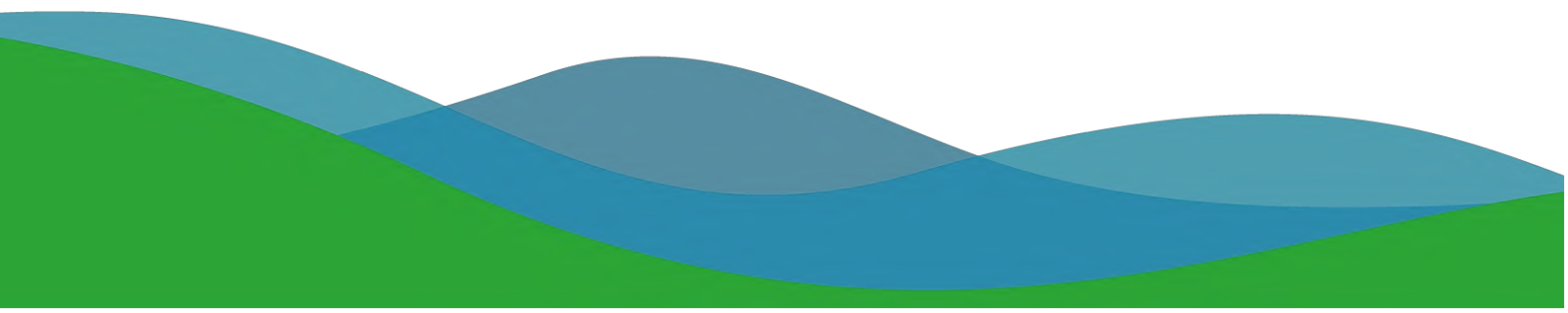




Codling Wind Park

CWP-CWP-02-REP-00261-Onshore Infrastructure Scoping
Report



Document Classification
Onshore Infrastructure Scoping Report
Issued to
Codling Wind Park Limited

Approvals

Prepared by:		
Name / Title	TOBIN	Consulting Engineers
Date:	12/02/2021	
Commercial Approval:		
Name / Title	Liz Royle	Consents Manager
Date:	23/04/2021	
Approved for Release:		
Name / Title	Arno Verbeek	Project Director
Date:	28/04/2021	
Signed:		

Hard copy signatures for all approvals required:

--	--	--

Record of Changes

Issue	Document Date	Detail of Change
A	11/02/2021	First issue for review
B	23/02/2021	Second issue for review
C	16/03/2021	Third issue for review
D	30/03/2021	Fourth issue for review
E	21/04/2021	New document template

TABLE OF CONTENTS

ABBREVIATIONS	VIII
GLOSSARY.....	XI
1 INTRODUCTION.....	1
1.1 Introduction	1
1.2 The Developer.....	1
1.3 Codling Wind Park: Project Timeline	1
1.3.1 Codling Wind Park (as per 2005 Foreshore Lease)	1
1.3.2 Codling Wind Park Extension (2009)	1
1.4 Codling Wind Park: Current Project.....	2
1.4.1 CWP Offshore Wind Farm	2
1.4.2 CWP Onshore Infrastructure Works	3
1.4.3 Operation and Maintenance (O&M) Overview	4
1.5 Purpose of Scoping Report.....	4
1.6 Scoping Report Structure	4
2 APPROACH TO SCOPING	6
2.1 Approach to Scoping of the EIA	6
2.2 Approach to Scoping Consultation.....	6
2.3 Approach to Scoping of Cumulative Impacts	6
2.4 Approach to Transboundary Effects.....	7
2.5 Approach to Scoping of Appropriate Assessment.....	7
3 POLICY AND LEGISLATION	8
3.1 Offshore Wind Energy: Policy & Legislation.....	8
3.2 Onshore Infrastructure Works: Policy & Legislation	9
3.2.1 Onshore Infrastructure Works: Applicable Legislative Consent	10
4 DESCRIPTION OF THE DEVELOPMENT	12
4.1 Introduction	12
4.2 Design Parameter Approach.....	12
4.3 Onshore Infrastructure Works (Landfall, Cabling & Substation)	12
4.3.1 Overview	12
4.3.2 Landfall.....	19

4.3.3	Onshore Underground Cables	21
4.3.4	New Onshore Substation	22
4.3.5	Construction Programme (Landfall, Underground Cabling & Substation)	22
4.3.6	Decommissioning	23
4.4	O&M Base	24
4.4.1	O&M Base	24
5	EIA METHODOLOGY	25
5.1	Introduction	25
5.2	Regulations and Guidance	25
5.3	Structure of EIA Report	25
5.4	Characterisation of the Existing Environment	26
5.5	Consideration of Alternatives	26
5.6	Assessment of Potential Effects	26
5.6.1	Description of Potential Impacts	28
5.6.2	Mitigation	30
5.6.3	Assessing Residual Effects	31
5.7	Cumulative Impact Assessment	31
5.8	Inter-related Effects	33
5.9	Other Consents Required	33
6	APPROPRIATE ASSESSMENT	34
7	POPULATION AND HUMAN HEALTH	37
7.1	Introduction	37
7.2	Existing Environment	37
7.3	Data Sources and Baseline Methodology	37
7.4	Legislation and Guidance	38
7.5	Design Parameters	39
7.6	Embedded Mitigation	39
7.7	Scoping of the Assessment	39
7.8	Scoping Questions	40
8	LAND, SOILS AND GEOLOGY	41
8.1	Introduction	41
8.2	Existing Environment	41
8.2.1	Poolbeg	41

8.2.2	Carrickmines	42
8.2.3	Ballybeg	43
8.3	Data Sources and Baseline Methodology	43
8.3.1	Baseline Data Sources	43
8.4	Guidance	45
8.5	Design Parameters.....	45
8.6	Embedded Mitigation	45
8.7	Scoping of the Assessment	45
8.8	Scoping Questions.....	46
9	HYDROLOGY AND HYDROGEOLOGY	48
9.1	Introduction	48
9.2	Existing Environment	48
9.2.1	Poolbeg	48
9.2.2	Carrickmines	49
9.2.3	Ballybeg	49
9.3	Data Sources and Baseline Methodology	50
9.3.1	Baseline Data Sources	50
9.3.2	Baseline Assessment.....	51
9.4	Legislation and Guidance	53
9.5	Design Parameters.....	54
9.6	Embedded Mitigation	54
9.7	Scoping of the Assessment	54
9.8	Scoping Questions.....	55
10	BIODIVERSITY	56
10.1	Introduction	56
10.2	Existing Environment	56
10.2.1	Study Area	56
10.2.2	Poolbeg	56
10.2.3	Carrickmines	56
10.2.4	Ballybeg	57
10.3	Data Sources and Baseline Methodology	57
10.3.1	Baseline	57
10.3.2	Baseline Assessment.....	58
10.4	Legislation and Guidance	60
10.5	Design Parameters.....	61

10.6	Embedded Mitigation	61
10.7	Scoping of the Assessment	62
10.8	Scoping questions	62
11	ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE	63
11.1	Introduction	63
11.2	Existing Environment	63
11.3	Data Sources and Baseline Methodology	64
11.3.1	Methodology.....	64
11.4	Legislation and Guidance	65
11.5	Design Parameters.....	66
11.6	Embedded Mitigation	66
11.7	Scoping of the Assessment	66
11.8	Scoping Questions.....	67
12	LANDSCAPE AND VISUAL IMPACTS	68
12.1	Introduction	68
12.2	Existing Environment	68
12.3	Data Sources and Baseline Methodology	69
12.4	Legislation and Guidance	71
12.5	Design Parameters.....	71
12.6	Embedded Mitigation	71
12.7	Scoping	71
12.8	Scoping Questions.....	72
13	NOISE AND VIBRATION.....	73
13.1	Introduction	73
13.2	Existing Environment	73
13.3	Data Sources and Baseline Methodology	73
13.4	Legislation and Guidance	73
13.5	Design Parameters.....	74
13.6	Embedded Mitigation	75
13.7	Scoping	75
13.8	Scoping Questions.....	75
14	AIR QUALITY AND CLIMATE.....	76
14.1	Introduction	76

14.2	Existing Environment	76
14.3	Data Sources and Baseline Methodology	76
14.4	Legislation and Guidance	77
14.5	Design Parameters.....	78
14.6	Embedded Mitigation	79
14.7	Scoping	79
14.8	Scoping Questions.....	79
15	MATERIAL ASSETS – BUILT SERVICES	81
15.1	Introduction	81
15.2	Existing Environment	81
15.3	Data Sources and Baseline Methodology	82
15.4	Legislation and Guidance	82
15.5	Design Parameters.....	83
15.6	Embedded Mitigation	83
15.7	Scoping	83
15.8	Scoping Questions.....	84
16	TRAFFIC AND TRANSPORT	85
16.1	Introduction	85
16.2	Existing Environment	85
16.3	Data Sources and Baseline Methodology	85
16.4	Legislation and Guidance	86
16.5	Design Parameters.....	86
16.6	Embedded Mitigation	86
16.7	Scoping	87
16.8	Scoping Questions.....	88
17	SUMMARY OF EIA SCOPING	89

TABLE OF TABLES

Table 1.1: Layout of scoping document and compliance with EIA Guidance.....	5
Table 5.1: Extracted from the Draft EPA Guidelines (2017) (Table 3.3)	29
Table 5.2: Other Offshore Wind Farms.....	32
Table 5.3: Other Consented Projects (Onshore) within the Study Areas	32
Table 5.4: Other Existing Projects (Onshore) within the Study Areas.....	32
Table 5.5: Existing Zoned Lands.....	32
Table 6.1: Overview of the SACs and SPAs that have potential connectivity with the development area or cable route at Poolbeg.....	35
Table 6.2: Overview of the SACs and SPAs that have connectivity with the development area or cable route at Carrickmines.....	35
Table 6.3: Overview of the SACs and SPAs that have connectivity with the development area or cable route at Ballybeg.....	36
Table 8.1: Summary of the typical geotechnical characteristics of the geology in the Dublin Docklands Area (Source: Environmental Report, Dublin Docklands Master Plan 2008).....	42
Table 8.2: Land, Soils and Geology baseline data sources and data availability	44
Table 9.1: Hydrology and Hydrogeology baseline data sources and data availability	50
Table 10.1: Baseline data sources and data availability for flora and fauna.....	58
Table 11.1: Summary of principal features in the Study Area	63

TABLE OF FIGURES

Figure 1.1: Location of Codling Wind Park (CWP).....	2
Figure 4.1: Planning Zoning Poolbeg	13
Figure 4.2: Environmental Baseline Poolbeg	14
Figure 4.3: Planning Zoning Carrickmines	15
Figure 4.4: Environmental Baseline Carrickmines.....	16
Figure 4.5: Planning Zoning Ballybeg	17
Figure 4.6: Environmental Baseline Ballybeg.....	18
Figure 4.7: Image of Typical Landfall Transition Joint Bay Installation (Source: Dogger Bank Wind Farm).....	19
Figure 4.8: Image of Typical Open Trench Method (Source: EirGrid).....	20
Figure 4.9: Image of Typical HDD Method (Source: EirGrid)	20
Figure 4.10: Image of Typical 220 kV Underground Cable Circuit Installation (Source: EirGrid)	21
Figure 4.11: Image of Typical 220 kV GIS Building (Source: EirGrid).....	22
Figure 5.1: EIA Process.....	27
Figure 12.1: Assessing the Significance of Effects (Source: GLVIA3 (Figure 3.5)).....	70

ABBREVIATIONS

Abbreviation	Term in Full
AA	Appropriate Assessment
AC	Alternating Current
AIS	Air Insulated Switchgear
BS	British Standard
C&D	Construction & Demolition
CDP	City / County Development Plan
CEMP	Construction Environmental Management Plan
CFRAM	Catchment Flood Risk Assessment and Management
CGS	County Geological Sites
CIEEM	Chartered Institute of Ecology and Environmental Management
CO ₂	Carbon dioxide
CWP	Codling Wind Park
CWPE	Codling Wind Park Extension
CWPL	Codling Wind Park Limited
CWP OWF	CWP Offshore Wind Farm
CWP OIW	CWP Onshore Infrastructure Works
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht
DCHG	Department of Culture, Heritage and the Gaeltacht
DCC	Dublin City Council
DCCAE	Department of Communications, Climate Action and Environment
DCMNR	Department of Communications, Marine and Natural Resources
DECC	Department of the Environment, Climate and Communications
DEHLG	Department of the Environment, Heritage & Local Government
DELG	Department of Environment and Local Government
DHLGH	Department of Housing, Local Government and Heritage
DLRCC	Dún Laoghaire–Rathdown County Council
DTTS	Department of Transport, Tourism and Sport
EC	European Commission
ED	Electoral District
EclA	Ecological Impact Assessment
EDF	Électricité de France
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
EU	European Union
FORL	Fred Olsen Renewables Ltd.

Abbreviation	Term in Full
FRA	Flood Risk Assessment
GHG	Greenhouse Gas
GIS (switchgear)	Gas Insulated Switchgear
GIS	Geographic Information System
GSI	Geological Survey of Ireland
GLVIA3	Guidelines for Landscape & Visual Impact Assessment, Third Edition
GW	Gigawatt
HDD	Horizontal Directional Drilling
HEC-RAS	Hydrologic Engineering Centre's – River Analysis System
HGV	Heavy Goods Vehicles
HSE	Health Service Executive
IAQM	Institute of Air Quality Management
IED	Industrial Emissions Directive
IFI	Inland Fisheries Ireland
IHP	Irish Health Repository
INNS	Invasive Non-Native Species
IPPC	Integrated Pollution Prevention and Control
IWEA	Irish Wind Energy Association
kV	Kilovolt
LAP	Local Area Plan
LCA	Landscape Character Assessment
mAOD	Metres Above Ordnance Datum
MAC	Maritime Area Consent
MAP	Maritime Area Planning Bill
MEC	Maximum Export Capacity
MHWM	Mean High Water Mark
MoLAS	Museum of London Archaeology Service
MPDM	Marine Planning and Development Management
MRFS	Mid-Range Future Scenario
MSL	Mean Sea Level
MW	Megawatt
NBDC	National Biodiversity Data Centre
NECP	National Energy and Climate Plan
NHA	Natural Heritage Area
NIAH	National Inventory of Architectural Heritage
NIS	Natura Impact Statement
NMPF	National Marine Planning Framework
NMS	National Monuments Services
NPWS	National Parks and Wildlife Services
NRA	National Roads Authority

Abbreviation	Term in Full
NSA	Nutrient Sensitive Area
NTA	National Transport Agency
O&M	Operations & Maintenance
OPW	Office of Public Works
OREDPP	Offshore Renewable Energy Development Plan
OSI	Ordnance Survey Ireland
OWF	Offshore Wind Farm
PM	Particulate Matter
pNHA	proposed Natural Heritage Area
PPV	Peak Particle Velocity
RESS	Renewable Energy Support Scheme
RMPs	Records of Monuments and Places
RPS	Records of Protected Structures
RSA	Road Safety Audit
RSES	Regional Spatial and Economic Strategy
SAC	Special Area of Conservation
SDCC	South Dublin County Council
SDZ	Strategic Development Zone
S.I.	Statutory Instrument
SID	Strategic Infrastructure Development
SMR	Sites and Monuments Record
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SuDS	Sustainable Drainage Systems
TII	Transport Infrastructure Ireland
TMP	Traffic Management Plan
TSO	Transmission System Operator
UNFCCC	United Nations Framework Convention on Climate Change
USEPA	United States Environmental Protection Agency
VRP	Viewshed Reference Points
WCC	Wicklow County Council
WEDGs	Wind Energy Development Guidelines
WFD	Water Framework Directive
WHO	World Health Organisation
WtE	Waste to Energy
WWTP	Wastewater Treatment Plant
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility

GLOSSARY

Glossary	Meaning
Alternating Current (AC)	A flow of electrical current which reaches maximum in one direction, decreases to zero, then reverses itself and reaches maximum in the opposite direction. The cycle is repeated continuously and the number of cycles per second is equal to the frequency. The Irish electrical system is an AC network that uses a frequency of 50 Hz.
Baseline	Current state of the environment which is subject to an impact assessment as part of the EIA process.
Chartered Institute of Ecology and Environmental Management (CIEEM)	Chartered Institute of Ecology and Environmental Management. The professional membership body representing and supporting Ecologists and Environmental professionals in the UK, Ireland and abroad. Previously known as Institute of Ecology and Environmental Management.
Codling Wind Park (CWP)	The Project as described in this document consisting of: <ul style="list-style-type: none"> • CWP Offshore Wind Farm (CWP OWF); and • CWP Onshore Infrastructure Works (CWP OIW).
CWP Onshore Infrastructure Works (OIW)	CWP OIW will comprise the key components: <ul style="list-style-type: none"> • Landfall, cabling and substation; and • Operations and Maintenance (O&M) Base.
Department of Transport (DT)	. The Irish government department responsible for transport
Department of Agriculture	The Irish government department responsible for agriculture, food and the marine. Also, the Department of Agriculture, Food and the Marine (DAFM).
Department of the Environment, Climate and Communications (DECC)	The Irish government department responsible for environment and climate action, natural resources and waste; energy; and communications.
Department of Climate Action, Communications and Environment (DCCAE)	Previous name of DECC from 2016 until 2020
Department of Communications, Marine and Natural Resources (DCMNR)	Previous name of DECC and DCCAE from 2002 until 2016.
Department of Housing, Local Government and Heritage (DHLGH)	The Irish government department responsible for housing, local government (including planning) and heritage.

Glossary	Meaning
Development Area	All areas within which the project is proposed and which will form the boundary of future applications for statutory consent.
EirGrid	State-owned electric power transmission system operator in Ireland.
ESB Networks	Licensed operator of the electricity distribution system in the Republic of Ireland, responsible for carrying out maintenance, repairs and construction on the grid.
Environmental Impact Assessment (EIA)	A systematic means of assessing a development project's likely significant Effects undertaken in accordance with Environmental Impact Assessment Directive (Directive 2011/92/EU) (as amended) and sector-specific Irish implementing legislation, including the Planning and Development Acts 2000 to 2020 and the Planning and Development Regulations 2001 to 2021.
Environmental Protection Agency (EPA)	National agency responsible for protecting and improving the environment of Ireland under the Environmental Protection Agency Acts 1992 to 2011.
European Commission (EC)	The executive body of the European Union responsible for proposing legislation, enforcing European law, setting objectives and priorities for action, negotiating trade agreements and managing implementing European Union policies and the budget.
Foreshore Lease	Leases granted under the Foreshore Acts 1933 to 2014 for the erection of long-term structures (e.g. piers and marinas).
Foreshore Licence	Licences are granted under the Foreshore Acts 1933 to 2014 for works not requiring exclusive possession (e.g. laying of submarine pipelines and cables) and purposes (e.g. aquaculture).
Geographical Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.
High Voltage Direct Current (HVDC)	A high-voltage, direct current (HVDC) electric power transmission system (also called a power superhighway or an electrical superhighway) uses Direct Current for the bulk transmission of electrical power. For long-distance transmission, HVDC systems may be less expensive and suffer lower electrical losses. For underwater power cables, HVDC avoids the heavy currents required to charge and discharge the cable capacitance each cycle. HVDC uses voltages between 100 kV and 1,500 kV.
High Water Mark (HWM)	The high water of ordinary or medium tides
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significant Effects of change resulting from development both on the Landscape as an environmental resource in its own right and on people's views and Visual Amenity.
National Parks and Wildlife Service (NPWS)	The National Parks and Wildlife Service is a division of the Department of Housing, Local Government and Heritage which manages the Irish State's nature conservation responsibilities. As well as managing the national parks, the activities of the NPWS include the protection of Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas.

Glossary	Meaning
Nutrient Sensitive Areas (NSAs)	Areas of protected habitats and species as defined in the Nitrates Directive.
Onshore Grid Connection	This is the collective name for all grid connection works namely <ul style="list-style-type: none"> •Onshore Export Cable Route; and •Onshore Electrical Infrastructure (including transition pits).
Offshore Substation Platform (OSP)	The Offshore Substation Platform(s) required as part of the offshore infrastructure
OSPAR Commission	The forum through which Contracting Parties cooperate underpinning the OPSAR Convention. The Convention for the Protection of the Marine Environment of the North-East Atlantic or OSPAR Convention is the current legislative instrument regulating international cooperation on environmental protection in the North-East Atlantic.
Ramsar site	A wetland site designated to be of international importance under the Ramsar Convention. The Convention on Wetlands, known as the Ramsar Convention.
Receptor	Environmental component that may be affected, adversely or beneficially, by the project.
Relevant Project (now referred to as Phase 1 Project)	As defined in the Transition Protocol contained in Appendix 4 of the MPDM Frequently Asked Questions. On 19 of May 2020, the Government announced that seven offshore renewable energy projects had been designated as Relevant Projects, namely Oriel Wind Park, Dublin Array (2 projects - Bray and Kish Banks), Codling Wind Park (2 projects - Codling I and Codling II), Skerd Rocks Offshore Wind Farm and the North Irish Sea Array (also known as Phase 1 Projects).
Special Area of Conservation (SAC)	Areas of protected habitats and species as defined in the Habitats Directive (92/43/EEC).
Special Protection Area (SPA)	Sites classified in accordance with Article 4 of the EC Birds Directive (79/409/EEC) which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex 1 of the Directive), and for regularly occurring migratory Species.
Species	A group of interbreeding organisms that seldom or never interbreed with individuals in other such groups, under natural conditions; most species are made up of subspecies or populations.
Study Area	Development Area and any survey area that is required to comprehensively identify, evaluate and assess the potential significant effects of CWP OIW on a particular environmental factor
Water body	A discrete and significant element of surface water such as a lake, a reservoir, a stream, river or canal, part of a stream, river or canal, a transitional water or a stretch of coastal water, designated for the purposes of implementing the Water Framework Directive (WFD).
Zone of Influence (Zoi)	Spatial extent of potential impacts resulting from the project.
Zone of Theoretical Visibility (ZTV)	A map, digitally produced, showing areas of land within which, the Proposed Development is theoretically visible.

1 INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment (EIA) Scoping Report has been prepared for the onshore infrastructure components associated with the Codling Wind Park (CWP) project., which are known collectively as the 'CWP Onshore Infrastructure Works (OIW)'.

The purpose of the Scoping Report is to engage with regulators, statutory and non-statutory consultees as part of the EIA process, inviting them to provide relevant information and to comment on the proposed approach to the preparation of the EIA Report (EIAR) in consideration of the CWP OIW. The Scoping Report aims to outline the main potential environmental impacts which may arise due to the construction, operation and decommissioning of CWP OIW. It sets the terms of the onshore EIA requirements and how CWPL proposes to compile the EIAR in accordance with the relevant legislation.

A separate EIA Scoping Report was prepared for the CWP Offshore Wind Farm (OWF) and this was issued to consultees in December 2020.

1.2 The Developer

Codling Wind Park Limited (CWPL), a joint venture between Fred. Olsen Renewables Ltd. (FORL) and Électricité de France (EDF) Renewables was established to develop Codling Wind Park. Both companies are leading developers, owners and operators of renewable energy assets, with many years of global experience in the renewable energy and offshore wind sector.

1.3 Codling Wind Park: Project Timeline

1.3.1 Codling Wind Park (as per 2005 Foreshore Lease)

The original CWP project comprised up to 220 wind turbine generators with a rotor diameter of up to 120 m and a tip height of up to 160 m above Mean Sea Level (MSL) and a generating capacity of up to 1,100 megawatt (MW).

The project was granted its Foreshore Lease by the Department of Agriculture, Fisheries and Food in November 2005. The Lease enables a grid connection route to the Irish coastline and the following infrastructure:

- 220 wind turbine generators and foundations;
- Offshore substation platforms (OSP);
- Anemometer mast; and
- Transmission infrastructure.

1.3.2 Codling Wind Park Extension (2009)

In 2009, CWPL submitted an application for a Foreshore Lease to the Department of Agriculture, Fisheries and Food for an additional 200 turbines with up to 1,000 MW capacity within a similar sized area to the consented CWP. Referred to as the Codling Wind Park Extension (CWPE), the proposed array of wind turbines adjoins the original CWP. The application was for a Foreshore Lease allowing for the installation of the following key infrastructure:

- 200 wind turbines and foundations;
- Subsea power cables; and
- Two OSPs and associated works.

No lease has yet been granted pursuant to that application.

1.4 Codling Wind Park: Current Project

In order to take advantage of significant advances in wind turbine technology in recent years, and to ensure the delivery of the lowest cost of energy to consumers, CWPL now proposes to develop the Codling Wind Park and CWPE projects as one project, known as Codling Wind Park (CWP).

The CWP comprises of the following main components:

- CWP Offshore Wind Farm (CWP OWF); and
- CWP Onshore Infrastructure Works (CWP OIW).

1.4.1 CWP Offshore Wind Farm

The CWP OWF is proposed within an area of approximately 125 km² and is located ca. 13 km from the east coast of Ireland between Greystones and Wicklow. The CWP OWF is undergoing non-statutory scoping¹, on the basis of up to 140 no. wind turbine generators with a tip height of up to 320 m and an overall electrical power output of between 900 – 1,500 MW.

The extent of the CWP OWF is illustrated below in Figure 1.1.

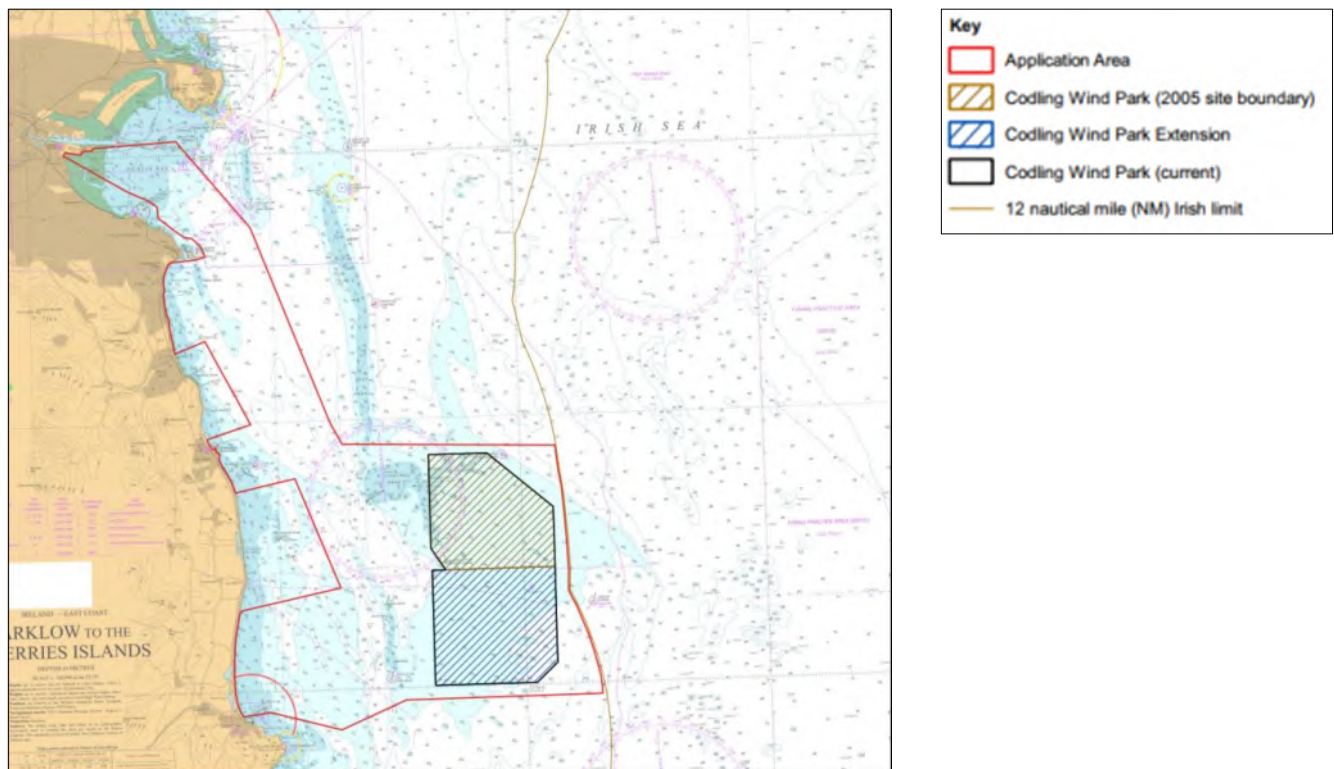


Figure 1.1: Location of Codling Wind Park (CWP)

In May 2020, CWP OWF was designated as a 'Phase 1 Project' in the context of forthcoming Maritime Area Planning (MAP) Bill. This enables CWP OWF to apply for a Maritime Area Consent (MAC) (subject to the terms and conditions which will apply). If the MAC application is successful, CWP OWF will be granted a MAC, conditional on securing planning permission from An Bord Pleanála (ABP).

