* Grey Seal	EMF. Collision with vessels.		
Rockabill to Dalkey Island SAC - 003000	189	NPWS (2012i): Qualifying Interests potentially within the ZoI of identified effects Harbour Porpoise Other Qualifying Interests included in site conservation objectives Reefs*	Habitat loss / degradation. Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons. EMF.	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	No LSE in-combination with other plans and projects. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.

Site name/Code	Distance (km)	Designated features (*=Priority)[6] [Bold indicates features at potential risk of LSE]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
			Collision with vessels.		
West Connacht Coast SAC - 002998	228	NPWS (2012j): Qualifying Interests potentially within the ZoI of identified effects Bottlenose dolphin	Habitat loss / degradation. Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons. EMF. Collision with vessels.	No LSE. The European Site features a number of species and habitats which would not be impacted by the proposed works due to the distance between localized effects and the European Site. See Blackwater River (Cork/Waterford) SAC for justification with regard to effects on designated features highlighted.	No LSE in-combination with other plans and projects. See Lower Shannon SAC for justification.

Table 2.8 Potential effects of the Project on Special Protection Areas in Ireland (rows highlighted in green indicate sites for which LSEs could not be excluded)

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
Ballymacoda Bay SPA - 004023	1	NPWS (2012k): Qualifying Interests potentially within the ZoI of identified effects Non-breeding populations of: • Teal *Anas crecca* • Grey Plover *Pluvialis squatarola* • Sanderling • Bar-tailed Godwit • Curlew • Ringed Plover	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the	No LSE in relation to offshore activities. LSE identified in relation to landfall construction and installation[8] Of the designated features listed, only black-headed gull, common gull and lesser black-backed gull have the potential to be affected by the offshore elements of the cable route. Offshore, the cable route occupies a very small area of the seabed in comparison with the potential coverage of common gull, lesser black-	No LSE in-combination with other plans and projects in relation to offshore activities. LSE identified in relation to landfall construction and installation None of the potential effects for the project alone are considered likely to affect the fitness of the designated features of the European sites or the wider populations of

[7] Designated features in **BOLD** are those within the zones of influence (i.e. those features that could be subject to an effect due to the Celtic Interconnector project)
[8] LSE only predicted if Cable installation method 1 is taken forward. If Option 2 is taken forward no LSE is predicted to occur alone or in combination.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Charadrius hiaticula • Black-headed Gull *Chroicocephalus ridibundus* • Common Gull *Larus canus* • Lesser Black-backed Gull *Larus fuscus* Other Qualifying Interests included in site conservation objectives Non-breeding populations of: • Wigeon *Anas Penelope* • Golden Plover *Pluvialis apricaria* • Lapwing *Vanellus vanellus*	food chain or directly (e.g. oiling).	backed gull or black-headed gull (based on mean maximum foraging distance off these species). The disturbance to the seabed will be temporary and is not expected to result in a marked change in prey availability in the locality either during construction (even allowing for the temporary suspension of sediments) or operation. Temporary habitat loss associated with the landfall connection does not directly impact areas of Ballymacoda Bay SPA (the closest point being 1.7km to the SW), however bird species present at the European Site during the non-breeding period have the potential to utilise areas of un-	these species. They are of a scale (both spatially and temporally) that additive effects (i.e. in-combination) will not occur.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Dunlin *Calidris alpine* • Black-tailed Godwit • Redshank *Tringa tetanus* • Turnstone • Wetland and Waterbirds assemblage.		designated habitat for foraging and roosting which will be temporarily unavailable during construction and installation, scheduled to take place between October and April (year subject to confirmation) for a 10 week period. Whilst is not anticipated that the temporary loss of this habitat would result in a marked change in availability of prey or resting/roosting habitats for the designated features of the European site a Potential Significant Effect cannot be ruled out. Further consideration of this effect is provided in Section 3. Offshore, the presence (including noise and human activity) may result in an	

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				individual bird changing flight path (when considering the seabirds included as designated features of the European site). However, given the large distances covered, the presence throughout this area of other shipping and the highly localised behavioural change that this may elicit, no change to the fitness of an individual bird would be predicted and therefore there would be no implications to the SPA population. Disturbance associated with construction and installation of the cable route at the landfall location will not have a direct impact on the European site being more than 1.5km to the SW of the Site. However,	

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				wading birds and waterfowl listed as designated features have the potential to utilise areas of un-designated habitat for foraging and roosting which may be impacted. Whilst is not anticipated that the temporary disturbance would result in a marked change in prey or habitat availability for the designated features of the European site a Potential Significant Effect cannot be ruled out. Further consideration of this effect is provided in Section 3. The freeing of contaminated sediments is not predicted given the location of the cable route away from port areas or anchorages. The risk of the loss of pollutants (including	

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				hydrocarbons and litter) from the vessels and other plant installing or maintaining the cable is low given the standard operating procedure for offshore and intertidal works. However, even should this occur the geographic extent of any effect would be highly localised due to the dilution effect and control of potential pollution events. This would not result in any LSE on the designated features of the European Site.	
Blackwater Estuary SPA - 004028	2.6	NPWS (2012l): Qualifying Interests potentially within the ZoI of identified effects Non-breeding populations of:	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise.	No LSE in relation to offshore activities. LSE identified in relation to landfall construction and installation.[8] Temporary habitat loss associated with the landfall	No LSE in-combination with other plans and projects None of the potential effects for the project alone are considered likely to affect the fitness of the

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Bar-tailed Godwit • Curlew • Other Qualifying Interests included in site conservation objectives • Non-breeding populations of: • Wigeon • Golden plover • Lapwing • Dunlin • Black-tailed godwit • Redshank • Wetland and waterbird assemblage	Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	connection does not directly impact areas of Blackwater Estuary SPA (the closest point being 2.6km to the SW of the Site, however wading birds present at the European Site during the non-breeding period have the potential to utilise areas of un-designated habitat for foraging and roosting which will be temporarily unavailable during construction and installation, scheduled to take place between October and April (year subject to confirmation) for a 10 week period. Whilst it is not anticipated that the temporary loss of this habitat would result in a marked change in availability of prey or resting/roosting habitats for the	designated features of the European sites or the wider populations of these species. They are of a scale (both spatially and temporally) that in-combination effects will not occur.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				designated features of the European site a Potential Significant Effect cannot be ruled out. Further consideration of this effect is provided in Section 3. Disturbance associated with construction and installation of the cable route at the landfall location will not have a direct impact on the European site being more than 2km to the north-west of the construction area. However, wading birds and waterfowl listed as designated features of the European Site have the potential to utilise areas of un-designated habitat for foraging and roosting which may be impacted. Whilst is not anticipated that the temporary	

