Celtic Interconnector

Volume 3D1

Environmental Impact Assessment Report - Introductory Chapters

June 2021

Co-financed by the European Union
Connecting Europe Facility

Tionscadal Éireann
Project Ireland
2040

EIRGRID

The Oval, 160 Shelbourne Road, Ballsbridge, Dublin D04 FW28
Telephone: 01 677 1700 • www.eirgrid.ie

Report for

EirGrid plc and Réseau de Transport d'Électricité

Main contributors

Laura Gatdula
Jennifer Wilson
Hannah Nelson
Brian O'Keeffe
Alistair Billington

Issued by

.....
Jennifer Wilson

Approved by

.....
Alistair Billington

Wood

Doc Ref. 43171-WOOD-XX-XX-RP-OM-0007_B_P02

Copyright and non-disclosure notice

Third party disclaimer

Management systems

This document has been produced by Wood Group UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and ISO 45001 by Lloyd's Register.

Table of Contents

Glossary

AA	Appropriate Assessment
AIS	Automatic Identification System
BAS	Burial Assessment Study
CBRA	Cable Burial Risk Assessment
CEF	Connecting Europe Facility
CPCS	Cable Protection Complementary Study
CRU	Commission for Regulation of Utilities
DEFRA	Department for Environment Food and Rural Affairs
DOL	Depth of Lowering
EC	European Commission
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPC	Engineering Procurement Construction
EQS	Environmental Quality Standard
ESAS	European Seabirds at Sea
EU	European Union
FLO	Fisheries Liaison Officer
GES	Good Environmental Status
HVDC	High Voltage Direct Current
HRA	Habitats Regulations Assessment
ICES	International Council for the Exploration of the Seas
IUCN	International Union for the Conservation of Nature
JER	Joint Environmental Report
JNCC	Joint Nature Conservation Committee
KP	Kilometre Point
MCAA 2009	Marine and Coastal Access Act
MCMS	Marine Case Management System

MCZ	Marine Conservation Zone
MFE	Mass Flow Excavator
MHWS	Mean High Water Springs
MMO	Marine Management Organisation
MW	Megawatt
NCA	National Competent Authority
NSCOG	Northern Seas Offshore Grid
NTS	Non-Technical Summary
OGA	Oil and Gas Authority
PCI	Project of Common Interest
PEXA	Practice and Exercise Areas
RTE	Réseau de Transport d'Electricité
SAC	Special Area of Conservation
SCANS	Small Cetaceans in European Atlantic waters and the North Sea
SFWD	Shellfish Waters Directive
SI	Statutory Instrument
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TEN-E Regulation	European Union Regulation No. 347/2013 on guidelines for Trans-European Network for Energy
TOC	Total Organic Carbon
TOM	Total Organic Matter
TSO	Transmission System Operator
TSS	Traffic Separation Scheme
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded Ordnance
VMS	Vessel Monitoring Service
WFD	Water Framework Directive
ZoI	Zone of Influence

1 Introduction

The Celtic Interconnector Project (hereafter 'the Proposed Development') will create an electrical interconnection between Ireland and France to allow the exchange of electricity between the two countries. It is being jointly developed by EirGrid, the electricity Transmission System Operator (TSO) in Ireland, and its French counterpart, RTE (Réseau de Transport d'Électricité). EirGrid and RTE are jointly developing the Celtic Interconnector Project as a whole.

The connection will link an existing electricity transmission substation located in Knockraha in east Cork, Ireland, with a substation in La Martyre in Brittany, France. Designated as a Project of Common Interest (PCI) by the European Union, the Celtic Interconnector Project responds to European challenges regarding energy transition and addresses climate change by facilitating progress towards a low-carbon electricity mix. It will contribute to more secure, more sustainable and better priced electricity.

This Environmental Impact Assessment Report (EIAR) has been prepared to accompany a Foreshore Licence application to the Department of Housing, Local Government, and Heritage (DHLGH) for the Ireland Offshore element of the overall Celtic Interconnector Project (Volume 3D). A separate, though integrated, EIAR has been prepared to accompany an application for statutory approval to An Bord Pleanála (ABP) for the Ireland Onshore element of the overall Celtic Interconnector project (Volume 3C).

About EirGrid

EirGrid is the state-owned independent Transmission System Operator (TSO) and developer of Ireland's national high voltage electricity grid (also called the "Transmission System"). The European Communities (Internal Market in Electricity) Regulations 2000 (SI 445 of 2000) sets out the role and responsibilities of the TSO in particular Article 8(1) (a) gives EirGrid, as TSO, the exclusive function:

"To operate and ensure the maintenance of and, if necessary, develop a safe, secure, reliable, economical, and efficient electricity transmission system, and to explore and develop opportunities for interconnection of its system with other systems, in all cases with a view to ensuring that all reasonable demands for electricity are met having due regard for the environment."

About RTE

RTE is the French TSO. Its fundamental mandate is to provide its customers with an economical, safe and clean supply of electricity.

RTE supplies its customers through appropriate infrastructure and provides them with all systems and services they require to meet their needs in terms of economic efficiency, respect for the environment and the security of their energy supply. To this end, RTE operates, maintains and develops high voltage (HV) and very high voltage networks. It guarantees that the electricity system operates safely and correctly. RTE is also responsible for routing electricity from other electricity suppliers (both French and European) to its consumers.

Project Overview

The Proposed Development is primarily a subsea link that will enable the exchange of electricity between the electricity transmission grids in Ireland and France. The link will have the capacity to carry up to 700 MW of electrical energy between the two systems.

The transmission grids in both Ireland and France are operated at High Voltage Alternating Current (HVAC). High Voltage Direct Current (HVDC) is used for the transmission of electrical power over large distances where HVAC is not technically or economically feasible. Converter stations are therefore required in both France and Ireland to convert the HVDC power to HVAC.

The main elements of the overall Celtic Interconnector project are:

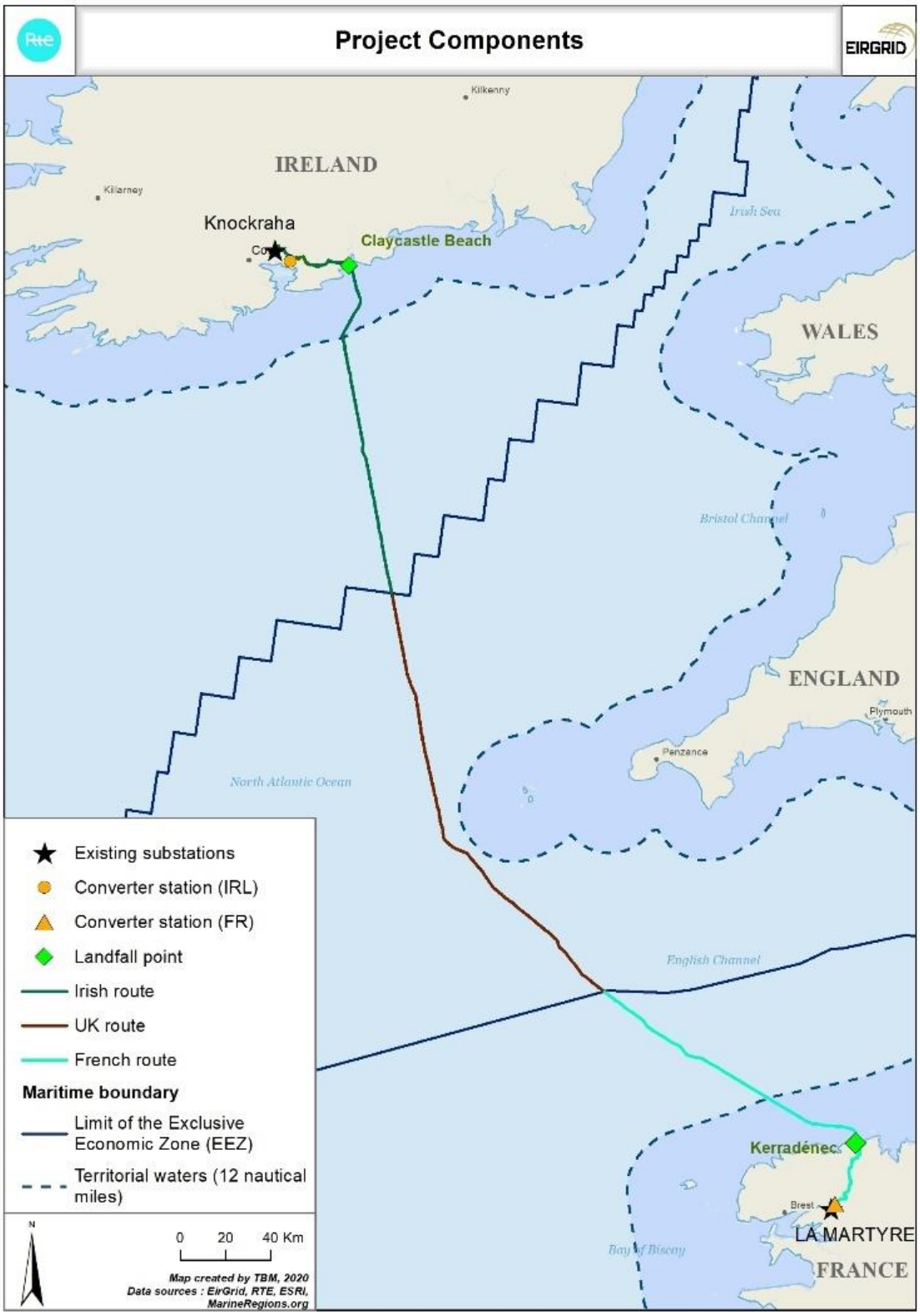
- A High Voltage Direct Current (HVDC) submarine cable of approximately 500 km in length laid between the coast in Brittany France, and the Cork coast in Ireland. The submarine cable will be either buried beneath the seabed or laid on the seabed and covered for protection;
- A landfall location in Ireland and France, where the HVDC submarine circuit will come onshore and terminate at a Transition Joint Bay (TJB);
- A HVDC underground cable (UGC) in both countries between the landfall location and a converter station compound;
- A converter station in both countries to convert the electricity from HVDC to High Voltage Alternating Current (HVAC) and vice versa;
- A HVAC UGC in both countries between the converter station compound and the connection point to the National Grid;
- A connection to the National grid; and,
- A fibre optic link, with associated power supply, will also be laid along the route for operational control, communication and telemetry purposes.