¹ See Offshore Scoping Report (30 November 2020) (<https://codlingwindpark.ie/environmental-impact-assessment-published/>)

It should be noted that a Scoping Report was prepared for the CWP OWF and circulated to all statutory stakeholders, and other stakeholders to whom it was considered to be of potential interest, in December 2020. That Scoping Report was focused on the offshore works of the project and the cumulative impacts of the OWF and OIW but did not include the standalone impacts of the OIW.

1.4.2 CWP Onshore Infrastructure Works

The CWP OIW will comprise of the following components:

- Landfall: to include works to get the cable from the OWF onshore, a transition joint bay (TJB), piling (if required), temporary construction compound, access roads and above ground infrastructure (may include cable marker posts, communications boxes and manhole covers for accessing the TJB), landscaping/reinstatement works;
- Underground cable route: between the TJB and the entrance to the proposed onshore substation and works which will include soil stripping (for any off-road sections), trenches, duct installation, cable joint bays, pulling pits, road access points, temporary construction compounds, above ground infrastructure (may include cable marker posts, communication boxes and man hole covers for accessing cable joint bays), landscaping / reinstatement works; and
- Substation: substation building/s, electrical infrastructure and above ground cabling, underground cabling, access points, temporary construction compound, drainage infrastructure (such as sustainable urban drainage systems (SUDS) ponds), landscaping and reinstatement works.

It is anticipated that the CWP OWF will export power at a voltage of between 220 kilovolt (kV) to 275kV however other voltage levels may be considered when optimising the design. The operating voltage shall not materially change the onshore cabling design requirements with regards to trench design.

The CWP OWF is expected to produce between 900 – 1,500 MW of electricity, which is proposed to connect into the existing onshore transmission grid network at one, or a combination of, the following three locations:

1. Poolbeg 220 kV substation;
2. Carrickmines 220 kV substation; and
3. Arklow – Ballybeg – Carrickmines overhead line circuit (near Ballybeg).

For clarity, it should be noted that ‘onshore’ comprises the components of the project between the Mean High Water Mark (MHWM) to the final point of connection to the existing transmission grid network which is operated by EirGrid, who are the Transmission System Operator (TSO).

EirGrid is expected to confirm its preferred connection options in 2021. CWPL intends to seek consent for each of these preferred connection options.

Each of the proposed connections identified above will comprise of the following infrastructure:

- Landfall site with the shore end cable from the OFW, between the MHWM and the TJB;
- TJB at the landfall site to connect the shore end cable from the OFW and the onshore cables;
- Onshore underground cable from the TJB at the landfall site to the onshore substation;
- Potential joint bays and pulling pits, to allow installation of the onshore export cable (located at points along the onshore cable route)
- New onshore substation, compound, statcoms (if required) and transformer stations (if required);
- Temporary construction compounds and working areas;
- Access and site tracks; and
- Associated works including landscaping and reinstatement.

Further information on the location and design characteristics of the transmission grid infrastructure, including detailed mapping, is provided in Section 4.2.

1.4.3 Operation and Maintenance (O&M) Overview

The O&M facilities to support the OWF will include buildings/warehouse, laydown areas, cranes, parking and marine works such as pontoons for maintenance vessels. At present there are multiple harbours / ports under consideration for an O&M base.

The location of the O&M base has yet to be confirmed and there is a possibility that due to the programme associated with securing the final site and subsequently developing an O&M design that this part of the project will not be as advanced as the OIW for consideration as part of the project EIAR.

As such, it is currently proposed that the environmental effects of this future development, will be accounted for in the OIW EIAR as part of the cumulative assessment.

1.5 Purpose of Scoping Report

This Scoping Report is for the CWP OIW only and is a separate Scoping Report to the CWP OWF, which is referenced in Section 1.4.1.

The purpose of the Scoping Report is to engage with consenting authorities, statutory and non-statutory consultees to identify the likely significant effects of CWP OIW on the environment. It should be noted that it is proposed additional correspondence and meetings will be held with many of the consultees issued with a copy of this Scoping Report. Ongoing engagement with consultees is an important element of the EIA process and CWPL is committed to sharing project information throughout the EIAR preparation process.

The Scoping Report identifies:

- The characteristics of CWP OIW;
- The location of the project relative to protected areas, sensitive areas and areas designated under zoning and other land-use policies and the main aspects of the physical, biological and human environments likely to be significantly affected by the construction, operation and decommissioning of CWP OIW;
- The characteristics of the potential impacts; and
- The extent of relevant environmental studies that need to be undertaken as part of the EIAR for the CWP OIW.

At the end of each topic section, a series of questions has been asked, to which CWPL would appreciate a response from consultees. If no responses are received to these questions, CWPL will proceed on the basis outlined in this Scoping Report. CWPL would also welcome any indication from consultees that they are interested in follow up consultation.

1.6 Scoping Report Structure

This Scoping Report has been structured in order to comply with the most current and relevant guidance for EIA in the Republic of Ireland and European Union. Table 1.1 presents the structure of this Scoping Report and how it aligns with such guidance.

The final EIAR will include additional sections for cumulative impacts including intra-project effects, consideration of reasonable alternatives etc.

Table 1.1: Layout of scoping document and compliance with EIA Guidance

Section	Chapters/sections in Scoping Report	Consistent with requirements as set out in Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG 2018)	Consistent with requirements as set out in Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft) (EPA 2017)	EU Commission's "Guidance on Scoping" (2017)
Introductory Chapters	Introduction Approach to Scoping including Appropriate Assessment Policy and Legislation Description of Development EIA Methodology	Description of project Competent experts Reasonable alternatives	Description of project Characteristics of project Consideration of alternatives Description of other related projects	Contact details of the Developer Location and characteristics of the Project Information on the Project's specific characteristics – location, technical capacity
Technical Chapters	Population and Human Health	Human health Risk of major accidents and disasters	Population and human health	Information on the Project's specific characteristics – location, technical capacity Characteristics of the Potential Impacts
	Land and Soils	Land	Land and Soils Water	
	Hydrology & Flood Risk	Biodiversity Climate	Water Biodiversity Climate	
	Biodiversity (including Onshore Ornithology)	Biodiversity	Biodiversity	
	Archaeology, Architecture and Cultural Heritage	Cultural Heritage	Cultural Heritage	
	Landscape & Seascape	Landscape	Landscape	
	Noise and Vibration	Human Health	Noise and Vibration Human Health	
	Air Quality & Climate	Air Climate	Air Climate	
	Material Assets (including built services, waste & roads)	Material Assets	Material Assets	
	Interactions	All above	All above	

2 APPROACH TO SCOPING

2.1 Approach to Scoping of the EIA

This Scoping Report aims to outline the characteristics of CWP OIW, its location relative to sensitive environmental receptors, the main potential impacts which may result in significant environmental effects due to the construction, operation and decommissioning of the CWP OIW and how CWPL propose to assess such impacts as part of the EIA process.

As outlined in Section 1.5, this scoping exercise is intended to identify the likely significant effects of CWP OIW on the environment.

Following receipt of feedback on this Scoping Report, CWPL will continue to engage with statutory and non-statutory consultees in order to refine and agree the approach to the EIA.

2.2 Approach to Scoping Consultation

Although the feedback received pursuant to this scoping process will form an important step in developing the EIAR for the CWP OIW, it is also recognised that the final scope of the assessments will require further development and discussion with consenting authorities and relevant statutory and non-statutory consultees. CWPL expect to engage with consultees and members of the public as part of the scoping process and throughout the pre-application period in order to ensure that a robust EIA process is followed, and all relevant issues have been adequately considered.

2.3 Approach to Scoping of Cumulative Impacts

This Scoping Report aims to identify the scope of the cumulative impacts to be considered in the EIAR for the CWP OIW.

Cumulative effects are considered to be those that result from the addition of many minor or significant effects, including effects of other projects with the CWP OIW, to create larger, more significant effects.

Directive 2011/92/EU, the Planning and Development Acts 2000 to 2020 and best practice guidance (identified in Table 1.1) require the likely significant environmental effects of a development to be considered cumulatively with effects caused by other existing or approved projects. CJEU case law indicates that the developer's proposals for future phases of a project should also be taken into account, as far as practically possible, in the EIA. CWPL has no current plans for future phases of CWP.

The draft EPA Guidelines on the Information to be Contained in EIARs (2017) also state that *"it can also be prudent to have regard to the likely future environmental loadings arising from the development of zoned lands in the immediate environs of the proposed project."* This Scoping Report accordingly aims to identify the scope of the cumulative impact assessment to be considered in the CWP EIA.

Guidance and legislation indicates that the following must or should be considered in terms of cumulative impacts:

- Existing projects;
- Projects that have received consent;
- Impacts of the development of existing zoned lands; and
- Future phases or proposals for the project.

Other offshore wind farms which have been confirmed as a 'Phase 1 Project' (as defined in Section 3.1), are also under consideration where they may result in cumulative effects in terms of OIW relating to grid infrastructure.

Section 5.7 of the Report provides a list of projects and plans that has been compiled as part of the scoping process. This list will be considered within each topic Chapter of the EIAR, with regard to potential cumulative impacts.

The list will be updated regularly to ensure that the cumulative impact assessment in the EIAR takes account of all relevant plans and projects.

CWPL would welcome engagement with stakeholders to identify a final list of projects to be considered in the cumulative assessment.

2.4 Approach to Transboundary Effects

As part of this Scoping Report any potential transboundary effects resulting from the CWP OIW will be identified, and relevant authorities in neighbouring states consulted where appropriate. This will include possible transboundary effects on European sites as part of the Appropriate Assessment.

The main direct transboundary effect resulting from the CWP OIW will be the supply of renewable electricity on the All-Island transmission grid system and its interconnection with other jurisdictions. There is also the potential for indirect effects associated with the CWP OWF.

2.5 Approach to Scoping of Appropriate Assessment

Appropriate Assessment (AA) is an assessment of whether a plan or project, alone or in combination with other plans or projects, could affect the integrity of any European sites, otherwise known as Natura 2000 sites (*EC Habitats Directive 92/43/EEC*). AA screening requires the preparation of an AA Screening Report which determines whether a plan or project (which is not directly connected with or necessary to the management of a European site), individually or in combination with other plans or projects, would be likely to have a significant effect upon any European site. A project must be "screened-in" and require AA if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.. The AA Screening Report informs the AA process; however, the decision-making responsibility is with the designated Competent Authority.

Where the Competent Authority cannot exclude significant effects and 'screened in' the project, an AA is required. The Competent Authority must complete the AA, informed by the preparation of a Natura Impact Statement (NIS) which is prepared by the project proponent (i.e. CWPL). This must determine whether the proposal will adversely affect the integrity of any European sites, either alone or in combination with other projects or plans. Where adverse impacts have been identified, mitigation must be proposed to that satisfies the Competent Authority that the development will not have an adverse effect on the integrity of any European site.

The Competent Authority must refuse permission for a project unless it is satisfied that it will not have an adverse effect on the integrity of any European site. (There is an exception for projects advanced for imperative reasons of overriding public interest, but it is not anticipated that CWPL need to rely on that exception at this time.)

The proposed approach to the assessment will be to screen in identified SPAs and SACs where:

- The assessment cannot exclude potential connectivity with the Development Area or grid connection corridor(s),
- Those where assessment cannot exclude the potential for species designated as interest features to migrate through the proposed development and
- SPAs and SACs whose boundaries are adjacent to or overlap the Development Area or grid connection corridor(s).

Further information on CWPL's approach to the assessment is set out in Section 6.

3 POLICY AND LEGISLATION

The key drivers underpinning the need for renewable energy and the development of CWP are as follows:

- The need to reduce greenhouse gas emissions, including increasing energy generation from low carbon sources to replace high carbon energy sources such as burning coal, peat and oil;
- Support the Irish Government's commitment to achieve 70% renewable electricity by 2030;
- Support the Irish Government's objective of delivering 5GW of offshore wind generation by 2030;
- The need to secure safe, affordable and reliable local energy generation; and
- The need to support expected electricity demand whilst meeting climate change commitments.

3.1 Offshore Wind Energy: Policy & Legislation

One of the key foundation policies for the development of offshore wind farms was the Offshore Renewable Energy Development Plan (OREDPA), which was published in 2014 and identified that Ireland offered '*one of the best offshore renewable energy resources in the world*' and that the development of this offshore resource would be central to Ireland's overall energy policy. Since 2014, some of the other key policy developments include:

- Irish Government Climate Action Plan (2019) which identifies the importance of renewable energy and targets an increased reliance on renewables by adding 12 GW of renewable energy capacity, inclusive of the 3.5 GW target specifically for offshore wind;
- The Marine Planning Policy Statement was finalised in November 2019 and identifies the vision for the future development of Ireland's marine planning system, overarching policies and principles for marine planning and other public bodies that engage with the marine planning system along with the high-level priorities for the delivery of a marine planning system;
- The draft National Marine Planning Framework (NMPF) which covers a range of plan policies for the management of marine activities including offshore wind development. The NMPF is intended to be Ireland's first marine spatial plan, as required under the Maritime Spatial Planning Directive (2014/89/EU);
- The publication of the Marine Planning and Development Management Bill (MPDM), General Scheme (January 2020), (more recently referred to as the Maritime Area Planning Bill (MAP Bill)) which covers requirements for forward marine planning and the Maritime Area Consent (MAC) which is the proposed single consenting system for future OWF developments; and
- Programme for Government 2020 – Our Shared Future, which creates a vision for reform and renewal that can help Ireland recover and thrive following issues and challenges inflicted by the Covid-19 pandemic. The Programme for Government increased the target for offshore wind by 2030 from 3.5GW to 5GW.

The Transition Protocol contained in Appendix 4 of the MPDM Frequently Asked Questions sets out the criteria for projects to be designated as Relevant Projects, namely:

- a) offshore wind projects which applied for (and substantially advanced) or were granted a lease under the Foreshore Act 1933, as amended (the Foreshore Act) in respect of which material changes are proposed to that which was originally applied for and assessed under the Foreshore Acts, which changes require further assessment; and/or
- b) offshore wind projects which have a valid connection agreement from the TSO or are confirmed by the TSO as eligible to be processed to receive a valid connection offer.

CWP is considered as having 'Phase 1 Project' status under these transitional arrangements. Once the MAP Bill is enacted CWPL will be entitled to apply for MAC which if granted (subject to conditions) will allow it to apply to An Bord Pleanála for development consent.

3.2 Onshore Infrastructure Works: Policy & Legislation

The relevant European, national and local planning policy and legislation which is considered relevant to the CWP OIW is set out below.

At an international and European level, this includes:

- The European Green Deal 2019;
- Europe 2030 Climate and Energy Framework;
- Energy Roadmap 2050;
- EIA Directive (Directive 2011/92/EU as amended);
- Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC);
- Renewable Energy Directive (2009/28/EC) & Recast Directive (2018/2001/EU).
- Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters (Aarhus Convention).

At a national level this will include:

- Land, foreshore and marine legislation including:
 - The Planning and Development Acts 2000-2020 and Regulations 2001-2021;
 - The Foreshore Act 1933 to 2014 and the Foreshore Regulation 2011;
 - Maritime Area Planning Bill (MAP Bill) (once enacted).
- National Energy and Climate Plan (NECP) 2021-2030;
- Climate Action and Low Carbon Development (Amendment) Bill 2021;
- Ireland 2040 - Our Plan (National Planning Framework) [2018];
- National Development Plan 2018-2027;
- Government White Paper – Ireland's Transition to a Low Carbon Energy Future 2015-2030;
- National Marine Planning Framework Baseline Report.

At a regional level, the EIAR will consider the Eastern and Midland Regional Assembly: Regional Spatial and Economic Strategy (RSES) 2019-2031.

At a local level the EIAR will consider all statutory County Development Plans (CDPs) (both current and draft), Local Area Plans (LAPs), Local Economic and Community Plans etc which are applicable to the CWP OIW.

Given the current location and design assumptions for the project, the local authority areas in which the various onshore works are likely to be located are:

- Dublin City Council (DCC);
- Dún Laoghaire-Rathdown County Council (DLRCC); and
- Wicklow County Council (WCC).

The current list of plans compiled as part of the scoping process is

- Dún Laoghaire-Rathdown County Council: CDP (Draft) 2022-2028 / Dún Laoghaire-Rathdown CDP 2016-2022;
- Dublin City Development Plan 2016-2022 (with a review commenced for the preparation of an updated Plan);
- Wicklow County Development Plan 2016-2022 (with a review commenced for the preparation of an updated Plan);
- Poolbeg West Strategic Development Zone (SDZ);
- Cherrywood SDZ Scheme;
- Ballyogan & Environs LAP 2019-2025;
- Woodbrook-Shanganagh LAP 2017-2023; and
- Wicklow Town-Rathnew Development Plan 2013-2019.

Legislation and guidance relevant to the individual environmental topics are detailed in Section 7 to Section 16 of the Report.

3.2.1 Onshore Infrastructure Works: Applicable Legislative Consent

MAP Bill

The detail of the MAP Bill has yet to be finalised and it may be the case that there is some allowance for onshore infrastructure works associated with a 'Phase 1 Project' to be subject to a new consenting process under future MAP legislation.

Any such requirements will become clearer in later in 2021. However for the purpose of this EIA Scoping Report it is not considered that this would result in a material change in the scope or technical content of the EIAR.

Onshore Infrastructure Works (Landfall, Cabling & Substation)

CWPL has commenced consultations with An Bord Pleanála under Section 182E of the Planning and Development Act 2000, as amended, in respect of the landfall, underground cabling and substation components of the CWP OIW.

It is the view of CWPL that this development is of a type which comes within the meaning of Section 182A of the Planning and Development Act 2000 which relates to 'Electricity Transmission Lines' and as such that it is appropriate that CWPL apply to An Bord Pleanála to approve the grid connection pursuant to Section 182A and 182B rather than to the planning authorities for permission pursuant to Section 34.

Section 182A (1) to (3) and subsection (9) of the Planning and Development Act 2000 provide as follows:

- 1) *Where a person (hereafter referred to in this section as the 'undertaker') intends to carry out development comprising or for the purposes of electricity transmission, (hereafter referred to in this section and section 182B as 'proposed development'), the undertaker shall prepare, or cause to be prepared, an application for approval of the development under section 182B and shall apply to the Board for such approval accordingly.*
- 2) *In the case of development referred to in subsection (1) which belongs to a class of development identified for the purposes of section 176, the undertaker shall prepare, or cause to be prepared, an environmental impact statement or Natura impact statement or both of those statements, as the case may be, in respect of the development.*
- 3) *The proposed development shall not be carried out unless the Board has approved it with or without modifications. [...]*
- 9) *In this section 'transmission', in relation to electricity, shall be construed in accordance with section 2(1) of the Electricity Regulation Act 1999 but, for the purposes of this section, the foregoing expression, in relation to electricity, shall also be construed as meaning the transport of electricity by means of—*
 - a. *a high voltage line where the voltage would be 110 kilovolts or more, or*
 - b. *an interconnector, whether ownership of the interconnector will be vested in the undertaker or not.*

"Transmission" is defined in subsection 2(1) of the Electricity Regulation Act 1999 as follows:

"transmission", subject to section 2A, in relation to electricity, means the transport of electricity by means of a transmission system, that is to say, a system which consists, wholly or mainly, of high voltage lines and electric plant and which is used for conveying electricity from a generating station to a substation, from one generating station to another, from one substation to another or to or from any interconnector or to final customers but shall not include any such lines which the Board may, from time to time, with the approval of the Commission, specify as being part of the distribution system but shall include any interconnector owned by the Board.

"electric plant" is defined as follows:

"any plant, apparatus or appliance used for, or for purposes connected with, the generation, transmission, distribution or supply of electricity, other than—

- a) an electric line,*
- b) a meter used for ascertaining the quantity of electricity supplied to any premises, or*
- c) an electrical appliance under the control of a consumer".*

O&M Base

As previously discussed, multiple harbours / ports under consideration for an O&M base. At the time of writing, the location of the O&M base has yet to be confirmed and it is proposed that a design parameters approach to identifying, describing and evaluating the impacts of the O&M in the project EIAR is undertaken.

In terms of the consenting route options for the O&M there is the possibility that the design of the O&M may exceed the thresholds identified in the 7th Schedule of the Planning Acts relating to harbour and port installations which fall within the project types classed under 'Transport Infrastructure'. The most likely thresholds are:

- 2) *Development comprising or for the purposes of any of the following:*

A harbour or port installation (which may include facilities in the form of loading or unloading areas, vehicle queuing and parking areas, ship repair areas, areas for berthing or dry docking of ships, areas for the weighing, handling or transport of goods or the movement or transport of passengers (including customs or passport control facilities), associated administrative offices or other similar facilities directly related to and forming an integral part of the installation)—

- a) where the area or additional area of water enclosed would be 20 hectares or more, or*
- b) which would involve the reclamation of 5 hectares or more of land, or*
- c) which would involve the construction of one or more quays which or each of which would exceed 100 metres in length, or*
- d) which would enable a vessel of over 1350 tonnes to enter within it.*

In the event that any relevant threshold is exceeded, then CWPL would consult as appropriate with An Bord Pleanála to determine if an application for planning consent would be required under Section 37A of the Planning Acts.

If there is no exceedance of a threshold or if there is and An Bord Pleanála direct that an application under Section 37A is not required, then the application for planning consent would be submitted to the respective planning authority.

Accordingly, the applicable legislation for the O&M infrastructure can only be confirmed when the principal design for that development has been completed and CWPL has completed its consultation with An Bord Pleanála.

4 DESCRIPTION OF THE DEVELOPMENT

4.1 Introduction

This chapter provides an overview of the key design parameters associated with the CWP OIW and includes a description of the proposed development, a high-level indicative project programme, and potential construction methodologies.

The design information presented is indicative and provided to inform the EIA scoping process. This will be further refined as part of the pre-application process, including through consultation with regulators and other stakeholders. The final parameters will be presented in the EIAR and will form the basis for the EIA.

4.2 Design Parameter Approach

The EIAR will take a Design Parameters approach to the assessment. Accordingly, the dimensions and layouts provided in the final EIAR will not be the precise dimensions and layout of the development, but will constitute an envelope within which CWPL can implement a range of designs. The assessment for each environmental factor addresses the most impactful design from that range so that the maximum adverse impacts of the project will have been assessed. That may involve assessing a different design for different environmental factors. For example, the depth of excavation may be allowed to vary within the design parameters. The deepest excavations may reduce noise at the nearest houses, but require additional mitigation to protect groundwater. In that example, the noise assessment would address shallow excavations, while the groundwater assessment would address deeper excavations.

4.3 Onshore Infrastructure Works (Landfall, Cabling & Substation)

4.3.1 Overview

The CWP OIW is expected to produce between 900 – 1,500 MW of electricity which is proposed to connect into the existing onshore transmission grid network at one or a combination of the following three locations:

- Poolbeg 220 kV substation;
- Carrickmines 220 kV substation; and
- Arklow – Ballybeg – Carrickmines overhead line circuit (near Ballybeg).

Each of the proposed connections identified above would comprise onshore works at the landfall location, underground cabling and a new substation.

Maps for each of the connection options are presented in Figures 4.1 to Figures 4.6.

It should be noted that these maps indicate at a high level the spatial areas which are presently being subject to optioneering assessment in relation to a landfall site, underground cables and new substation for each option. The final EIAR will include more specific Design Parameters.

The maps indicate planning zoning and high level environmental features of the baseline environment relating to biodiversity, archaeology and cultural heritage, landscape flooding and water quality.

These features are discussed in more detail from Section 6 in this Scoping Report.



Legend

Indicative Onshore Infrastructure Works Study Area

National Monuments (NM)

Sites and Monuments Record (SMR)

Record of Protected Structures (RPS)

National Inventory of Architectural Heritage (NIAH)

DublinCityIndustrialHeritageRecord

proposed Natural Heritage Areas (pNHA)

Special Area of Conservation (SAC)

Special Protected Area (SPA)

Strategic Development and Regeneration Area Zoning

River Status

River Waterbody 2013 – 2018
Unassigned Status River

River Waterbody 2013 – 2018 Good
Status River

River Waterbody 2013 – 2018
Moderate Status River

Note: underground grid connection infrastructure will be installed between the landfall site and the substation site.

Issue	Date	Description	By	Chkd.
D02	22.04.21	FINAL ISSUE	SP	RH
D02	12.03.21	DRAFT ISSUE	MN	RH
D01	12/02/2021	DRAFT ISSUE	JMG	RH

Client:

Project:

Codling Wind Park
Onshore Infrastructure Works

Title:

Environmental Baseline
Poolbeg

Scale @ A3: 1:10,000

Prepared by:
S. Pezzetta

Checked:
R. Hunt

Date:
April 2021

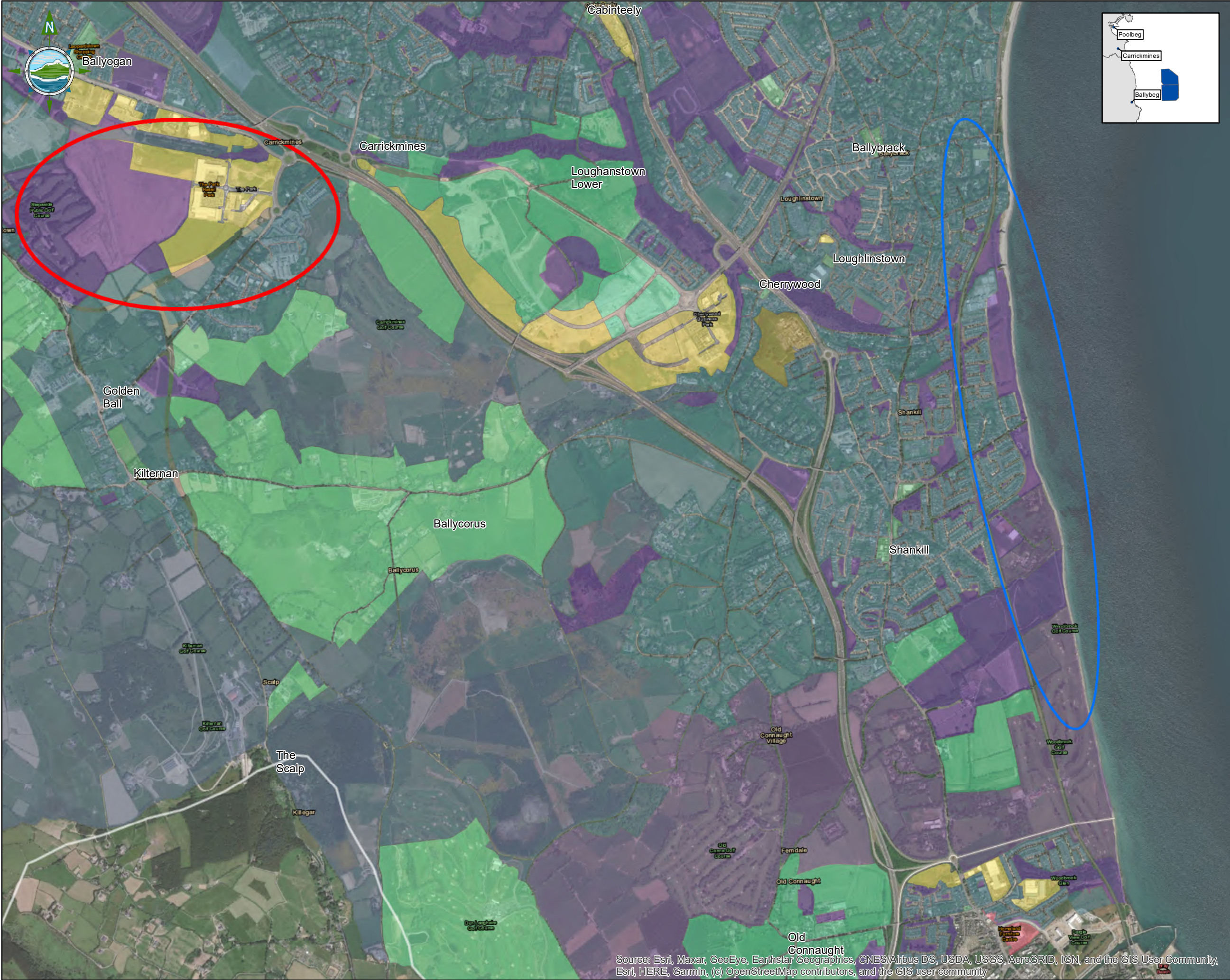
Project Director: D. Grehan

TOBIN
CONSULTING ENGINEERS

Consulting, Civil and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
tel: +353-(0)1-8030406
fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission of Patrick J. Tobin & Co. Ltd. as copyright holder except as agreed for use on the project for which the document was originally issued.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

- Legend**
- Indicative Landfall Study Area
 - Indicative Substation Study Area
- Zoning**
- A To protect and-or improve residential amenity.
 - A1 To provide for new residential communities in accordance with approved Local Area Plans.
 - B To protect and improve rural amenity and to provide for the development of agriculture.
 - DC To protect, provide for and-or improve mixed-use district centre facilities.
 - E To provide for economic development and employment.
 - F To preserve and provide for open space with ancillary active recreational amenities.
 - G To protect and improve high amenity areas.
 - GB To protect and enhance the open nature of lands between urban areas.
 - MH To improve, encourage and facilitate the provision and expansion of medical-hospital uses and services.
 - MTC To protect, provide for and-or improve major town centre facilities.
 - NC To protect, provide for and-or improve mixed-use neighbourhood centre facilities.