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				disturbance would result in a marked change in prey or habitat availability a Potential Significant Effect cannot be ruled out. Further consideration of this effect is provided in Section 3. The freeing of contaminated sediments is not predicted given the location of the cable route away from port areas or anchorages. The risk of the loss of pollutants (including hydrocarbons and litter) from the vessels and other plant installing or maintaining the cable is low given the standard operating procedures for offshore and intertidal works. However, even should this occur, the geographic extent of any effect would be highly localised due to	

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				the dilution effect and control of potential pollution events. This would not result in any LSE on. The designated features of the European site.	
Ballycotton Bay SPA - 004022	12	NPWS (2012m): Qualifying Interests potentially within the ZoI of identified effects Non-breeding populations of: • Common Gull • Lesser Black-backed Gull Other Qualifying Interests included in site conservation objectives Non-breeding populations of:	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the	No LSE. The European Site features a number of species which would not be impacted by the proposed works due to the distance between localised effects and the European Site. Common gull and lesser black-backed gull are highly mobile species that forage over wider distances and could potentially interact with the identified effects. The cable route and proposed landfall occupies a very small area of the seabed and intertidal	No LSE in-combination with other plans and projects. None of the potential effects for the project alone are considered likely to affect the fitness of individual common gull or lesser black-backed gull or the wider population. They are of a scale (both spatially and temporally) that additive effects (i.e. in-combination) will not

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Teal • Ringed Plover • Golden Plover • Grey Plover • Lapwing • Black-tailed Godwit *Limosa limosa* • Bar-tailed Godwit • Curlew • Turnstone *Arenaria interpres* • Wetland and Waterbird assemblage	food chain or directly (e.g. oiling).	area in comparison with the potential foraging range of common gull or lesser black-backed gull (based on mean maximum foraging distance). The disturbance to the seabed will be temporary and is not expected to result in a marked change in prey availability in the locality either during construction (even allowing for the temporary suspension of sediments) or operation. Presence (including noise and human activity) may result in an individual bird changing flight path. However, given the large distances covered, the presence throughout this area of other shipping and the highly localised behavioural change that this may elicit, no change to the	occur.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
				fitness of an individual bird would be predicted and therefore there would be no implications to the SPA population. The freeing of contaminated sediments is not predicted given the location of the cable route away from port areas or anchorages. The risk of the loss of pollutants (including hydrocarbons and litter) from the vessels installing or maintaining the cable is low given the standard operating procedure for offshore works. However, even should this occur the geographic extent of any effect would be highly localised due to the dilution effect. This would not result in any LSE on seabirds.	

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
Cork Harbour SPA - 004030	21	NPWS (2012n): Qualifying Interests potentially within the ZoI of identified effects Non-breeding populations of: • Cormorant *Phalacrocorax carbo* • Common Gull • Lesser Black-backed Gull Other Qualifying Interests included in site conservation objectives Non-breeding populations of: • Little Grebe *Tachybaptus ruficollis*	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	No LSE. The European Site features a number of species which would not be impacted by the proposed works due to the distance between localized effects and the European Site. Cormorant, common gull and lesser black-backed gull are highly mobile species that forage over wider distances and could potentially interact with the identified effects. See Ballycotton Bay SPA for justification with respect to cormorant, common gull and lesser black-backed gull.	No LSE in-combination with other plans and projects. See Ballycotton Bay SPA SPA for justification with respect to cormorant, common gull and lesser black-backed gull.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Great Crested Grebe *Podiceps* cristatus • Grey Heron *Ardea cinereal* • Shelduck *Tadorna tadorna* • Wigeon • Teal • Pintail *Anas acuta* • Shoveler *Anas clypeata* • Red-breasted Merganser *Mergus serrator* • Oystercatcher *Haematopus ostralegus* • Golden Plover			

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Grey Plover • Lapwing • Dunlin • Black-tailed Godwit • Bar-tailed Godwit • Curlew • Redshank *Tringa totanus* • Black-headed Gull • Wetland and Waterbirds Assemblage • Breeding populations of: • Common Tern *Sterna hirundo*			
Cruagh Island SPA - 004170	31	NPWS (2012o): Qualifying Interests	Reduction in prey availability due to	No LSE. The European Site features	No LSE in-combination with other plans and

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		potentially within the ZoI of identified effects Breeding populations of: Manx Shearwater *Puffinus puffinus* Other Qualifying Interests included in site conservation objectives Non-breeding populations of: Barnacle Goose *Branta leucopsis*	habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	species which would not be impacted by the proposed works (Barnacle Goose) due to the distance between localized effects and the European Site. Manx Shearwater are highly mobile species that forage over wider distances and could potentially interact with the identified effects. See Ballycotton Bay SPA for justification with respect to Manx Shearwater.	projects. See Beara Peninsula SPA for justification with respect to Manx shearwater.
Helvick Head to Ballyquin SPA - 004192	75	NPWS (2012p): Qualifying Interests potentially within the ZoI of identified effects	Reduction in prey availability due to habitat change, suspended sediment or survey,	No LSE. See Ballycotton Bay SPA for justification with respect to cormorant, herring gull and	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Breeding populations of: • Cormorant • Herring Gull *Larus argentatus* • Kittiwake *Rissa tridactyla* • Other Qualifying Interests included in site conservation objectives • Peregrine falcon • *Falco peregrinus* • Chough *Pyrrhocorax pyrrhocorax*	construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	kittiwake.	respect to cormorant, herring gull and kittiwake.
Saltee Islands SPA - 004002	84	NPWS (2012q): Qualifying Interests potentially within the ZoI of identified effects	Reduction in prey availability due to habitat change, suspended sediment or survey,	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar, gannet, lesser black-	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Breeding populations of: • Fulmar • Gannet • *Morus bassanus* • Lesser Black-backed Gull • Kittiwake • Puffin *Fratercula arctica* Other Qualifying Interests included in site conservation objectives • Cormorant • Shag • Herring Gull • Guillemot *Uria aalge* • Razorbill *Alca torda*	construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	backed gull, kittiwake and puffin.	respect to fulmar, gannet, lesser black-backed gull, kittiwake and puffin.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
The Bull and The Cow Rocks SPA - 004066	101	NPWS (2012r): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of: • Storm petrel • Gannet Other Qualifying Interests included in site conservation objectives Breeding populations of: • Puffin	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	No LSE. See Ballycotton Bay SPA for justification with respect to storm petrel and gannet.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to storm petrel and gannet.
Wexford Harbour and Slobs SPA -	102	NPWS (2012ah): Qualifying Interests potentially within the ZoI of	Reduction in prey availability due to habitat change,	No LSE. See Ballycotton Bay SPA for justification with respect to	No LSE in-combination with other plans and projects

