# NON-TECHNICAL SUMMARY (ENGLISH)

## 1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by McCarthy Keville O'Sullivan Ltd. (MKO) and Xodus Group Ltd. (Xodus) on behalf of Fuinneamh Sceirde Teoranta (FST) (the Applicant), who intend to apply to An Bord Pleanála for development permission for the construction of the Sceirde Rocks Offshore Wind Farm (hereafter known as the Project). The Project is being brought forward in response to local, national, regional and European policy regarding Ireland's transition to a net zero economy and associated climate change policy objectives and to reduce Ireland's dependence on imported fossil fuels for the production of electricity.

The Project is a fixed-bottom offshore wind farm off the West Coast of Ireland, and under the transitional protocol is recognised as a Relevant Project and is now referred to in marine policy as a Phase One project. This meant that the Project was eligible to apply for a Maritime Area Consent (MAC), which was awarded in December 2022 and a Grid Connection Assessment (GCA), which was also awarded in December 2022. Projects with a MAC and GCA were eligible to participate in the first Offshore Renewable Energy Support Scheme (ORESS1) auction. The Project was one of four successful projects in ORESS1, confirmed in June 2023.

The Project will encompass 30 No. Wind Turbine Generators (WTGs) with fixed foundations and associated ancillary infrastructure, and a Maximum Export Capacity (MEC) of 450 megawatts (MW). The Project received a MAC on the 23rd of December 2022 (MAC no: 2022-MAC-007) and is therefore eligible to apply for development permission to An Bord Pleanála under Section 291 of the Planning and Development Act 2000 (as amended).

### References to the Project

For the purposes of this EIAR:

Where the 'Project' is referred to, this encompasses both the 'Offshore Site' and 'Onshore Site'. Where the 'Offshore Site' is referred to, this includes the Offshore Array Area, Offshore Substation, as well as the Offshore Export Cable, the Offshore Export Cable Corridor and the Landfall. Further details in relation to the Offshore Site elements are set out below:

- The 'Offshore Array Area' (OAA) – area within which the Wind Turbines Generators (WTG), associated fixed bottom foundations, Inter-Array Cabling (IAC) and Offshore Substation are located. This area corresponds to the MAC Array Area;
- The 'Offshore Substation' (OSS) – offshore substation infrastructure including fixed bottom foundation;
- The 'Offshore Export Cable' (OEC) – the cable that will export electricity to the landfall location from the OSS to the landfall site;
- The 'Offshore Export Cable Corridor' (OECC) – the 1km corridor assessed for the location of the Offshore Export Cable; and
- The 'Landfall' - The location where the Offshore Export Cable will be brought ashore.

Where the 'Onshore Site' is referred to, this includes the Onshore Landfall Location, Onshore Grid Connection, and Onshore Compensation Compound. Further details in relation to the Onshore Site elements are set out below:

- The 'Onshore Landfall Location' (OLL) - The location where the Offshore Export Cable will be brought ashore to meet the Transition Joint Bay (TJB);

- The 'Onshore Grid Connection' – cabling that transports electricity from the Onshore Landfall Location to the Onshore Compensation Compound, and a second section of cabling connecting the Onshore Compensation Compound to the National Grid at the existing Moneypoint 220kV Substation; and
- The 'Onshore Compensation Compound' Compound containing Eirgrid 220 kV GIS building, ESB 220 kV GIS building, Customer SCADA and MV power building, Statcom building and other electrical equipment'.

In addition:

- Where 'the Site' is referred to, this relates to the primary study area for the Environmental Impact Assessment Report (EIAR), as delineated in green on Figure 1-1 of Chapter 1 Introduction and hereafter referred to as the EIAR Site Boundary.

The EIAR Site Boundary (the Site) identifies the primary EIAR study area for the Project, however, each individual topic, i.e. chapter, has its own specific study area for assessment purposes relevant to that topic which will be clearly defined in the relevant chapters. The development permission application site boundary (Red Line Boundary) for the purposes of this development permission application occupies a smaller area within the EIAR Site Boundary. The EIAR Site Boundary encompasses an area of approximately 43,714 hectares (ha).

This EIAR, along with a Natura Impact Statement ('NIS') and associated appendices, accompanies the development permission application for the Project. It is being submitted to An Bord Pleanála in accordance with the provisions of Section 291 of the Planning and Development Act 2000, as amended. Both the EIAR and NIS contain the information necessary for An Bord Pleanála to complete the Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) as required for this Project, the subject of this application.