Note: underground grid connection infrastructure will be installed between the landfall site and the substation site.

Issue	Date	Description	By	Chkd.
D03	22/04/2021	FINAL ISSUE	SP	RH
D02	12/03/2021	DRAFT ISSUE	MN	RH
D01	12/02/2021	DRAFT ISSUE	JMG	RH

Client:

codling wind park

Project:

**Codling Wind Park
Onshore Infrastructure Works**

Title:

**Planning Zoning
Carrickmines**

Scale @ A3: 1:22,000

Prepared by:	Checked:	Date:
S. Pezzetta	R. Hunt	April 2021
Project Director:	D. Grehan	

TOBIN
CONSULTING ENGINEERS
Consulting, Civil and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
tel: +353-(0)1-8030406
fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission of Patrick J. Tobin & Co. Ltd. as copyright holder except as agreed for use on the project for which the document was originally issued.

Issue:

Figure 4.3

D03



- Legend**
- Indicative Landfall Study Area
 - Indicative Substation Study Area
 - National Monuments (NM)
 - Sites and Monuments Record (SMR)
 - Record of Protected Structures (RPS)
 - National Inventory of Architectural Heritage (NIAH)
 - Assets to be confirmed against NIAH dataset
 - proposed Natural Heritage Areas (pNHA)
 - Special Area of Conservation (SAC)
 - Architectural Conservation Area
 - River Flood Extents - Medium Probability 1 in 100 year storm event
 - Coastal Flood Extents - Medium Probability 1 in 100 year storm event
 - River Status**
 - River Waterbody 2013 – 2018 Unassigned Status River
 - River Waterbody 2013 – 2018 Good Status River
 - River Waterbody 2013 – 2018 Moderate Status River

Note: underground grid connection infrastructure will be installed between the landfall site and the substation site.

Issue	Date	Description	By	Chkd.
D03	26/04/2021	FINAL ISSUE	SP	RH
D02	12/03/2021	DRAFT ISSUE	MN	RH
D01	12/02/2021	DRAFT ISSUE	JMG	RH

Client:

Project: **Codling Wind Park Onshore Infrastructure Works**

Title: **Environmental Baseline Carrickmines**

Scale @ A3:1:22,000

Prepared by:	Checked:	Date:
S. Pezzetta	R. Hunt	April 2021
Project Director:	D. Grehan	

TOBIN
CONSULTING ENGINEERS
Consulting, Civil and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
tel: +353-(0)1-8030406
fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

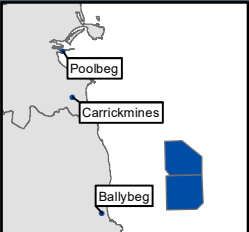
No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission of Patrick J. Tobin & Co. Ltd. as copyright holder except as agreed for use on the project for which the document was originally issued.

Figure 4.4

Issue: **D03**

Wicklow County Council Zoning

- Active Open Space: To preserve, improve and provide for recreational public and private open space.
- Clermont Campus: To provide for a higher education and R&D campus
- Community/Educational/Institutional: To provide for and improve community, educational and institutional facilities
- Community/Educational/Institutional: To provide for and improve community, educational and institutional facilities.
- Enterprise and Employment: To provide for enterprise and employment development in the form of business parks, light industrial uses, office, technology parks etc with pure warehousing use generally not accounting for more than 20% of the floor area perm
- Enterprise and Employment: To provide for enterprise and employment development in the form of light industry, warehousing and logistics development.
- Enterprise and Employment: To provide for enterprise and employment development in the form of retail warehousing development.
- Existing Residential: To protect and preserve existing residential uses and provide for infill residential development.
- Mixed Use: To provide for mixed use development including residential, community, employment and retail uses subject to the objectives specified for each mixed use zone in the development plan
- Neighbourhood Shops and Services: To provide for retail and non retail services such as grocery shops, newsagents hairdressers, dry cleaners etc and local professional services.
- New Residential: To provide for new residential development at densities up to 10 units per hectare
- New Residential: To provide for new residential development at densities up to 20 units per hectare
- New Residential: To provide for new residential development at densities up to 28 units per hectare
- New Residential: To provide for new residential development at densities up to 40 units per hectare
- Passive Open Space: To preserve, improve and provide for parks, recreational public and private open space, green corridors and ecological buffer zones.
- Port: To protect and provide for commercial and industrial port related uses.
- Public Utilities: To provide for public and service infrastructure and utilities
- Public Utility
- Strategic Land Bank: To provide a land bank for future development of the settlement after the lifetime of this plan.
- Tourism: To provide for tourism related uses including tourist accommodation.
- Town Centre: To preserve, improve and provide for town centre uses.
- Village Centre: To preserve, improve and provide for village centre uses
- Village Centre: To preserve, improve and provide for village centre uses.



Legend

- Indicative Landfall Study Area
- Indicative Substation Study Area

Note: underground grid connection infrastructure will be installed between the landfall site and the substation site.

Issue	Date	Description	By	Chkd.
D03	22/04/2021	FINAL ISSUE	SP	RH
D02	12/03/2021	DRAFT ISSUE	MN	RH
D01	12/02/2021	DRAFT ISSUE	JMG	RH

Client:



Project:

Codling Wind Park
Onshore Infrastructure Works

Title:

Planning Zoning
Ballybeg

Scale @ A3: 1:30,000

Prepared by: J. McGee Checked: R. Hunt Date: April 2021

Project Director: D. Grehan

TOBIN
CONSULTING ENGINEERS

Consulting, Civil and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
tel: +353-(0)1-8030406
fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission of Patrick J. Tobin & Co. Ltd. as copyright holder except as agreed for use on the project for which the document was originally issued.

Issue:

Figure 4.5

D03

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community



Legend

- Indicative Landfall Study Area
- Indicative Substation Study Area
- Sites and Monuments Record (SMR)
- Record of Protected Structures (RPS)
- National Inventory of Architectural Heritage (NIAH)
- Architectural Conservation Areas
- proposed Natural Heritage Areas (pNHA)
- Special Area of Conservation (SAC)
- Special Protected Area (SPA)
- River Flood Extents - Medium Probability 1 in 100 year storm event
- Coastal Flood Extents - Medium Probability 1 in 100 year storm event
- River Status**
- River Waterbody 2013 – 2018
- Unassigned Status River
- River Waterbody 2013 – 2018 Good Status River
- River Waterbody 2013 – 2018 Moderate Status River

Note: underground grid connection infrastructure will be installed between the landfall site and the substation site.

Issue	Date	Description	By	Chkd.
D03	22/04/2021	FINAL ISSUE	SP	RH
D02	12/03/2021	DRAFT ISSUE	MN	RH
D01	12/02/2021	DRAFT ISSUE	JMG	RH

Client:

Project: **Codling Wind Park Onshore Infrastructure Works**

Title: **Environmental Baseline Ballybeg**

Scale @ A3: **1:30,000**

Prepared by:	Checked:	Date:
S. Pezzetta	R. Hunt	April 2021

Project Director: D. Grehan

TOBIN
CONSULTING ENGINEERS
Consulting, Civil and Structural Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
tel: +353-(0)1-8030406
fax: +353-(0)1-8030409
e-mail: info@tobin.ie
www.tobin.ie

No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission of Patrick J. Tobin & Co. Ltd. as copyright holder except as agreed for use on the project for which the document was originally issued.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 4.6

D03

4.3.2 Landfall

At landfall, the shore end cable from the OFW will come onshore and will be transitioned / connected to the onshore underground cables. The shore end cables from the OFW and the onshore cables will be connected in an underground transition joint bay (TJB) with a dimension of approx. 20m x 6m. The TJB will have a concrete plinth and walls, where the cables and joints will be anchored. Other works required at the landfall locations will include:

- Above ground infrastructure which may include cable marker boards, communication boxes and manhole covers for accessing the TJB;
- Provision of a temporary construction compound;
- Access roads (if required); and
- Landscaping/reinstatement works.



Figure 4.7: Image of Typical Landfall Transition Joint Bay Installation (Source: Dogger Bank Wind Farm)

Piling may be required during the construction of the TJB depending on the detailed design.

A construction and installation methodology will be developed to determine how the cable will be brought ashore using either an open-cut trench or trenchless technique.

Figure 4.8 illustrates a typical open-cut trenching method, working above the water level, using mechanical excavators. Typically, the trench is then cut or dredged to meet the nearshore approach using barge mounted equipment or vehicles suitable for use at depth in water.

The cables are then floated offshore and pulled onshore by a winch, usually located at the TJB. Other solutions include burial techniques where the cable is floated offshore, pulled onshore and positioned into a narrow trench.

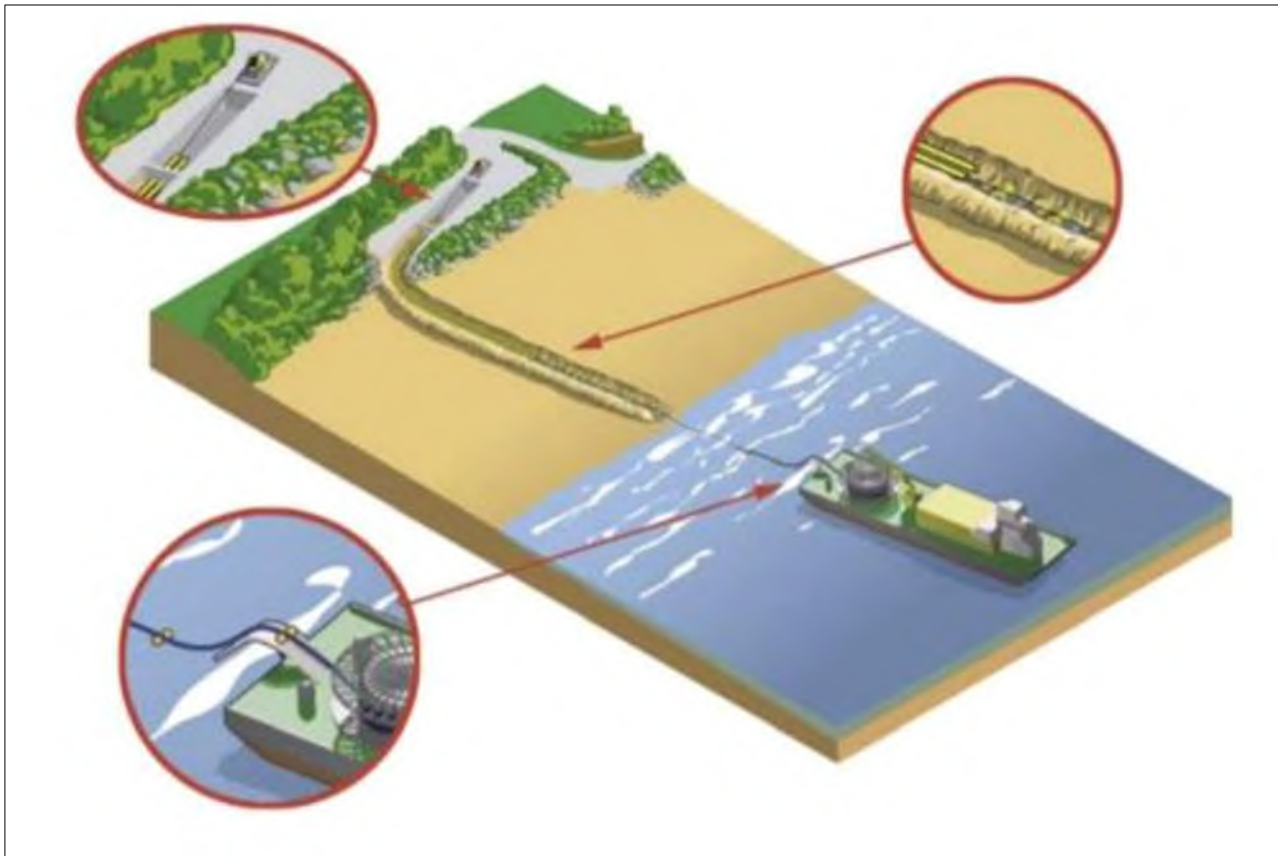


Figure 4.8: Image of Typical Open Trench Method (Source: EirGrid)

In the case of HDD or other trenchless techniques, a launch pit would be required at the landfall area. The drill equipment creates a shallow arc and passes through a casing structure, through which the cable would be pulled.

In the case of HDD, the trench would not be opened for the full length of the beach area. However, laydown and a works area would be required.

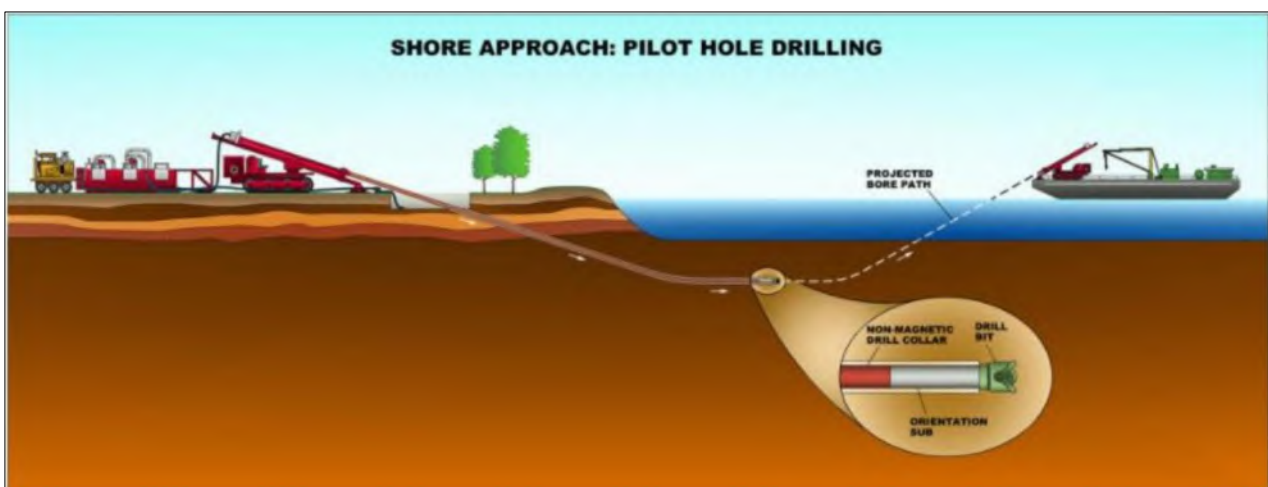


Figure 4.9: Image of Typical HDD Method (Source: EirGrid)

4.3.3 Onshore Underground Cables

The onshore cable for each connection point will either be a single circuit arrangement or a double circuit arrangement, connecting between the TJB at the landfall location and the onshore substation.

Regardless of the cable type, the general arrangement will consist of three high voltage (HV) cable ducts and two communication ducts and in a trench approx. 1.7m wide by 1.25m deep. The double circuit arrangement involves two such single circuit trenches side by side or on separate sides of a road / path / route.

During the installation period, a working cable corridor of up to c. 20-30m in width will be required such as when the route travels off the public road.

It is CWPL's preference to install the underground cables in the public road network wherever possible. The cables would be installed in ducts within a trench in the road. Once a trench is opened on a public road, the ducts are installed in the correct arrangement, the trench is backfilled and the road above is reinstated.

Other works associated with the installation of the underground cables will include:

- Soil stripping (for off-road sections), excavation of trenches and duct installation;
- The provision of cable joint bays at points along the length of the cable route. The cable joint bays will be buried below the existing ground / road level. The underground cable will be pulled into both ends and the joint made within the bay.
- The excavation of pulling pits at locations along the cable route. Pulling pits are temporary excavations, required to provide a pulling point for the cable.
- The provision of above ground infrastructure, which may include cable marker posts, communication boxes and man hole covers for accessing cable joint bays. These will be required at intervals along the cable route. Communication boxes will be positioned at every cable joint bay for the duration of the cable route. These are required to be located on the roadside to allow access for future O&M;
- Road access points (if required);
- Temporary construction compounds; and
- Landscaping / reinstatement works.



Figure 4.10: Image of Typical 220 kV Underground Cable Circuit Installation (Source: EirGrid)

4.3.4 New Onshore Substation

The proposed technology for the onshore substation is yet to be determined. For the purposes of EIA scoping, the maximum site area that would be required for a substation is approximately 14,000m² and in the event that a building(s) are needed on the site, these would be approximately 17m in height.

Other works associated with the substation would include:

- Erection and installation of electrical infrastructure including above ground cabling and underground cabling;
- Structural steel erection, cladding and building finishes for any required buildings;
- Installation of foul and surface water drainage infrastructure (such as sustainable urban drainage systems (SUDS) ponds);
- Miscellaneous civil works such as paving, fencing, site entrance and internal access roads;
- Temporary construction compound; and
- Landscaping and reinstatement works.

Piling may be required during the construction of the substation depending on the detailed design.



Figure 4.11: Image of Typical 220 kV GIS Building (Source: EirGrid)

4.3.5 Construction Programme (Landfall, Underground Cabling & Substation)

It is expected that construction will commence in the mid-2020s subject to the proposed development successfully securing the necessary planning consents, with construction and commissioning activities lasting around 24 months for all connection options with each programme running in parallel (assuming a combination of connection locations).

The exact programme of works will be confirmed by CWPL prior to mobilisation of the site. All works will be carried out in accordance with the Building Regulations, the EIAR, planning conditions and up-to-date design codes at the time of mobilisation.

Construction activities will include for all project elements:

- Site Preparation and Groundworks such as
 - Site establishment
 - Construction of temporary site drainage works
 - Bulk earthworks: excavation and removal of topsoil / spoil
 - Infilling of material for internal access road, site compound and laydown area
 - Landscaping/reinstatement

Construction activities for the Landfall(s):

- Open Cut trench or a trenchless technology such as HDD installation for the shore end of the OFW cable and piling (if required)
- Pulling the shore end of the OFW into the TJB
- Installation and backfilling of the underground TJB
- Installation of the associated above ground infrastructure (cable marker posts, communication boxes and man hole covers)

Construction activities for the Underground Cable(s):

- Trenching and installation of underground cables, cable joint bays and pulling pits;
- Installation of the associated above ground infrastructure (cable marker posts, communication boxes and man hole covers)

Construction activities for the construction of the Substation(s):

- Pouring of concrete foundation and/or piling (if required)
- Erection of steel frame and cladding of walls and roofs for any required buildings
- Permanent foul and surface water drainage works (such as SUDS ponds)
- Installation of above ground and underground cabling
- Miscellaneous civil works (i.e., erection of fencing, internal road construction provision of a site entrance, paving, etc.)
- Electrical Installation, Commissioning and Operation

Construction activities will gradually phase out from pre-construction to predominantly civil activities followed by commissioning and testing of the substation and equipment. It is expected that the number of construction workers required throughout the duration of the construction phase will peak at approximately 50 persons (at each connection option, with the peak number associated with the substation construction).

4.3.6 Decommissioning

At the end of the operational lifetime the wind farm may be decommissioned or alternatively it may be repowered.

At this stage, the detail on what decommissioning work will be required for the CWP OIW is not known, nor is it likely to be until much closer to the time of decommissioning. The decommissioning activities will be determined by the relevant legislation and guidance available at the time. However, if the CWP OFW was repowered, it is expected that the CWP OIW would be kept operational and potentially subject to some upgrade works.

In the event that the CWP OFW was decommissioned, it is likely that the CWP OIW could be kept in place and potentially repurposed, depending on grid requirements at this time.

4.4 O&M Base

4.4.1 O&M Base

At present multiple harbours / ports are under consideration for an O&M base.

The O&M facilities to support the OWF are likely to include an operations building, warehouse, emergency diesel generator, laydown areas, cranes, fuel storage tank, grey water tank, parking, a mast for communications equipment, security fencing with gated access, quayside berthing for Service Operations Vessels (SOVs) and pontoons for Crew Transfer Vessels (CTVs).

The operations building is likely to house: a reception area, offices, meeting rooms, welfare facilities, a canteen, the OWF primary operational control room, a server room, an electrical distribution room and a battery room. The warehouse is likely to house: pallet shelving and racking area, a COSHH (control of substances hazardous to health) room, a workshop, an electrical items storage room, lockable areas for quarantined items and an accommodation block containing offices, a drying room, bag storage area and welfare facilities.

As described previously the location of the O&M base has yet to be confirmed and there is a possibility that due to the programme associated with securing the final site and subsequently developing an O&M design that this part of the project will not be as advanced as the OIW for consideration as part of the project EIAR.

As such, it is currently proposed that the environmental effects of this future development, will be accounted for in the OIW EIAR as part of the cumulative impact assessment.

This assessment will consider the O&M in terms of:

- a) **Location** – Shortlist of potential ports/locations for the O&M;
- b) **Onshore O&M Base** – Indicative parameters for an O&M including (i) office space parameters (ii) parking facilities by number of cars per day (iii) harbour facilities (iv) service vessels (v) maximum staff levels; and (vi) traffic volumes for the proposed O&M;
- c) **Vessel Operations** – Details of the vessel types being considered for the wind farm noting that any vessel used would need to comply with all required health and safety specifications. Vessels include crew vessels, supply vessels and jack-up vessels. Estimate of vessel round trips per year;
- d) **Helicopter Operations** (if relevant) – Details of types of helicopters being considered and estimate of helicopter round trips per year (if necessary).
- e) **Offshore accommodation** – Details of offshore accommodation platforms (if considered).
- f) **Offshore O&M Strategies and Activities** – Factors considered in the development of O&M strategies including safety of personnel, transit duration, port location, the amount of weather downtime, and the economic viability of each O&M option. Noting that the optimum strategy is strongly influenced by factors such as the wind turbine type selected and will likely therefore not be finalised until the final stage of the turbine selection process

5 EIA METHODOLOGY

5.1 Introduction

This chapter presents an outline of the methodology to be employed for the CWP OIW EIAR. It outlines the methodology for the identification and evaluation of potential likely significant environmental effects and also presents the methodology for the identification and evaluation of potential cumulative and inter-related impacts.

As noted previously, a separate EIA Scoping Report was prepared for the CWP OIW and this was issued to prescribed consultees and other relevant stakeholders in December 2020.

5.2 Regulations and Guidance

The impact assessment methodology draws upon a number of EIA principles, regulations and guidance documents, including:

- Draft Guidelines on the Information to be contained in Environmental Impact Statements (EPA, September 2015);
- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, August 2017);
- Draft Advice Notes on Preparing Environmental Impact Statements” (EPA, September 2015);
- Guidance on Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) Preparation for Offshore Renewable Energy Projects (DCCAE, 2017);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment, (European Commission, 2013);
- Receptor specific guidance documents (e.g. Ecological Impact Assessment (EclA) guidance issued by the Chartered Institute of Ecology and Environmental Management (CIEEM)); and
- The EIA Directives and other relevant legislation defined in Section 3.2;

5.3 Structure of EIA Report

It is currently proposed that the EIAR for the CWP will comprise of 5 no. volumes, as follows:

- Non-Technical Summary
- Volume A: CWP Onshore Infrastructure Works: Landfall, Cabling & Substation including:
 - Technical Appendices
 - Figures
- Volume B: CWP OFW including:
 - Technical Appendices
 - Figures
- Volume C: Project Wide Assessments
- Volume D: Cumulative Impact Assessment

The above structure will be discussed as appropriate with the relevant statutory consenting authorities to ensure that it meets with all requirements for the application(s) for statutory consent.

There is the possibility that the structure may be amended to reflect these requirements or if there are delays with submitting applications under separate legislative processes.

CWP would welcome engagement with stakeholders in relation to the future structure of the OIW EIAR.

5.4 Characterisation of the Existing Environment

A characterisation of the existing environment and its likely evolution in the absence of the project will be undertaken in order to determine the baseline conditions. This will involve the following steps:

- Study areas defined for each receptor type based on the relevant characteristics of the receptors (mobility / range);
- Review information available from official sources, public sources and consultation;
- Review likely or potential impacts that might be expected to arise from the project;
- Determine if there is sufficient data to identify, describe, evaluate and assess the impacts of the project with sufficient confidence;
- If further data is required, ensure data gathered is targeted and directed at answering the key questions and filling key data gaps; and
- Review information gathered to ensure the environment can be characterised in sufficient detail.

5.5 Consideration of Alternatives

The EIA Directive requires that the EIAR provides a description of the reasonable alternatives studied, which are relevant to the project and its specific characteristics. An indication of the main reason for selecting the chosen option (the project), including a comparison of the environmental effects will be provided within the EIAR.

This approach will include an assessment of:

- Alternative Sites: This will outline the consideration given to other land banks and the assessment that was undertaken to identify the final proposed site locations for the onshore infrastructure;
- Alternative Layouts / Design: This will detail how the arrangement of site infrastructure within a site was considered and where environmental issues have informed final proposed layouts;
- Alternative Technology / Processes: This will detail the consideration of other technology/processes that was undertaken taking into account aspects such as the needs and scale of the project and site location details.

5.6 Assessment of Potential Effects

The approach taken to make balanced assessments will be guided by both EIA specialists and technical specialists using publicly available and official data, new data gathered for the purposes of the EIAR, experience and expert judgment. In order to provide a consistent framework and system of common tools and terms, where appropriate, a matrix approach will be used to frame and present the judgments made. However, it should be noted that for each topic of the EIA the latest guidance or best practice will be used and therefore definitions of sensitivity and magnitude of impact will be tailored to each receptor. The impact assessment will consider the potential impacts during the construction, operation and decommissioning of the CWP OIW.

The EIAR for the CWP OIW will be undertaken in accordance with the requirements of Directive 2011/92/EU, the Planning and Development Act 2000 to 2020 and the Planning and Development Regulations 2001 to 2021, with the information contained within the EIAR adhering to the requirements of Schedule 6 of the Regulations (Information to be Contained in EIAR)

The methodology used in preparing the EIAR will comprise the following steps:

- A description of the project comprising information on the site, design, size and other relevant features of the project;
- A description of the likely significant effects of the project on the environment;
- 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; and

- Any additional information relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.

The methodology will be broadly consistent across all chapters of the EIAR and will be adhered to as much as possible, in order to ensure that the assessment methodology is transparent and can be effectively communicated to, and understood by, all planning and environmental stakeholders, and the general public. The schematic below from the EPA's Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft) (2017) provides an overview of the steps undertaken in the preparation of the EIAR.