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
004076		identified effects Non-breeding populations of: • Lesser Black-backed Gull Other Qualifying Interests included in site conservation objectives Non-breeding populations of: • Little Grebe • Great Crested Grebe • Cormorant • Grey Heron • Bewick's Swan *Cygnus columbianus bewickii* • Whooper Swan	suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	lesser black-backed gull.	See Cruagh Island SPA for justification with respect to lesser black-backed gull.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Cygnus Cygnus • Light-bellied Brent Goose *Branta bernicla hrota* • Shelduck • Wigeon • Teal • Mallard *Anas platyrhynchos* • Pintail • Scaup *Aythya marila* • Goldeneye *Bucephala clangula* • Red-breasted Merganser • Hen Harrier Circus cyaneus • Coot *Fulica atra*			

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Oystercatcher • Golden Plover • Grey Plover • Lapwing • Knot • *Calidris canutus* • Sanderling • Dunlin • Black-tailed Godwit • Bar-tailed Godwit • Redshank • Black-headed Gull • Little Tern • Greenland White-fronted Goose *Anser albifrons flavirostris* • Wetland and			

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Waterbirds assemblage			
Mid-Waterford Coast SPA - 004193	104	NPWS (2012s): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of: • Herring Gull Other Qualifying Interests included in site conservation objectives Breeding populations of: • Cormorant • Peregrine • Chough	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	No LSE. See Ballycotton Bay SPA for justification with respect to herring gull.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to herring gull.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
Beara Peninsula SPA - 004155	118	NPWS (2012t): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of; • Fulmar[9] Other Qualifying Interests included in site conservation objectives Breeding populations of: • Chough	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar.	No LSE in-combination with other plans and projects. Cruagh Island SPA

[9] All breeding seabirds that are features of SPAs have been considered both during inside and outside of the breeding season. This is in light of the Biologically Defined Minimum Population Scales published by Natural England (2015)

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
Cliffs of Moher SPA - 004005	156	NPWS (2012u): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of: • Fulmar Other Qualifying Interests included in site conservation objectives Breeding populations of: • Kittiwake • Guillemot • Razorbill • Puffin • Chough	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to fulmar.
Puffin Island SPA - 004003	175	NPWS (2012v): Qualifying Interests potentially within the ZoI of	Reduction in prey availability due to habitat change,	No LSE. See Ballycotton Bay SPA for justification with respect to	No LSE in-combination with other plans and projects.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		identified effects Breeding populations of: • Herring Gull Other Qualifying Interests included in site conservation objectives Breeding populations of: • Cormorant • Peregrine • Shag	suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	herring gull.	See Cruagh Island SPA for justification with respect to herring gull.
Magharee Islands SPA - 004125	177	NPWS (2012w): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of:	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or	No LSE. See Ballycotton Bay SPA for justification with respect to storm petrel.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Storm Petrel Other Qualifying Interests included in site conservation objectives Breeding populations of: • Shag • Common Gull • Common Tern • Arctic Tern • Little Tern *Sterna albifrons* Non-breeding populations of: • Barnacle Goose	operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).		respect to storm petrel.
Blasket Islands SPA - 004008	182	NPWS (2012x): Qualifying Interests potentially within the ZoI of identified effects	Reduction in prey availability due to habitat change, suspended sediment	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar, Manx shearwater and	No LSE in-combination with other plans and projects. See Cruagh Island SPA

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Breeding populations of: • Fulmar • Manx Shearwater • Storm Petrel Other Qualifying Interests included in site conservation objectives Breeding populations of: • Shag • Lesser Black-backed Gull • Herring Gull • Kittiwake • Arctic Tern *Sterna paradisaea* • Razorbill • Puffin	or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	storm petrel.	for justification with respect to fulmar, Manx shearwater and storm petrel.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Chough			
Skelligs SPA - 004007	183	NPWS (2012y): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of: • Fulmar • Manx shearwater • Storm petrel • Gannet Other Qualifying Interests included in site conservation objectives Breeding populations of; • Kittiwake • Guillemot • Puffin	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar, Manx shearwater, storm petrel and gannet.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to fulmar, Manx shearwater, storm petrel and gannet.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
High Island, Inishshark and Davillaum SPA - 004144	198	NPWS (2012z): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of: • Fulmar Other Qualifying Interests included in site conservation objectives Breeding populations of: • Arctic Tern • Non-breeding populations: • Barnacle Goose	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to fulmar.
Duvillaun Islands SPA - 004111	218	NPWS (2012aa): Qualifying Interests potentially within the ZoI of	Reduction in prey availability due to habitat change,	No LSE. See Ballycotton Bay SPA for justification with respect to	No LSE in-combination with other plans and projects.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		identified effects Breeding populations of: • Fulmar • Storm Petrel Other Qualifying Interests included in site conservation objectives Non-breeding populations of: • Barnacle Goose	suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	fulmar and storm petrel.	See Cruagh Island SPA for justification with respect to fulmar and storm petrel.
Kerry Head SPA - 004189	221	NPWS (2012ab): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of:	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Fulmar Other Qualifying Interests included in site conservation objectives Non-breeding populations of: • Chough	operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).		respect to fulmar
Stags of Broad Haven SPA - 004072	224	NPWS (2012ac): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of: • Leach's storm petrel *Oceanodroma leucorhoa*	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance /	No LSE. See Ballycotton Bay SPA for justification with respect to Leach's storm petrel.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to Leach's storm petrel.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		Other Qualifying Interests included in site conservation objectives Breeding populations of: • Storm Petrel	displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).		
Lambay Island SPA - 004069	225	NPWS (2012ad): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of: • Fulmar Other Qualifying Interests included in site conservation objectives Breeding populations of:	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli.	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to fulmar.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Cormorant • Shag • Lesser Black-backed Gull • Herring Gull • Kittiwake • Guillemot • Razorbill • Puffin Non-breeding populations of: • Greylag Goose *Anser anser* • Herring Gull	Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).		
Deenish Islands and Scariff Island SPA - 004175	241	NPWS (2012ae): Qualifying Interests potentially within the ZoI of	Reduction in prey availability due to habitat change, suspended sediment	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar, Manx shearwater and	No LSE in-combination with other plans and projects. See Cruagh Island SPA