All infrastructure as set out above forms part of the planning application and is assessed within this EIAR. All elements of the Project have been assessed cumulatively and in combination with other plans and projects in preparing this EIAR to enable An Bord Pleanála to undertake an EIA.

The Project is shown in Figure 1 below and described in detail in Chapter 5 of this EIAR.

SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

450000
500000
550000
750000
700000
650000
N

Offshore Array Area (OAA)
Galway City
Offshore Export Cable Corriodr (OECC)
Landfall
Onshore Grid Connection Route
Onshore Compensation Compound (OCC) Location
Moneypoint 220kV Substation Location
Clooneylissaun
Earthwork
Castle
Ballymacrinan
Carrowdotia North
N67
Holy Well
Killimer
Cill Iomaí
Ballymacrinan Bay
Poulnadarree
Carrowdotia South
Money Point

## LEGEND

- EIAR Site Boundary
- Offshore Array Area (OAA)
- Offshore Export Cable Corridor

0 10 20 km
Kilometres



PROJECT TITLE
**Sceirde Rocks**

MAP TITLE
**Overview of the Project**

| VER | REMARKS | DATE | Drawn | Approved |
|---|---|---|---|---|
| V1 | | 2025-01-15 | CF | OM |
| | | | | |
| | | | | |

DRAWING NO
**Figure 1**

| SCALE | PAPER SIZE | DATUM | PROJECTION |
|---|---|---|---|
| 1:580,000 | A4 | IRENET95 | Transverse Mercator |

## Site Location

The Project site is located within the Atlantic marine area adjacent to the Connemara, Co. Galway and Co. Clare coast. The OAA is located between 5 kilometres (km) and 11.5 km off the coast of Connemara, Co. Galway, between Slyne Head and Inishmore (Aran Islands). The closest settlement is Carna, Co. Galway, which is located approximately 8 km from the closest point of the Project. Land in the area of Carna is primarily pastural agricultural lands, as well as one-off rural housing. It is proposed to connect the Project to the national electricity grid via approximately 63.5km of cabling to be buried within or on the seabed. The OEC runs to the west and south of the Aran Islands to a landfall location approximately 3.5 km northwest of Doonbeg, Co. Clare in the townland of Killard. Once ashore, it is proposed that the Onshore Grid Connection (OGC) will run underground, mostly in the existing road network but also through some private lands to connect to the national grid at Moneypoint, Co. Clare.

## The Applicant

The Applicant for the Project, Fuinneamh Sceirde Teoranta (FST), is an Irish and Gaeltacht-based company that was established in 2002. The Applicant initiated the offshore wind farm project off the coast of Carna in the early 2000s. The Applicant was acquired by Macquarie's Green Investment Group (GIG) in September 2021 and is now a joint venture led by specialist offshore wind developer Corio Generation, a GIG portfolio company, and the Ontario Teacher's Pension Plan.

## Brief Description of the Project

The Project will comprise the construction of 30 no. WTGs with a blade tip height of 324.9 metres (m) and all associated works. The OEC will comprise approximately 63.5km of grid connection cabling to be buried in or on the seabed. The OEC runs to the west and south of the Aran Islands to a landfall location in the townland of Killard, Co. Clare. The OGC will connect to an Onshore Compensation Compound (OCC) at Ballymacrinan near Moneypoint. The OGC will continue from the OCC to connect to the national grid at the existing 220kV substation at Moneypoint, Co. Clare.

The full description of the Project, as included in the public planning notices, is as follows:

Offshore Development:

*I.* 30 no. offshore WTGs with gravity based fixed-bottom foundations with the following details:

- Tip height of 324.9m above Lowest Astronomical Tide (LAT),
- Rotor diameter of 292m;
- Hub height of 178.9m above LAT;

*II.* 1 no. 220kV offshore substation (OSS) of 55 m in height above LAT (including crane and communications mast) with a gravity based fixed bottom foundation. The OSS consists of an offshore electrical substation platform with multiple decks accommodating the electrical and communications plant and equipment, ancillary components and welfare facilities;

*III.* A network of inter-array electrical and communication cables, of approximately 73 km in length, connecting the 30 WTGs to the OSS;

*IV.* A 220kV OEC complete with communication lines, of approximately 63.5 km in length, laid in and on the seabed from the OSS to landfall in the townland of Killard, Co. Clare;

*V.* Seabed preparation for WTG, OSS and cable installation including rock placement, dredging and disposal;

*VI.* Cable protection including trenching and burial, rock berms, and concrete mattresses.