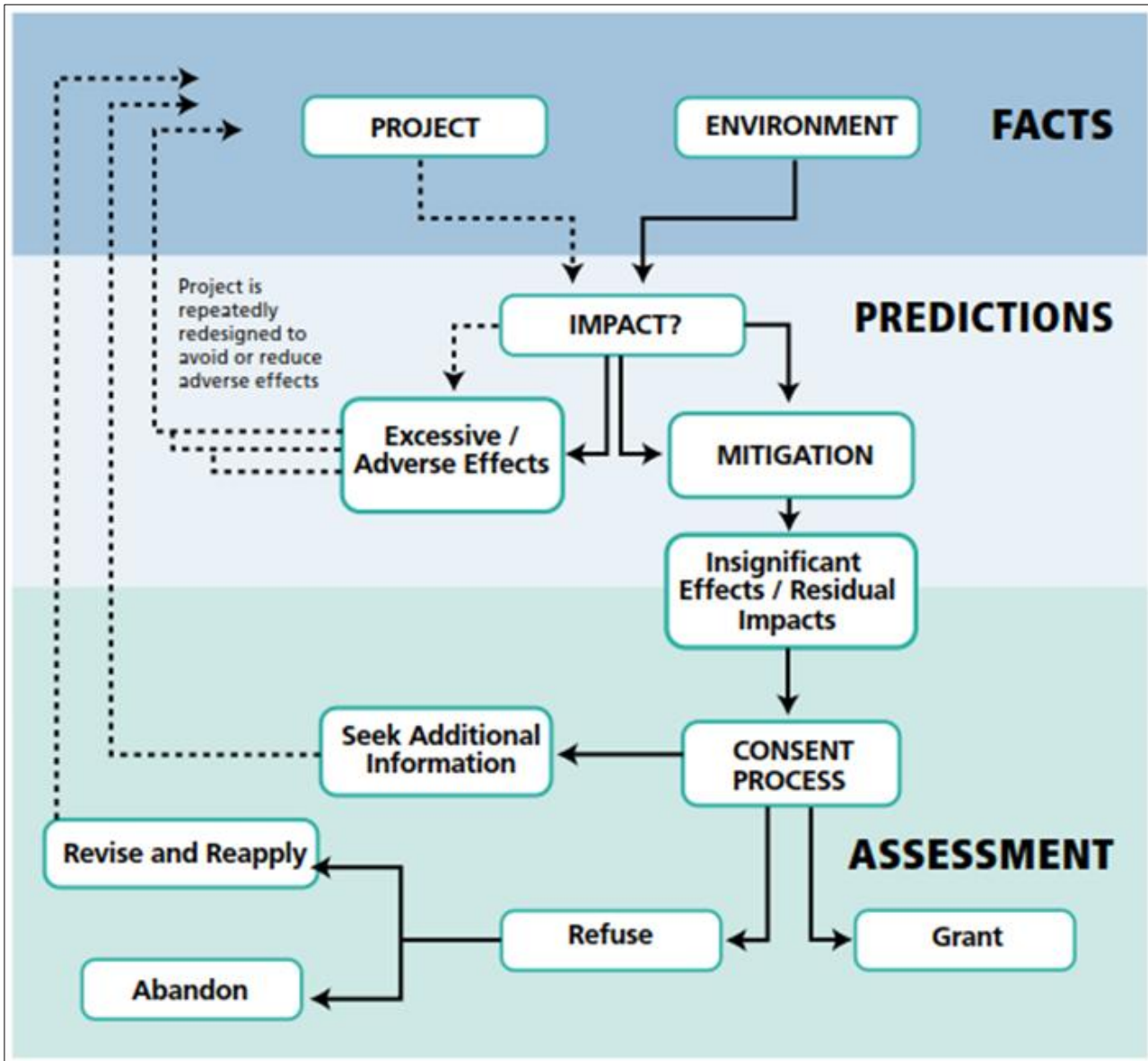


Figure 5.1: EIA Process

The EIAR, adhering to the requirements of Schedule 6 of the Planning and Development Regulations 2001 to 2021, will include (to an appropriate degree of detail) a description of:

- The location of the project and the physical characteristics of the whole project, including, where relevant, demolition works, and the land-use requirements during construction and operation;
- The main characteristics of the operational phase of the project (production and maintenance processes in particular), for example energy demand, energy used, nature and quantity of materials and natural resources (including water, land, soil, biodiversity, etc.,) used;
- An estimate, by type and quantity, of the expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, etc., and quantities and types of waste produced during the construction and operational phases; and
- The reasonable alternatives which are relevant to the project and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects;
- The relevant aspects of the baseline environment, an outline of the likely evolution thereof without the project;
- The likely significant effects of the project on the environment accounting for construction of the project, the use of natural resources, emission of pollutants, risks to human health, cultural heritage and the environment;
- Of the expected significant adverse effects on the environment of the project deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it;
- The cumulation of effects with other existing or approved developments, or both;
- The impact of the project on climate and vulnerability of the project to climate change;
- Of the likely significant effects and methods used to identify and assess significant effects on the environment, including details of any difficulties;
- The measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements.

All of the data collected as part of the preparation of this EIAR will be relevant to the specific study area defined for each individual chapter. The data requirements for each environmental topic will be determined by technical specialists and will be driven by relevant legislation, guidelines, planning and environmental policy requirements and the submissions and observations provided in response to consultation.

5.6.1 Description of Potential Impacts

This Scoping Report sets out the potential environmental impacts and identifies, utilising existing knowledge of the site, which are proposed to be scoped in or scoped out of the EIA process.

The final list of issues to be considered in the EIA process will be confirmed following receipt of feedback on this Scoping Report from the relevant stakeholders, and through further discussions with relevant stakeholders.

As stated in the “Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports’ (EPA, August 2017), an assessment of the likely significant effects of a proposed development is a statutory requirement of the EIAR process. The criteria for the presentation of the characteristics of potential significant effects will be described with reference to the magnitude, spatial extent, nature, complexity, probability, duration, frequency, reversibility, cumulative effect and transboundary nature (if applicable) of the effect.

The classification and description of effects in the EIAR will follow the terms provided in Table 3.3 of the Draft EPA Guidelines (2017) referenced above (and duplicated in Table 5.1 below for information purposes).

According to the Guidelines, the relevant terms listed in the table below can be used to consistently describe specific effects, but all categories of terms do not need to be used for every effect.

The use of standardised terms for the classification of effects will ensure that the EIAR employs a systematic approach, which can be replicated across all disciplines covered in the EIAR. The consistent application of terminology throughout the EIAR will facilitate the assessment of the proposed development on the receiving environment.

Table 5.1: Extracted from the Draft EPA Guidelines (2017) (Table 3.3)

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 different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see <i>Determining Significance</i> below.).	Imperceptible An effect capable of measurement but without significant consequences.
	Not significant 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	Extent Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.

Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.	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
	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

5.6.2 Mitigation

Where the impact assessment identifies that an aspect of the development is likely to give rise to significant environmental effects, mitigation measures, above and beyond any embedded mitigation incorporated into the assessment process, will be considered to avoid effects or reduce them to acceptable levels where possible.

Two types of mitigations have been defined and these will be identified within the EIAR:

- Embedded mitigation: measures that are identified and adopted as part of the evolution of the project design or measures otherwise incorporated as controls on the construction or operation of

the project, will be included as considerations in assessing significance during the EIA process: and

- Additional mitigation: measures that are identified as a result of the EIA process to reduce or eliminate any effects that are predicted to be significant, which are subsequently offered as project commitments for inclusions in the conditions of consent.

5.6.3 Assessing Residual Effects

Following the identification of any necessary additional mitigation measures, residual impacts will be assessed, and their significance will be described. Where significant impacts remain, and no mitigation measure is proposed, a discussion will explain why the significance cannot be reduced. Monitoring measures will be proposed in the EIAR where there is uncertainty regarding the significance of, or the predicted levels of residual effects or where monitoring is necessary to modify control measures on ongoing basis to control residual effects.

5.7 Cumulative Impact Assessment

This Scoping Report aims to identify the scope of the cumulative impacts to be considered in the EIAR for the CWP OIW.

Each technical chapter of the EIAR will include a cumulative assessment which will consider the impacts arising from the CWP OIW alone and cumulatively with CWP OWF and other relevant plans, projects and activities. As discussed in Section 2.3, guidance and legislation indicates that the following must or should be considered in terms of cumulative impacts:

- Existing projects;
- Projects that have received consent;
- Impacts of the development of existing zoned lands; and
- Future phases or proposals for the project.

CWPL has no current plans for future phases of the CWP (offshore) and so it proposes that the EIAR will consider the cumulative impacts with the OIW of the developments listed in the first three points.

At present multiple harbours / ports are under consideration for an O&M base. As such, it is currently proposed that the environmental effects of this future development, will be accounted for in the OIW EIAR as part of the cumulative impact assessment.

The EIAR will also consider other offshore wind farms which have been confirmed as a 'Phase 1 Project' (as defined in Section 3.1), as these projects may result in cumulative effects in terms of onshore infrastructure relating to grid infrastructure.

CWPL will also confirm with local authorities what public projects are likely to proceed at the same time as anticipated construction and operation of the CWP OIW.

A preliminary list of projects and plans relevant to the currently defined study areas has been developed as part of the Scoping Report and are outlined below in Table 5.2 - Table 5.5.

This list will be updated regularly, including when the location of the OIW is confirmed, to ensure that the cumulative impact assessment takes account of all relevant plans and projects.

Table 5.2: Other Offshore Wind Farms

Other Offshore Wind Farms
<p>Dublin Array (3 km north) (confirmed as 'Phase 1 Project')</p> <p>Arklow Bank Phase 2 (22 .5km south)</p> <p>North Irish Sea Array (25 km north) (confirmed as 'Phase 1 Project')</p> <p>Oriel Wind Farm OWF (61 km north) (confirmed as 'Phase 1 Project')</p>

Table 5.3: Other Consented Projects (Onshore) within the Study Areas

Other Consented Projects (Onshore) within Study Areas
<p>Aero Derivative Gas Fired Turbine, Poolbeg (submitted for planning October 2020)</p> <p>Battery Energy Storage System, Poolbeg (submitted for planning October 2020)</p> <p>Glenamuck District Roads Scheme</p> <p>Clay Farm Strategic Housing Development (SHD)</p> <p>Dean Homes Ltd.: Residential Development near Glenamuck Road (submitted for planning February 2021)</p> <p>Cairn Homes Ltd.: Residential Development at Ashwood Farm (submitted for planning February 2021)</p> <p>Residential Developments at Ballykillavane (Wicklow)</p>

Table 5.4: Other Existing Projects (Onshore) within the Study Areas

Other Existing Projects (Onshore) within Study Areas
<p>Dublin Port including developments within the Poolbeg area such as the Poolbeg Power Station, Ringsend Wastewater Treatment Plant and Dublin Waste to Energy Plant</p> <p>Shanganagh Wastewater Treatment Plant</p> <p>Wicklow Harbour</p>

Table 5.5: Existing Zoned Lands

Existing Zoned Lands (Onshore) Relevant to Study Areas
<p>Refer to:</p> <p>Dún Laoghaire-Rathdown County Council: County Development Plan (Draft) 2022-2028</p> <p>Dublin City Development Plan 2016-2022 (with a review commenced for the preparation of an updated Plan)</p> <p>Wicklow County Development Plan 2016-2022 (with a review commenced for the preparation of an updated Plan)</p> <p>Poolbeg West Strategic Development Zone (SDZ)</p> <p>Cherrywood SDZ Scheme</p> <p>Ballyogan & Environs LAP 2019-2025</p> <p>Woodbrook-Shanganagh LAP 2017-2023</p> <p>Wicklow Town-Rathnew Development Plan 2013-2019</p>

Once a list of plans and projects is confirmed, scoping of the cumulative impacts will be based on proximate distance to the OIW, if there is potential for overlap in construction periods, operational areas and whether the general scale and nature of a plan or project is likely to result in a significant cumulative effect, when considered with the OIW.

CWP would welcome engagement with stakeholders to identify a final list of projects and plans to be considered in the cumulative assessment.

5.8 Inter-related Effects

The EIAR will consider the inter-relationships between the aspects of the environment that are likely to be affected by construction, operation and decommissioning.

5.9 Other Consents Required

Any requirements for other consents such as road opening licences will be determined once the OIW locations are confirmed and will be applied for in accordance with application requirements and in consultation with the relevant authorities.

6 APPROPRIATE ASSESSMENT

European Sites (Natura 2000) i.e., SPAs and SACs are classified under the *European Union Birds Directive (2009/147/EC)* and *Habitats Directive (92/43/EEC)*. Articles 6(3) and 6(4) of the Habitats Directive specify the procedures that must be followed when considering any proposed plan or project which may potentially affect a designated European Site. Article 6(3) requires that:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public”.

Article 6 (4) states: *“If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted”.*

AA is an assessment of whether a plan or project, alone or in combination with other plans or projects, may affect the integrity of any European sites, otherwise known as Natura 2000 sites (*EC Habitats Directive 92/43/EEC*). AA screening requires the preparation of an AA Screening Report which determines whether a plan or project (which is not directly connected with or necessary to the management of a European site), individually or in combination with other plans or projects, would be likely to have a significant effect upon any European site. A project must be “screened-in” and require AA if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The AA Screening Report informs the AA process; however, the decision-making responsibility is with the designated Competent Authority.

Where the Competent Authority cannot exclude significant effects and ‘screens in’ the project, an AA is required. The Competent Authority must complete the AA, informed by the preparation of a Natura Impact Statement (NIS), which is prepared by the project proponent (i.e. CWPL).

This must determine whether the proposal will adversely affect the integrity of any European sites, either alone or in combination with other projects or plans. Where adverse impacts have been identified, mitigation must be proposed that satisfies the competent authority that the development will not have an adverse effect on the integrity of any European site. The Competent Authority must refuse permission for a project unless it is satisfied that it will not have an adverse effect on the integrity of any European site. (There is an exception for projects advanced for imperative reasons of overriding public interest, but it is not anticipated that CWP need to rely on that exception at this time.)

The proposed approach to the assessment will be to screen in identified SPAs and SACs where:

- those where assessment cannot exclude potential connectivity with the Development Area or grid connection corridor(s),
- those where assessment cannot exclude the potential for species designated as interest features to migrate through the proposed development
- SPAs and SACs whose boundaries are adjacent to or overlap the Development Area or grid connection corridor(s).

Therefore, the following European sites located in or that have potential connectivity to the three study areas in County Dublin and County Wicklow have been identified:

Table 6.1: Overview of the SACs and SPAs that have potential connectivity with the development area or cable route at Poolbeg

SAC/SPA	Approx. distance from development area (km)
South Dublin Bay SAC	On-site
North Dublin SAC	2.4
Howth Head SAC	7.3
Rockabill to Dalkey Island SAC	7.4
Baldoyle Bay SAC	9.6
Ireland Eye SAC	11.2
Malahide Estuary SAC	11.6
South Dublin Bay & River Tolka Estuary SPA	On-site
North Bull Island SPA	2.5
Baldoyle Bay SPA	8.5
Dalkey Island SPA	9.3
Howth Head Coast SPA	9.8
Ireland's Eye SPA	11
Malahide Estuary SPA	12.2
Wicklow Mountain SPA	14.5

Table 6.2: Overview of the SACs and SPAs that have connectivity with the development area or cable route at Carrickmines

SAC/SPA	Approx. distance from development area (km)
Bray Head SAC	3.6
Knocksink Wood SAC	4.9
South Dublin Bay SAC	5.4
Ballyman Glen SAC	5.5
Wicklow Mountain SAC	6
Rockabill to Dalkey Island SAC	7.3
North Dublin Bay SAC	10.6

SAC/SPA	Approx. distance from development area (km)
Glenasmole Valley SAC	10.7
Howth Head SAC	14.4
South Dublin Bay and River Tolka Estuary SPA	5.4
Wicklow Mountain SPA	6
Dalkey Island SPA	7.3
North Bull Island SPA	10.6
Howth Head Coast SPA	15.3

Table 6.3: Overview of the SACs and SPAs that have connectivity with the development area or cable route at Ballybeg

SAC/SPA	Approx. distance from development area (km)
The Murrough Wetlands SAC	On-site
Deputy's Pass Nature Reserve SAC	5.4
Wicklow Reef SAC	9
Vale of Clara (Rathdrum Wood) SAC	9.8
Wicklow Mountains SAC	11
The Murrough SPA	On-site
Wicklow Head SPA	6
Wicklow Mountains SPA	12

7 POPULATION AND HUMAN HEALTH

7.1 Introduction

This section sets out the scope of assessment in relation to Population and Human Health for the CWP OIW.

This EIAR Chapter will examine the potential effects of the proposed development on the local population and human beings, predominantly residents, sensitive receptors and the tourism sector. Residential amenity aspects will be addressed in this Chapter, as well as the impacts of land use changes and impacts on recreation.

The assessment will include an examination of the potential socio-economic effects such as employment opportunities and likely economic effects.

The human health aspect will be carried out in accordance with the appropriate guidance, as set out in Section 6.4, for completing a health assessment as part of an EIAR. The assessment will present a comprehensive review of published literature on the potential effects of the CWP OIW on human health.

7.2 Existing Environment

The OIW of the project are set out in Section 4 of this report and identify indicative areas for the siting of offshore cable landfall infrastructure, new onshore substation infrastructure and corridors for an underground grid connection between the landfall and substation.

The study area for the Population and Human Health impact assessment will be focused on a 500m buffer zone around the proposed landfall locations and substation sites at Poolbeg, Carrickmines and Ballybeg. The study area will also focus on a 200m buffer zone around the proposed grid connection route corridors between the landfall locations and the substations. These buffer zones are considered appropriate to assess the potential impacts of the OIW on local communities as the potential effects on residential amenity and human health from noise emissions, air/dust emissions and visual changes would not be expected to be significant at distances of greater than 500m from main infrastructure sites or 200m from the grid connection routes. During the assessment process, if it is identified that significant effects are likely outside of these buffer areas, the study area for this Chapter of the EIAR will be expanded accordingly.

The receptors within the study area will include residents, businesses, community facilities and schools as well as prominent recreational and tourist amenities that may be impacted by the project. Key recreation considerations in the Carrickmines study areas will include Shanganagh Park, the proposed future Jamestown Park, a number of golf courses in the area as well as the beach area at Killiney. In the Ballybeg study area, key considerations will include recreational facilities along The Murrough in Wicklow Town, schools and sports facilities in Rathnew and equestrian facilities.

At the Poolbeg location, the study area will extend to the overall peninsula to address the strategic nature of the lands, the need for collaborative development in the area and the intertwined economic interests of key stakeholders including Dublin Port, the ESB, Irish Water and DCC.

Any direct or indirect impacts on tourism will be identified. Within the Poolbeg study area, the historical significance of Pigeon House and recreational use of the South Bull Wall and the Irishtown Nature Reserve will be addressed. The Carrickmines study area will be important in the context of the Wicklow and Dublin Mountains as well as popular coastal tourist destinations such as Killiney, Bray and Greystones. Wicklow Gaol is a key tourist location in the southern part of the Ballybeg study area as well as Wicklow Abbey.

7.3 Data Sources and Baseline Methodology

A review of the most recent census data (2011 and 2016) for the study area will be completed. The proposed 2021 census has been postponed until April 2022; therefore, it is not expected that any data from this census will be available at the time of preparation of the assessment. The key population metrics will be described and the projected changes in the population of the study area, if any, will be presented.

Population and social-economic data will be reviewed on a county and national scale but will mainly be concentrated on the Electoral Districts (ED) within which the proposed CWP OIW are located. Data is collected on an ED basis as this is the most appropriate scale for collated census data and is commonly used for defining an existing population profile.

Information relevant to social and public infrastructure will mainly be obtained from the relevant County Development, Local Area and Strategic Development Plans, namely:

- Dublin CDP 2016-2022;
- Poolbeg West Strategic Development Zone (SDZ) Scheme;
- Cherrywood SDZ Scheme;
- Dún Laoghaire-Rathdown CDP 2016-2022 / Dún Laoghaire-Rathdown County Council: CDP (Draft) 2022-2028;
- Wicklow CDP 2016-2022;
- Ballyogan & Environs LAP 2019-2025;
- Woodbrook-Shanganagh LAP 2017-2023; and
- Wicklow Town-Rathnew Development Plan 2013-2019.

It is noted that a number of the above Development Plans are coming to the end of their life-cycle and works are underway in preparing updated Plans. Any updated versions of the above Plans will be reviewed as part of this assessment.

Fáilte Ireland and information specific to the 'Ancient East' initiative will be reviewed to present a baseline environment with regard to tourism. Existing recreation outlets such as walking trails, parks and golf courses will be outlined. Ordnance Survey of Ireland (OSI) mapping, other publicly available maps and existing aerial photography will be used to identify land use features in the project study area.

The economic impacts of the proposed CWP OIW will be examined including employment opportunities during the construction, commissioning, operational and decommissioning phases. The proposed development will create a community benefit fund in accordance with the terms of the Government's Renewable Electricity Support Scheme (RESS), and this will be explored within this assessment.

Specific baseline health data for individuals in the vicinity of the proposed development is confidential and difficult to establish, therefore a community profile will be identified to establish the baseline health profile of the study area and compare this profile to the rest of the country.

A group made up of the Health Service Executive (HSE) and the Irish Health Repository (IHP), known as Lenus, have published separate health profiles for all the Local Authorities areas in Ireland. The most recent County Health Profiles published are from 2015 and will be used to establish a community health profile for the project study area.

The human health assessment will present a desktop study of published literature on the subject of electrical infrastructure and wind farm development relevant to the CWP OIW. In this regard, it is important to assess the quality of available information. In general, studies which are published in peer-reviewed journals are the most authoritative. Peer-reviewed means that only those with reasonable scientific substance which meets the scientific criteria of experts in the field are published.

7.4 Legislation and Guidance

In addition to the general EIA guidance documents identified in Section 5.2, the following relevant guidance documents for this Chapter will include:

- Irish Wind Energy Association (IWEA), *Best Practice Principles in Community Engagement and Community Commitment* (2013); and
- Fáilte Ireland, *EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects* (undated).

The human health assessment will be prepared in accordance with the EPA Draft EIAR Guidelines (August 2017) and, in particular, the IEMA *Health in Environmental Impact Assessment: A Primer for Proportionate*

Approach (2017) and Institute of Public Health Ireland, Health Impact Assessment (2009) publications. In addition, the following publications will provide relevant information with regard to human health impacts:

- US Environmental Protection Agency (USEPA), *Health Impact Assessment Resource and Tool Compilation* (2016);
- World Health Organisation (WHO), *Guidelines for Community Noise* (1999);
- *Air Quality Standards Regulations 2011* (S.I. No. 180 of 2011);
- WHO, *Air Quality Guidelines* (2005);
- British Standard (BS) 5228-1:2009+A1:2014 – *Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 1: Noise*;
- EPA, *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* (2016);
- WHO, *Environmental Noise Guidelines for the European Region* (2018); and
- EirGrid, *The Electricity Grid and Your Health* (2019).

7.5 Design Parameters

Maps for each of the connection options are presented in Figure 4.1 to Figure 4.6. It should be noted that these maps indicate at a high level the spatial areas which are presently being subject to optioneering assessment and where it is proposed the landfall site, underground cables and new 220 kV substation for each option will be located. The final EIAR will include more specific design parameters. The maps indicate planning zoning and high-level environmental features of the baseline environment relating to biodiversity, archaeology and cultural heritage, landscape, flooding and water quality. These features are discussed in more detail in the relevant subsequent sections of this Scoping Report.

The population and human health impacts will mainly come from the appearance and siting of the landfall and substation infrastructure and therefore the design parameters relevant to those topics will govern the design of those elements of the OIW. The design parameters relevant to the electrical aspects of the onshore grid connection infrastructure will be in accordance with EirGrid functional specifications.

7.6 Embedded Mitigation

As per above, underground installation of electrical infrastructure and utilities is common practice, particularly in urban environments. The 2006 WEDGs state that the cost of underground connection to the national grid is “*generally prohibitive*”, however installing underground grid connections for renewable electricity projects has become the common approach since the 2006 WEDGs were published. The Draft 2019 Wind Energy Development Guidelines (WEDGs) state that, “*In general, it is considered that underground grid connections for wind energy projects are the most appropriate environmental and/or engineering solution, particularly in sensitive landscapes where the visual impacts need to be minimised. Therefore, this should be the default approach*”. This design approach will reduce impacts from the grid connection works associated with visual appearance and land take.

The design of the preferred landfall and substation locations and the optimum grid connection corridor will iterate having regard to sensitive receptors adjacent to and along the proposed infrastructure corridors and avoidance of impact will be the primary goal in determining the final iteration /preferred locations.

7.7 Scoping of the Assessment

Under the heading of population and human health, the EPA Draft EIAR Guidelines (2017) identify the following topics for assessment:

- Employment;
- Human Health (considered with reference to other headings such as water and air); and
- Amenity (e.g. effects on amenity uses of a site or other areas in the vicinity – may be addressed under the factor of landscape).

Amenity is further referenced in the guidelines to include typical topics such as:

- Public access;
- Public amenities;
- Recreation; and
- Tourism.

As part of this scoping Fáilte Ireland is being asked for their input on potential tourism sites which could be impacted.

The potential for electromagnetic frequency (EMF) effects on human health will be addressed in this Chapter and will take guidance primarily from existing studies carried out by EirGrid as part of their electrical transmission network development works.

In relation to cumulative impacts, a preliminary list of projects and plans relevant to the currently defined study areas has been developed as part of the Scoping Report and are outlined in Section 5. As the assessment works continue, this list will be updated regularly, including when the location of the OIW are confirmed and the potential for cumulative effects on population and human health will be considered.

7.8 Scoping Questions

- Are you content with the scope of the assessment?
- Are you satisfied that the study areas are sufficient to capture all impacts on population and human health and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to impact on population and human health?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Are there any receptors that you believe could be particularly sensitive that you wish to see assessed?
- Are there any projects you would wish to see included in the cumulative impact assessment for this topic?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?

8 LAND, SOILS AND GEOLOGY

8.1 Introduction

The principal objectives of the Land, Soils and Geology Chapter of the EIAR will be to identify and mitigate potential issues of the proposed development to ensure that the impact on these aspects of the environment is identified, described, evaluated, assessed and minimised.

This section deals with effects on terrestrial land, soils and geology only. Effects on marine environment are set out in CWP Offshore Scoping Report Section 7 Marine Geology, Sediments and Coastal Processes.

The following section sets out the scope of assessment in relation to the physical environment for the CWP OIW. The scope of the assessment includes:

- Identify and mitigate any potential impacts associated with the proposed development on land, soils and geology;
- A desktop study will be undertaken to acquire all available topographic, geological, geotechnical data (including geotechnical and site stability data) for the proposed development site(s) and surrounding areas;
- Provide detailed information for all identified receptors to the onshore elements of the CWP;
- Consideration of the effects on land, soil and geology resulting from the construction, operation and decommissioning phases of the proposed development;
- A consideration of the project design parameters relevant to the physical environment; and
- The scope of the EIA (including cumulative considerations).

The physical environment, for the purposes of this assessment, is referred to as the land (surrounding land use), soils, and geology (superficial and bedrock).

8.2 Existing Environment

The onshore grid connection infrastructure may incorporate more than one connection to the transmission network grid. The potential grid connection options are existing 220 kV substations at Poolbeg and Carrickmines and the connection to the existing overhead electricity transmission line near Ballybeg.

The study area for the Land, Soils and Geology impact assessment will be focused on a 2 km buffer zone around the proposed landfall locations and substation sites for the OIW. The study area will also focus on a 2 km buffer zone around the proposed grid connection route corridors between the landfall locations and the substations.

These buffer zones are considered appropriate by the Institute of Geologists Ireland² (2013) to assess the potential direct impacts of the OIW on the local land, soils and geological environment. During the assessment process, if it is identified that the sensitivity the subsurface environment is high i.e. if karst features were present, then the study area for the assessment will be expanded accordingly.