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		identified effects Breeding populations of: • Fulmar • Manx Shearwater • Storm Petrel Other Qualifying Interests included in site conservation objectives Breeding populations of: • Lesser Black-backed Gull • Arctic Tern	or survey, construction or operational maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).	storm petrel.	for justification with respect to fulmar, Manx shearwater and storm petrel.
Iveragh Peninsula SPA - 004154	266	NPWS (2012af): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of:	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to fulmar.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		• Fulmar Other Qualifying Interests included in site conservation objectives Breeding populations of: • Peregrine falcon • Kittiwake • Guillemot • Chough	maintenance noise. Disturbance / displacement due to aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).		
Clare Islands SPA - 004136	284	NPWS (2012ag): Qualifying Interests potentially within the ZoI of identified effects Breeding populations of: • Fulmar Other Qualifying Interests included in site conservation	Reduction in prey availability due to habitat change, suspended sediment or survey, construction or operational maintenance noise. Disturbance / displacement due to	No LSE. See Ballycotton Bay SPA for justification with respect to fulmar.	No LSE in-combination with other plans and projects. See Cruagh Island SPA for justification with respect to fulmar.

Site name	Distance (km)	Designated features[7]	Potential effects of the project	LSE for the project alone	LSE for the project when in combination with other plans and projects
		objectives Breeding populations of: • Shag • Common Gull • Kittiwake • Guillemot • Razorbill • Chough	aural and visual stimuli. Direct toxic effects of pollutants including hydrocarbons through bioaccumulation in the food chain or directly (e.g. oiling).		

2.6 Screening Outcome

Based on objective information, LSEs cannot be excluded for two European sites. These are Ballymacoda Bay SPA and Blackwater Estuary SPA, which are 1.7km and 2.4km from the proposed landfall installation site respectively. For both sites, the following LSEs have been identified:

- habitat loss / degradation resulting in reduction in prey availability and roosting/resting habitat for wintering birds; and
- visual/aural disturbance resulting in a reduction of availability of prey and roosting/resting habitat for wintering birds.

The identified effects are not predicted to impact gull species, which are listed features of these European Sites. Common gull, lesser black-backed gull and black-headed gull are highly tolerant of human presence and their ability to forage over large distances ensures that any exclusion from construction areas would represent only a small part of their respective foraging ranges.

No further LSEs have been identified for any other European sites within the jurisdiction of Ireland. This result is driven by the type of project (i.e. sub-sea cabling), its relatively remote location with regards the Irish Europtomean site network and the ability of those mobile features that may interact with the Project to travel and forage across wide areas.

Consideration of European sites designated by the UK and French Governments that are potentially affected by the Celtic Interconnector Project are described in Volume 4C: HRA for UK Offshore and Volume 4D: Évaluation des incidences Natura 2000 respectively.

3 Natura Impact Statement

3.1 Summary of screening outcome

Likely Significant Effects could not be excluded for two European sites at AA Screening stage. These are Ballymacoda Bay SPA and Blackwater Estuary SPA, which are 1.7km and 2.4km from the proposed landfall installation site respectfully. For both European sites, the following LSEs have been identified:

- habitat loss / degradation resulting in reduction in prey availability and roosting/resting habitat for wintering birds; and
- visual/aural disturbance resulting in a reduction of availability of prey and roosting/resting habitat for wintering birds.

3.2 Ornithology baseline – background information

Ballymacoda Bay SPA and Blackwater Estuary SPA are 1.7km and 2.4km from the proposed installation site at Claycastle Beach. Whilst direct impacts have been ruled out, mobile Special Conservation Interest (SCI) species associated with these sites have the potential to utilise un-designated additional habitat that supports the designated features for some part of their life cycle.

Table 3.1 provides a description and summary of the designated features associated with these two European sites.

Table 3.1 Description of designated features of Ballymacoda Bay SPA (NPWS, 2012k) and Blackwater Estuary SPA (NPWS, 2012l)

Site Name	Description	Special Conservation Interest (SCI)
Ballymacoda Bay SPA	Ballymacoda Bay SPA supports over 20,000 waterbirds during the non-breeding season, making it a site of international importance. It is the second most important site for wintering waterfowl on the south coast after Cork Harbour. The site has internationally important numbers of Black-tailed godwit and Lesser black-backed gull and is the	All Non-breeding populations: • Wigeon • Teal • Ringed Plover • Golden Plover • Grey Plover • Lapwing • Sanderling • Dunlin • Black-tailed Godwit

Site Name	Description	Special Conservation Interest (SCI)
	most important site in the country for Lesser black-backed gull during autumn. The site provides both feeding and roosting areas for the waterfowl species and habitat quality for most of the estuarine habitats is very good.	• Bar-tailed Godwit • Curlew • Redshank • Turnstone • Black-headed Gull • Common Gull • Lesser black-backed Gull Other Features • Wetlands NPWS (2012k)
Blackwater Estuary SPA	The Blackwater Estuary is of high ornithological importance for wintering waterfowl, providing good quality feeding areas for a diversity of waterfowl species. At high tide, the birds roost along the shoreline and saltmarsh fringe. The site supports an internationally important population of black-tailed godwit. It supports a further eight species in numbers of national importance: shelduck; wigeon; golden plover; lapwing; dunlin; curlew; redshank and greenshank.	• Wigeon • Golden Plover • Lapwing • Dunlin • Black-tailed Godwit • Bar-tailed Godwit • Curlew • Redshank • Wetland and Waterbirds NPWS (2012l)

Further information regarding the status of the non-breeding populations at these sites is provided in Tables 3.2 and 3.3 below.