The key elements of the project are illustrated in Figure 1.1 and Figure 1.2.

An overview of the proposed Ireland Offshore element of the overall Celtic Interconnector project is presented in Chapter 3 Project Overview. A detailed description of the Ireland Offshore element of the project is provided in Volume 3D Part 2 of this EIAR, Chapter 5: Description of the Landfall, and Chapter 6: Description of the Offshore Cable.

Figure 1.1 Celtic Interconnector (Project Overview)

Figure 1.2 The Celtic Interconnector



Structure of Whole of Project Environmental Appraisal

The Celtic Interconnector Project is, by its nature multi-jurisdictional, and is being jointly developed by the two TSOs of Ireland and France. In addition, while not occurring within UK territory, it will be located, in part, within the UK Exclusive Economic Zone (EEZ). In response, and to ensure a comprehensive environmental appraisal of the overall end-to-end project, a multi-volume application has been prepared by a multi-organisational team of competent experts working collaboratively. This has ensured that this overall environmental appraisal is robust and objective.

Having regard to this multi-jurisdictional project, this whole-of-project environmental appraisal is set out in a number of volumes. This is intended for the convenience of the various Competent Authorities, prescribed bodies and the general public as it allows specific focus on those particulars of relevance to each jurisdiction, set within a whole-of-project framework. It also facilitates the fact that the different jurisdictions have different legislative requirements and processes in respect of environmental assessment.

The multi-volume approach to the consents that are required in the Irish jurisdiction is set out in Table 1.1. Details regarding the contents of the Marine Licence Application that is required in the UK jurisdiction is set out in Table 1.2. This EIAR is Volume 3D Ireland Offshore.

Table 1.1 Multi-Volume Application and Supporting Documentation

Consents	Volumes	No.	Contents	Organisation
1. Strategic Infrastructure Development (SID) Application:	**Volume 1**	1A	Statutory Particulars	Mott MacDonald (MM)
		1B	Planning Drawings	MM
	Volume 2	2A	Planning Report	EirGrid
		2B	Public and Landowner Consultation Report	EirGrid
	Volume 3	3A	Non-Technical Summary (NTS) for Ireland Onshore**	MM
		3C	Environmental Impact Assessment Report (EIAR) for Ireland Onshore**	MM
	Volume 4		Environmental Report for UK Offshore*and **	Wood
	Volume 5		Joint Environmental Report (JER)	TBM Consulting Group
	Volume 6	6A	Onshore Natura Impact Statement (NIS) for Ireland (including in-combination effects) **	MM
2. Foreshore Licence Application:	**Volume 3**	3B	NTS for Ireland Offshore*	Wood
		3D	EIAR for Ireland Offshore*	Wood
	Volume 4		Environmental Report for UK Offshore*and **	Wood
	Volume 5		Joint Environmental Report (JER)	TBM Consulting Group
	Volume 6	6B	Offshore NIS for Ireland (including in-combination effects)*	Wood
	Volume 7	7A	Statutory Particulars	Wood
		7B	Foreshore Licence Drawings	Wood

Consents	Volumes	No.	Contents	Organisation
	Volume 8	8A	Planning and Consultation Report	Wood
		8B	Marine Strategy Framework Directive Assessment	Wood
		8C	Water Framework Directive Assessment	Wood
3. CRU Consent Applications:	**Volume 9**	9A	Draft Application Form under Section 16(1)(b) of the 1999 Act for Authorisation to Construct an Interconnector	EirGrid
		9B	Draft Application under Section 48 of the 1999 Act for Consent to Lay Electric Cables Applications	EirGrid
			Draft Application under Section 49 of the 1999 Act for Consent to Lay Electric Cables Applications	EirGrid
Notes: * This is proposed to be submitted as part of the SID Application for information purposes. ** This is proposed to be submitted as part of the Foreshore Licence Application for information purposes.				

Table 1.2 Contents of Marine Licence Application within UK Jurisdiction

Volumes	No.	Details	Organisation
Volume 10	10A	Marine Conservation Zone (MCZ) Assessment	Wood
	10B	Marine Strategy Framework Directive Assessment	Wood
Volume 11	11A	Appropriate Assessment Screening Report	Wood

Wood has led the project design and environmental appraisal for the Ireland Offshore element of the overall Celtic Interconnector project presented in this EIAR (Volume (3D). Mott MacDonald has led the project design and environmental assessment for the Irish onshore (land) elements of the project (Volume 3C). Both of these Volumes comprise Environmental Impact Assessment Reports (EIARs) prepared in accordance with relevant legislation and established guidance.

In respect of the UK offshore element of the project (Volume 4), the Competent Authority, the UK Marine Management Organisation (MMO), has determined that no EIA is required in respect of the proposed development within the UK Exclusive Economic Zone. As such, an Environmental Report (ER) has been prepared by Wood that is consistent with the structure and provisions of the EIARs carried out for the other jurisdictions, in order to ensure an adequate and robust whole-of-project environmental appraisal to assist the Competent Authorities in their assessments and decision-making.

TBM Consulting Group has led the environmental assessment for the French onshore and offshore elements. While EIARs have been prepared for the French onshore and French offshore project elements, the specifics of the French consenting process requires that, at the time of submitting the consents applications in Ireland, the French EIARs are not publicly available. A Joint Environmental Report (JER) has however been prepared in accordance with EU *Guidance on the Application of the Environmental Impact Assessment Procedure for Large-scale Transboundary Projects* to present a whole-of-project environmental assessment for the benefit of the Competent Authorities, relevant Prescribed Bodies and the general public.

Details of the competencies of the EIAR contributors to Volume 3D are provided in Appendix 1A EIAR Competencies.

This EIAR (Volume 3D) addresses the proposed Ireland Offshore development between an onshore Transition Joint Bay (TJB) located at (though above) the historic High Water Mark (HWM) at Claycastle Beach in Youghal, and the outermost limit of the Irish Exclusive Economic Zone (EEZ). Volume 3C addresses the Ireland Onshore element of the overall Celtic Interconnector Project between Knockraha substation in County Cork and the TJB at Claycastle Beach. This ensures an appropriate interface between the two EIARs, at the landfall area. The structure of this EIAR (Volume 3D) is presented in Table 1.3.

Table 1.3 Structure of the EIAR for the Proposed Ireland Offshore Development

Volume	Chapter	Title
Volume 3D EIAR for Ireland Offshore (Part 1)	1	Introduction
	2	Project Need
	3	Project Overview
	4	EIAR Methodology
Volume 3D EIAR for Ireland Offshore (Part 2)	5	Description of Landfall
	6	Description of Offshore Cable
	7	Alternatives Considered
	8	Population and Human Health
	9	Air Quality and Climate
	10	Marine Sediment Quality
	11	Marine Physical Process
	12	Marine Water Quality
	13	Biodiversity
	14	Seascape and Landscape
	15	Archaeology and Cultural Heritage
	16	Material Assets
	17	Noise and Vibration
	18	Shipping and Navigation
	19	Commercial Fisheries
	20	Major Accidents and/or Disasters
	21	Summary of Transboundary and Cumulative Impacts

Volume	Chapter	Title
	22	Summary of Monitoring and Mitigation Measures
	23	Interaction of Effects

2 Project Need

Introduction

This chapter sets out the need for the Celtic Interconnector Project. The text of this chapter is also set out in Volume 8A Planning and Consultation Report; however, it is being included in this EIAR for completeness.