8.2.1 Poolbeg

Within the general Poolbeg study area, the land is at low elevations close to sea level and relatively flat. The initial study area forms a part of the Dublin Docklands Area. The potential landfall locations and supporting infrastructure at Poolbeg are likely to comprise infilled / reclaimed land and primarily hosts utilities and port related development.

The general ground conditions and geology are outlined in the Dublin Docklands Area *Strategic Environmental Assessment of the Docklands Master Plan 2008*. The geology of the Docklands Area is comprised of a

² Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements, IGI, (2013)

limestone bedrock overlain by a gravelly clay which in turn is overlain by alluvial deposits of clay, sand and gravel. Much of the Docklands Area is built on reclaimed land from the River Liffey. The soil types in the docklands area comprise man-made fill placed over estuarine deposits. Table 8.1 below outlines the typical geotechnical characteristics of the geology in the area.

Table 8.1: Summary of the typical geotechnical characteristics of the geology in the Dublin Docklands Area (Source: Environmental Report, Dublin Docklands Master Plan 2008)

Layer Description	Layer Characteristics	Estimated Depth of Layer
Filled Ground	Gravelly clay with fragments of glass, clay, brick, plastics, metal, timber, ash and ceramics.	0-8m
Soft Black Silty Clay	Alluvial deposits ranging from 1-2m thick and generally soft flow shear strength.	1-2m
Glacial Boulder Clay	Stiff to hard with occasional interbedded gravel layers.	3-10m
Limestone	Varies from weak to moderately strong and strong to very strong.	7-20m

Former land uses within the Docklands Area, together with site investigation data from previous development proposals (from DCC) indicated some sites have been contaminated by former industrial uses.

The proposed development area may have some contamination present, partly from historic land uses, which will require further review and evaluation of available information, previous site investigation data and further planned developments.

8.2.2 Carrickmines

The proposed onshore works in the Carrickmines study area will run through an urban / urban fringe environment where much of the available land has been subject to prior development, principally suburban housing with attendant transport infrastructure, schools, amenity areas and public parks.

The landfall study area is coastal and is located at low elevations at or near sea level, with the land remaining flat. Of note in the coastal part of the study area is a landslide event that occurred in 2000 at the trainline along Killiney Beach. There is also a designated geological heritage site in this coastal study area which comprises exposures of glacial deposits in the coastal cliffs between Killiney and Bray.

Aggregate potential mapping prepared by the Geological Survey of Ireland (GSI) indicates that some potentially extractable aggregate resources occur particularly close to the coast at Shanganagh and around Cherrywood and Carrickmines.

The general area for a new substation and the existing Carrickmines 220 kV Substation are located at c. 90 to 110m above ordnance datum (m AOD), where the lands are mostly flat with a gentle gradient. The majority of the potential substation study area is located on sealed ground, identified as made ground, with a small portion of the study area showing bedrock close to surface. The general substation study area is underlain by bedrock geology comprising granite.

The potential grid connection route corridors are coming inland from the coast to higher elevations of around 100 m AOD, mostly traversing a mixture of urban setting and some green fields. A number of soil types are traversed by these corridors, mostly till, made ground, glaciofluvial sands and gravels, with small patches of alluvium and bedrock at or near the surface. The geology underlying the grid route corridors are made up of two formations, the Maulin Formation and the Caledonian Granites.

There are two former landfills in the study area located at Kilboggett Park and Ballyogan and there is potential for encountering municipal waste and landfill gas emissions during excavations. Onshore ground investigation

studies will aim to establish the lateral extent and depth of such waste (if present) which may be encountered during the onshore works. Consideration will also be given to the potential risk of ground gas emissions on the development.

Lead mining and smelting took place at the Ballycorus lead mine in the early 19th Century and continued until it was closed in the 1920s. The historical mine site, with opencast workings and smelter chimney and flue lies to the south of the study area. The GSI has designated the Ballycorus mine site as a County Geological Site (CGS).

8.2.3 Ballybeg

The proposed onshore works in the Ballybeg study area will run through a mix of urban and rural settings with coastal works at landfall locations likely to be in a built-up environment and proposed substation infrastructure in a more rural setting.

The potential landfall sites are coastal and are located at low elevations at or near sea level, the land remaining flat. The landfall study area mainly comprises beach sands and gravels which overlies the Maulin Formation, bedrock which comprises slate, phyllite and schist. The southern part of the study area comprises the Wicklow Head Formation, which comprises mica-schist.

The bedrock geology underlying the Ballybeg study area is the Maulin Formation made up of slate, phyllite and schist. Small portions of the Ballylane Formation comprising slate with siltstone and the Wicklow Head Formation comprising mica-schist lie to the south of the study area. Beach sands and gravels are mapped along the shoreline, some glaciofluvial sands and gravels, alluvium associated with the Vartry River. Irish Sea Till and till associated from Lower Palaeozoic rocks are present further inland with bedrock at surface at the highest elevations to the southwest of the study area. A small patch of made ground is present associated with Rathnew village centre.

The grid connection route corridors rise from sea level up to a maximum of c. 130 m AOD and up to c. 90 m AOD in other areas. A number of soil types are traversed by the proposed grid corridors; mostly till, made ground, glaciofluvial sands and gravels, with small patches of alluvium and bedrock at or near the surface.

The geology underlying the grid corridors is made up of a number of formations, namely the Maulin Formation and Bray Head Formation comprising greywacke and quartzite, Ballylane Formation comprising slate with siltstone and Wicklow Head Formation comprising mica-schist.

Aggregate potential mapping prepared by the GSI indicates that some potentially extractable aggregate resources occur particularly close to Cronkeery.

There is a designated geological heritage site within the landfall study area which comprises shingle beach in the coastal area between Greystones and Wicklow.

8.3 Data Sources and Baseline Methodology

8.3.1 Baseline Data Sources

The following data sources in Table 8.2 will be used to develop the baseline for land, soils and geology for the CWP OIW.

Table 8.2: Land, Soils and Geology baseline data sources and data availability

Source	Data
EPA	EPA licensed activities including urban wastewater, Waste, Integrated Pollution Prevention and Control (IPPC) and Industrial Emissions Directive (IED) Licensed facility data
GSI	Teagasc soils, subsoils (Quaternary Sediments), subsoil permeability, bedrock geology, ground elevation, Irish Geological Heritage, CGSs Recorded Landslide Events (from the historical landslide database) in the region of the study area(s). Geotechnical site reports and geotechnical boreholes. GSI Landslide Events and extent, susceptibility classification. GSI Aggregate Potential Mapping. Historical geological maps.
Office of Public Works (OPW)	Report on 'Irish Protection Strategy' IPCSS – Phase 2 (South East Coast)
ESRI	Aerial photography, maps from 2011 to present.
OSI	OSI maps and Historical OSI Maps from 1837 to present covering base information and mapping, environmental and geology maps, historical development patterns and former land uses.
DCC	Planning applications, relevant information submitted as a part of the planning application. EIARs from adjacent developments. Previous site investigation data.
DLRCC	
WCC	
National Parks and Wildlife Service (NPWS)	Nature conservation designations

In assessing the baseline scenario, a wide variety of sources will be consulted which is covered under Table 8.2 to include site specific soils, subsoils, geological, geotechnical, geological heritage, landslide potential and aggregate potential, supported through the inclusion of regional and site-specific information / data available from public sources and scientific literature.

Scoping of geological, geotechnical and potential contamination aspects of the study areas, particularly at the Poolbeg site in relation to historical contamination and the Carrickmines coastal area with regard to landslide potential, will be discussed and reviewed within the multidisciplinary design team. This will include consideration of suitable construction methodologies where particular concerns arise. Potential impacts from historical mining activities will be considered, where appropriate, in the Carrickmines study area.

The project team will undertake a variety of environmental surveys for the purposes of site characterisation and collecting data on various soil and geological parameters which will then feed into the overall design of the proposed CWP OIW. In respect of the three site locations, considerations will include the onshore underground cable routes and associated works, temporary construction compounds, substation infrastructure, landfall infrastructure and enabling works etc. The following outline survey strategy is proposed:

- Site walkover surveys to be conducted in 2021;
- Intrusive site investigation works, including trial pitting, at key infrastructure locations;

- Geomorphology and/or geohazard assessment and mapping will be undertaken of geomorphological features;
- The nature and requirements of the potential soil and excavation material management will be informed by the information gathered from previous studies, site investigations, site surveys and the evaluations undertaken by the multi-disciplinary team; and
- Design of appropriate erosion and sediment control measures as part of project design and during construction works.

8.4 Guidance

The methodology for undertaking the assessment of impacts from the proposed development will follow the general EIA guidance as outlined in Section 5 as well as the following specific guidance relevant to the land, soils and geology environment:

- Institute of Geologists of Ireland (IGI), *Geology in Environmental Impact Statements – A Guide* (2002);
- Environmental Protection Agency (EPA), *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2017);
- National Roads Authority (NRA), *Environmental Impact Assessment of National Road Schemes – A Practical Guide* (2008);
- NRA, *Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes* (2008);
- IGI, *Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements* (2013);
- Energy Consents Unit, Scottish Government, *Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments* (2nd Edition, 2017).

8.5 Design Parameters

Key design parameters relevant to the land, soils and geology environment will be in relation to land use and disturbance of existing ground conditions. The proposed development infrastructure will require ground disturbance and this assessment will be focused on potential impacts that may occur from the ground disturbance mainly during the construction phase. The nature and extent of hard surfacing and drainage control during the operational phase will also be an important factor in providing protection to the underlying ground environment.

8.6 Embedded Mitigation

Embedded mitigation will be determined throughout the development of the design parameters and will be presented in the EIAR for the CWP OIW. These will evolve over the EIA progression, the development process and upon consultation reviews.

As part of the EIAR, a draft Construction Environment Management Plan (CEMP) will be prepared to address the environmental management of construction phase activities for the onshore works. The CEMP will include best practice mitigation measures that will be employed as standard across all the construction activities.

8.7 Scoping of the Assessment

The assessment will encompass the following:

- An assessment and characterisation of the baseline conditions at the proposed development locations;
- Description of the geological environment from desktop and ground investigation data;
- Testing and determination of the composition of various geological strata;

- Determination of the geological heritage;
- Assessment of potential contamination sites;
- Identification of the potential effects of the proposed development on the physical environment (with embedded mitigation) during the construction, operation and decommissioning phases;
- Identification of additional mitigation (if/where necessary); and
- Subsequent description of the residual effects, their magnitude and significance.

The assessment of potential impacts on the physical environment will be based on a realistic worst-case scenario based on the Design Parameters submitted to the Competent Authority for consent.

The potential impacts / effects of the proposed development during the construction, operational and decommissioning phases will include:

- During construction:
 - Temporary and localised disturbance of soils and geological environment;
 - Temporary and localised disturbance of potential contaminated land sites;
 - Piling operations that may be required for substation and TJB construction;
 - Soil stability;
 - Temporary increases in suspended sediment concentrations;
 - Movement and management of soils and geological material;
 - Construction traffic on-site which could result in leaks / spills of fuels and oils;
 - Construction of temporary drainage system for proposed infrastructure;
 - Change in land use at the onshore infrastructure locations; and
- During operations:
 - Permanent alteration of land, soils and geology across the site as a result of the presence of installed structures (e.g. landfall infrastructure, substations, transmission grid cabling);
 - Potential impact of coastal processes;
 - Potential alteration in geological setting surrounding identified contaminated land sites; and
 - Maintenance of the infrastructure which could result in leaks / spills of fuels and oils.

Decommissioning phase impacts will be similar to construction phase, however additional consideration will be given to any future proposals that may relate to reinstatement of lands and/or removal of infrastructure (e.g. substation and landfall).

In relation to cumulative impacts, a preliminary list of projects and plans relevant to the study areas has been developed as part of the Scoping Report and are outlined in Section 5. As the assessment works continue, this list will be updated regularly, including when the location of the OIW is confirmed.

The cumulative impact assessment will include a description of the likely significant effects of the project on the land, soils and geological environment resulting from the cumulation of effects with other existing/ and or consented projects.

The assessment will focus on interactions, particularly identifying pathways, both direct and indirect which can magnify effects through the interaction or accumulation of effects. The assessment will take into account the proximate distances of other projects to the OIW, if there is potential for overlap in construction periods, operational phases and whether the general scale and nature of other projects is likely to result in a significant cumulative effect on the land, soils and geological environment.

8.8 Scoping Questions

- Are you content with the scope of the assessment?
- Are you satisfied that the study areas are sufficient to capture all impacts on land, soils and geology and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?

- What other aspects, if any, of the Design Parameters have the potential to impact on land, soils and geology?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Are there any receptors that you believe could be particularly sensitive that you wish to see assessed?
- Are there any projects you would wish to see included in the cumulative impact assessment for this topic?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?

9 HYDROLOGY AND HYDROGEOLOGY

9.1 Introduction

The principal objectives of the Hydrology and Hydrogeology Chapter of the EIAR will be to identify and mitigate potential impacts of the onshore components of the proposed development to ensure that the impact on the terrestrial surface water and groundwater environment is minimised.

This section deals with effects on terrestrial water courses only. Effects on marine waters is set out in CWP Offshore Scoping Report Section 8 Marine Water Quality.

The following section sets out the scope of assessment in relation to the water environment for the CWP OIW. The scope of assessment includes:

- Identifying the existing surface water drainage characteristics of the site (including any natural or man-made drainage);
- Site-specific Flood Risk Assessment;
- Establishing baseline water quality across the site – any historical water quality for the project study area will be reviewed and examined;
- Identify and mitigate any potential impacts associated with the proposed development on hydrology and hydrogeology;
- A desktop study will be undertaken to acquire all available topographic, hydrological, water quality, hydro-ecology and hydrogeological data for the proposed development site(s) and surrounding areas;
- Provide information for all identified receptors in the water environment;
- Consideration of the effects on the water environment resulting from the construction, operation and decommissioning phases of the proposed development;
- A consideration of the project design parameters relevant to the water environment; and
- The Scope of the EIA (including cumulative considerations).

The water environment, for the purposes of this assessment, is referred to surface and ground water, establishing the interaction between surface and ground water in both the coastal setting and inland site areas.

9.2 Existing Environment

The onshore grid connection infrastructure may incorporate more than one connection to the transmission network grid. The potential grid connection options are existing 220 kV substations at Poolbeg and Carrickmines and the connection to the existing overhead electricity transmission line near Ballybeg.

The study area for the Hydrology and Hydrogeology impact assessment will be focused on a 2 km buffer zone around the proposed landfall locations and substation sites. The study area will also focus on a 2 km buffer zone around the proposed grid connection route corridors between the landfall locations and the substations.

These buffer zones are considered appropriate by the IGI (2013) to assess the potential direct impacts of the OIW on the local surface and ground water environment. During the assessment process, if it is identified that the sensitivity the subsurface environment is high i.e. karst features present, then the study area for this assessment will be expanded accordingly.

9.2.1 Poolbeg

There are no river channels present within the general study area. The site is a part of the Dublin Docks which sits at the mouth of River Liffey. The potential landfall locations and supporting infrastructure at Poolbeg are likely to comprise infilled / reclaimed land and primarily hosts utilities and port related development.

This scoping area is located within the National River Basin District and is within the Liffey and Dublin Bay Catchment (Catchment ID: No. 9) under the WFD.

The scoping area lies within the Dublin City Flood Risk Management Area and measures from this management area will apply. The Poolbeg study area does not fall within River Flood Events of medium probability nor within Coastal Flood events of medium probability.

In terms of hydrogeology, the scoping area is within the Dublin Groundwater Body (GWB) and the bedrock aquifer is classified as a poorly productive aquifer (PP), given that the site and surrounding area is within coastal estuarine deposits overlain by made-ground. Any groundwater present in the made ground and estuarine deposit within the development area will likely be tidally influenced, of which depths and extent are presently undefined.

The study area is located within and in proximity to a number of sensitive receptors, namely the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA) (Site Code 004024), the South Dublin Bay Special Area of Conservation (SAC) (Site Code 000210) and the South Dublin Bay proposed Natural Heritage Area (pNHA) (Site Code 000210).

9.2.2 Carrickmines

A number of river channels have been identified within the Carrickmines study area: the Shanganagh River, the Kill-O-The-Grange Stream and the Carrickmines Stream.

The scoping area is located in the National River Basin District and are within the Avoca Varty Catchment (Catchment ID: No. 10) under the WFD.

There is a Flood Relief Scheme for the Loughlinstown area on the Shanganagh River which is being led by the OPW under the Catchment Flood Risk Assessment and Management (CFRAM) plans. The remainder of the study area lies within the Dublin City Flood Risk Management Area and measures from this apply.

The potential locations for landfall sites are not located within coastal flood extents of medium probability. The general substation study area and existing Carrickmines 220 kV substation are not located within any coastal or fluvial flood zones.

In terms of hydrogeology, the scoping area is within the Wicklow GWB and the bedrock aquifer is classified as a locally important aquifer (LI) along the coastal study area and is classified as a Poor Aquifer (PI) across the remainder of the study area further inland.

It was noted that tufa springs have been identified hydrogeology and ecology reports relating to development proposals in the Cherrywood area. The springs are fed by highly localised permeable limestone deposits within the glacial till subsoil deposit. The groundwater flow paths are expected to be relatively short within the subsoil deposit.

9.2.3 Ballybeg

A number of river channels have been identified within the Ballybeg study area: the Grange North River, the Dunran Demesne River, the Little Barnacoyle River and the Inchanappa River, Coolawinnia River, Tinakelly River, Vartry River, Rathnew Stream, Cronroe River and Rossana Lower River.

The scoping area is located in the National River Basin District and is within the Avoca Varty Catchment (Catchment ID: No. 10) under the WFD.

There is a Flood Relief Scheme for Wicklow, Ashford and Rathnew area on the Rathnew Stream and Vartry River which is being led by the OPW under the CFRAM plans. The remainder of the areas lie within the Avoca-Vartry Catchment Flood Risk Management Area and measures from this apply.

The landfall study area comprises a considerable area of medium probability coastal flood extents. Similarly, the substation study area includes a number of rivers which have flood potential.

In terms of hydrogeology, the scoping area is within the Wicklow GWB and the bedrock aquifer (Maulin Formation) is classified as a locally important aquifer (LI) along the coastal area around Ballyba and Rathnew

and the Caledonian Granites is classified as a Poor Aquifer (PI) across the some of the more elevated sections of the route further inland.

9.3 Data Sources and Baseline Methodology

9.3.1 Baseline Data Sources

The following data sources in Table 9.1 will be used to develop the baseline for baseline and existing hydrological and hydrogeological conditions for the CWP OIW.

Table 9.1: Hydrology and Hydrogeology baseline data sources and data availability

Source	Data
EPA	WFD Catchments, WFD Sub-catchments, WFD River Waterbodies Status (2013-2018), WFD River Waterbodies Risk (3 rd Cycle, objectives to be met by 2027). WFD Ground Waterbody Status (2013-2018), WFD Ground Waterbodies Risk 3 rd cycle (2020), WFD Areas For Action Plans (2020). River Ecology Monitoring Results (Latest River Q Values). River water quality results. Flows and Levels (EPA Hydrometric network, river flow estimates). Consented abstractions, discharges and licenses.
GSI	Teagasc soils, subsoils (Quaternary Sediments), subsoil permeability, bedrock geology, ground elevation, groundwater resources (aquifers), groundwater vulnerability, groundwater recharge, group scheme and public supply source protection areas, groundwater wells and springs, groundwater karst data. County Groundwater Protection Reports. Surface Water Features, Catchment and WFD Management Units.
OPW	Report on 'Irish Protection Strategy' IPCSS – Phase 2 (South East Coast) Flood Risk Management Plan for the Avoca-Vartry River Basin (UOM10)
Floodinfo.ie	Dún Laoghaire-Rathdown Flood Relief Scheme for Deansgrange (Kill-O-The-Grange) Stream. Wicklow and Ashford Flood Relief Scheme
Inland Fisheries Ireland (IFI)	Survey and water quality information
Local Authority	Monitoring results (surface and groundwater) for Kilboggett Park (former landfill) and Ballyogan landfill as there may be contaminated shallow groundwater associated with these former landfills which could be intercepted by construction works.
ESRI	Aerial photography, maps from 2011 to present.
OSI	OSI maps and Historical OSI Maps from 1837 to present covering base information and mapping, environmental and geology maps, historical development patterns and former land uses.
Irish Water	Water Supply Zone Map

Source	Data
DCC	Planning applications, relevant information submitted as a part of the planning application. EIARs from adjacent developments. Previous site investigation data.
DLRCC	
WCC	
NPWS	Nature conservation designations

In assessing the baseline scenario, a wide variety of sources will be consulted, as outlined in Table 9.1, to include site-specific surface water, groundwater and water quality supported through the inclusion of regional and site-specific information / data available from public sources and scientific literature.

Scoping of hydrological, hydrogeological and contamination aspects of the study areas, particularly at the Poolbeg site in relation to historical contamination, will be discussed and reviewed within the multidisciplinary design team. This will include consideration of suitable construction methodologies where particular concerns arise.

9.3.2 Baseline Assessment

CWPL are committed to undertaking a variety of environmental surveys for the purposes of site characterisation and collecting data on various hydrological and hydrogeological parameters which will then feed into the overall design of the proposed CWP OIW. The following strategy has been proposed.

9.3.2.1 Water Framework Directive (WFD)

A key constraint is the water quality in downstream locations and areas within Water Framework Directive (WFD) Areas for Action. Changes to the local water environment can affect receptors such as wells/boreholes, springs, wetlands and waterways, and can also have implications for groundwater dependent ecology and/ or land stability.

The overarching objective of the WFD is for the water bodies in Ireland to attain good or high status/potential. Good or high status for surface waters is defined by three quality elements, namely the biological, physico-chemical and hydromorphological conditions associated with limited or no human pressure. Good status for groundwater is defined by two quality elements, namely qualitative and quantitative conditions associated with limited or no human pressure.

A WFD Assessment will be completed if deemed necessary following consultation with the EPA. The purpose of the WFD assessment would be to evaluate the potential effects on the WFD water bodies in the vicinity of the CWP OIW. It is the determination of permanent long-term effects that are required for the assessment against the WFD objectives. However, where it is considered that construction impacts on watercourses could potentially be longer term, they will be also be included in the assessment.

9.3.2.2 Hydrology

- Identify the existing surface water drainage characteristics of the site (including any natural or man-made drainage). A surface water feature survey / catchment assessment of the study area will be carried out to record all streams, rivers and lakes within the site boundary and surrounding area;
- Establish baseline water quality across the site. Any historical water quality for this area will be reviewed and existing EPA water quality data will also be examined as part of the study including any available data relating to the river catchments in this area;
- Confirm at preliminary stage design, the classification of any watercourses relevant to the OIW.

- Where required, surface water samples will be collected in order to provide a baseline set of water quality results for the area. Biological assessments of the rivers will also be carried out, if required; and
- Identify potential downstream receptors which may include for designated conservation sites and water supplies. Establish any hydrological connectivity between the site and the receptor through specified pathways.

The potential for siltation as a result of the proposed development will be assessed particularly during the construction phase and mitigation measures will be proposed for associated pollution control. Any existing siltation management practices will be reviewed as part of this assessment.

9.3.2.3 Flood Risk Assessment (FRA)

A site-specific Flood Risk Assessment (FRA) will be prepared for the proposed development. The risk of fluvial flooding (rivers and streams) is considerable across the grid connection corridors. The risk of pluvial flooding from new hard-stand areas and infrastructure will additionally be considered.

The FRA will be completed for the overall site and detailed within the EIAR. This assessment shall include undertaking the following tasks:

- A visual inspection of site and watercourses by a qualified hydrologist;
- Site topographical survey;
- Site survey of watercourses for hydraulic modelling;
- A review of existing information and planning guidelines;
- An assessment of historical flooding;
- Estimation of the 100 and 1,000-year MRFS (Mid-Range Future Scenario) design flood events at the three study areas, as recommended in the OPW Guidelines (2009). The hydrological assessment of the site may include:
 - Statistical estimation of design flood flow from available hydrometric data;
 - Analysis of watercourses using the OPW's Flood Studies Update Portal;
 - Estimation of design flood flow from catchment descriptors and rainfall;
 - Hydraulic Modelling, using HEC-RAS (Hydrologic Engineering Centre's – River Analysis System) or similar, of watercourses for the 100 and 1,000-year design flood events. Where possible, the model shall be calibrated against historical and gauged flow data if available from the OPW and EPA hydrometric station network in the vicinity of the site;
 - Modelling and assessment of one flood risk solution proposed by the design team; and
 - Floodplain Mapping for the 100 and 1,000-year MRFS design flood events for the watercourses.

9.3.2.4 Water Quality

A water quality assessment will be carried out which will include the following:

- Conduct surface water sampling in accordance with best practice guidelines, including:
 - *EN ISO 5667-2:1994 Water Quality – Sampling Part 2: Guidance on Sampling Techniques;* and
 - *EN ISO 5667-3:1994 Water Quality – Sampling Part 3: Guidance on preservation and Handling of Water Samples.*
- Interpret and identify surface and groundwater linkages through specific water quality parameters; and
- Establish baseline / existing conditions, identify potential impacts and propose appropriate mitigation measures.

9.3.2.5 Hydrogeology

- Desktop study of soils, subsoils, bedrock, geological, groundwater vulnerability, groundwater recharge, groundwater resources maps and aerial photography;
- Confirm at preliminary stage design, the classification of any groundwater bodies relevant to the OIW.
- Aquifer assessment, in terms of the underlying aquifer and shallow groundwater system within the soils / subsoils / aquifer;
- Impact assessment on water schemes / water supplies within 2 km radius;
- Surface water and groundwater interaction (if existent);
- Site Investigation works will be specified in conjunction with the requirements of the designers. The site investigation will provide detail on soils, geology, soil types and depths and potential requirements for water management and drainage. Investigations may include:
 - Trial pitting;
 - Cobra Probes;
 - Boreholes (drilling methods and depths to be determined as part of specification); and
 - Ground Water Monitoring Installation.
- The nature and requirements of the potential soil / waste management in terms of subsurface flows will be informed by the information from the site investigation, site surveys and visits and the evaluations undertaken by the multi-disciplinary team;
- Design and installation of monitoring wells, piezometers and surface hydrometric structures where required; and
- Interpretation and reporting of all geological and hydrogeological data collected from preliminary geotechnical site investigations will be used to build a robust conceptual site model.

9.4 Legislation and Guidance

The proposed methodology for undertaking the assessment of impacts of the proposed development considers the following relevant guidance / regulations:

- S.I. No. 293 of 1988: European Communities (Quality of Salmonid Waters) Regulations;
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended;
- S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010, as amended;
- S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011
- European Communities (Water Policy) Regulations 2003 [S.I. No. 722/2003], as amended;
- Waste Management Act 1996 as amended;
- Water Framework Directive (2000/60/EEC);
- Groundwater Directives (2006/118/EC);
- Local Government (Water Pollution) Acts 1977 and 1990;
- Inland Fisheries Ireland (IFI), *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites* (2016);
- IGI, *Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements* (2013);
- Forest Service, *Forestry and Water Quality Guidelines* (2000);
- Office of Public Works (OPW) and Department of Environment, Heritage and Local Government (DEHLG), *The Planning System and Flood Risk Management: Guidelines for Planning Authorities* (November 2009);
- Construction Industry Research and Information Association (CIRIA), *Good practice guidelines on the control of water pollution from construction sites* (2001);

- CIRIA, *Guidance on Control of Water Pollution from Linear Construction Projects* (CIRIA Report No. C648) (2006);
- CIRIA, *C697 SuDS Manual*; and
- CIRIA, *Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors* (CIRIA C532) (2006).

9.5 Design Parameters

Key design parameters relevant to the hydrology and hydrogeology environment will be in relation to land disturbance and the management of surface water run-off. New infrastructure will incorporate controlled surface water drainage design to collect and return clean water to the environment in accordance with Sustainable Drainage Systems (SUDS) principles.

9.6 Embedded Mitigation

Embedded mitigation will be determined throughout the development of the design parameters and will be presented in the EIAR for the CWP OIW. These will evolve over the EIA progression, the development process and upon consultation reviews.

As part of the EIA, a Construction Environment Management Plan (CEMP) will be prepared to address the environmental management of construction phase activities for the onshore works. The CEMP will include best practice mitigation measures that will be employed as standard across all the construction activities.