Table 3.2 Special Conservation Interest (SCI) species of Ballymacoda Bay SPA – Current Site Conservation Condition (Taken from NPWS 2014a)

Special Conservation Interest	BoCCI category *	Site population trend (1995/96 – 2009/10)	Site conservation condition	Current all Ireland trend	Current international trend**
Bar-tailed Godwit	Amber	+28	Favourable	Stable	Increasing
Black-headed Gull	Red	-73	Highly Unfavourable	n/c	n/c
Black-tailed Godwit	Amber	+207	Favourable	Increasing	Increasing
Common Gull	Amber	-91	Highly Unfavourable	n/c	n/c
Curlew	Red	-51	Highly Unfavourable	Declining	Declining
Dunlin	Red	-55	Highly Unfavourable	Declining	Stable/Declining
Golden Plover	Red	-39	Unfavourable	Declining	Declining
Grey Plover	Amber	-15	Intermediate	Declining	Declining
Lapwing	Red	-61	Highly Unfavourable	Declining	Declining
Lesser Black-backed Gull	Amber	-85	Highly Unfavourable	n/c	n/c
Redshank	Red	+1	Favourable	Stable	Stable/Fluctuating
Ringed Plover	Green	-7	Intermediate (Unfavourable)	Stable	Declining/Stable
Sanderling	Green	+111	Favourable	Stable	Stable
Teal	Amber	+29	Favourable	Stable	Increasing?
Turnstone	Green	+7	Favourable	Increasing	Increasing
Wigeon	Red	-16	Intermediate (Unfavourable	Declining	Declining?

Commented [JW10]: Placeholder: Data (throughout table) to be reviewed and updated if more recent information available prior to submission of final Application File.

			)		

* BoCCI status presented in NPWS 2014a were out of date and have been updated to reflect current status using Colhoun and Cummins (2013
**Updated international trends cross referenced using Wetlands International (2021). "Waterbird Population Estimates" . Retrieved from wpe.wetlands.org on Monday 1 Mar 2021

Table 3.3 Special Conservation Interest (SCI) species of Blackwater Estuary SPA – Current Site Conservation Condition (Taken from NPWS 2012ai)

Special Conservation Interest	BoCCI category*	Site population trend (1997/98-2006/07)	Site conservation condition	Current all Ireland trend	Current international trend**
Wigeon	Red	-51.4	Highly Unfavourable	Declining	Declining?
Golden Plover	Red	-2.2	Intermediate (Unfavourable)	Declining	Declining
Lapwing	Red	-24.3	Intermediate (Unfavourable)	Declining	Declining
Dunlin	Red*	-74.3	Highly Unfavourable	Declining	Stable/Declining
Black-tailed Godwit	Amber	+163.2	Favourable	Increasing	Increasing
Bar-tailed Godwit	Amber	+28	Favourable	Stable	Increasing
Curlew	Red	-28.3	Unfavourable	Declining	Declining
Redshank	Red	+16.6	Favourable	Stable	Stable/Fluctuating

* BoCCI status presented in NPWS 2014a were out of date and have been updated to reflect current status using Colhoun and Cummins (2013
**Updated international trends cross referenced using Wetlands International (2021). "Waterbird Population Estimates" . Retrieved from wpe.wetlands.org on Monday 1 Mar 2021

The two European sites support a range of different wetland birds with a number of species common to both sites occurring in numbers of national and international significance. Population trends for species at both sites have historically mirrored national and international trends of increasing or decreasing populations. For example, black-tailed godwit, a species undergoing expansion nationally and internationally **has also been shown to be increasing in number at both sites**. Conversely, both sites support diminishing populations of curlew, a species that is undergoing marked declines across Ireland and in the wider biogeographical population.

3.2.1 Wintering Bird Surveys

Initial surveys were completed in February and March 2019 at high tide and low tide, following methods based on the Irish Wetland Bird Survey (I-WeBS) methodology (Boland and Crowe, 2012) (for high tide counts) and similar methods for low tide counts (Lewis and Tierney, 2014). The high-tide counts used a "snapshot" approach, recording the number of birds present over high tide only whilst the low tide counts used a four-hour observation period, centred on low tide.

A full season of wintering bird surveys were completed at the site in 2019/20 between November 2019 and March 2020 (Mott MacDonald 2020) using similar methods with additional watches of the nearshore to observe marine/coastal birds which used areas immediately adjacent to the proposed cable route. These surveys included:

- Monthly intertidal and inshore counts, completed at high and low tide along Redbarn-Claycastle beach (incorporating the proposed landfall location); and
- Monthly shore-based –sea-watches within the zone of influence of disturbance from the proposed landfall

Surveys during a third winter's season were completed monthly from October 2020 to March 2021 inclusive, following a similar methodology to previous surveys (but minus the shore-based seawatches).

Commented [JW11]: Placeholder: Additional data to be reviewed and incorporated into final Application File, as appropriate.

Across all surveys the survey area was split into five count sectors (plus some fields behind the beach) covering approximately 2.1km of linear beach from Redburn – Claycastle. Figure 3.1 shows the boundaries of these survey areas.

Figure 3.1 Bird survey count sector boundaries (taken from Mott MacDonald 2020)

Across all surveys and the two seasons of survey, 22 wetland bird species were recorded in total. Table 3.4 provides a list of species (with peak counts) recorded which are also SCIs of Ballymacoda Bay SPA and/or Blackwater Estuary SPA.

The proposed working area required for the landfall point at Claycastle Beach is approximately 14m wide, and therefore occupies only a small proportion of the survey area. The proposed landfall locations is centred approximately on the boundary between count sections 3 and 4. Based on the ZoI defined in Table 2.4 (from Cutts *et al* 2009) birds which were recorded zones 3 and 4 would represent those most at risk of disturbance. Birds recorded in other sectors could be as much as 750m from predicted disturbance sources and therefore outside of the defined ZoI.

Of the species recorded, only bar-tailed godwit and sanderling occurred in notable numbers. 152 Bar-tailed godwit were recorded in January 2020 representing 0.9% of the all-Ireland population of this species. Sanderling also occurred in notable numbers with a peak count of 159 individuals recorded in March 2020 representing 1.88% of the all-Ireland population of this species.

Commented [JW12]: Placeholder: Status to be reviewed and amended prior to submission of final Application File.

The only records of bar-tailed godwit from January and February both occurred in count sector 1 which is between 700m and 1,200m south-west of the proposed landfall location.