Project Need

The Celtic Interconnector Project, being jointly developed by EirGrid and RTE, will create an electrical interconnection between Ireland and France to allow the exchange of electricity between the two countries.

The Celtic Interconnector is being developed in response to European challenges such as the energy transition and the management of climate change. Designated as a Project of Common Interest (PCI) by the European Union (see Volume 8A for more discussion re PCI projects), the project meets the criteria detailed in Article 4 of the EU Regulation 347/2013 on guidelines for trans-European energy infrastructure - i.e. the project contributes significantly to at least one of the following specific criteria:

- **Market integration**, *inter alia*, through lifting the isolation of at least one Member State and reducing energy infrastructure bottlenecks; competition and system flexibility;
- **Sustainability**, *inter alia*, through the integration of renewable energy into the grid and the transmission of renewable generation to major consumption centres and storage sites;
- **Security of supply**, *inter alia*, through interoperability, appropriate connections and secure and reliable system operation.

The Celtic Interconnector as a whole will:

- **Facilitate an increase in the use of renewable energy**: an interconnection between Ireland and the continent will increase the integration of renewable energy at the European level and enable France and Ireland to move forward in terms of the energy transition (in line with national policies in respect of the development of renewables);
- **Provide security of supply**: pooling resources will enable both countries to better cope with contingencies and spikes in electricity consumption. Interconnection will promote mutual assistance between both countries and will work in both directions;
- **Improve European solidarity on energy**: the Celtic Interconnector project will be a benchmark project in terms of European Solidarity on energy. It will enable Ireland to benefit directly from the European integrated electricity market. The Celtic Interconnector will be Ireland’s only direct transmission link with another Member State of the European Union;
- **Promote the movement of electricity flows at a European level**: by promoting the movement of electricity in Ireland, in France and throughout all of continental Europe,

the Celtic Interconnector will enable European consumers to benefit from a more open electricity market;

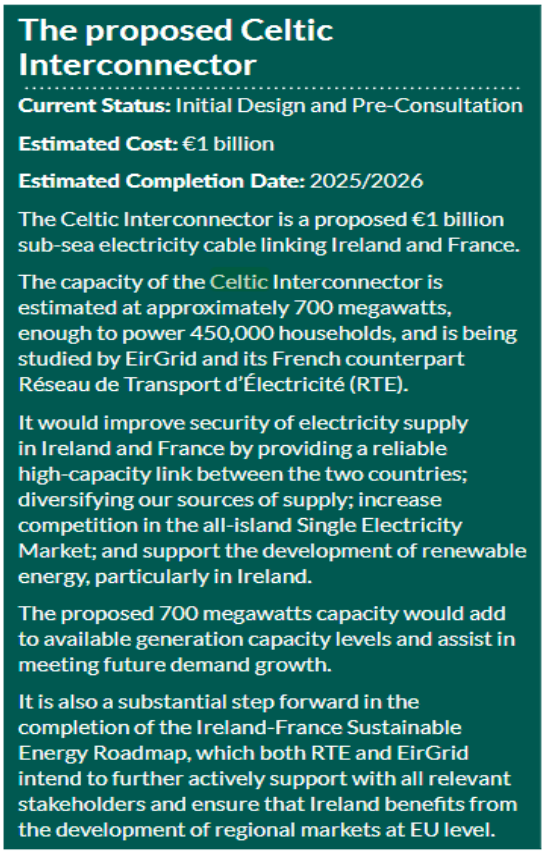
- **Support the development of a more sustainable electricity mix in France and in Ireland**: The Celtic Interconnector will contribute to European objectives of a low-carbon energy future, promoting the development of other renewable energy sources and their integration into the European electricity system.

In this context, the project enjoys strong support from both the French and Irish governments, as well as from the European Commission. Of particular note in this regard, the completion of the project is specifically included in the current Programme for Government, as follows:

- In respect of Mission: A Green New Deal, the Programme states: "*We will take the necessary action to deliver at least 70% renewable electricity by 2030. To achieve this, we will:…Complete the Celtic Interconnector to connect Ireland's electricity grid to France*" (p35);
- In respect of Mission: At the Heart of Europe and Global Citizenship, and in particular respect of Ireland at the Heart of Europe, the Programme states: "*We will…..Support work on the Celtic Interconnector, which will link Ireland to Europe's energy grid, increase competition in electricity prices, and help Ireland to switch to at least 70% renewable electricity*" (p111).

The Celtic Interconnector Project is also specifically included in Project 2040: The National Development Plan 2018-2027. In particular respect of Strategic Outcome 8: Transition to a Low-Carbon and Climate-Resilient Society, the project is identified as a commercial state sector investment (p 78-79 and Figure 2.1 below).

Figure 2.1 Extract from Project 2040: The National Development Plan 2018-2027 (P79)



References

Department of Public Expenditure and Reform National Development Plan 2018 – 2027 [online] Available at: https://www.gov.ie/en/policy-information/07e507-national-development-plan-2018-2027/

Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009

3 Project Overview

Ireland Onshore Element of the Overall Celtic Interconnector Project

The EIAR for Ireland Onshore is presented separately in Volume 3C. A brief summary of the Irish onshore elements of the project is provided below.

The Celtic interconnector will connect to the Irish electricity transmission system at Knockraha substation in County Cork via a High Voltage Alternating Current (HVAC) underground cable of approximately 14km in length. Alternating current (AC) is the technology utilised on the Irish electricity transmission network.

Electricity is best carried over long distances by means of High Voltage Direct Current (HVDC) technology. As such, a HVDC submarine cable will connect to a HVDC onshore underground cable at a Transmission Joint Bay (TJB) north of the car park at Claycastle Beach near Youghal in County Cork. The HVDC onshore UGC is approximately 36km in length.

The majority of the HVAC and HVDC underground cables (UGCs) will be installed within the existing public road network. Off-road routes are proposed at particular locations. In particular, these include:

- The villages of Killeagh and Castlemartyr will be avoided by means of cross-country routing; this will minimise disruption and nuisance for these villages, their residents and communities, and for traffic passing through the villages which are both located on the N25 Cork-Waterford-Wexford / Rosslare National route.
- North of Claycastle Beach where, due to structural constraints associated with an existing narrow railway bridge, it is necessary to divert the UGC off road for approximately 160 metres in the area of, and under, the planned Midleton to Youghal Greenway (currently under construction). Approximately 64 metres of the 160 metres of land cable for this off-road section will be installed within Ballyvergan Marsh proposed Natural Heritage Area (pNHA) (site code 000078).

The HVAC and the HVDC UGCs will terminate at a proposed converter station compound on a brownfield site within the Industrial Development Authority (IDA) development landholding at Ballyadam, between Carrigtwohill and Midleton, East Cork.

As the name suggests, the converter station will convert HVDC electricity to HVAC, and vice versa. The converter station compound will measure approximately 250m x 150m and will include three main buildings, the tallest element being up to 25m in height. The compound will also include associated and ancillary development such as electrical equipment and apparatus, stores and other buildings, drainage, road and landscaping infrastructure.

Figure 3-2 below illustrates the main elements of the proposed development.

Figure 3.2 Irish Onshore elements

In respect of the underground cable (UGC), cable trenches will be excavated (as noted above these will primarily be within public roads), and ducts will be installed, with the road reinstated. The UGC will be delivered to site on drums and will be pulled through the cable ducts. Fibre optic cables will also be laid along with the electricity cables.

Joint bays (underground chambers) will also be constructed along the cable routes and are used to join together ('joint') consecutive lengths of cable and to facilitate the cable pulling. Joint bay separation for a HVAC cable is between approximately 500m and 850m and joint bay separation for a HVDC cable is between approximately 750 to 1,000 metres.

To facilitate traffic management at locations where joint bays are to be located within the carriageway, the use of temporary passing bays is proposed. These are strips of land at the edge of a public road on one side of a joint bay (approximately 50-80m in length), that are temporarily cleared and laid with a hard surface in order to facilitate vehicle movements around the joint bay, thereby avoiding or minimising the need for road closures. This will entail removing the top layer of ground to the side of the carriageway (including removal of hedges if present) and temporarily storing it locally to the site for reinstatement following the works. New hedges would generally be planted as part of re-instatement works.