9.7 Scoping of the Assessment

The proposed assessment methodology will follow the guidance detailed in the EPA's Draft EIAR Guidelines (2017) and the guidance documents listed above. The assessment of potential impacts on the physical environment will be based on a realistic worst-case scenario based on the Design Parameters submitted to the Competent Authority for consent.

The potential impacts / effects of the proposed development during construction, operational and decommissioning phases include:

- During installation
 - Exposed and disturbed ground may increase the risk of erosion and subsequent sediment laden surface water runoff;
 - Impact on flood defences if development works, site works and river crossings compromise the integrity of flood defences;
 - Impact on storm water drainage if development works and river crossings compromise the integrity of storm water drainage;
 - Groundwater flow and quality impacts such as from piling if required for the substation building; and
 - Alteration to groundwater springs in terms of flow, water chemistry and the habitat / groundwater dependent terrestrial ecosystem.
- During operations
 - Increase in runoff from operational infrastructure, foundations and access due to installation of impermeable surfaces;
 - Increase in flood risk if development is within the flood zone of a surface water course; and
 - Permanent alteration of surface and groundwater flow regime across the site(s) as a result of the presence of installed structures (e.g. landfall, substations,).
- Decommissioning phase impacts will be similar to construction phase, however additional consideration will be given to any future proposals that may relate to reinstatement of lands and/or removal of infrastructure (e.g. substation and landfall).

In relation to cumulative impacts, a preliminary list of projects and plans relevant to the currently defined study areas has been developed as part of the Scoping Report and are outlined in Section 5. As the assessment works continue, this list will be updated regularly, including when the location of the OIW is confirmed.

The cumulative impact assessment will include a description of the likely significant effects of the project on the hydrological and hydrogeological environment resulting from the cumulation of effects with other existing/ and or consented projects. The assessment will focus on interactions, particularly identifying pathways, both direct and indirect which can magnify effects through the interaction or accumulation of effects. The assessment will take into account the proximate distance to the OIW, if there is potential for overlap in construction periods, operational phases and whether the general scale and nature of other projects is likely to result in a significant cumulative effect on the hydrological and hydrogeological environment.

9.8 Scoping Questions

- Are you content with the scope of the assessment?
- Are you satisfied that the study areas are sufficient to capture all impacts on hydrology and hydrogeology and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to impact on hydrology and hydrogeology?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Are there any receptors that you believe could be particularly sensitive that you wish to see assessed?
- Are there any projects you would wish to see included in the cumulative impact assessment for this topic?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?

10 BIODIVERSITY

10.1 Introduction

This section describes the scope of works and methods to be applied in the identification and assessment of ecological (flora and fauna) impacts associated with the proposed development. A high-level overview of the existing environment is provided, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on flora and fauna as part of the EIAR and AA.

Flora and fauna refer to plants and wildlife, respectively. The term is used to refer to the indigenous plants and wildlife of a geographical region. Both are collective terms, referring to groups of plants (their communities or habitats) and wildlife specific to a region or a period of time. In addition to geographical groupings, environment also helps further their classification. Examples of such classification include aquatic and terrestrial flora and fauna.

The purpose of this Chapter is to provide detailed information on receptors of relevance to the CWP OIW.

AA has been specifically addressed in Section 6 of the Report.

10.2 Existing Environment

10.2.1 Study Area

The study area for the proposed OIW works currently covers areas at Poolbeg, County Dublin, Carrickmines, County Dublin and Ballybeg in County Wicklow with three potential development sites / corridors within.

Once the location of the OIW are confirmed, the ecological study areas will be expanded around the infrastructure locations to take into account sensitive receptors that may be within the zone of influence of the OIW. The zone of influence will depend on the particular sensitivities of receptors and the ecological pathways along which impacts may be transmitted.

Within the current study areas, there are a number of European sites and notable protected areas. European sites that are within or offshore (up to 15km) of the OIW or where they are considered to be within the zone of influence of the final OIW locations will be considered as part of the final study areas.

10.2.2 Poolbeg

Within the general study area for potential infrastructure in Poolbeg, there are seven SACs, eight SPAs and 17 no. NHAs within a 15km radius of the area. Poolbeg is located within the Poolbeg peninsula on the eastern Docklands, adjacent to both Dublin Bay and the River Liffey and east of the River Dodder and Grand Canal Dock. This is an area of many of Dublin region's major power, sewage, storage and port facilities, as well as a number of industrial uses. It also includes an active deep water berthing and docking facilities on its northern edge. The peninsula also contains a number of areas of open space, including Sean Moore Park and Irishtown Nature Park. Its southern shore opens on to Dublin Bay and is bordered by Sandymount Beach.

Directly within the study area is South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA (Figure 4.2). Irishtown Nature Park is a Natural Heritage Area (NHA) and within the general study area. The main river beside this location is the River Liffey. There are records of invasive plants within the area that have been noted.

10.2.3 Carrickmines

Carrickmines is a semi-rural suburban region located south of Dublin City. It is divided northeast/southwest by the M50 motorway. Northeast of Carrickmines contains more established residential areas, while the

southwest, including along Glenamuck Road, represents areas of new retail parks, office buildings, housing schemes and apartments. The Carrickmines study area extends from the coastline to the area around the existing Carrickmines 220 kV substation (as in Figure 4.4) covering a vast area of existing east coast beach, residential housing, railway line, motorways, parks and agricultural land. Within the 15km zone of this development site, there are nine SACs and five SPAs. There is a large number of NHAs surrounding the area, 15 no. in total. The proposed substation study area is within the vicinity of Ballyogan stream which flows into Carrickmines River and joins the Loughlinstown River before entering the Shanganagh River. There is potential for some river crossings or other construction works to be carried out within close proximity of these rivers and streams. There are also two species of high-risk invasive plants noted within the area, namely Japanese Knotweed and Giant Hogweed. These may also be located along proposed cable routes and will be assessed at preliminary stages.

10.2.4 Ballybeg

This study area is located in County Wicklow and extends from the coastline at Wicklow Town, and north of the town, inland towards the M11 Motorway and the general Ballybeg area (Figure 4.6). Within the 15km zone of this proposed development area, there are five SACs and three SPAs. Potential landfall locations along the coastline may also be close to or within designated sites. There are also seven NHAs identified within the development area.

10.3 Data Sources and Baseline Methodology

10.3.1 Baseline

Multiple options for the CWP OIW are currently being considered and a multi-disciplinary optioneering study is underway.

The onshore grid infrastructure will likely incorporate more than one grid connection to the transmission grid network. There are currently potential grid connection options at existing 220 kV substations at Poolbeg and Carrickmines as well as connecting into existing overhead transmission infrastructure in the general area of Ballybeg.

The study areas will require sensitive consideration in the finalisation of the design process, accounting for potential proximity to a range of ecologically sensitive receptors, including international and nationally designated conservation sites. Wherever technically possible, the proposed development infrastructure will be sited to avoid these sensitive areas in order to minimise and, in most cases, eliminate adverse effects. The project design at this current time is not yet finalised and is subject to ongoing design development, option assessment and EIA.

Sensitive ecological features within the study area will be identified as key ecological receptors through a desktop study, consultation and field surveys and will inform the optioneering assessment and EIA.

Following the desktop study and a high-level ecological walkover, further detailed ecological surveys will be scoped and carried out.

The timing of the ecological surveys will take account of constraints in terms of seasonality, recognised optimal survey windows and relevant licensing requirements

10.3.1.1 Data validation

The project baseline will be ascertained using a number of data sources currently available. The data sources which will be used in the assessment are shown below in Table 10.1. Where data allows, the baseline will cover the last 10 years (2011- 2021).

An updated desktop review of data sources, in addition to a comprehensive suite of ecological field surveys, will be undertaken to inform the EIA.

Table 10.1: Baseline data sources and data availability for flora and fauna

Up to Date Data Sources and Publications	Year
National Biodiversity Data Centre (NBDC) records for protected species (e.g. Flora Protection Order, fauna protected under the Wildlife Act (Amendment 2000) and European (EU) Habitats Directive and species on the Red Data Lists), bat landscape model, invasive species records, and general biodiversity records	2011 - to date
NPWS rare and protected species records	2011 - to date
NPWS designated area boundary data	2011 - to date
NPWS site-specific conservation objectives shapefiles	2011 - to date
NPWS Natura 2000 conservation objectives	2011 – to date
Bat Conservation Ireland database records	2011 - to date
National Survey of Native Woodland sites	2011 - to date
National Fen Database sites	2011 - to date
EPA biological water quality monitoring data	2011 - to date
Inland Fisheries Ireland datasets (e.g. WFD fish studies)	2011 - to date
Bord na Móna ecological databases	2011 - to date
Codling Wind Farm Foreshore Applications and associated historical ecological data	2011 - to date
Ordnance Survey Ireland 6 - inch historical raster mapping, 1:50,000 Discovery mapping, and vector data	2011 – to date
Aerial photography	2011 - to date
EPA WFD water quality data	2010 to 2015
EPA Water quality reports	2008 to 2018

10.3.2 Baseline Assessment

A variety of environmental surveys will be undertaken for the purpose of site characterisation.

Ecological field surveys will be necessary to characterise the baseline condition of the study area, which comprises a zone of influence (Zoi) extending from the development works.

An accurate and comprehensive baseline description, including the provision of robust and scientific data, will be necessary to establish and inform the assessment of significance with regards to ecological impacts.

The timing of the ecological surveys will take account of constraints in terms of seasonality, recognised optimal survey windows and relevant licensing requirements.

Surveys will be carried out during the most appropriate time of the year and during suitable conditions, following relevant guidance for target receptors.

The scope of ecological surveys will include all proposed infrastructure locations and temporary construction works locations.

Ecological field surveys will incorporate a number of the following:

- Botanical

A habitat and botanical survey comprising both aerial / satellite imagery evaluations and field habitat surveys will be undertaken having regard to *Best Practise Guidance for Habitat Survey and Mapping* (Smith et al., 2011) and *A Guide to Habitats in Ireland* (Fossitt, 2000). The Interpretation Manual of

European Union Habitats (European Commission, 2013) will be referenced when defining habitat types. The habitat survey will take into particular consideration those species which are likely to occur in the habitats present on site in which the proposed development may impact. Presence of Annex I (Habitats Directive) habitats will be recorded and mapped and their condition assessed. Additionally, botanical surveys will identify protected flora listed on Annex II of the *Habitats Directive (92/43/EEC)*, the *Flora Protection Order (2015)*, as well as species listed on the Red Data List. The presence of any invasive plant species listed in Part 1 of the Third Schedule of S.I No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations 2011 will be recorded. The surveys will be undertaken within the optimal survey period as per guidelines.

- **Mammals (Non-Volant)**

A mammal survey will be completed for all protected species such as; otter and badger protected under the *Habitats Directive (92/43/EEC)* and the Wildlife Act (Amendment 2000) and follow regard to the *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Scheme* (NRA, 2009) where these species may occur within the Zol of the project. Searches for evidence of protected mammal species and/or presence of suitable habitats will be undertaken by a qualified ecologist during ecological walkover surveys of the study area. This survey will record any direct sightings or signs including tracks, droppings and resting places. An assessment will be made as to the likelihood that protected mammals use the habitats.. The surveys will be undertaken within the optimal survey period as per guidelines. The scope of protected mammal species surveys will be determined based on the presence of suitable habitat;

- **Bats**

Bat species are protected under the Wildlife Act (Amendment 2000) and Annexes II and IV of the *Habitats Directive (92/43/EEC)*. A preliminary survey will be carried out to determine the suitability of the site for bats, to assess whether further bat surveys will be needed and how those surveys should be carried out. The preliminary field survey for bats will include a daytime visual assessment of suitable roosting and foraging habitat within the zone of influence of the proposed development following regard to *Bat Surveys for Professional Ecologists: Good Practise Guidelines* (3rd edition) (Collins, 2016). The bat surveys will focus on the potential for displacement or disturbance, arising from the loss of potential habitat and roosts. Surveys will include bat detector surveys (including monitoring at height) and walking transects. The surveys will be undertaken within the optimal survey period as per the guidelines.

Where suitable habitat occurs, detailed surveys will be undertaken Annex II invertebrate species including Marsh Fritillary and *Vertigo* spp. The Marsh Fritillary butterfly is considered one of the most endangered Lepidoptera species in Ireland. Survey methodology will follow *National Biodiversity Monitoring Scheme* (NBDC 2019) and *UK Butterfly Conservation Monitoring Scheme Methodology for Marsh Fritillary Larval Webs* (UKBMS 2019). Larval surveys will be carried out in sunny conditions, at a time of year when colonies of individuals are known to construct conspicuous webs over Devil's-bit Scabious leaves and adjacent vegetation

Additional broad-based studies will include a characterisation of the baseline condition for reptiles (common lizard), amphibians (common frog, smooth newt) and other invertebrates; The Common Frog, the Common Lizard (*Lacerta vivipara*) and the Smooth Newt are all protected species under the Wildlife Acts 1976 to 2019.. Pools, ponds, drainage ditches and wet grasslands provide habitat for amphibians while the common lizard is widespread in habitats such as dry banks, heathland and bog.

Biological water quality assessments (Q-value indices), including a characterisation of the macroinvertebrate community, will be undertaken at select sites within the study area. These surveys will focus on watercourses potentially impacted by the proposed development where suitable sampling conditions occur.

Riparian and instream habitat surveys including botanical surveys, riparian habitat characterisation (RHAT methodology) and characterisation of watercourses potentially impacted by the proposed

development will be undertaken. The surveys will include instream and riparian habitat communities listed on Annex I of the *Habitats Directive (92/43/EEC)* and aquatic flora listed on Annex II of the *Habitats Directive* and/or the *Flora Protection Order (2015)*; and

For watercourses of significant fisheries value that are potentially impacted by the proposed development, an evaluation and identification of fish populations will include a review of existing IFI data and consultation with this statutory agency. This review will focus on species of fisheries interest, as well as of conservation concern, such as Atlantic salmon, brown trout and coarse fish species.

- Ornithology

A desktop study will be undertaken to review all publications/guidance documents relative to the proposed development area. This will include a review of Irish Wetland Bird Survey (I-WeBS) data and mapping, National Biodiversity Data Centre (NBDC) data, the Offshore bird survey data collected by Natural Power, a review of EIARs undertaken in the local area and any other ecological reports. A review of Ordnance Survey maps and aerial photography will also be carried out, in order to determine the broad habitats that occur within the study area and thus typical bird communities.

The requirement for breeding bird and wintering bird survey work at the landfalls, final underground cable routes and substations will be confirmed when the final locations are confirmed as part of the OIW optioneering process which CWPL is currently undertaking.

In addition, during the ecological field survey of the OIW, all bird species present (recorded by sight or call) will be noted. The surveyor will regularly stop to allow rapid detection of species presence, such as displaying birds. The survey methodology will broadly follow that of the Countryside Bird Survey (CBS) Manual.

The ecological survey effort listed above is indicative and will be reviewed once the OIW locations are confirmed and following feedback from the desktop study, initial ecological walkovers and engagement with stakeholders.

The need for additional survey work to address any information gaps will be reviewed on an ongoing basis during the assessment process.

10.4 Legislation and Guidance

The assessment of flora and fauna will be conducted under the relevant legislation applicable to Ireland. In addition to the general guidance and legislation presented in Section 5, the EIAR will take into consideration relevant guidance specific to the ecological environment, including:

- European Communities (*Birds and Natural Habitats*) Regulations 2011 (S.I. No. 477 of 2011) (as amended);
- The Planning and Development Act 2000 to 2020
- The *Habitats Directive (92/43/EEC)* (as amended);
- The *Birds Directive (2009/147/EC)* (as amended);
- The *Water Framework Directive (2000/60/EC)*;
- The *Wildlife Act 1976 as amended by the Wildlife (Amendment) Act, 2000* (as amended);
- The *Flora Protection Order 2015* (S.I. No. 365 of 2015);
- Relevant Fisheries legislation up to and including the *Inland Fisheries Acts 1959-2010*, (as amended);
- Bird species of medium and high conservation concern listed in the publication *Birds of Conservation Concern in Ireland 2014-2019*;
- Relevant policies in Action for *Biodiversity 2011-2016*, Ireland's 2nd *National Biodiversity Plan* produced by the Department of Arts, Heritage and the Gaeltacht (DAHG) in 2011 (now the Department of Housing, Local Government and Heritage (DHLGH));

- Department of Culture, Heritage and the Gaeltacht (DCHG), *National Biodiversity Action Plan 2017-2021* (2017);
- Chartered Institute Ecology and Environmental Management (CIEEM), *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (2018);
- Scottish Natural Heritage (SNH), *Bats and Onshore Wind Turbines – Survey Assessment and Mitigation* (2019);
- EUROBATS Advisory Committee, *Guidelines for Consideration of Bats in Wind Farm Developments* (2014);
- Bat Conservation Trust, Hundt. L., *Bat Surveys: Good Practice Guidelines (3rd Edition 2016)*;
- Bat Conservation Ireland, *Wind Turbine / Wind Farm Development Bat Survey Guidelines* (2012);
- NRA, *Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes* (2005);
- NRA, *Guidelines for Assessment of Ecological Impacts of National Road Schemes (Revision 1, 2006)*;
- NRA, *Guidelines for the Treatment of Otters prior to the Construction of National Roads Schemes* (2006);
- NRA, *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (2009);
- NRA, *Guidelines for Assessment of Ecological Impacts of National Road Schemes (Revision 2, 2009)*;
- Smith, G. F., O'Donoghue, P., O'Hora, K., & Delaney, E., *Best practice guidance for habitat survey and mapping*. Ireland's Heritage Council: Kilkenny, Ireland (2011);
- NRA, *Guidelines on the Management of Noxious Weeds and Non-Native Plant Species on National Roads* (2010);
- Bord na Móna, *Biodiversity Action Plan 2016-2021* (2016); and
- Objectives relevant to ecology and biodiversity in the latest CDPs prepared by the Local Authorities (DCC, DLRCC, ad WCC).

An initial high-level desktop assessment of ecological constraints will be undertaken for the proposed development and its environs, using ecological data retrieved from various online databases such as; habitat and species Geographic Information System (GIS) datasets and conservation objectives (and supporting) documents, as held by the NPWS, National Biodiversity Data Centre (NBDC) records and mapping, OSI and EPA mapping, and aerial photography (Google Maps, Bing Maps). Verification will take place following the preliminary layout design and ecological field surveys will be undertaken to establish the baseline environment within the proposed development area.

Additional guidance documents prepared by relevant local authorities on good practice relating to biodiversity and development will also be taken into consideration in the assessment of flora and fauna.

10.5 Design Parameters

Key design parameters relevant to the ecological environment will include factors such as land disturbance, the management of surface water run-off, the size, siting and layout of the OIW infrastructure. Habitat mapping and identification of key ecological receptors will provide guidance on appropriate siting of infrastructure. During operations, substation lighting design will have due consideration of ecological impacts as well as noise emissions from proposed equipment.

10.6 Embedded Mitigation

The methodology used to assess and mitigate potential impacts will be based on established best practice and the guidance documents set out previously. Identifying priority habitats if they are present and sensitive ecological receptors within the study area can support the design team to embed avoidance measures into the infrastructure siting and eliminate potential for adverse effects.

10.7 Scoping of the Assessment

The impact assessment methodology will follow that recommended by CIEEM in their Guidance, as listed in Section 9.4. The assessment will consider those habitats and species that have connectivity with the project. It is noted that the baseline will be developed further through field surveys and additional desk-based literature.

Potential impacts on terrestrial and freshwater habitats during the construction (and decommissioning) and operations of the CWP OIW will be assessed and include for the following:

- Impacts during installation (and decommissioning);
- Direct temporary disturbance or loss of terrestrial habitat;
- Impacts during operation;
- Long term loss of original habitat;
- Potential pollutants / sediment entering surface water receptors;
- Impacts from noise and vibration;
- Indirect effects as a consequence of impacts on prey species;
- Temporary behaviour response or displacement;
- Dust effects;
- Introduction of Invasive Non-Native Species (INNS); and
- Potential loss of breeding or resting locations.

As part of scoping for the proposed assessment, the project team will engage with stakeholders including the NPWS and IFI to gather input on the proposed assessment scope.

In relation to cumulative impacts, a preliminary list of projects and plans relevant to the currently defined study areas has been developed as part of the Scoping Report and are outlined in Section 5. As the assessment works continue, this list will be updated regularly, including when the location of the OIW is confirmed. The assessment will take into account the proximate distance to the OIW, if there is potential for overlap in construction periods, operational phases and whether the general scale and nature of other projects is likely to result in a significant cumulative effect on biodiversity.

Other projects within the vicinity of the proposed development could result in cumulative impacts during the construction and operational phase if these projects were to run concurrently. Therefore, the scheduling of construction works would need to occur at the same time for a cumulative impact to occur, provided there is no long-term loss of original habitat, or other long-term negative impacts, as a result of the construction works.

The biodiversity assessment will evaluate the construction, operational and decommissioning phases of the OIW based on the likely hood, the extent, magnitude, duration and significance of potential impacts. The potential for cumulative impacts to arise will also be considered in this same manner.

10.8 Scoping questions

- Are you content with the scope of the assessment?
- Are you satisfied that the study areas are sufficient to capture all impacts on Biodiversity and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to impact on Biodiversity?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Are there any receptors that you believe could be particularly sensitive that you wish to see assessed?
- Are there any projects you would wish to see included in the cumulative impact assessment for this topic?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?

11 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

11.1 Introduction

This section of the Scoping Report proposes a number of archaeological, architectural and cultural heritage receptors of relevance for the CWP OIW. The final EIAR will be based on detailed constraints mapping using GIS software, followed by further analysis of the sites that could potentially be impacted upon and field surveys to ground-truth the results of the desk-based assessment and ascertain the significance of any potential impacts.

Archaeological, architectural and cultural heritage features that may be located within the study area can be generally categorised as:

- National Monuments in State Care;
- Record of Monuments and Places;
- Register of Historic Monuments;
- Religious Sites;
- Protected Structures;
- Demesne Landscapes; and
- National Inventory of Architectural Heritage.

11.2 Existing Environment

The onshore infrastructure is described in Section 4 of this report and identifies the proposed locations for the offshore cable landfall, proposed new substations and the proposed grid connection routes. Marine archaeology is dealt with in Section 14 of the CWP Offshore EIA Scoping Report.

The study area for this Chapter of the EIA will incorporate the lands surrounding the proposed development infrastructure where there is a potential direct or indirect on cultural heritage environment. A 100m buffer from the proposed substation and landfall locations is proposed along with a 50m buffer on either side of the cable route, which will allow for an assessment of the potential direct effects of the proposed development works. The study area will be mapped using GIS and the known cultural heritage features identified on the map.

Initial constraints mapping has been carried out showing the known cultural heritage features within the study areas and these are shown on Figures 4.2, 4.4 and 4.6. Some of the key features identified at each of the infrastructure locations are listed in Table 11.1.

Table 11.1: Summary of principal features in the Study Area

Project Site	Principal Features in the Study Area
Poolbeg	Site & Monuments Record: <ul style="list-style-type: none"> • DU019-027 – Pigeon House (Blockhouse) • DU019-029 – Sea Wall
	Record of Protected Structures: <ul style="list-style-type: none"> • RPS No. 6974 - Remnants of Pigeon House Fort • RPS No. 6795 – Former Pigeon House Hotel • RPS No. 6796 – Pigeon House Power Station • RPS No. 6798 – Great South Wall (to lighthouse)
	Dublin City Industrial Heritage Record: <ul style="list-style-type: none"> • DCIHR No. 19-09-015 – Poolbeg Generating Station Chimneys

Project Site	Principal Features in the Study Area
Carrickmines	Sites & Monuments Record: <ul style="list-style-type: none"> • DU026-004 – Church (Kilgobbin) • DU026-015 – Cist Burial (Jamestown) • DU026-032 – Enclosure (Shanganagh)
Ballybeg	Sites & Monuments Record: <ul style="list-style-type: none"> • WI025-012 – Historic Town (Wicklow) • WI025-010 – Church (Commons Townland in Rathnew) • WI025-085 – Habitation Site (Ballybeg) National Inventory of Architectural Heritage: <ul style="list-style-type: none"> • Reg. No. 16003345 – Wicklow Gaol

11.3 Data Sources and Baseline Methodology

Data sources for this assessment include OSI mapping, historical mapping, aerial photography, archaeological and architectural heritage datasets. National datasets providing information on the National Inventory of Architectural Heritage (NIAH), Record of Monuments and Places (RMP) and Sites and Monument Records (SMR) will be sourced primarily from the online National Monuments Service (NMS) (www.archaeology.ie) of the Department of Housing, Local Government and Heritage (DHLGH).

The relevant CDPs for each of the proposed infrastructure locations also provide information on Records of Protected Structures (RPS) within their administrative boundaries. Demesne Landscapes and Historic Gardens will be mainly sourced from OSI First Edition Mapping.

In addition, the following relevant information sources will be reviewed:

- Excavations Bulletin;
- Topographical files of the National Museum of Ireland;
- Cartographic Sources;
- Toponyms;
- Aerial photographs;
- Published archaeological inventories;
- Documentary Sources; and
- Existing EIA studies.

11.3.1 Methodology

As per Section 10.2 above, preliminary constraints mapping based on GIS datasets have been compiled. These desktop constraints will be further expanded through review of historical mapping and the additional data sources listed above.

Preliminary windscreen (drive-around) surveys will then be carried out to ensure that any potentially significant cultural heritage constraints are noted as early as possible in the proposed development. The windscreen surveys will also validate the known features identified in constraints mapping and allow for capture of photographs of features, as appropriate. Along with analysis of the density of cultural heritage sites within and in the vicinity of the proposed development, this exercise will form the basis of the project constraints review. The surveys will also include sites where there is potential for impact on setting.

Cultural heritage sites located in the immediate vicinity of the proposed development which could be subject to direct physical impacts during the construction phase will be highlighted for review of design to avoid impacts where possible. The project team will also undertake a review of the data to highlight sites with particular sensitivity to impacts on setting that are located within the surrounding landscape. The archaeologist will assist

the project team in the layout optimisation process as necessary, providing specialist feedback in relation to cultural heritage issues. A review of cartographic sources and aerial photography will be carried out at this stage, and any anomalies observed will be mapped and recorded. Any issues arising will be flagged at this stage for further investigation.

A second phase of field inspection will be carried out to investigate any identified anomalies and ground truth the desktop analysis. This will, where possible, involve viewing sites from nearby roads or field visits. A survey of the proposed cable and construction haul routes will also be carried out. The survey team allocated to this task will note, record and locate vernacular features which could be impacted upon by the proposed works. This will include Protected Structures, bridges, street furniture etc. and other cultural heritage features as well as other cultural heritage features in the vicinity of these proposed routes.

Upon completion of a final design parameters of access routes, substations, grid connections and landfall locations, the Archaeologist will undertake the preparation of the Archaeological, Architectural and Cultural Heritage Chapter of the EIAR. This work will be completed to the highest standards of professional best practice and cognisant of the Draft EPA EIAR Guidelines (2017), relevant CDPs, Best Practice Guidelines and legislative protection afforded to the archaeological, architectural and cultural heritage resource.

Following completion of the preliminary baseline study and preliminary assessment of impacts, and, subsequent to freezing of design parameters, a final programme of fieldwork will be undertaken to ground truth the results of the desk-based work and ascertain the likely potential significance of the impacts that the proposed development may have on the cultural heritage resource. Sites that may experience impacts from the proposed development will be visited and the potential impacts qualified and quantified in line with the Draft EPA EIAR Guidelines (2017).

The archaeologists will work closely with the landscape consultants in highlighting the most important archaeological and architectural sites and coordinate with them in the production of photomontages, as necessary, from the most sensitive archaeological and architectural receptors.

A detailed assessment will be carried out on any potential impacts that the proposed development may have on the cultural heritage resource, based on analysis of the data sources listed above and elsewhere herein. Any potential impacts identified will be discussed with the relevant experts and wider Project Team and amendments made to the proposed design where possible to eliminate or minimise the potential impact.