During the wetland bird survey, sanderling numbers were distributed between the different count sectors occurring predominantly in count sectors 1, 2 and 3. The peak count recorded during the intertidal surveys, a count of 84 birds at low-tide in December 2019, included a count of 38 individuals foraging in sector 3, the sector that overlaps the proposed landfall location. The other birds recorded during this count included 8 birds in sector 1 and 38 birds in sector 2.

A single count of 50 sanderling was also made in November 2019 during the high-tide survey with the birds occurring in sector 3. The overall peak count of 159 birds was recorded during the nearshore surveys in March 2020 with the birds recorded foraging in the immediate vicinity of the proposed landfall.

Curlew were recorded during surveys, with peak counts of up to 85 individuals, however these records were all restricted to inshore agricultural fields located behind the beach and are therefore considered to be outside of the ZoI for the effects listed. Further consideration of effects above the MHWM are considered in XXXX. Ringed plover, a SCI of Ballymacoda Bay SPA, were recorded with a flock of 20 birds occurring within sector 3, however this accounts for less than 0.2% of the all-Ireland wintering population and only occurred on a single occasion and are therefore not considered further for assessment.

In summary, the SCI species present in significant numbers within the ZoI of the proposed development are restricted to Sanderling. Other species which occurred in notable numbers (such as bar-tailed godwit) were only recorded outside of the ZoI and therefore no impacts are predicted on these species.

Table 3.2 Peak counts from wintering bird surveys completed on Redbarn-Claycastle in 2019-2020. Species highlighted in green are those occurring in notable numbers withing the ZoI of predicted effects and considered further.

Commented [JW13]: Placeholder: Data table will be reviewed and revised as appropriate, based on latest surveys, prior to submission of final Application File.

Common Name	Scientific Name	SCI of Ballymacoda Bay SPA	SCI of Blackwater Estuary SPA	High Tide Peak (sectors 3&4 only in parentheses)	Low Tide Peak (sectors 3&4 only in parentheses)	Nearshore Bird Survey Peak count (surveys centred on proposed landfall location and covering onshore and offshore areas)	Notes
Bar-tailed godwit	*Limosa laopponica*	✓	✓	0 (0)	152 (0)	0	Peak count from January 2020, counts of 1 and 71 individuals from November 2019 and February 2020 respectively.
Black-headed gull	*Chroicocephalus ridibundus*	✓	-	4 (2)	*22 (9)*	143	Counts between 2 and 22 recorded in all surveys.
Common gull	*Larus canus*	✓	-	15 (12)	31 (3)	153	Recorded during all low tide surveys ranging from 2 – 31 individuals.

Common Name	Scientific Name	SCI of Ballymacoda Bay SPA	SCI of Blackwater Estuary SPA	High Tide Peak (sectors 3&4 only in parentheses)	Low Tide Peak (sectors 3&4 only in parentheses)	Nearshore Bird Survey Peak count (surveys centred on proposed landfall location and covering onshore and offshore areas)	Notes
Lesser black-backed gull	*Larus fuscus*	✓		0 (0)	*4 (4)*	34	Not recorded during 2019/2020 surveys. Recorded during early 2019 surveys and nearshore surveys only.
Curlew	*Numenius arquata*	✓	✓	76 (0)	85 (0)	0	Counts between 65 and 85 individuals recorded outside of intertidal areas using fields behind beach in February and March 2020 only.
Dunlin	*Calidris alpina*	✓	✓	1 (0)	0 (0)	21	Single count from November 2019.
Grey plover	*Pluvialis*	✓	-	0 (0)	1 (0)	0	Single count from

Common Name	Scientific Name	SCI of Ballymacoda Bay SPA	SCI of Blackwater Estuary SPA	High Tide Peak (sectors 3&4 only in parentheses)	Low Tide Peak (sectors 3&4 only in parentheses)	Nearshore Bird Survey Peak count (surveys centred on proposed landfall location and covering onshore and offshore areas)	Notes
	squatarola						January 2020
Redshank	*Tringa totanus*	✓	✓	1 (0)	2 (0)	0	1 or 2 birds recorded during the majority of Low Tide counts.
Ringed plover	*Charadrius hiaticula*	✓	-	20 (20)	0 (0)	12	Single count of 20 birds from November 2019.
Sanderling	*Calidris alba*	✓	-	50 (50)	84 (38)	159	Recorded in all months during low tide surveys with total counts of 13 (November), 84 (December), 34 (January), 76 (February) and 7 (March). Single record

Common Name	Scientific Name	SCI of Ballymacoda Bay SPA	SCI of Blackwater Estuary SPA	High Tide Peak (sectors 3&4 only in parentheses)	Low Tide Peak (sectors 3&4 only in parentheses)	Nearshore Bird Survey Peak count (surveys centred on proposed landfall location and covering onshore and offshore areas)	Notes
							during high tide counts of 50 birds. Flock of 159 birds recorded close to observation point during nearshore surveys in March 2020.
Teal	*Anas crecca*	✓	-	26 (0)	15 (0)	0	Count from February 2020 – only other record was of 2 birds in March 2020).

Counts in italic (i.e. *4 (4)*) indicate peak counts taken from February or March 2019 surveys
Rows highlighted in green indicate species occurring in notable numbers (i.e. >1% of all-Ireland population)

3.3 Impact Prediction

3.3.1 Impact on European Sites – Blackwater Estuary SPA

Of the species listed as SCIs for Blackwater Estuary SPA, only bar-tailed godwit was recorded in notable numbers. However, the recorded distribution of these birds has shown that this species did not occur within the ZoIs for installation activities, favouring areas of the coastline >700m from proposed working areas.

Therefore, it is concluded that the proposed development will not adversely affect the integrity of Blackwater Estuary SPA.

3.3.2 Impact on European Sites – Ballymacoda Bay SPA

Whilst direct impacts on Ballymacoda Bay SPA will not occur due to the distance between the proposed works and the European Sites, the beach and intertidal habitats may provide alternative habitat (NPWS 2012k) supporting the non-breeding bird assemblages associated with the European site. As outlined in the conservation objectives for these sites *"assessments that are examining factors that have the potential to affect the achievement of the site's conservation objectives should also consider the use of these 'ex-situ' habitats and their significance to listed bird species"*.