Other traffic control measures will also be implemented as appropriate along the cable routes. These are likely to include road diversions, temporary closures and stop / go traffic management. All traffic management measures will be implemented in the context that the laying of UGC is a linear construction process, generally at a rate of approximately 50m per day for public roads

where there are generally little or no access constraints, and at a rate of approximately 20m per day on more constrained local roads.

A number of crossings of watercourses, drainage ditches, utilities, railway lines and the Midleton to Youghal Greenway will also be required along the cable route. These crossings will be facilitated by either open cut trenching or by use of Horizontal Directional Drilling (HDD). The specific detail of each crossing will be developed by the appointed contractor within the parameters assessed in this EIAR.

Laydown areas, where construction materials can be temporarily stored, and construction compounds, where car parking and welfare facilities are provided, will also be provided along the route. These are identified on the statutory planning drawings.

In respect of the converter station construction, it is expected that a peak of approximately 300 Heavy Goods Vehicles (HGV) movements per day will be required during the most intense period of the construction phase. It is also expected that approximately 10 abnormal load movements will be required. Abnormal load deliveries will include elements such as construction cranes, the transport of electricity transformers to the site, and equipment to place the transformers on their plinths.

The number of construction workers anticipated to be employed during the construction phase is expected to peak at approximately 100 persons for the converter station. Crew sizes for the installation of the cable routes are estimated at approximately 10 persons per crew.

Subsequent to the grant of statutory approvals, it is anticipated that construction of the converter station, including enabling works and equipment installation, will take approximately 36 months, with the construction phase commencing in Q4 2022. Installation of the land cables is anticipated to take approximately 24 months. Overall, construction of the Celtic Interconnector project is currently anticipated to be complete by 2026. Thereafter, there will be a be a number of months of testing and commissioning prior to full energisation of the Interconnector. Safety requirements for the installation operations / procedures and weather condition will however ultimately dictate the final programme.

In respect of the connection point at Knockraha substation, this will require the provision of 3 no. operational transformers, and one spare transformer, to transform the HVAC electrical power from 400 kV to 220 kV which is the operating voltage of the substation. In addition, other electrical apparatus and equipment will be constructed within the substation, including lightning protection masts.

EirGrid PLC will ultimately own the Celtic Interconnector, while ESB will own the transmission asset infrastructure within Knockraha substation.

Ireland Offshore Element of the Overall Celtic Interconnector Project – the Proposed Development

A brief overview of the proposed development is provided below. The detailed description of the proposed development is provided in EIAR Volume 3D Part 2 Chapter 5: Description of the Landfall, and Chapter 6: Description of the Offshore Cable.

As noted above, the subsea cable will connect to its onshore element at the Transmission Joint Bay (TJB) north of the car park at Claycastle Beach near Youghal in County Cork. The HVDC subsea cables will be buried within pre-installed conduits beneath the beach and car park at Claycastle Beach. The cables will be pulled ashore through the conduits and into the TJB by a temporary winch. Once the cable is secured in the TJB, the offshore cable laying and burial process shall commence. For this, a plough / jetter shall be transferred to the beach to bury the cable seaward.

The cable landfall installation method selected for Claycastle Beach is an open cut installation method to be constructed in two phases. Phase 1 of the installation involves the installation of conduits within a trench excavated across the beach and extending across an existing car park located above the beach to the area of the TJB. Two options are proposed for these works:-

1. Install the conduits almost to the Lowest Astronomical Tide (LAT) level. This minimises disruption to the beach during the high amenity season as these works can be carried out in the winter season; however they involve a significant construction effort as a causeway and extensive cofferdam piling are required. This activity is expected to take up to 10 weeks.
2. Install the conduits for a shorter distance below the beach. This significantly reduces the construction effort, as in particular there would be no requirement for a causeway and the extent of cofferdam piling would be minimal, thereby reducing associated construction noise and traffic. This option would result in a short duration (2-3 days) public exclusion from a 50m corridor of the beach for the installation of each of the two cables, with pedestrian diversions on the beach during the cable installation (the works might occur in the high amenity season). However, the car park would remain fully accessible, and would facilitate the diversion around the exclusion zone.

Option 1 has the greater potential for environmental impact, and so is the basis for assessment in the Ireland Offshore EIAR (Volume 3D2).

Phase 2 of the installation sequence involves pull-in of the submarine cables through the pre-installed conduits and into the TJB using a cable winch. The specific location of the receiver pit will vary between Option 1 and Option 2; however, all other activities are similar between the two options.

Temporary laydown areas and a construction compound will be required along the beach, in the car park, and on the section of grass which separates the car park from the year-round holiday park for the installation of the onshore trench, the TJB and the winch platform.

The offshore cable route through the Irish Territorial Waters is approximately 35km and 116km in the Irish EEZ. The offshore works involve a number of vessels (survey vessels, cable lay vessels and support vessels). The installation of the submarine cable will follow the general sequence below:

- Contractor survey, route engineering and finalisation;
- Unexploded Ordnance (UXO) intervention campaign;
- Boulder clearance;

- Sandwave pre-sweeping (not required in Irish Territorial waters or Irish EEZ);
- Pre-lay grapnel runs;
- Construction of infrastructure crossings;
- Pre-lay route survey;
- Cable lay;
- Post-lay survey;
- Cable burial;
- External / Secondary protection; and
- Post-burial survey.

The first activity of the offshore works will be the pre-lay survey expected to last 28 days in Irish waters and performed well in advance of the main construction activity. The preparatory works shall be carried out in advance of cable lay for approximately 30 days in Irish TW and EEZ. Offshore Cable installation is envisaged using standard burial tools (plough or a mechanical trenching tool). There is approximately 33km of the marine route in the Irish EEZ (Kilometre Point (KP) 57.5 to KP 90.7) that has more challenging strata, consisting of underling chalk. Sections of this route may pose a challenge to cable burial using standard burial tools and may require the use of specialist rock cutting tools for trenching. The overall schedule for cable lay and burial in Irish Territorial Waters and EEZ excluding weather or mechanical damage stand by is 60 days.

A rock placement vessel, only if required in the Irish EEZ, will follow cable installation and be required in Irish TW and EEZ for up to 16 days.

UK Offshore Element of the Overall Celtic Interconnector Project

The ER for the UK Offshore is presented separately in Volume 4. A brief summary of this element of the overall Celtic Interconnector project is provided below.

The cable route through the UK EEZ is approximately 211km and does not enter the Territorial Waters of the UK. The installation of the submarine cables will follow the same approach and processes as described above for the Ireland Offshore elements of the project, and will require a marine licence.

The first activity will be the pre-lay survey expected to last 40 days in UK EEZ.

There is approximately 120km of the marine route in the UK EEZ (KP 185.0 to KP 305.0) that has a relatively challenging strata, consisting of underling chalk. Sections of this route may pose a challenge to cable burial using standard burial tools and may require the use of specialist rock cutting tools for trenching. The overall schedule for cable lay and burial in UK EEZ excluding weather or mechanical damage stand by is 139 days.

French Offshore Element of the Overall Celtic Interconnector Project

The cable route within French waters covers approximately 48km of French Territorial Waters, and 87km of the French EEZ. The installation of the cable will follow the same approach and processes as described above for the UK offshore elements of the project.

French Onshore Element of the Overall Celtic Interconnector Project

The French onshore UGC route is located between the landfall point at Kerradénec in Cléder and the connection point at the existing substation at La Martyre. Volume 5, the Joint Environmental Report (JER) provides a detailed description of the French Onshore infrastructure, mapping and all associated environmental appraisals.

The UGC and associated infrastructure, as well as the nature and extent of the proposed converter station, are as per the description of the proposed Ireland Onshore developments.

The onshore HVDC cable corridor in France is proposed to follow generally a North – South direction from Kerradénec to the converter station location near La Martyre. No town or settlement centres are traversed by the cable route although there are some residential and commercial buildings that are mainly related to agricultural activities such as greenhouses, livestock buildings and farms.

The UGC extends southwards from the geographical area of the "Roscoff onion" towards the Elorn. In this region, agricultural activities are more oriented towards livestock farming and tillage.

A number of businesses and service providers are also located in the villages near the study area. Industrial and economic infrastructure is mainly located in the nearby major cities: Plouescat, Landivisiau, Landerneau and Brest. The Landivisiau naval aviation base extends over the municipalities of Bodilis, Saint-Servais, Saint-Derrien, Plougar and Plounéventer and is an intermittent source of noise (aircraft). There is a working quarry to the South of the Elorn.

4 EIAR Methodology

Introduction

Environmental Impact Assessment (EIA) Directive 2011/92/EU on the assessment of the effects of certain public and private projects as amended by Directive 2014/52/EU (hereafter termed 'the amended EIA Directive') defines EIA as a process consisting of:

1. The preparation of an Environmental Impact Assessment Report (EIAR) by the developer;
2. The carrying out of consultations;
3. The examination by the competent authority of the EIAR, any supplementary information provided by the developer (where necessary) and relevant information received through consultations with the public, prescribed bodies and any affected Member States;
4. The reasoned conclusion of the competent authority on the significant effects of the project on the environment; and,
5. The integration of the competent authority's reasoned conclusion into any development consent decision.