Onshore Development:

*I.* An underground TJB at the landfall point in the townland of Killard, Co. Clare connecting the OEC to the OGC cable. The TJB consists of an underground concrete chamber (20m x 5m wide, with a depth of 2.5m), where the proposed OEC will be connected to the OGC cable;

II. 220kV onshore grid connection and communications cables laid underground, primarily in the public road corridor with small sections in third party lands, for approximately 19.3 km between the TJB in the townland of Killard, Co. Clare and the new 220kV Onshore Compensation Compound (OCC) in the townland of Ballymacrinan, Co. Clare;

III. 220kV onshore grid connection and communication cables laid underground, primarily in the public road corridor with small sections in third party lands, for approximately 3 km between the new 220kV OCC in the townland of Ballymacrinan, Co. Clare and the existing Moneypoint 220kV substation in the townland of Carrowdotia South, Co. Clare;

IV. 43 no. joint bays complete with communication chambers and link box chambers along the onshore grid connection route between the TJB in the townland of Killard, Co. Clare to the existing 220kV Moneypoint substation in the townland of Carrowdotia South, Co. Clare;

V. A 220kV Onshore Compensation Compound located in the townland of Ballymacrinan, Co. Clare. The 220kV onshore compensation compound consists of:

- Eirgrid 220kV GIS Building (49m x 18.5m, with a total height of 16.7m above Finished Floor Level (FFL);
- ESB 220kV GIS Building (49m x 18.5m, with a total height of 16.7m above FFL);
- Customer SCADA and MV power building (18.4m x 8.7m, with a total height of 6.15m above FFL);
- Statcom building (30.5m x 22m, with a total height of 7.59m above FFL);
- Upgrade of existing entrance onto the L-6150 including the removal of a small portion of existing stone wall and hedgerow;
- All associated electrical and communications plant and equipment, welfare facilities, 3 no. foul water holding tanks, 3 no. bored wells, 3 no. attenuation tanks, access tracks, car parking, security fencing and gates, rail and post fencing, telecommunications pole, lightning masts, signage, safety bollards, landscaping, drainage infrastructure and all other ancillary works and associated site development works;

VI. 3 no. temporary construction compounds along the onshore grid connection cable route:

- 1 no. temporary construction compound at the landfall point in the townland of Killard Co. Clare;
- 1 no. temporary construction compound at the Kilrush Golf Club in the townland of Parknamoney, Co. Clare;
- 1 no. temporary construction compound at the 220kV OCC in the townland of Ballymacrinan, Co. Clare;

VII. Reinstatement of the road or track surface above the proposed onshore grid connection cable trench along existing roads and tracks;

VIII. New and upgraded access tracks above the proposed onshore grid connection cable trench in third party lands

IX. Temporary entrances from public roads to facilitate construction of the onshore grid connection for construction phase only;

X. Provision of 3 no. passing bays and the widening of the L-6150 road in the townland of Ballymacrinan to facilitate the delivery of abnormal loads for the construction of the proposed OCC;

XI. All works associated with spoil management;

XII. All associated site works and ancillary development above and below ground including hard and soft landscaping, habitat enhancement and drainage infrastructure.

This application is seeking a ten-year permission and 38-year operational life from the date of commissioning of the wind farm development.

The design and layout of both the offshore and onshore elements of the Project has been led by consideration of constraints and facilitators, thereby avoiding the most environmentally sensitive receptors.

The MAC boundary for the Project was selected due to its favourable characteristics for offshore wind development. The current MAC boundary encompasses the OAA, OSS and OECC and covers an area of approximately 977.51 $km^2$. Excluding the OECC, the MAC OAA boundary covers an area of approximately 37.2 $km^2$.

## Need for the Project

Ireland has one of Europe's highest average wind speeds and a vast maritime area that is more than seven times the size of the country's landmass, as well as a geographic location at the edge of the Atlantic Ocean. This means that Ireland has a natural advantage when it comes to harnessing the potential of wind energy, and the potential for offshore wind energy development is significant.

## Purpose and Scope of the EIAR

The purpose of this EIAR is to document the current state of the environment on and in the vicinity of the Site and to quantify the likely significant effects of the Project on the environment. The compilation of this document serves to highlight any areas where mitigation measures may be necessary in order to protect the surrounding environment from the possibility of any significant effects arising from the Project.