A peak count of 159 sanderling (representing 1.88% of the all-Ireland population[10] (Burke *et al* 2019)) was one of only two notable record of a species listed as a feature of Ballymacoda Bay SPA. It is not possible to conclude definitively if these birds were associated specifically with the European Site, using the beach at Claycastle as alternative habitat, however, taking a precautionary approach, this has been assumed for the purposes of the assessment.

3.3.3 Habitat loss/degradation – Ballymacoda Bay SPA

During phase one of installation approximately 6,220 m^2 of land take could be required including areas of the beach, car park and amenity grassland areas on the landward side of the beach. This also includes approximately 2,860m^2 of intertidal habitats which are required for the installation of the sheet pile cofferdam and temporary causeway. This is only the case if construction Option 1 is taken forward.

Habitat loss for waterbirds in the intertidal zone would be temporary; the presence of undisturbed sediment immediately adjacent to the area affected by installation means that recolonisation will begin within the short-term. The affected area would be returned to its current state following the end of phase one but it could still be unavailable for up to 10 weeks during the non-breeding period with installation planned for October-April (subject to confirmation). Whilst the installation area will be re-instated, it is likely that the prey resources upon which wading birds are reliant will take longer to recolonise the substrate

[10] When considering the relative importance of a site for a specific bird species, a threshold of 1% of a reference population is used to identify sites that support nationally or internationally important numbers taking into account the relevant national (in this case all-Ireland population) or international (in this case NW European) populations. Where nationally or internationally important populations occur regularly, this can be used to identify and designate sites of national (NHAs) or international importance (SPAs).

making it unsuitable for a longer period. However, this approach has been included within the design to minimise any impacts of the installation.

Records of birds from surveys completed in 2019/20 indicate that wading birds favour the south-western end of the beach between Redbarn and Claycastle beach. All of the records of bar-tailed godwit for example occurred more than 700m from the proposed cable route. Sanderling were more widespread during the surveys with birds recorded in closer proximity to the proposed cable route. Records from count sectors one, two and three indicate that suitable habitat was present throughout much of the survey area.

Commented [JW14]: Placeholder: Data to be reviewed, and presented graphically in final Application File, using mos recent counts available.

The surveys completed in 2019/20 have shown that use of the intertidal areas is sporadic with numbers of wading birds varying between months with no species occurring in notable numbers for an extended part of the non-breeding period. In addition, the surveys suggest that wading birds favour areas of similar habitat which is more than 200m away from the proposed cable route and associated installation areas.

If it is assumed that sanderling associated with Ballymacoda Bay SPA are using the intertidal habitats between Redbarn and Claycastle Beach as alternative habitat, it has been concluded that the temporary loss of habitat would not result in a long-term change in population trend or a significant decrease in range, timing or intensity of use throughout the wider area of distribution for this species. This is because the reduction in potential foraging area is small, does not form a regularly used area and therefore its temporary loss will not affect the fitness of individual birds, or therefore, the local population associated with the European Site.

3.3.4 Visual/aural disturbance during installation

During phase one (and to a lesser extent phase two) of installation, activities on the foreshore and presence of personnel have the potential to result in disturbance that would render the installation area and an additional buffer of 250m from disturbance sources (Cutts *et al* 2009) unsuitable for wading birds resulting in effective loss of habitat for a 10-week period during the installation phase. The peak of disturbance would be during the construction period of the cofferdam though human presence throughout could still result in disturbance within the defined ZoI.

As described above, the surveys completed in 2019/20 showed that birds generally favoured sections of the beach which are more than 200m from the proposed cable route with bar-tailed godwits in particular only occurring more than 700m away. Sanderling were recorded in closer proximity to proposed working areas but are less sensitive to human disturbance (Cutts et al., 2013) and were recorded throughout the survey area with suitable habitat available throughout.

The surveys completed in 2019/20 have shown that use of the intertidal areas is sporadic with numbers of wading birds varying between months with no species occurring in notable numbers for an extended part of the non-breeding period.

If it is assumed that sanderling associated with Ballymacoda Bay SPA are using the intertidal habitats between Redbarn and Claycastle Beach, the temporary loss of habitat through

disturbance would not result in a long-term change in population trend or a significant decrease in range, timing or intensity of use throughout the wider area of distribution. This is because the reduction in potential foraging area is small, does not form a regularly used area and therefore its temporary loss will not affect the fitness of individual birds, or therefore, the local population associated with the European Site.

3.4 Potential for adverse effects on site integrity

3.4.1 Ballymacoda Bay SPA

The undesignated habitat between Redbarn and Claycastle is only used sporadically by non-breeding wetland birds. Counts varied significantly between months and there were few species which were present throughout the non-breeding season. The beach and intertidal area also experience moderate-high levels of human disturbance through dog walking and other recreational uses.

Commented [JW15]: Placeholder: Reference to threat assessment table in the NPWS supporting documentation will be included in final Application File, as well as Glas and Nagle bird reports.

Ballymacoda Bay SPA has been identified as the 13th most importance site in Ireland for Sanderling supporting an estimated baseline population of 98 individuals (1995/96 – 1999/00) (NPWS 2014). Analysis of population trends for this species, based on the Irish Wetland Bird Survey from 1995/96-2009/10, suggest numbers of sanderling at Ballymacoda Bay SPA have increased progressively during this period, consistent with the all-Ireland and international trends. The conservation status of sanderling is favourable at the European Site and assessed as stable for Ireland as a whole. Table 3.3 summarises the population trends and conservation status for Sanderling.

Table 3.3 Summary of sanderling population trends and conservation status for sanderling (taken from NPWS 2014)

Special Conservation Interest	BoCCI category	Site population trend	Site conservation condition	Current all Ireland trend	Current international trend
Sanderling	Green	+111	Favourable	Stable	Increasing

The wider area includes considerable areas of intertidal and coastal habitat that is protected through statutory protection and includes sites such as Ballymacoda Bay SPA, Blackwater Estuary SPA, Ballycotton Bay SPA and Cork Harbour SPA that provide suitable habitat for sanderling and are within 20km of the proposed development. The surrounding coastline also provides significant areas of non-designated habitat which is also suitable for sanderling.

Given the short-term nature of the predicted effects (i.e temporary habitat loss and disturbance during construction), the availability of other suitable habitat in the wider area, the observed distribution and counts of sanderling, it is concluded that the proposed development will not adversely affect the integrity of Ballymacoda Bay SPA or any other European sites.