This definition provides for a clear distinction between the process of EIA to be carried out by the competent authority and the preparation by the developer of an EIAR.

The Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports [Environmental Protection Agency (EPA), 2017], hereafter referred to as the EPA Draft Guidelines 2017 describe the EIAR as follows:

"The EIAR consists of a systematic analysis and assessment of the potential effects of a proposed project on the receiving environment. …The EIAR should be prepared at a stage in the design process where changes can still be made to avoid adverse effects. This often results in the modification of the project to avoid or reduce effects through redesign".

This chapter sets out the approach to this EIAR. For each assessment, a precautionary approach[1] has been applied whereby maximum design parameters based on realistic worst-case dimensions, orientations and components have been assessed. This approach ensures that the assessment will consider the greatest environmental impact (i.e. largest footprint, longest exposure, or highest dimensions depending on the topic). This approach is a resilient method where it may not be possible to identify the exact design parameters at this stage within the final design, thereby accommodating flexibility in design and construction whilst ensuring maximum extents and ranges are assessed in this EIAR.

The technical chapters of this EIAR provide further topic specific details of the methodologies applied in the preparation of this EIAR.

[1] Principle adopted by the UN Conference on the Environment and Development (1992) states that in order to protect the environment, a precautionary approach should be widely applied, meaning that where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.(Definition from European Commission: (europa.eu))

EIA Directive

The amended EIA Directive requires that the EIAR provides:

"A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge".

Article 3(1) states that the EIA shall:

"Identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of the project on the following factors:

1. *Population and human health;*
2. *Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
3. *Land, soil, water and climate;*
4. *Material assets, cultural heritage and landscape; and*
5. *The interaction between the factors referred to in points (a) to (d)".*

Article 5 states that an EIAR shall include at least:

1. *"A description of the project comprising information of the site, design, size and other relevant features of the project;*
2. *A description of the likely significant effects of the project on the environment;*
3. *A description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce, and if possible, offset likely significant adverse effects on the environment;*
4. *A description of the reasonable alternatives studied by the developer which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;*
5. *A non-technical summary of the information referred to in (a) to (d); and*
6. *Any additional information specified in annex iv relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected".*

Annex IV requires:

"The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short term, medium term and long term permanent and temporary, positive and negative effects of the project. The description should take into account the environmental protection objectives established at Union or member State level which are relevant to the project".

In addition, Annex IV requires:

"A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved".

EIA Screening

Screening is the term used to describe the process for determining whether a proposed development requires an EIA by reference to mandatory legislative threshold requirements or by reference to the type and scale of the proposed development and the significance or the environmental sensitivity of the receiving baseline environment.

Annex I to the amended EIA Directive requires as mandatory the preparation of an EIA for all projects listed therein. Projects listed in Annex II to the Directive are not automatically subjected to EIA. Member States can decide to subject them to an assessment on a case-by-case basis or according to thresholds and/or criteria (for example size), location (sensitive ecological areas in particular) and potential impact (surface affected, duration).

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018) amended the Planning and Development Act 2000 and the Planning and Development Regulations 2001 in order to transpose into Irish Law the provisions of Directive 2014/52/EU.

In Ireland, Schedule 5 (Part 1 and Part 2) of the Planning and Development Regulations 2001, as amended, transposes Annex I and Annex II to EIA Directive 2014/52/EU. The Celtic Interconnector is not of a type described by either Part 1 or Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended. Notwithstanding this, however, following pre-application consultation between EirGrid and DHLGH, it has been agreed that a voluntary EIAR will be produced to accompany the Foreshore Licence application.

EIA Scoping

Scoping is the process of identifying the significant issues which should be addressed by a particular impact assessment as well as the means or methods of carrying out the assessment. Scoping of an EIAR is voluntary for a developer and, as outlined in the EPA Draft Guidelines 2017, scoping can also be an informal process.

The advancement and refinement of the Proposed Development has followed a systematic and iterative process of assessment and engagement.

As part of EirGrid's Development Framework, described in Volume 8A Planning and Consultation Report and EIAR Volume 3D Part 2 Chapter 7: Alternatives Considered, the collation and assessment of environmental data were essentially linked to the refinement of the Proposed Development, including inputs from key stakeholders.

Throughout the preparation of this EIAR, the design of the Proposed Development has been revised and refined to take account of the findings of studies and surveys and from public consultation and stakeholder feedback which have brought the design from initial design to the proposed design. This has also included ongoing consultation and engagement with the various Competent Authorities and other Prescribed Bodies.

Informal scoping of these documents was carried out by a team of environmental specialists working in close collaboration with design engineers, as part of an iterative design and consultation process, which also considered the potential for alternative approaches and techniques. Where appropriate these alternatives became part of the proposed design.

This scoping has continued throughout the environmental appraisal process and the overall project design and scope of work has been amended appropriately in light of any key issues identified or new information gathered from consultation or as a result of design changes which have subsequently been addressed in this EIAR. This is addressed in more detail in EIAR Volume 3D Part 2 Chapter 7: Alternatives Considered.

Informal scoping also took place between EirGrid and the Foreshore Unit during various pre-application meetings and as a result of actions arising. In addition, as part of the PCI process, the Foreshore Unit received a copy of the Draft Application File in April 2021 and were invited to comment on the proposed contents of the Foreshore Licence Application including the scope of the EIAR.

EIAR Methodology

Regulations and Guidelines

This EIAR has been prepared having regard to the following guidelines.

- The EPA Draft Guidelines 2017;
- Environmental Protection Agency (EPA) Advice Notes for Preparing Environmental Impact Statements (Draft 2015);
- Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment; and
- European Commission Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU), 2017.

Further specific reference documents are cited within the technical chapters of this EIAR, as appropriate.

Baseline Environment

The baseline environment describes the current state of environmental characteristics, detailing the condition, sensitivity and significance of relevant environmental factors which are likely to be significantly affected by the Proposed Development.

The amended EIA Directive also requires consideration of the likely future receiving environment in the absence of the Proposed Development, refer to Section 4.5.8 Do Nothing Effects:

“A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge”.

Temporal and Spatial Scope

The duration of effects will be described for each technical chapter in Part 2 of this EIAR.

Spatial (or geographical) scope refers to the area over which the EIAR considers effects. The environmental sensitivity of the surrounding geographical areas and the establishment of source-pathway-receptor linkages (i.e. the zones of influence) will determine the extent of the area to be assessed as part of the EIAR. This is defined in each of the technical chapters in Part 2 of this EIAR.

Identification of Potential Receptors

A receptor is defined in the EPA Draft Guidelines 2017 as "*any element in the environment which is subject to impacts*".

The environmental effect will depend on the spatial relationship between the source and the receptor with some receptors being more sensitive than others to particular environmental effects. Topic specific receptors will be identified in each technical chapter in Part 2.

Identification of Likely Significant Impacts

Where appropriate and unless otherwise stated, the evaluation of impacts on the environment has been evaluated according to the criteria outlined in Table 4.1 Description of Effects and as referenced in the EPA Draft Guidelines 2017.