11.4 Legislation and Guidance

All cultural heritage work will be cognisant of best current practice and will be carried out by suitably qualified and experienced archaeologists. The assessments comply with guidance relevant to the design and acquisition of data, standards in terms of data quality and coverage of the baseline and assessment for cultural heritage.

The cultural heritage assessment will be in accordance with the following key policies and specific guidance, as well as the general EIA and wind farm guidelines outlined in Section 5:

- The National Monuments Acts (1930-2005), as amended;
- Current Local Authority Development Plans and LAPs, namely:
 - Dublin CDP 2016-2022;
 - Poolbeg West SDZ;
 - Dún Laoghaire-Rathdown CDP 2016-2022/ Dun Laoghaire Rathdown County Council: CDP (Draft) 2022-2028;
 - Ballyogan & Environs LAP 2019-2025;
 - Kiltiernan/Glenamuck LAP 2013;
 - Woodbrook-Shanganagh LAP 2017-2023;
 - Wicklow CDP 2016-2022; and
 - Wicklow Town-Rathnew Development Plan 2013-2019.
- Best practice guidelines, policies and frameworks including:

- Department of Culture, Heritage and the Gaeltacht (DCHG), *Frameworks and Principles for the Protection of the Archaeological Heritage* (1999);
- DCHG, *Policy and Guidelines on Archaeological Excavation* (1999);
- Department of Environment and Local Government (DELG), *Landscape and Landscape Assessment. Guidelines for Planning Authorities* (2000);
- The Heritage Council, *Archaeology & Development: Guidelines for Good Practice for Developers* (2000);
- DAHG, *Architectural Heritage Protection. Guidelines for Planning Authorities* (2011);
- Museum of London Archaeology Service (MoLAS), *Archaeological Site Manual* (Third Edition, 1994); and
- National Museum of Ireland Topographical Files, County Dublin and County Wicklow.

In addition to the above, EirGrid has published specific guidance for high voltage transmission infrastructure entitled *Cultural Heritage Guidelines for Electricity Transmission Projects – A Standard Approach to Archaeological, Architectural and Cultural Heritage Impact Assessment of High Voltage Transmission Projects* in October 2015 which will be reviewed in the context of the proposed works.

The *Frameworks and Principles for the Protection of the Archaeological Heritage* (DCHG, 1999) document provides the formal policy and standard approaches to dealing with ground disturbance, development impacts on archaeological heritage and will be used as key guidance for recommendation of mitigation measures.

The *Architectural Heritage Protection. Guidelines for Planning Authorities* (DAHG, 2011) set out the information required for planning applications where architectural heritage considerations are relevant, as well as best practice approaches to avoiding adverse impact on built and architectural heritage. These guidelines will be utilised in assessing impacts and proposing mitigation with regard to architectural heritage.

11.5 Design Parameters

At this early stage of the project, the design parameters include a number of potential options for landfall locations, onshore substations and grid connection routes. Any proposed ground disturbance will have potential to impact directly on previously unknown archaeological features.

11.6 Embedded Mitigation

The desktop surveys, field surveys and constraints mapping will identify the key features in the existing environment and provide a factual basis for determining the least constrained infrastructure options. The proposed grid connection corridors are primarily located in the public road network between the landfall locations and the substation sites. This measure will ensure that works are mostly carried out in previously disturbed ground and, as such, the potential for discovery or impacting on previously unknown archaeological features is low.

Similarly, potential substation locations at Poolbeg and Carrickmines may be located in heavily developed areas which reduces the likelihood of new archaeological finds. In Ballybeg, which is a more rural location, the substation study area includes areas of previously undeveloped greenfield sites but will seek to avoid areas of high archaeological potential.

11.7 Scoping of the Assessment

Information gathering for this archaeological, architectural and cultural heritage assessment will primarily come from desktop research of available information as set out above with ground truthing and more detailed site surveys carried out subsequently. This scoping report will be issued to the DHLGH who, in conjunction with the National Museum and the NMS, may identify specific areas of concern to be assessed in the EIAR. The Heritage Section of DCC, DLRCC and WCC will also be consulted with prior to completing the assessment.

The Draft EPA EIAR Guidelines (2017) identify the following key factors to be considered in an assessment of cultural heritage:

- Archaeology:
 - Known archaeological monuments;
 - Areas of archaeological potential (including unknown archaeology); and
 - Underwater archaeology
- Architectural heritage:
 - Designated architectural heritage; and
 - Other significant architectural heritage
- Folklore and history Designations or sensitivities.

In relation to cumulative impacts, a preliminary list of projects and plans relevant to the currently defined study areas has been developed as part of the Scoping Report and are outlined in Section 5. As the assessment works continue, this list will be updated regularly, including when the location of the OIW are confirmed and the potential for cumulative effects on archaeological, architectural and cultural heritage environment will be considered. The assessment will take into account the proximate distance to the OIW, if there is potential for overlap in construction periods, operational phases and whether the general scale and nature of other projects is likely to result in a significant cumulative effect on the archaeological, architectural and cultural heritage environment.

The *Frameworks and Principles for the Protection of the Archaeological Heritage* (DCHG, 1999) document provides the formal policy and standard approaches to dealing with ground disturbance, development impacts on archaeological heritage and will be used as key guidance for recommendation of mitigation measures.

The *Architectural Heritage Protection. Guidelines for Planning Authorities* (DAHG, 2011) set out the information required for planning applications where architectural heritage considerations are relevant, as well as best practice approaches to avoiding adverse impact on built and architectural heritage. These guidelines will be utilised in assessing impacts and proposing mitigation with regard to architectural heritage.

11.8 Scoping Questions

In addition to the above proposed scope for this assessment, the following information would be beneficial to the overall assessment being carried out:

- Are you content with the scope of the assessment?
- Are you satisfied that the study areas are sufficient to capture all impacts on Archaeological, Architectural and Cultural Heritage and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to impact on Archaeological, Architectural and Cultural Heritage?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Are there any receptors that you believe could be particularly sensitive that you wish to see assessed?
- Are there any projects you would wish to see included in the cumulative impact assessment for this topic?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?
- Are there key structures or areas that will require assessment by a conservation architect and inclusion of a report by same as part of the application?

12 LANDSCAPE AND VISUAL IMPACTS

12.1 Introduction

This Chapter of the EIAR will describe the landscape context of the CWP OIW and assesses the likely landscape and visual effects of the scheme on the receiving environment. Although closely linked, landscape and visual effects are assessed separately.

Landscape Impact Assessment (LIA) – relates to assessing effects on the landscape as a resource in its own right and is concerned with how the proposal will affect the key elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

Visual Impact Assessment (VIA) – relates to assessing effects on specific views and on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements. Visual effects may occur from; Visual Obstruction (blocking of a view, be it full, partial or intermittent) or; Visual Intrusion (interruption of a view without blocking).

The landscape and visual impact assessment is based on:

- Landscape Institute and the Institute of Environmental Management and Assessment (IEMA), *Guidelines for Landscape and Visual Impact Assessment* (Third Edition, 2013) (GLVIA3);
- Landscape Institute, *GLVIA3 Statement of Clarification 1/13 10-06-13* (2013);
- Landscape Institute, *Visual Representation of Development Proposals, Landscape Institute Technical Guidance Note 06/19* (2019);
- Scottish Natural Heritage (SNH), *Offshore Renewables – guidance on assessing the impact on coastal landscape and seascape: Guidance for Scoping an Environmental Impact Statement* (2012);
- SNH, *Assessing the Cumulative Impact of Onshore Wind Energy Developments* (2012); and
- Marine Institute, *Regional Seascape Character Assessment for Ireland 2020 – Draft Consultation Report* (2020).

12.2 Existing Environment

The onshore infrastructure is described in Section 4 of this report and identifies the proposed locations for the offshore cable landfall, proposed new substations and the proposed grid connection routes. The 2006 WEDGs specify different radii for examining the Zone of Theoretical Visibility (ZTV) of proposed wind farm projects, however SNH guidance (2017) defines the extent of defining the ZTV by the turbine tip height. Section 19 of the Offshore EIA Scoping Report defines the appropriate study area for the CWP relative to the proposed turbine infrastructure.

In respect of the onshore project elements, the existing baseline environment will consist of a description of the landscape fabric of the proposed site, landscape character and existing visibility, as well as the relevant planning context, including any landscape designations, within the study area. The study area for landscape and visual issues is based on professional experience of working on projects of a similar scale and nature and will comprise a 3km buffer around the proposed substation and landfall infrastructure. A 100m buffer on either side of the grid connection corridor will also be used to define the boundary of the study area.

The current Dublin CDP does not include a landscape character assessment (LCA) or landscape designations. Preparation of an LCA is identified a Council Objective in the current Development Plan and will be used to inform the landscape baseline if published during the assessment. Views of the peninsula from Sandymount Strand are likely to have most potential for an impact. Irishtown Nature Park and green infrastructure within and surrounding the Poolbeg West SDZ area will have particular value given its proximity to the urban centre of the city.

Within DLRCC, viewpoints identified for protection are located along Ballyedmonduff Road and Burrow Road which overlook the Carrickmines area and may have views of the proposed substation infrastructure. Popular recreational paths in Killiney and the Dublin Mountains may also have locations where the substation infrastructure and potential landfall infrastructure will be visible. There are 14 no. LCAs identified in the DLRCC CDP (Appendix 7) with the indicative substation study area located mainly within LCA No. 13 (Carrickmines) and the indicative landfall study area mainly situated within and around LCA No. 12 (Shanganagh).

The WCC CDP includes a Landscape Assessment which divides the county into 15 no. distinctive landscape categories set out on Map 10.13 of the Plan. The proposed development works at Ballybeg, including the landfall locations, grid connection routes and substation locations are predominantly located within the Urban Areas, Coastal Area and Corridor East Designated areas.

12.3 Data Sources and Baseline Methodology

Data sources which will inform the landscape and visual impact assessment will include:

- CDPs and predominantly, landscape character assessments:
 - Dún Laoghaire-Rathdown CDP 2016-2022/ Dún Laoghaire Rathdown County Council: CDP (Draft) 2022-2028;
 - Dublin CDP (2016-2022); and
 - Wicklow CDP 2016-2022.
- Marine Institute, *Regional Seascape Character Assessment for Ireland 2020 – Draft Consultation Report* (2020).
- Aerial photography; and
- OSI mapping and aerial imagery.

The initial desktop study will comprise of the following:

- Prepare and review of ZTV maps, which indicate areas from which the development is potentially visible in relation to terrain within the Study Area;
- Review of relevant CDPs, particularly with regard to sensitive landscape and scenic view / route designations;
- Selection of potential Viewshed Reference Points (VRPs) from key visual receptors to be investigated during fieldwork for actual visibility and sensitivity; and
- Preparation of an initial VRP selection report and associated map for consultation purposes (Planning Authorities).

Fieldwork will consist of:

- Select a refined set of VRPs for assessment;
- Record a description of the landscape elements and characteristics within the Study Area generally and also within view from each VRP; and
- Capture high quality base photography from which to prepare photomontages of the proposal.

Sensitive landscape and visual receptors will be identified during baseline studies and fieldwork and will consist of both designated (highly sensitive landscape zoning / scenic views in the CDP) and non-designated receptors. Visual receptors will be selected from the following categories;

- Designated scenic routes / views (CDP);
- Local Community views;
- Centres of Population;
- Major Transport Routes; and
- Amenity, Heritage and Tourism locations.

As there is no LCA prepared in respect of the Poolbeg study area, the assessment will be based on landscape character types that will be defined by the relevant expert contributors.

The assessment of landscape effects involves establishing the landscape baseline. This includes consideration of the geographic location and landscape context of the proposed development as well as the essential landscape character and salient features of the wider Study Area and is discussed with respect to; landform and drainage and; vegetation and land use. The visual baseline is more population based, but still overlaps with elements of the landscape baseline.

The visual baseline is discussed in relation to; centres of population and houses; transport routes and; public amenities and facilities. Once the baseline environment is established an assessment of the potential significant effects associated with the proposed development will be carried out. In accordance with the Guidelines for Landscape and Visual Impact Assessment GLVIA3 (Landscape Institute, 2013), the method for estimating the significance of landscape impacts and visual impacts is very similar and follows the process shown in Figure 3.5 (p39) of GLVIA3 (Figure 12.1).

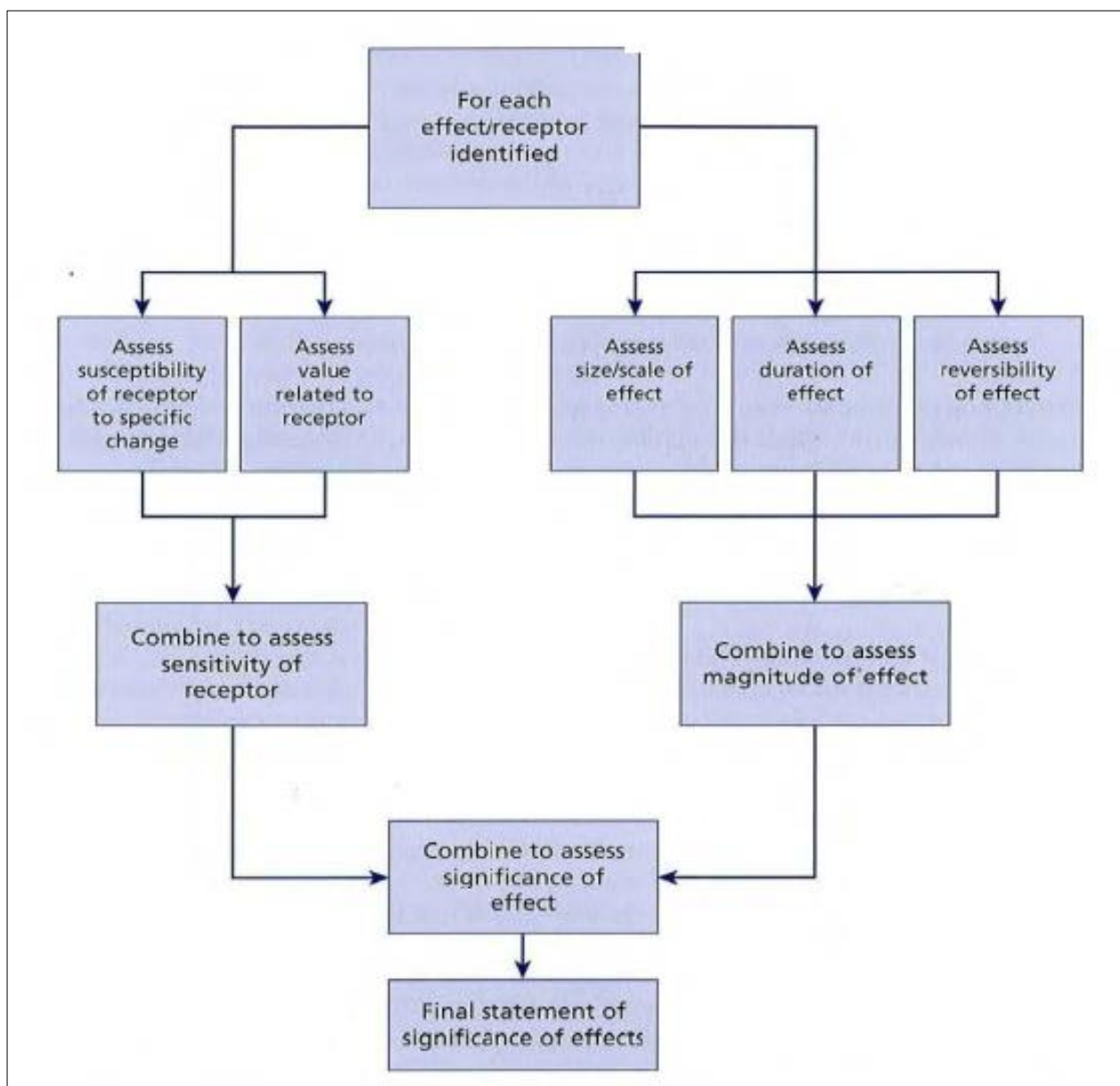


Figure 12.1: Assessing the Significance of Effects (Source: GLVIA3 (Figure 3.5))

12.4 Legislation and Guidance

General EIA and wind farm development guidance as outlined in Section 5 will be used to guide the preparation of this Chapter.

The key specific guidance for carrying out a landscape and visual impact assessment is provided in the *Guidelines for Landscape and Visual Impact Assessment GLVIA3* (Landscape Institute, Third Edition, 2013).

In addition to the above, EirGrid has published specific guidance for high voltage transmission infrastructure entitled *EirGrid Evidence Based Environmental Studies Study 10: Landscape & Visual – Literature review and evidence based study on the landscape and visual effects of high voltage electricity infrastructure in Ireland* in June 2016 which will be reviewed in the context of the proposed works.

12.5 Design Parameters

The greatest potential for landscape and visual impacts will occur from the proposed above ground electrical infrastructure to be installed at the proposed substation. The impacts at these locations will be long-term. Proposed substation infrastructure as part of the CWP at the Poolbeg and Carrickmines sites will be similar to existing substation and electrical infrastructure at both sites and, as such, there is precedent for this type of development.

At Ballybeg, the proposed substation sites are predominantly in rural locations which do not have an existing industrial use type. Similar 110 kV substations are located in the general area and proposed infrastructure will be of a similar type and in compliance with EirGrid and ESB Networks design and performance requirements. A new 220 kV substation will be required along with an upgrade to the existing 110 kV substation.

The potential siting of above ground landfall infrastructure may be required close to the landfall locations. This will be confirmed as part of the design process. In this event, any above ground infrastructure will be designed to ensure minimal visual impact.

Grid connection infrastructure will be underground and, as such, there are minimal design considerations related to the potential for visual impacts associated with the infrastructure. Access chambers and maintenance points will be required and will be of similar design and sizing to those for existing underground electrical infrastructure.

12.6 Embedded Mitigation

Employment of underground cabling, as identified as the preferred method for grid connection in the 2019 Draft WEDGs and commonplace in urban environments, will eliminate the impact associated with HV overhead power lines between the landfall and substation sites. Visualisations and modelling will be utilised to consider the visual impacts of the landfall infrastructure along the coastline.

12.7 Scoping

The selection of appropriate VRP and agreement of same will be carried out by preparing a VRP selection report and associated mapping for discussion with the local authorities in DCC, DLRCC and WCC (as required). There may be specific sensitive locations that the local authority planners will be aware of that should be used to capture imagery for preparing visualisations. In particular, the proposed substation locations at Carrickmines are located adjacent to the current DLRCC administrative offices as well as the former Ballyogan Landfill site which is in the ownership of DLRCC.

The Draft EPA EIAR Guidelines (2017) identify the following key factors to be considered in an assessment of the landscape:

- The Landscape
 - Landscape Appearance and Character;

- Landscape Context;
- Views & Prospects; and
- Historical Landscapes.

This assessment will interact in particular with the Seascape, Landscape and Visual Impacts assessment for the proposed offshore infrastructure and consideration will be given to the combined effects of landfall electrical infrastructure, if required, and the offshore turbines. A ZTV identifying locations where both aspects of infrastructure have potential to be visible will be prepared and appropriate VRPs selected.

It is not envisaged that there will be any potential transboundary effects with regard to the landscape and visual impact assessment.

A number of existing and proposed projects which could have a cumulative effect with the OIW are identified in Section 5. As the assessment works continue, further relevant projects, as described in Section 5, will be added to this list and the potential for cumulative effects on landscape and visual impact will be considered.

12.8 Scoping Questions

- Are you content with the scope of the assessment?
- Can you provide a suitable list or opinion on locations for the VRPs which can be considered for assessment?
- Do you have an opinion on how selected viewpoints be presented in the offshore and onshore EIA aspects where there is an overlap?
- Are you satisfied that the study areas are sufficient to capture all Landscape and Visual Impacts and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to have Landscape and Visual Impacts?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?

13 NOISE AND VIBRATION

13.1 Introduction

The Noise and Vibration Chapter of the EIAR will assess the potential impacts of the proposed development on sensitive receptors in the surrounding environment during the construction, operational and decommissioning phases. The principal objectives of the Noise and Vibration assessment will be to specify appropriate limit values and mitigation measures to ensure that the impact on the noise sensitive receptors is minimised to an acceptable level.

13.2 Existing Environment

All properties with a potential for a significant impact from proposed development activities will be considered in the assessment. Potential noise sensitive locations (NSLs) will include residential dwellings (existing and proposed) and commercial properties (such as creches, hospitals, schools and churches). All properties will then be reviewed by ground-truthing and further desktop assessment (in the case of new planning applications on the online planning portal) to identify potential sensitive receptors in the vicinity of the development.

13.3 Data Sources and Baseline Methodology

A review of substation locations, grid routes and landfall infrastructure will be carried out to inform the selection of appropriate baseline noise monitoring locations in the vicinity of the sites. Grid connection works will mainly be carried out in the public road and will be similar to underground utilities works which are frequently carried out in public roads. Where grid connection works required specific engineering solutions for pinch points or crossing points, such as HDD, the proposed locations will be reviewed and the closest NSLs identified.

A background noise monitoring survey will be completed at identified NSLs and all measurements will be conducted in accordance with relevant guidance documents including *ISO 1996-2:2017 Acoustics. Description, measurement and assessment of environmental noise - Part 2: Determination of sound pressure levels* (2017).

Day and night survey will be undertaken as required which will entail up to six hours in duration for daytime periods and two hours for night time.

13.4 Legislation and Guidance

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and may consider noise limits at their discretion. In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise*.

For the assessment of potential noise impacts from construction related traffic along public roads and haul routes, it is proposed to adopt guidance from *Design Manual for Roads and Bridges (DMRB)* (2019) published by Highways England, Transport Scotland, The Welsh Government and The UK Department for Infrastructure.

Other relevant legislation and guidance for this assessment includes:

- Air Quality Technical Advisory Group 09 (AQTAG09), *Guidance on the effects of industrial noise on wildlife*;
- BSI, *BS 7445:1991 Description and measurement of environmental noise Part 2: Guide to the acquisition of data pertinent to land use*;
- BSI, *BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound*;

- BSI, *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*;
- DCC, *Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (2019);
- EPA, *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* (January 2016);
- European Commission Directive 2000/14/EC8;
- ISO, *ISO 9613-2:1996-2 Acoustics - Attenuation of sound during propagation outdoors – Part 2: General method of calculation*;
- IEMA, *Guidelines for Environmental Noise Impact Assessment* (October 2014);
- WHO, *Environmental Noise Guidelines for the European Region – Guideline Values for Community Noise in Specific Environments* (2018).

EirGrid commissioned a study which was published in May 2016 entitled *EirGrid Evidence Based Environmental Studies Study 8: Noise – Literature review and evidence based field study on the noise effects of high voltage transmission development*. This is an evidence-based study carried out by experts in noise. The research looks at the actual noise effects of the construction and presence of high voltage transmission infrastructure in Ireland. Such projects include overhead lines and substations. The document was prepared to inform best practice in future planning of this type of infrastructure and the purpose was to:

- Review literature on the noise effects of transmission infrastructure;
- Report on and discuss noise surveys of existing overhead lines and substation transmission infrastructure of different voltages across the country – 110 kV, 220 kV and 400 kV; and
- Present conclusions and recommendations in relation to noise for the future design and siting of transmission infrastructure projects.

The findings of this study will be reviewed in the preparation of this assessment and will provide guidance to the design team on the siting of critical infrastructure.

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. With respect to this development, the range of relevant criteria used for building protection is expressed in terms of Peak Particle Velocity (PPV) in mm/s.

Guidance relevant to acceptable vibration within buildings is contained in the following documents:

- BSI *BS 7385 – Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground borne vibration* (1993); and
- BSI *BS 5228-2:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration* (2014).

In relation to operational noise for the onshore grid infrastructure it would be proposed that noise criteria derived using guidance in *BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound* be applied to the substation. This is the typical approach that would be adopted by DCC (and other local authorities) and would reflect the wording of noise conditions typically applied by local authorities to developments of this nature.

13.5 Design Parameters

In terms of the noise and vibration assessment, the key design parameters will be in respect of operational phase noise emission from the proposed substation and equipment installed at the landfall points. In particular, where electrical infrastructure is required to be installed above ground at the landfall locations, for Carrickmines this may be in close proximity to residential receptors and design measures to attenuate electrical noise at this location will be an important consideration.

Construction methodology for the substation infrastructure will largely be driven by technical requirements such as piling operations and EirGrid / ESB Networks minimum requirements. The electrical design requirements will determine the overarching substation technology and consideration will also be given to the

design of other substation elements (such as transformers and capacitor banks) in terms of their potential to create noise.

Similarly, for landfall infrastructure and underground cabling, the construction methodology proposed will take input from the noise and vibration specialists to reduce or eliminate potential emissions.

13.6 Embedded Mitigation

Design measures to attenuate and dampen noise emissions from electrical transmission infrastructure are embedded as best practice in the projects of this nature. Reviews and discussions on internal layouts and positioning of equipment at the chosen sites will also be carried out to optimise the attenuation of noise.

Where appropriate, preliminary noise modelling for key infrastructure locations will highlight any potential operational phase exceedances and will provide vital feedback for the design team. Any opportunities to refine and improve infrastructure layouts will be implemented at this stage.

13.7 Scoping

The proposed scope of baseline noise monitoring is in accordance with the best practice guidelines outlined above and can be further refined based on the requirements of the local authorities in DCC, DLRCC and WCC as required.

The Draft EPA EIAR Guidelines (2017) identify the following key factors to be considered in an assessment of noise and vibration:

- Noise & Vibration
 - Daytime noise;
 - Night-time noise;
 - Vibration sources; and
 - Sensitive receptors

In relation to cumulative impacts, a preliminary list of projects and plans relevant to the currently defined study areas has been developed as part of the Scoping Report and are outlined in Section 5. As the assessment works continue, this list will be updated regularly, including when the location of the OIW are confirmed and the potential for cumulative effects on surrounding noise environment will be considered. The assessment will take into account the proximate distance to the OIW, if there is potential for overlap in construction periods, operational phases and whether the general scale and nature of other projects is likely to result in a significant cumulative effect on the noise environment.

13.8 Scoping Questions

- Are you satisfied that the study areas are sufficient to capture all Noise and Vibration Impacts and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to have Noise and Vibration Impacts?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?
- Is the proposed baseline noise monitoring scope acceptable?
- Is the proposed methodology for identifying sensitive receptors and NSLs acceptable?
- Is the proposed methodology for noise modelling acceptable?

14 AIR QUALITY AND CLIMATE

14.1 Introduction

The Air Quality and Climate Chapter of the EIAR will assess the potential impacts of the proposed CWP OIW on local and regional air quality as well as the potential impacts of the project on climate.

The assessment in terms of climate impacts will consider the targets and objectives of the Government's Climate Action Plan 2019 and how the proposed works will contribute to achieving these targets. The overall CWP project will generate clean renewable energy offshore which will be connected into the national transmission network onshore, increasing the contribution of renewable energy sources into the total electricity generation fuel mix and replacing historical fossil fuel burning generating stations. The indirect impact of the CWP will be to enable the gradual phasing out of fossil fuel burning with a resulting improvement in air quality in the vicinity of the power plants and reducing the release of greenhouse gases (GHGs) into the atmosphere.

The consent application for the CWP OIW will contain a carbon balance assessment which will be produced to give an indication of CWP's impact on carbon dioxide (CO₂) emissions against the total potential carbon savings attributed to the project. The assessment will aim to quantify the CO₂ emission savings over the life cycle of the project against the release of CO₂ as a result of constructing and implementing the project. This assessment will be presented in the CWP OIW EIAR.

14.2 Existing Environment

The existing environment for the CWP OIW will include a desktop review of air quality in the areas surrounding the proposed onshore works using available data from the EPA at existing monitoring stations. In addition, meteorological data provided by Met Éireann pertaining to the sites will be obtained from the nearest weather monitoring stations.

The climate assessment will consist of an overview of Ireland's compliance with its GHG emissions targets. This information will provide historical trends and existing baseline information.