3.5 In-Combination Assessment

3.5.1 Within project

Marine and coastal species and species groups identified through the screening process (such as marine mammals and seabirds are largely restricted to marine or coastal habitats and would not be impacted by onshore works associated with the project. Those species which enter freshwater habitats (such as migratory fish species) whilst having the potential to occur within the ZoI of onshore works are not identified predicted to be impacted by the onshore works as discussed in Volume XX. Therefore no in-combination effects within the project are predicted on these species.

Wintering bird surveys have shown that some wetland bird species such as curlew (peak count of 85 birds) and teal (peak count of 26 birds) utilise areas of terrestrial habitat in and adjacent to Ballyvergan Marsh. These areas are above the MHWM and outside of the ZoI of any anticipated works offshore or in the intertidal zone. Whilst these species have the potential to use intertidal habitats not records were made during 2019 and 2019/2020 surveys of teal or curlew in significant numbers. The adaptability of these species and the availability of suitable habitat both above and below the MHWM rule out the risk of in-combination effects between the works taking place in offshore, coastal and onshore habitats.

Onshore works are predicted to result in a temporary impact of disturbance on Loughs Aderry and Ballybutler pNHA. This site features two freshwater lakes and surrounding marsh and farmland which supports wetland bird species such a wigeon and teal which are listed as SCIs of Ballymacoda Bay SPA. Even if considered to provide “ex-situ” habitat for waterfowl associated with the European site, the low numbers of these species recorded in the intertidal areas means that a risk of in-combination effects between the works taking place in offshore, coastal and onshore habitats are not predicted.

3.5.2 Other Projects and plans

The Offshore Renewable Energy Development Plan (OREDP) published in 2019 (OREDP 2019) has identified the need for sustainable development of offshore wind and tidal energy and examines three different scenarios for delivery of increasing amounts of offshore energy. Whilst this plan does not provide locations of potential sites it does consider the potential capacity of regional marine and coastal areas and further considers potential cumulative impacts with other existing projects in Irish Waters. Through a Strategic Environmental Assessment (SEA) and associated screening for impacts on environmental receptors (including fish, shellfish, marine mammals, seabirds and marine reptiles) and European Sites an assessment has been made by the Department of the Environment, Climate and Communications with regard to the potential impacts of a significant increase in offshore development in Irish waters.

Results of the SEA conclude that whilst there is potential to achieve the “higher level scenario” presented in the OREDP without significant adverse effects on the environment, this is only achieved with the inclusion of mitigation measures embedded into the planning and design phases to ensure sustainable development. As highlighted in the NIS that

accompanies the OREDP, a number of European sites and species could be impacted by the levels of offshore development proposed by the plan. However the assessment highlights the need for further investigative work at an individual project level to adequately assess these impacts and highlights the need for developers to "comprehensively demonstrate at the project level that there would be no LSE on the integrity and conservation of objectives of a Natura Site". It further states that where developers are "unable to demonstrate that there would be no LSE developments would not be permitted unless IROPI was demonstrated". These requirements would therefore be built into any developments brough forward ensuring that where possible offshore developments minimise or avoid impacts on European sites and the species they support.

However, given the time that would be needed to develop the hypothetical capacity proposed in OREDP there would be no temporal overlap with the Celtic Interconnector Project and therefore no in combination effects on European Sites.

Furthermore, given the temporary nature of the construction effects associated with the Celtic Interconnector; it is considered that effects would not occur in combination with other, already operational offshore developments.

3.6 Embedded Measures

Embedded measures to minimise any potential impact of the cable installation, both offshore and in the intertidal zone have been included within the design and installation methods described for the project. These include:

- Steps to protect the cable route offshore using concrete mattressing or rock placement to cover and protect the cable where burial is not possible (i.e. due to the presence of hard rock or seabed obstacles). This approach ensures that the cable is protected but also ensures that mobile animals such as seal, cetaceans or fish are not able to come into direct contact with the cable. It will also further diminish the localised effects of electro-magnetic fields which could interfere with the behaviour of these species.
- Works withing the intertidal zone will be restricted in extent and timing to minimise impacts on non-breeding birds which use the beach and intertidal area at the proposed landfall location.
- All access to the beach will follow designated access and egress routes to ensure that impacts to habitats are minimised.
- High impact works, such as the sheet piling required for construction of the cofferdam, will be completed following best practice to minimise noise impacts. Full details will be provided in a Construction Code of Practice document to be adopted by the project but may include measures such as restricting timing and duration of piling activities or the use of aural screening to minimise the extent of noise.
- All works areas (including staging areas and site compounds) have been designed to be located outside of Annex 1 habitats (such as sand dunes).

Commented [JW16]: Placeholder: To be reviewed, and reference amended as appropriate, prior to submission of final Application File.

- All works will be completed following standard operating measures to minimise risk of pollution.

4 Summary Statement

Potential environmental changes that could result from the installation and operational phases of the Celtic Interconnector have been considered to determine whether LSE on European sites can be excluded on the basis of objective information; from the Celtic Interconnector individually, or in-combination with other plans or projects. The following potential environmental changes were considered:

1. Habitat damage / degradation (including from smothering);
2. Disturbance or displacement of marine mammals, migratory fish or birds;
3. Reduction in foraging efficiency/success of marine mammals, migratory fish or birds;
4. Collision of marine mammals with vessels;
5. Pollution events (including disturbance of polluted sediments, pollutant escape from vessels and marine litter); and
6. Barriers to the movement of migratory fish.

The AA screening process concluded that Likely Significant Effects on European sites cannot be excluded for the Celtic Interconnector alone, or in-combination with other plans or projects for the Ballymacoda Bay SPA and the Blackwater Estuary SPA. However, further assessment within the NIS has led to the conclusion that the Celtic Interconnector will not, either alone, or in-combination with other plans or projects, adversely affect the integrity of any European sites in light of their conservation objectives. Therefore, there will be no adverse effects on the integrity of any European sites, from the Project alone, or in combination with other plans or projects

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Appendix A – List of plans and projects included for in-combination effects

PLACEHOLDER – TO BE ADDED

Appendix B – Project description and installation methodology

PLACEHOLDER – TO BE ADDED FOR FINAL VERSION WHEN ALL AGREED

Appendix C – European Sites – Designation Information

PLACEHOLDER – TO BE ADDED

APPENDIX D – Conservation objectives for Ballymacoda Bay SPA and Blackwater Estuary SPA