Table 4.1 Description of Effects

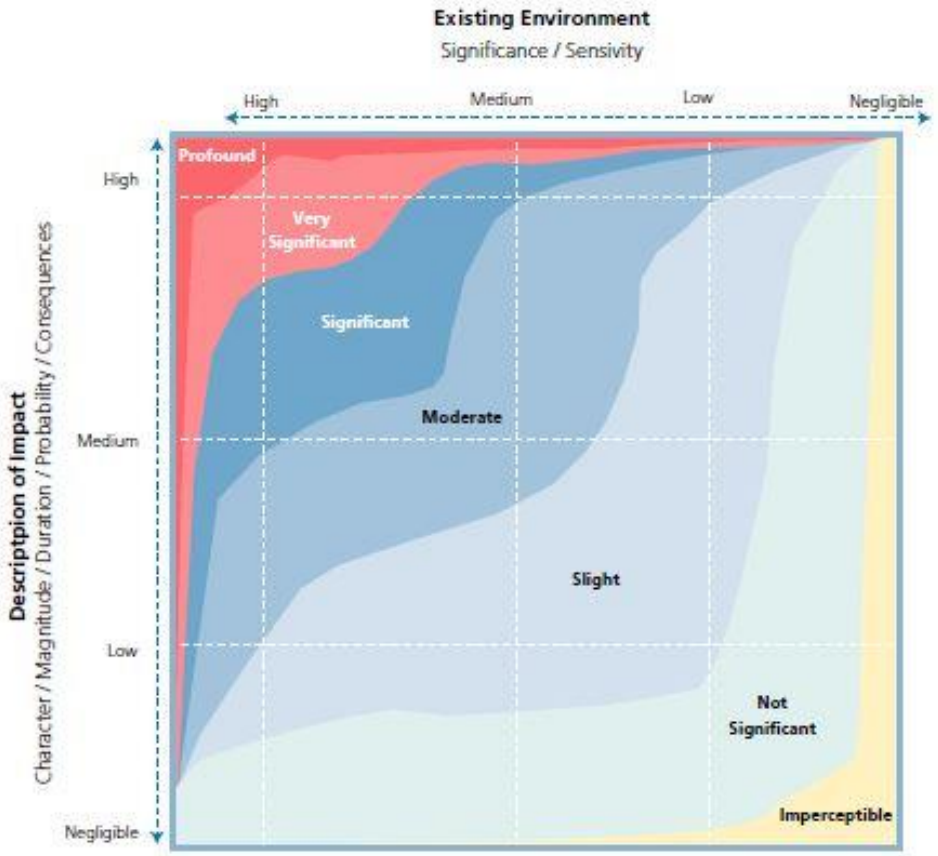
Category	Description of Effects
Quality of Effects It is important to inform the non-specialist reader whether an effect is positive, negative or neutral	**Positive Effects** A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
	Negative/adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Describing the Significance of Effects 'Significance' is a concept that can have different meanings for	**Imperceptible** An effect capable of measurement but without significant consequences.
	Not significant

Category	Description of Effects
different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see Determining Significance below.).	An effect which causes noticeable changes in the character of the environment but without significant consequences
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound Effects An effect which obliterates sensitive characteristics
Describing the Extent and Context of Effects Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.	**Extent** Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
	Context Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Probability of Effects Descriptions of effects should establish how likely it is that the predicted effects will occur – so that the CA can take a view of the balance of risk over advantage when making a decision.	**Likely Effects** The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing the Duration and Frequency of Effects 'Duration' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful	**Momentary Effects** Effects lasting from seconds to minutes
	Brief Effects Effects lasting less than a day
	Temporary Effects Effects lasting less than a year
	Short-term Effects Effects lasting one to seven years.

Category	Description of Effects
	Medium-term Effects Effects lasting seven to fifteen years
	Long-term Effects Effects lasting fifteen to sixty years
	Permanent Effects Effects lasting over sixty years
	Reversible Effects Effects that can be undone, for example through remediation or restoration
	Frequency of Effects Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Describing the Types of Effects	**Indirect Effects (a.k.a. Secondary Effects)** Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative Effects The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	'Do Nothing Effects' The environment as it would be in the future should the subject project not be carried out.
	`Worst case' Effects The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable Effects When the full consequences of a change in the environment cannot be described.
	Irreversible Effects When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
	Residual Effects The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic Effects Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog).

The significance of a potential impact is defined by the sensitivity of the receiving environment and the character of the predicted impact as shown in Figure 4.1. In some cases, magnitude or significance cannot be quantified with certainty, and in these cases professional judgement remains the most effective way to identify the significance of an impact. Where significant adverse effects are likely, mitigation to offset those impacts is required.

Figure 4.1 Impact Assessment Methodology



Mitigation and Monitoring

Embedded mitigation refers to those measures that have been incorporated into the design of the proposals and are detailed as appropriate within the relevant technical chapter. There are four established strategies for the additional mitigation of effects; avoidance, prevention, reduction and offsetting; the mitigation measures outlined within this EIAR reflects this hierarchy of strategies.

Additional mitigation measures and monitoring that have been proposed / implemented for each environmental topic are set out in the technical chapters in Part 2 of this EIAR.

Residual Impacts

Residual impacts that remain from the predicted impacts of the proposals once additional mitigation has been implemented are set out in the technical chapters in Part 2 of this EIAR.

Decommissioning

The operational life of the equipment and apparatus of the Proposed Development is expected to be 40 years. Thereafter, it is assumed that the equipment will be decommissioned and replaced with new equipment. The HVAC and HVDC cables will either be left in place or will be removed for recycling in accordance with the relevant waste management regulations in place when decommissioning takes place. All equipment for the converter station will be removed for recycling or disposal as required by the regulations at the time.

Decommissioning impacts have been assessed within this EIAR, on the assumption (based on previous experience, and understanding of the Proposed Development) that such effects are likely to be of a similar or lesser magnitude than those described and assessed for the construction of the Proposed Development. This approach has been taken within each of the technical assessments presented within Volume 3D Part 2 of this EIAR. Adherence to prevailing regulations and requirements will also apply to any replacement works planned once the initial project's lifespan is complete.

Do Nothing Effects

As outlined in the EPA Draft Guidelines 2017 the description of Do Nothing effects relates to *the environment as it would be in the future should the subject project not be carried out*.

In the context of the Celtic Interconnector Project, non-implementation would mean foregoing its benefits and slowing down the development of renewable energy required to combat climate change. Alternative development could occur at the proposed site of the converter station compound within IDA owned lands at Ballyadam in County Cork, given that the site is zoned for industrial (employment related) use in the current Cork County Development Plan 2014.

The Do Nothing scenario is however considered for each technical chapter in Part 2 of the EIAR.

Transboundary Effects

The need to consider transboundary effects has been enshrined in the United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, adopted in 1991 (the Espoo Convention). The Espoo Convention has been ratified by the European Union, Ireland and the United Kingdom of Great Britain and Northern Ireland. Where a project's effects transcend the territory of a Member State the amended EIA Directive requires that its likely significant effects must be described. These are detailed in Volume 3D Part 2 Chapter 21 of this EIAR.

All activities associated with the construction, operation, and decommissioning of the Proposed Development were assessed for the likely significant transboundary effects and these are detailed in Part 2 Chapter 21 of this EIAR.

Cumulative Effects

Cumulative effects take account of the addition of many minor or significant effects arising from other proposed or planned development within the area of influence of your projects to create larger, more significant effects at a given receptor.

As outlined in the EPA Draft Guidelines 2017, while a single activity may itself result in a minor impact, it may, when combined with impacts (minor or significant) from other proposed developments, result in a cumulative impact that is collectively significant. A single effect which may, on its own, have a significant effect, may also have a reduced and insignificant impact when combined with other effects.

Having regard for relevant guidance in other jurisdictions (The Planning Inspectorate for England and Wales, 2019), a tiered approach has been taken to the identification of other projects, where the level of information likely to be available decreases from tier 1 to tier 3, as detailed below and in Table 4.2.

1. Tier 1:
   a. Developments that are under construction.
   b. Permitted applications, not yet implemented.
   c. Submitted applications, not yet determined. Note that the onshore components of the Celtic Interconnector are categorised as Tier 1c.
2. Tier 2
   a. Development identified in Cork County Development Plan 2014 and the Draft County Development Plan 2022 - 2028 and associated Local Area Plans (LAPs).
3. Tier 3
   a. Development identified in other framework plans and programmes for future development consents / approvals, where such development is likely to occur.

For each technical topic, the nature and scale of the other development has been evaluated and the potential for temporal overlap within the topic-specific zone of influence (ZoI) has been assessed, having regard to the potential for significant cumulative effects.

All activities associated with the construction and operation and decommissioning of the Celtic Interconnector were assessed for the likely significant cumulative effects within the topic specific ZoI. Where likely significant cumulative effects are identified, discussion is provided on the contribution of the Celtic Interconnector to that cumulative effect.

Subject to consents being granted, it is anticipated that construction of the Celtic Interconnector will commence in Q1 2023, with construction complete in 2026. Table 4.2 includes a non-exhaustive list of existing and / or approved development and known planned development considered in this EIAR. Existing operational projects have been assessed as part of the baseline evaluation in this EIAR. EirGrid has engaged, and will continue to engage with the proponents of the developments detailed throughout the development of the Celtic Interconnector project to ensure a co-ordinated approach to the minimisation of environmental impacts.

Projects with the potential to interact with the onshore components of the Celtic Interconnector Project are outlined within Volume 3C Part 1.