14.3 Data Sources and Baseline Methodology

As part of the implementation of the *Air Quality Standards Regulations* 2011 (S.I. No. 180 of 2011), four air quality zones have been defined in Ireland for air quality management and assessment purposes by the EPA. Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

The assessment of air quality will focus on identifying the existing baseline levels of nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}) in the areas surrounding the proposed development by reviewing the existing EPA monitoring data. In the Poolbeg area (which is located in Zone A), there are existing monitoring stations at Ringsend (Station 17) and Dublin Port (Station 76). The closest monitoring station to the proposed works around Carrickmines (also Zone A) is located in Dún Laoghaire (Station 34). The monitoring station at Bray (Zone D) is the closest to the proposed works at Ballybeg, however it does not monitor NO₂ or particulates so representative Zone D monitoring stations will be reviewed to identify the existing baseline.

The impact of construction and decommissioning activities on air quality will be determined based on the nature and scale of dust generating activities based on guidance issued by the Institute of Air Quality Management (IAQM) as set out in Section 14.4.

Operational phase impacts will consider the atmospheric emissions from plant and equipment at the proposed substation locations.

The baseline methodology for the climate assessment will gather data from nearby Met Éireann weather stations to present the current climate conditions in the areas surrounding the proposed works.

14.4 Legislation and Guidance

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the *Air Quality Standards Regulations 2011 (as amended)*, which incorporate *EU Directive 2008/50/EC (as amended)*, which combines the previous air quality framework and subsequent daughter directives. Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions.

The concern from a health perspective is focused on NO₂ and particles of dust which are less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5}). EU ambient air quality standards (Council Directive 2008/50/EC transposed into Irish law as S.I. No. 180 of 2011) sets limit values for NO₂, PM₁₀ and PM_{2.5} as it is these pollutants which have the potential to be inhaled into the lungs and potentially cause adverse health impacts.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m²*day) averaged over a one-year period at any receptors outside the site boundary. Recommendations from the then Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the Bergerhoff limit of 350 mg/(m²*day) to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction of the proposed development as is considered best practice in the absence of site-specific guidance.

Guidance in respect of assessing the impact of dust from construction activities is provided from the IAQM 2014 document entitled *Guidance on the Assessment of Dust from Demolition and Construction and DCCs Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (2019).

The IAQM Guidelines also outline the assessment criteria for determining the sensitivity of the area to ecological impacts from dust. The criteria take into consideration whether the receiving environment is classified as an SAC, an SPA, a NHA or a pNHA as dictated by the *Habitats Directive (992/43/EEC)* or whether the site is a local nature reserve or home to a sensitive plant or animal species. The receiving environment in relation to biodiversity as set out in Section 9.2 will provide the relevant context for considering these potential impacts.

A review of potential traffic impacts due to the onshore infrastructure will be carried out and if significant changes in annual average daily traffic (AADT) occur, an air quality assessment will be carried out following procedures described in the publications by the EPA (EPA 2002, 2003, 2017) and using the methodology outlined in the policy and technical guidance notes, LAQM.PG(16) and LAQM.TG(16), and UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 LA 105 Air Quality (UK Highways Agency 20019).

In terms of climate, Ireland is party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Paris Agreement, which came into force in 2016, is an important milestone in terms of international climate change agreements and includes an aim of limiting global temperature increases to well below 2°C above pre-industrial levels with efforts to limit this rise to 1.5°C.

In 2015, the *Climate Action and Low Carbon Development Act 2015* (S.I. No. 46 of 2015) was enacted. The purpose of the Act was to enable Ireland "to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050". This is referred to in the Act as *the national transition objective*.

The *Climate Action Plan* published by the Government in June 2019, outlines the current status across key sectors including electricity, transport, built environment, industry and agriculture and outlines the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The Plan also details the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability

to the Oireachtas. The Plan has set an electricity sector reduction target of 50 - 55% relative to 2030 pre-National Development Plan projections, with a target of increasing the amount of electricity produced by renewable sources to 70% by 2030.

The IEMA *Assessing Greenhouse Gas Emissions and Evaluating Their Significance* (2017) guidance will be used in the preparation of this assessment and provides a guide to addressing GHG emissions and outlining mitigation measures.

The assessment of climate change impacts on the CWP OIW will be carried out in accordance with the IEMA *Climate Change Resilience and Adaptation* (2020) guidance document, which provides a framework for the effective consideration of climate change resilience and adaptation through EIA in the context of town and country planning.

The Climate Act makes provision for a national mitigation Plan and a national adaptation framework. The mitigation plan, referred to as the '*national low carbon transition and mitigation plan*', which is required to be submitted to Government for approval every five years, outlines a range of objectives to:

- Specify the manner in which it is proposed to achieve the national transition objective;
- Specify the policy measures required to manage GHG emissions and the removal of GHGs at a level that is appropriate for furthering the achievement of the national transition objective;
- Take into account any existing obligations of the State under the law of the EU or any international agreement; and
- Specify the sectoral mitigation measures for the purpose of reducing GHG emissions and enabling the achievement of the national transition objectives.

The adaptation plan, referred to as the '*national climate change adaptation framework*', which is required to be submitted to Government for approval every five years, outlines a range of objectives to:

- Specify the national strategy for the adaptation measures in different sectors which reduces the vulnerability of the State to the negative effects of climate change and to avail of the positive effects of climate change that may occur; and
- Take into account any existing obligations of the State under the law of the EU or any international agreement.

In addition, the Climate Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

Guidance from the UK Highway Agency *DMRB – LA 114 Climate* (2019) provides an assessment methodology for traffic related impacts on climate. An assessment of the embodied construction emissions for the OIW will be calculated using the *TII Carbon Assessment Tool* (Version 2) (TII 2020).

Currently there are no climate budgets for Ireland but there is an expectation for sectoral carbon budgets shortly for comparison with the Net CO₂ project GHG emissions. The IEMA guidance note on *Assessing Greenhouse Gas Emissions and Evaluating their Significance* (IEMA 2017) advises that all carbon emissions contribute to climate change and in the absence of a defined threshold (e.g. national sector-specific targets and trajectories), any increase (or decrease) in carbon emissions may be considered as significant.

14.5 Design Parameters

The infrastructure design for the onshore works, as described in Section 4, is based upon performance specifications set by EirGrid and ESB Networks for electricity transmission. The relevant design parameters for the air quality and climate assessment will include emissions from equipment installed at the substation and landfall locations.

14.6 Embedded Mitigation

Detailed optioneering assessments of suitable infrastructure locations and grid route options will include a consideration of the overall length of the grid connection, which will be minimised to the greatest extent possible, and proximity to sensitive human or ecological receptors with respect to construction phase impacts. Minimising the overall length of the grid connection will reduce building material requirements and the associated embodied energy in the manufacture of products as well as the associated haulage emissions.

Best practice construction techniques including minimising exposed ground surfaces, minimising stockpiles and 'damping down' of hard surfaced areas will limit the potential for the generation of dust and, as a result, reduce the potential for impacts associated with dust deposition.

14.7 Scoping

The approach to EIA will follow the overall methodology set out in the relevant guidelines identified in Section 5. The structure of the air quality and climate assessment Chapter will follow the same main structure as described in Section 5 with additional sub-headings included as required.

The magnitude of potential impacts will be determined initially to identify whether or not the potential for an effect is significant. A quantitative assessment of the potential effects will be carried out where possible

The potential impacts of construction and decommissioning works on the air quality and climate environment will include consideration all the construction activities which are likely to have a significant effect. The construction methodology will set out the key activities which have the potential to generate dust emissions which will be quantified, where possible, and assessed in the EIAR. Construction material types and haulage of materials will be an important consideration in the evaluation of construction traffic impacts and the associated impact of PM₁₀, PM_{2.5} and NO₂ emissions from construction traffic. The magnitude of construction traffic movements will determine whether a detailed assessment of construction traffic emissions will be required.

Plant and equipment associated with the electrical infrastructure will be reviewed to consider potential for atmospheric emissions and the magnitude of same, where appropriate.

Operational phase traffic movements to and from the substation will be infrequent and will be required for maintenance and upkeep only. There will not be any requirement for staff employed on a full-time basis at the substation. Inspections and maintenance of the underground grid connection and landfall infrastructure will also be infrequent. Accordingly, traffic movements during the operational phase are expected to be negligible and are not anticipated to require a detailed assessment in the EIAR.

A number of existing and proposed projects which could have a cumulative effect with the OIW are identified in Section 5. As the assessment works continue, further relevant projects, as described in Section 5, will be added to this list and the potential for cumulative effects on air quality and climate will be considered.

14.8 Scoping Questions

- Are you content with the scope of the assessment?
- Are you satisfied that the study areas are sufficient to capture all impacts on air quality and climate and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to impact on air quality and climate?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Are there any receptors that you believe could be particularly sensitive that you wish to see assessed?

- Are there any projects you would wish to see included in the cumulative impact assessment for this topic?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?

15 MATERIAL ASSETS – BUILT SERVICES

15.1 Introduction

This section of the Scoping Report addresses the potential impacts of the CWP OIW on Material Assets in the area surrounding the proposed development. In accordance with the EPA's Draft EIAR guidance (2017), the following environmental factors are considered under the heading of Material Assets:

- Built Services;
- Roads and Traffic; and
- Waste Management.

Potential impacts on roads and traffic are addressed separately in Section 15 and will be presented in a standalone Chapter in the EIAR. Built services and waste management will be addressed in this Chapter of the EIAR; in respect of built services this will include, but not be limited to:

- Rail lines and trams (i.e., DART, LUAS etc.);
- Cycleways;
- Underground and overhead utilities; and
- Telecommunications.

15.2 Existing Environment

The proposed Poolbeg and Carrickmines study areas are located in dense urban settings with a high degree of surrounding built infrastructure. The Ballybeg study area is less built up overall and, in particular, the potential lands for the substation infrastructure are typically in agricultural surrounds.

The Poolbeg area is characterised by heavy industrial development including shipping activities, wastewater treatment and thermal waste treatment. There is a network of public and private roads across the peninsula as detailed in Section 15, and areas of car parking at the eastern end of the peninsula to service recreational activities in the area such as the South Bull Wall walk, sea swimming and water polo. Underground utility services are significant in the area given that the location has two power generating stations, storage sites for national oil reserves, wastewater treatment and numerous effluent / wastewater discharge channels. Some above ground utility cabling remains in the area, however the majority of services are underground. *The Greater Dublin Area: Cycle Network Plan* (2013) identifies a designated cycle route onto the Poolbeg peninsula from Sean Moore Park to the south-west via the Irishtown Nature Reserve.

Carrickmines also represents a built-up urban environment with significant built infrastructure, both above and below ground. The potential grid route corridors will cross a number of major road features (M50 and N11/M11) as well as crossing the Dublin to Wexford rail line and potentially the LUAS green line around Cherrywood. Significant overhead powerline infrastructure is connected into the existing Carrickmines 220 kV substation which will be within the study area for this assessment. Underground power, telecommunications, water, gas and wastewater infrastructure will also be significant in the area. A number of designated cycle routes cross the study area.

At Ballybeg, the existing built infrastructure is concentrated at the urban centres of Wicklow Town and Rathnew. Power and telecommunications infrastructure is a mix of above and below ground across the study area. Significant overhead power infrastructure forming the Arklow-Ballybeg-Carrickmines transmission line exists in the western zone of the study area and proximity to this line will be a determining factor for siting a potential substation location. The Dublin to Wexford rail line runs close the shoreline on the eastern side of the study area and will be located in close proximity to any proposed landfall infrastructure and will be crossed as part of the grid connection to a substation. *The Greater Dublin Area: Cycle Network Plan* (2013) identifies a number of cycle routes in the Wicklow / Rathnew area including a 'Greenway' type route connecting north to Greystones and Bray.

The existing environment in terms of waste management infrastructure includes a number of operational civic amenity facilities located at Ringsend, Ballyogan and in Wicklow Town as well as the Dublin Waste to Energy

(WtE) facility within the Poolbeg study area. Ballynagran landfill is also located to the south of the Ballybeg Study Area.

Other locations of key waste infrastructure for handling of construction and demolition (C&D) waste are located across the Eastern-Midlands Waste Region including in South County Dublin and wider afield in Counties Kildare and Meath. Waste facilities for acceptance of clean soils and stones are located in north Dublin (Huntstown Waste Facility), Kildare (Drehid Waste Facility) and Wicklow (Walshestown Restoration Facility).

Historical waste infrastructure of particular interest in the Carrickmines study area is the former Ballyogan Municipal Waste Landfill, which is now closed. The former landfill is proposed for redevelopment as parkland, Jamestown Park, and incorporates potential sites for new substation infrastructure.

15.3 Data Sources and Baseline Methodology

The above referenced built environment features will be identified on mapping and used as part of the optioneering study for the proposed siting of the onshore infrastructure. Data collection for the above features will be collated from, amongst others:

- Aerial imagery and current online maps;
- OSI historical mapping;
- Relevant CDPs;
- Other plans and projects in the areas;
- EirGrid and ESB power line mapping;
- Irish Water utility mapping;
- Gas Networks Ireland infrastructure mapping;
- National Transport Authority (NTA), *Greater Dublin Area: Cycle Network Plan* (2013); and
- DTTS, *Strategy for the Future Development of National and Regional Greenways* (2018).

The above information will be collated and presented in a comprehensive summary of the baseline environment at each of the proposed infrastructure sites. The information will be presented on clear maps to help illustrate the presence, density and significance of built environment features in each study area and will be a critical tool in assessing environmental constraints as part of the infrastructure optioneering study which is ongoing.

Available capacity for waste acceptance is constantly changing and the baseline environment for waste infrastructure will present a summary of the suitable licensed facilities in the proximity of the proposed development. The Regional Waste Management Offices produced a capacity study in 2015 entitled *Construction & Demolition Waste: Soil and Stone Recovery/Disposal Capacity* which will be used as a basis for identifying suitable facilities and will be updated with a review of publicly available data from the EPA.

15.4 Legislation and Guidance

The Draft EPA EIAR Guidelines (2017), as set out in Section 5, outlines the environmental factors to be considered as part of an assessment on material assets. Table 3.1 in the guidance document identifies the following typical topics to be considered under materials assets:

- Electricity;
- Telecommunications;
- Gas;
- Water Supply Infrastructure; and
- Sewerage.

All of the above infrastructure features will be identified within the study area at each site and the significance of potential impacts from the proposed development on the assets addressed.

The EC Guidance on EIA Scoping (2017) also identifies buildings, other structures, mineral resources and water resources in terms of built infrastructure in the study area that may be impacted by a development. These topics will also be considered as part of this Chapter.

In respect of waste management, the IEMA *Materials and Waste Management in Environmental Impact Assessment* (2020) guide will be used to inform the impacts of waste generated from the project on the environment.

15.5 Design Parameters

The proposed development will have an impact on the existing electrical infrastructure by means of feeding into the transmission network and providing a clean renewable source of energy on the grid. The specific electrical export capacity of the wind farm as described in Section 4 will determine the significance of this impact.

Other design parameters which will affect existing built services will relate primarily to the underground grid connection infrastructure. The grid route optioneering exercise will give due consideration to existing underground services insofar as information on these services is available at this stage of the project.

Waste generation, particularly excavated materials, will be determined as part of the design of the onshore infrastructure. Excess excavated material will mainly be generated from installation of underground infrastructure and the EIAR will assess the capacity of existing waste facilities to accept excavated waste along with estimates of other C&D wastes, such as concrete, metals, timber and mixed C&D. This will be particularly relevant where contaminated ground is anticipated to be encountered.

15.6 Embedded Mitigation

Embedded mitigation in the project relevant to the built environment will be derived mainly from the optioneering exercise for substation and landfall infrastructure siting as well as grid route selection. A wide range of technical, economical and environmental factors will feed into the optioneering exercise and avoidance of impacts to key built infrastructure will be a significant component in that exercise.

15.7 Scoping

Potential impacts from the offshore wind turbine infrastructure on aviation and military are addressed in the CWP OWF EIA Scoping Report. The proposed onshore infrastructure works will not be of such nature that they would be likely to have significant effects on civil or military aviation operations and, as such, aviation impacts have been scoped out of the CWP OIW EIAR.

This Chapter will include information on existing and planned underground infrastructure (such as water supply, wastewater, electricity, gas and telecommunications) in the study area which could be affected by the proposed OIW. It is not anticipated that there would be any significant effects likely on above ground telecommunication links (such as radio, television and mobile coverage), however it is proposed to consult with key telecommunications providers in the studies areas (including but not limited to 2RN, Vodafone and Three) to inform them of the project.

The potential for EMF effects on existing built services will also be addressed in this Chapter. The potential for EMF effects on human health will be addressed in the Population and Human Health Chapter.

In relation to cumulative impacts, a preliminary list of projects and plans relevant to the currently defined study areas has been developed as part of the Scoping Report and are outlined in Section 5. As the assessment works continue, this list will be updated regularly, including when the location of the OIW are confirmed and the potential for cumulative effects on materials assets will be considered. The assessment will take into account the proximate distance to the OIW, if there is potential for overlap in construction periods, operational phases and whether the general scale and nature of other projects is likely to result in a significant cumulative effect on material assets.

15.8 Scoping Questions

- Are you content with the scope of the assessment?
- Are you satisfied that the study areas are sufficient to capture all impacts on built services and projects with the potential for cumulative impacts?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to impact on built services?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Are there any receptors that you believe could be particularly sensitive that you wish to see assessed?
- Are there any projects you would wish to see included in the cumulative impact assessment for this topic?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?
- Are there any significant utility installation works planned within the study areas identified that CWP should be aware of?

16 TRAFFIC AND TRANSPORT

16.1 Introduction

The Traffic and Transport Chapter of the EIAR will assess the potential impacts of the proposed CWP OIW on the surrounding road network and road users. Potential impacts associated with rail networks, LUAS and cycle paths are discussed in Section 14.

16.2 Existing Environment

The existing environment for the traffic and transport assessment will focus on the road networks surrounding the proposed substation and landfall infrastructure works as well as the road infrastructure in which the grid connection cabling will be installed.

Within the Poolbeg area, the key public road network is Shellybanks Road and Pigeon House Road, where the majority of road users are likely to be heavy goods vehicles (HGVs) accessing the Dublin WtE facility as well as the ESB Poolbeg Power Station and the Ringsend Wastewater Treatment Plant (WWTP). There are recreational facilities at the South Bull Wall which also attracts the general public to the most easterly end of the Poolbeg peninsula as well as the Irishtown Nature Reserve.

At Carrickmines, the study area of the proposed landfall location will be adjacent to urban residential estates within which there are a network of local roads servicing the estates. The R119 (Shanganagh Road) running north-south is the closest Regional Road to the coastline in this area. In the general area of the proposed substation, the main public road infrastructure is the Ballyogan Road and the Glenamuck Road connecting into a main overpass junction (Junction 15) on the M50 (Motorway). Between the indicative landfall study area and substation study area, the grid connection works will have to cross two major road features; namely the M50 and the N11/M11.

In Ballybeg, the proposed substation would be within a more rural setting to the west of Wicklow and Rathnew settlements. Small local country roads providing access to one-off housing and agricultural lands are typical of the area. The landfall site for Ballybeg may be developed within the urban setting of Wicklow Town or to the north of the town in a less built-up environment. The Dublin to Wexford rail line runs close along the coastline to the north of Wicklow town and will be within the existing environment for the traffic and transport assessment. The M11 Motorway running north to south is the prominent public road feature in the area and there are a number of Regional Roads (R750, R772, R752, R761 and R999) which connect the motorway to the wider area.

16.3 Data Sources and Baseline Methodology

Data collection for the traffic and transport assessment will mainly comprise the following sources:

- Aerial mapping and photography;
- Mapping of roads infrastructure in the relevant CDPs;
- Traffic count data from the local authorities in DCC, DLRCC and WCC; and
- Live traffic count data from Transport Infrastructure Ireland (TII) – TII Live Traffic Data Site.

The site entrance locations for the substation and landfall infrastructure (if required) will be reviewed to determine whether existing access onto the public road network can be utilised or whether new access is required. Aerial photography and mapping will assist in a desktop review which will be validated on site. A survey of topography and linear features at the proposed site entrances will be carried out to determine the availability of adequate sight lines in accordance with relevant guidance documents.

Where significant haulage requirements are identified, either for construction materials such as aggregate / concrete or for delivery of electrical equipment, suitable haulage routes in the area surrounding the sites will be reviewed and identified. Where any abnormal load deliveries are identified, the suitability of haulage routes for this equipment will be reviewed.

The traffic and transportation assessment will be set out as follows:

- Establishment of the study area for the Traffic and Transport assessment;
- A review of the existing and future transport infrastructure in the vicinity of the proposed CWP OIW, including an assessment of background traffic flows and traffic forecasts during the assumed construction completion year;
- Identification of sensitive receptors for assessment thresholds;
- A description of the nature of the proposed development and the traffic volumes that it will generate during the different construction stages and when it is operational, including trip assignment and distribution;
- A description of any abnormally large loads and vehicles that will require access to the site and a review of the traffic impacts on the proposed delivery routes; and
- A review of the potential impacts of the proposed development and identification of suitable mitigations measures.

16.4 Legislation and Guidance

The following guideline and reference documents will be used in the preparation of the traffic and transport assessment:

- TII, *Traffic and Transportation Guidelines (PE-PAV-02045)* (May 2014);
- Relevant CDPs;
- TII, *Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) (DN-GEO-03060)* (June 2017);
- TII, *Rural Road Link Design (DN-GEO-03031)* (June 2017);
- TII, *Guidance on Minor Improvements to National Roads (including Erratum No. 1 dated April 2013 and Erratum No. 2 dated June 2013) (DN-GEO-03030)* (March 2013);
- TII, *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (PE-PAG-02017)*;
- TII, *Road Safety Audit (GE-STY-01024)* (December 2017);
- DTTS, *Guidelines for Managing Openings in Public Roads (Purple Book)* (Second Edition) (April 2017); and
- DTTS, *Design Manual for Urban Roads and Streets* (2013).

16.5 Design Parameters

In accordance with current guidelines in grid connection infrastructure associated with wind energy, the installation of underground cabling is preferred in lieu of overhead power lines. Underground cabling will be used to connect the offshore electrical cabling to the national transmission network and the associated works to install cabling in the ground will have a direct impact on the public road network. A comprehensive optioneering study is in progress to determine the most appropriate route for the grid connection which will follow the public road network wherever possible. Design requirements in terms of excavation trench widths and joint bays will be in accordance with existing minimum standards requirements from EirGrid and ESB Networks.

It is anticipated that some works off the public road network and in third party lands may be required for particular 'pinch points' such as major road crossings or watercourses. The impacts here on traffic and transport may be reduced from the direct works in the public road.

16.6 Embedded Mitigation

The guidance and standards documents set out in Section 15.4, prepared mainly by TII and DTTS, provide specific requirements for the managing road openings in the public road network to ensure that reinstatement works are to a standard that will not disimprove the standard of the road. The installation of underground

utilities in the public road is common and there are set procedures, including the provision of a Road Opening Licence, which will be adhered to, to prevent adverse effects to the road network.

Minimum sight line requirements for site access will be embedded in the project design to ensure that any new access points are safe and will not adversely impact on road users. Existing and established site access will be preferred, and the design development will include consideration of access to the public road during operations, as well as during construction and decommissioning, in determining the layout and arrangement of substation and landfall electrical infrastructure.

16.7 Scoping

The primary traffic related impacts caused by this type of development will occur during the construction stage of the project and, in particular, where grid connection works are proposed in the public road network. The construction works will impact on existing flows and consideration will be given to appropriate traffic management to minimise the impacts.

Traffic management required as part of the construction works in the public road will be identified and set out in the Chapter. A separate report, a Traffic Management Plan (TMP), will be appended to the EIAR for this purpose. The TMP is a 'living document' that incorporates the commitments outlined in the EIAR at planning stage and will be implemented by the Contractor at Construction Stage. The TMP will consider measures to ensure that any increase in activity along the public road network during construction, operation and decommission does not result in an increase in safety hazards.

Construction material volumes and associated haulage requirements will be determined and reviewed in terms of the impact of additional traffic on the road network.

The requirement for the preparation of a Stage 1 Road Safety Audit (RSA) will be considered and discussed with the traffic departments in DCC, DLRCC and WCC, as appropriate. Where required, the RSA will be completed by a suitably qualified traffic expert and included in the EIAR.

Due to the nature of this type of development, scoping of traffic impacts may not only be required in the administrative areas that the proposed development is located (i.e., DCC, DLRCC and WCC) but may also extend into adjoining areas, such as South Dublin County Council (SDCC). Scoping of the assessment will be carried out with the Roads Departments in each of the local authorities where development will take place and may be carried out with other local authorities depending on the anticipated nature of traffic movements within those areas.

It is anticipated that the following items can be confirmed as part of scoping with the local authorities:

- The requirement to assess the traffic impact associated with the construction and decommissioning stages only, as these stages have the largest associated traffic volumes;
- The impact of COVID-19 on traffic movements and traffic count data collected since March 2020. The local authorities to confirm that the use of historical data pre-March 2020 is acceptable in lieu of undertaking traffic surveys where COVID-19 restrictions are still in place; and
- The need to undertake a Stage 1 or Stage 2 RSA for both the construction and operation stages.
- In addition, scoping will be carried out with TII to discuss the potential impacts and methodology for construction of works which could impact on the national road network. Scoping will be carried out in accordance with Section 2.3 of the TII publication PE-PDV-02045 referred to in Section 16.4 above.

A number of existing and proposed projects which could have a cumulative effect with the OIW are identified in Section 5. As the assessment works continue, further relevant projects, as described in Section 5, will be added to this list and the potential for cumulative traffic and transport effects will be considered.

16.8 Scoping Questions

- Are there any significant utility installation works planned within the study areas identified that CWP should be aware of?
- What is the status of the proposed road infrastructure within the study areas, primarily the Glenamuck District Distributor Road?
- Are you content with the scope of the assessment?
- Are you satisfied that the study areas are sufficient to capture all impacts on traffic and transport?
- What other data sources or surveys, if any, should we have regard to in relation to this topic?
- What additional guidance and policy, if any, should we have regard to in preparing this Chapter?
- What other aspects, if any, of the Design Parameters have the potential to impact on traffic and transport?
- Are there any additional impacts that you believe could be significant and that you wish to see assessed?
- Are there any receptors that you believe could be particularly sensitive that you wish to see assessed?
- Are there any projects you would wish to see included in the cumulative impact assessment for this topic?
- Is the general approach to the characterisation of impact magnitude, receptor sensitivity and impact significant appropriate for this topic?

17 SUMMARY OF EIA SCOPING

This Environmental Impact Assessment (EIA) Scoping Report has been prepared for the onshore infrastructure components associated with the Codling Wind Park which are known collectively as the 'Codling Wind Park Onshore Infrastructure Works' (CWP OIW).

The purpose of the Scoping Report is to engage with consenting authorities, statutory and non-statutory consultees as part of the EIA process, inviting them to provide relevant information and to comment on the proposed approach to the preparation of the EIAR in consideration of the CWP OIW.

A separate EIA Scoping Report was prepared for the CWP OWF and this was issued to prescribed consultees and other relevant stakeholders in December 2020.

It is currently proposed that the EIAR for the CWP will comprise of 5 no. volumes, as follows:

- Non-Technical Summary
- Volume A: CWP Onshore Infrastructure Works: Landfall, Cabling & Substation including:
 - Technical Appendices
 - Figures
- Volume B: CWP OFW including:
 - Technical Appendices
 - Figures
- Volume C: Project Wide Assessments
- Volume D: Cumulative Impact Assessment

The above structure will be discussed as appropriate with the relevant statutory consenting authorities to ensure that it meets with all requirements for the application(s) for statutory consent. There is the possibility that the structure is amended to reflect these requirements or if there are delays with submitting applications under separate legislative processes.

The Scoping Report outlines what surveys or assessments are required to inform a robust assessment. In some instances, further advice on whether additional work is needed is requested. In any case, the scope of any additional surveys and / or methodology will be agreed with consenting authorities and relevant consultees where appropriate.

Following the gathering of data, the assessment methodologies described in each section will be undertaken and a receptor specific assessment on the potential effects predicted to arise from the CWP produced. Should unacceptable significant effects be identified, mitigation measures will be sought and incorporated into the CWP design where appropriate, and applicable.

Consultations with relevant authorities, organisations and stakeholders will continue to be undertaken throughout the EIA reporting process.