Table 4.2: Existing and / or Approved Proposed Development (Cumulative Effects)

Development	Tier	Reference (planning/ other)	Location	Summary of Details
Youghal Eco Boardwalk	1	Youghal Eco Boardwalk[2]	The wooden boardwalk will be developed between the western section of the car park at Claycastle Beach and the Youghal Quality Hotel at Redbarn. The footprint is entirely on the Summerfield / Redbarn sand shoreline (and shingle strandline).	At the time of writing this EIAR the Boardwalk was under construction. The Boardwalk will be in operation during the construction phase of the Celtic Interconnector. The proposed submarine cable route will traverse to the east of the boardwalk. Engagement with Cork County Council will continue to ensure that impacts are minimised.
Inis Ealga Marine Energy Park	2	Inis Ealga Marine Energy Park[3]	Offshore; approximately 54km in width stretching from Dungarvan, Co. Waterford to Cork Harbour, Co. Cork	This project relates to an offshore floating wind energy project off the coast of Cork which is at an early stage of development. There is an intersection between the submarine cable route of the Celtic Interconnector and the indicative installation corridor identified for the Inis Ealga Marine Park. Micro-siting of the anchors associated with the Inis Ealga Marine Energy Park would be required to avoid the proposed Celtic Interconnector. The onshore transmission connection proposals are not yet available.
Planning Applications	1	Various	Adjacent to the proposed development	A search of current and decided Strategic Infrastructure Development Applications, and Current Strategic Housing Development applications to An Bord Pleanála was carried out in January 2021. No relevant applications were identified within the ZoI of the Proposed Development. A search of planning applications to Cork County Council was carried out in January 2021. No relevant applications were identified within the ZoI of the Proposed Development. The search did reveal a number of non-EIA planning applications related to dwellings and farm buildings along the proposed cables routes. These applications relate to extensions, demolition and construction of dwellings and installation of solar panels on roofs. The following applications are also noted: Prior to commencement of construction and during the construction phase engagement with the local communities along the proposed routes will continue and where there is

[2] Youghal Eco-Boardwalk Extension Works Get Underway | Cork County (corkcoco.ie)
[3] DP Energy – Inis Ealga

Development	Tier	Reference (planning/ other)	Location	Summary of Details
				potential for works to be carried out in parallel, appropriate mitigation measures will be implemented including the scheduling of works and regular liaison meetings to ensure that plans are co-ordinated and impacts are minimised. No large scale developments were identified in proximity to the proposals as a result of the search, other than those identified previously.

Interactions between Environmental Factors

Interactions between effects may arise from the reaction between effects of the Celtic Interconnector on different aspects of the environment which may exacerbate the magnitude of those effects. These are presented in Volume 3D Part 2, Chapter 23 of this EIAR.

Limitations and Assumptions

Each technical chapter of this EIAR identifies any assumptions made in undertaking the assessment and the limitations of the assessment and whether there were any difficulties encountered compiling the required information and the uncertainties involved.

References

Cork Country Council (2014) Cork County Development Plan

Cork Country Council Draft County Development Plan 2022 2028 (2021)

Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

European Commission Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU), 2017.

Environmental Protection Agency (EPA) (2015) Advice Notes for Preparing Environmental Impact Statements

Environmental Protection Agency (2017) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports Draft

Planning and Development Act, 2000 S.I. No. 30/2000

S.I. No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018

S.I. No. 600/2001 - Planning and Development Regulations, 2001

The Planning Inspectorate for England and Wales, 2019 [online]. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf

Appendix 1A
EIAR Competencies

Volume	Chapter	Chapter Heading	Competent Expert (Main Author/Peer Reviewer)
Volume 3D	5	Description of the Landfall	**Brian O'Keeffe (Wood)** is a Senior Consultant Engineer and Team Lead with Wood Ireland who has sixteen years' experience in subsea projects including design, verification and delivery management of umbilicals and power cables as well as risers and moorings. Since joining Wood he has gained considerable experience in all aspects of offshore engineering including offshore renewable energy systems. As Cables Team Lead for Wood Ireland he manages a team of engineers working in offshore fixed and floating wind providing Operators and Contractors with cable routing, cable burial and installation, landfall selection, fatigue and spanning assessments and dynamic cable design for floating wind. As umbilical/cable delivery manager and Subject Matter Expert (SME) he also has experience in functional and procurement specifications for subsea cables/umbilicals, and inspection and monitoring of manufacture of subsea cable/umbilicals. Brian is acting as Project Manager for the Marine Consultant Contract with EirGrid and RTE to develop the Celtic Interconnector cable between Ireland and France. The Marine Consultancy contract includes offshore survey monitoring and support, cable procurement support and management / execution of engineering scopes including, route optimization, burial assessment study, external protection studies and metocean and hydrosedimentary studies.
Volume 3D	6	Description of the Offshore Cable	**Brian O'Keeffe (as above)**
Volume 3D	7	Alternatives Considered	**Brian O'Keeffe (as above)**
Volume 3D	8	Population and Human Health	**Colin Carter (Wood)** has over 25 years' experience providing policy, economics and financial advice across a range of sectors including energy and infrastructure in the UK and overseas. He leads the economic function at Wood and covers socio-economic assessment, environmental and financial valuation, cost benefit analysis, financial instruments, and options assessment. He has provided standard assessment methodologies to government and industry including the World Bank, the European Commission, UK central government departments and UK agencies. Colin has extensive supporting energy sector experience. He recently worked on a market assessment for BIES for a proprietary (Wood) technology used for hydrogen production across the world. He wrote the justification for the first electricity interconnector between Scotland and Northern Ireland and developed the first model of the UK's original wholesale electricity market used across the industry. He subsequently worked for over 10 years on energy contracting and was seconded to expert government teams developing energy sector reform options in Australia and the US. Colin has a variety of experience in the marine sector. He provided the financial expertise in an expert team responsible for reviewing all major applications for UK government funding for marine renewable energy technologies and wrote technical responses to proposed new UK Marine Conservation Zone (MCZs) on behalf of the Royal Yachting Association and local harbour commissioners. He worked on the generic methodology for cumulative effects adopted by the Marine Management Organisation (MMO) and led an assessment of hypothetical oil spills in 43 countries for the Italian state oil company. **Jenny Gilbert (Wood)** is an experienced Senior Consultant at Wood specialising in socio-economic analysis and micro-economics and has worked for major national and international government and private sector clients across the areas of recreation, tourism, real estate, water resources, forestry, air quality and health. She is currently working on the socio-economic assessment for the EIA of the first nuclear power station in Poland. Previously, at British Waterways, she worked on canal network developments including the reopening of sections in Gravesend, Kent and the Lea Valley in London. She earlier worked at the Council for Scientific and Industrial Research in South Africa on studies including an EIA for a new 60km high speed train line and socio-economic impact assessments for tourism and biodiversity in a number of diverse coastal environments across the country.

Volume 3D	9	Air Quality and Climate	**Dr Rachel Allison (Wood)** is a Senior Consultant in Wood's Climate, Resilience and Sustainability team. She is an environmental scientist with consultancy experience, focusing on environmental impact assessment and climate adaptation projects. Rachel has authored several climate change environmental impact assessment (EIA) chapters including greenhouse gas assessments, climate vulnerability / resilience and mitigation development. She has worked across variations sectors including the energy, renewable energy, aviation, waste, nuclear and residential sectors. To support planning applications, and as stand-alone strategies, Rachel has developed climate action plans focusing on both mitigation and adaptation actions. Rachel has supported climate-related corporate reporting including completing scenario analysis for Heathrow Airport's TCFD response and developing London Luton Airport's Climate Change Adaptation Report for Defra's third round of reporting. Rachel acted as project co-ordinator for a Rapid Evidence Review on adaptive pathway approaches in flood risk management for the Environment Agency. Additionally, Rachel is supporting a climate vulnerability risk assessment of the Ukrainian transport system including identifying and researching potential adaptation options. Rachel obtained her Ph.D. in paleoclimate studies from Imperial College London. **Ben Warren (Wood)** (BSc, MSc, MIAQM, MIES) is an Associate Director with 14 years' of professional experience in air quality consultancy and has worked on a wide range of projects relating to air quality monitoring and data analysis, dispersion modelling and development of air quality policy. Ben is responsible for numerous air quality projects for clients in both the public and private sectors. He has prepared air quality Environmental Statement (ES) chapters and stand-alone reports for road schemes, residential and commercial developments, industrial sites, power generation facilities, oil and gas infrastructure projects and mining sites in the UK and around the world. He has an expert knowledge of a wide range of dispersion modelling approaches. He has produced numerous Local Air Quality Management (LAQM) reports, Air Quality Action Plans, emission inventories and Low Emission Strategies for local authorities. Ben has also provided a great deal of technical and policy support to local, regional and national government bodies including Defra, Transport for London (TfL) and the Greater London Authority (GLA).
Volume 3D	10	Marine Sediments Quality	**Seastar Survey Ltd.** is an independent marine survey company based in Southampton. Specialising in supplying a range of environmental, oceanographic and hydrographic services to both the offshore and coastal industries. Their aim is to offer an unbeatable level of support and services to organisations operating in the marine environment through a combination of experience in marine science and surveying, survey vessel operation and project management. They also have freshwater and terrestrial environmental survey capability, with trained staff members experienced in delivering the same unbeatable level of support and services to organisations operating in this sector.
Volume 3D	11	Marine Physical Processes	**Jennifer Wilson (Wood)** (BSc, MSc, MCIEEM) is a Principal Consultant within Wood's Marine Team, with nearly fifteen years' experience in marine EIA and consultancy. She has provided support and advice to clients on EIA and consenting issues for a broad range of marine and coastal development projects, including offshore wind farms, offshore construction projects, land reclamation, beach stabilisation and, most recently, nuclear new builds. Jennifer has worked within the project management team on a range of aspects, including: Screening and Scoping Reports; stakeholder engagement; EIAs; Habitats Regulations Assessment (at both project and plan level); Marine Coastal Zone assessments; general project management; and Water Framework Directive Assessments / Marine Strategy Framework Directive Assessments. She has also been involved in consultation with regulators, advisors and key stakeholders at all project stages, as well as provided detailed advice on a number of particular ES topic areas, including negotiations with statutory stakeholders regarding issues such as assessment approaches and proposed mitigation measures.
Volume 3D	12	Marine Water Quality	**Seastar (as above)**
Volume 3D	13	Biodiversity	**Richard Horsfield (Wood)** is a Technical Director with 30 years' experience as a Fisheries consultant, providing support and best practice advice to clients on a broad range of marine, transitional and freshwater projects. With a background in both regulatory and consultancy roles Richard has contributed to a number of EcIA's, ES's and HRA's for Nationally Significant Infrastructure Projects in both marine and freshwater environments. In recent years he has acted as lead technical consultant (fisheries) on projects that include Swansea Bay Tidal Lagoon, Hinkley 'C', Sizewell, Bradwell and Moorside New Nuclear Power Stations, Thames Tideway Tunnel and Poland's first Nuclear Power Station. Richard has a special interest in migratory fish and has held UK Home Office personal and

			project licences to undertake behavioural studies on these species. He has recently undertaken research on behavioural deterrents (strobe and acoustic) for fish at water intakes, tracked salmonid and eel migration in coastal waters to inform an IBM model, developed entrainment mimic units to determine survival through CW systems and assessed the effectiveness of fish recovery and return systems at power stations. **Richard McMullan (Wood)** is a Technical Director (Marine)/Chartered Environmentalist with 21 years' experience in the field of biological, environmental, aquaculture, marine and fisheries sciences. Richard started his career at the Scottish Government (Freshwater Fisheries Laboratory) and has since worked for a number of significant environmental/engineering consultancies within the UK and across the globe. Richard is listed on the register of fisheries professionals in the UK (Institute of Fisheries Management) and has expertise and experience delivering marine surveys and environmental impact assessments for fish and shellfish ecology, commercial fisheries, underwater noise, benthic ecology, marine mammals, intertidal habitats, nature conservation and habitats regulations assessments (HRA). Richard has recently been working on the Celtic Interconnector (Ireland to France) project and has fulfilled similar roles on the NFE Pipeline Route (Qatar), Aberdeen Harbour Expansion Project, Nigg South Quayside Development, Carsaig to Jura Marine Cable and Marine Benthic Environmental Survey (MBES) for BP (Offshore Norway) projects. Richard brings strong technical knowledge/skills and experience for delivering significant marine infrastructure projects. Richard is very organised and works well under pressure, to tight deadlines and schedule (as required). **Michael Shackshaft (Wood)** is a Principal Consultant with 14 year experience as a consultant and ornithologist. He is an experienced seabird ornithologist and has completed over 100 aerial surveys for seabirds and cetaceans and has achieved accreditation as a European Seabirds of Sea (ESAS) certified surveyor. He also has significant experience of intertidal and coastal projects providing inputs to survey programmes and assessments associated with Hinkley Point C, Bradwell and Sizewell new nuclear power stations. Since joining Wood, Michael has managed and contributed to a number of ornithology and ecology tasks and projects, including management of breeding and wintering bird surveys at Heathrow Airport, management and completion of breeding bird surveys at Foel Trawsnant Windfarm and intertidal disturbance surveys at Hinkley Point C, Michael has previously been employed as an ornithological expert by statutory agencies to produce GIS tools, survey guidance protocols and also to provided support during the assessment of Environmental Impact Assessment (EIA) and Habitat Regulation Assessment (HRA) for Round Three offshore windfarms Creyke Beck and Teesside.
Volume 3D	14	Seascape and Landscape	**Cathal Ruane (Wood)** is a Chartered Engineer with over eight years of experience working in various project roles from project management, project coordinator to project engineer. He has worked as an environmental engineer where his role covered the procurement of environmental specialists, being the point of contact with contractors and overseeing project work for the completion of various works packages including but not limited to Appropriate Assessments (AA) and Natura Impact Statements (NIS). Cathal is a project manager in Wood where he leads a team of engineers in the design and analysis of marine infrastructure for offshore energy exploration. He also carries out site suitability reports detailing potential technical obstacles to installation of Solar PV plants.
Volume 3D	15	Archaeology and Cultural Heritage	**Dr John Mabbitt (Wood)** has substantial experience of professional historic environment practice and project management on a wide variety of projects. He has particular expertise in Environmental Impact Assessment, supported by extensive experience of archaeological fieldwork management, buildings recording and documentary research. He has experience of working across the UK and Ireland. John manages historic environment support and multidisciplinary projects, providing advice to a wide variety of clients within the public and private sectors and managing archaeological services on behalf of clients. with an established record of completion to time and budget. His experience covers both marine and terrestrial archaeology, allowing for a joined-up approach to assessments that span the marine and terrestrial historic environment. He has developed effective working relationships with regulators and archaeological contractors across the UK. John has particular experience of the production of EIAs for planning and DCO applications. John's project experience includes involvement in property, industrial, urban regeneration and major infrastructure development schemes. He was project manager for the historic environment support to the Richborough Connection and Sizewell C

			DCO application, has been historic environment lead on other DCO applications including Manston Airport and has provided support to LPAs on DCO consultations for York Potash and Wylfa Newydd.
Volume 3D	16	Material Assets	**Laura Gatdula (Wood)** is a principal consultant and EIA practitioner with eleven years of project experience in the offshore renewable power, oil and gas, infrastructure, and mineral extraction sectors. She is a Practitioner member of the Institute of Environmental Management and Assessment (IEMA) and has contributed to over 20 EIA projects in the UK and internationally. Laura has undertaken assessments of impacts to material assets, marine infrastructure, and other sea users in projects around the UK, including for the Zonal Environmental Assessment of the East Anglia offshore wind Round 3 zone, and a Regional Environmental Assessment on behalf of the Humber Aggregate Dredging Association. Laura's wider involvement in the EIA coordination and technical EIA reporting for offshore wind projects within all four of the Crown Estate licensing rounds, as well has her contributions to marine aggregate licence applications and EIA for offshore and coastal oil and gas projects provide her with the expertise and knowledge necessary to assess impacts to material assets.
Volume 3D	17	Noise and Vibration	**Laura Gatdula (Wood)** Laura's technical expertise is in the marine sciences, with a particular focus on marine ecology, underwater noise. She has applied this to underwater noise assessments in support of European Protected Species disturbance licence applications in Scotland for oil and gas majors, and in EIA for coastal developments in Gibraltar.
Volume 3D	18	Shipping and Navigation	**John Pomfret (Wood)** is an expert on navigable waterway matters, especially freight transport, and has provided navigation inputs to environmental impact assessments for a wide range of projects, including wharf facilities, navigation structures, offshore renewable energy. He has undertaken feasibility studies for waterway transport of aggregates, waste and abnormal indivisible loads (AIL), contributed to port masterplans and contributed to drafting of a Transport and Works Act Order for a waterway scheme, negotiating withdrawal of objections and giving evidence at a Public Inquiry. He has experience of environmental monitoring of waterways and has produced guidance on navigation and nature conservation. He is a former member of the Inland Waterways Advisory Council, a Government appointed advisory body and is a director of Essex Waterways Ltd, managers of the Chelmer and Blackwater Navigation. He has direct experience of operating a small hire boat business, both for holiday hire and canal maintenance work.
Volume 3D	19	Commercial Fisheries	**Richard Horsfield (Wood) (as above)**
Volume 3D	20	Major Accidents and Disasters	**Laura Gatdula (Wood)** Laura has demonstrable experience of project coordination for international ESIA in Uganda, Tanzania, Gabon, and Liberia. These projects have involved the management of large subcontractor teams and the careful control of significant HSE risks including consideration of major accidents and disaster risks. Her contribution to the Major Accidents and Disasters assessment for the Celtic Interconnector project was undertaken in close liaison and under the guidance of Wood's wider Major Accidents and Disasters team.