The EIAR project team comprises a multidisciplinary team of experts with extensive experience in the assessment of wind energy developments and in their relevant area of expertise. Each chapter of this EIAR has been prepared by a competent expert in the subject matter. The chapters of this EIAR are as follows:

*Introductory Chapters*

1. *Introduction*
1. *Background and Planning Policy*
2. *Site Selection and Alternatives*
3. *Environmental Impact Assessment Methodology*
4. *Project Description*
5. *Population and Human Health*

*Offshore Chapters*

6. *Marine Physical and Coastal Processes*
7. *Water and Sediment Quality*
8. *Benthic Ecology*
9. *Fish and Shellfish Ecology*
10. *Marine Ornithology*
11. *Marine Mammals and Other Megafauna*
12. *Commercial Fisheries*
13. *Shipping and Navigation*
14. *Civil and Military Aviation*
15. *Seascape, Landscape, and Visual Impact Assessment*
16. *Marine Archaeology*
17. *Other Sea Users*
18. *Offshore Air Quality and Airborne Noise*

*Onshore Chapters*

19. *Terrestrial Biodiversity*
20. *Terrestrial Ornithology*
21. *Land, Soils and Geology*
22. *Water*
23. *Onshore Cultural Heritage*
24. *Onshore Air Quality*
25. *Onshore Noise and Vibration*
26. *Landscape and Visual Impact Assessment*

# 2 Background and Policy

This section of the EIAR sets out the energy and climate change related policy and targets along with the strategic, national, regional, and local planning policies relevant to the Project. It also summarises the Project site's consenting history, the pre-application consultation process and the EIA scoping undertaken.

## Climate and Renewable Energy Policy

The need to decarbonise the economy and reduce emissions has always been imperative, however in recent years the urgency involved has become clearer to all stakeholders. The latest Climate Action Plan (CAP) published by the Irish Government in 2024 sets out the detail for taking action to deliver the decarbonisation required under the carbon budgets and sectorial emissions ceilings. Central to this is the set of measures set out to increase the proportion of renewable electricity to up to 80% by 2030 and a 5GW offshore wind target by 2030. The CAP places front and centre the facts that without urgent action, global warming is likely to be more than 2˚C above pre-industrial levels, threatening the health and livelihoods of people across the globe. Urgency of action is also a key focus of the CAP. All sectors will have to further their efforts if the core and further measures are to be achieved. CAP 24 aligns Ireland with the latest climate and renewable energy policy at a European level. RepowerEU and the third iteration of the Renewable Energy Directive (RED III) have increased renewable energy targets at a European level and this has added to the urgency of implementation by underscoring the importance of renewable energy generation in European policy and law.

From the latest greenhouse gas emissions projections published by the EPA, it is clear that Ireland is not on track to meet the 51% emissions target. The first two carbon budgets (2021-2030) are projected to be exceeded by a significant margin of between 17 and 27 per cent. In the National Energy Projections Report published by the SEAI, their modelling indicates that the risk of under-delivery of CAP24 targets is highest for offshore wind. The reports concludes that if no new offshore wind energy capacity is added by 2030, it is projected to result in an 18% shortfall from the 80% renewable electricity target. The Climate Action and Low Carbon Development Act 2015 (as amended) legally binds Ireland to achieve net-zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade.

## Planning Policy

It is considered that the Project is consistent with and strongly supported by the planning policies and objectives of planning policy at all levels, from EU policy to the local county development plans.

### National Marine Planning Framework

The Project is supported by and in compliance with the policies and objectives of the National Marine Planning Framework (NMPF). The NMPF, through its 'overarching marine planning policies', supports the principle of developing offshore wind energy to achieve Ireland's offshore wind energy target of 5GW by 2030. The NMPF also includes sector specific policies for the development of offshore renewable energy (ORE). Those most pertinent to the Project are ORE Policy 1 and ORE Policy 2, which support proposals that assist the State in meeting the 5GW offshore wind target and prioritise the assessment of the Phase 1 offshore wind projects.

### Offshore Renewable Energy Development Plan

The Project is in full compliance with the provisions of the Offshore Renewable Energy Development Plan (OREDP) which supports the growth of the offshore renewable energy sector, in line with national marine spatial planning objectives and proper planning and sustainable development.

The OREDP has determined that Assessment Area 5 – West Coast, where the Project is located, possesses the potential to develop 500MW of fixed-bottom offshore wind turbines, without likely causing significant adverse environmental effects. This development potential figure is based on the cumulative assessment findings of the SEA and AA. Two forms of mitigation are identified in the OREDP, plan level mitigation and project level mitigation. The project level mitigation measures set out in the OREPD have been comprehensively considered when determining the necessary mitigation for the Project.

### National Planning Framework

A key focus throughout the National Planning Framework (NPF) is the transition towards a low carbon, climate-resilient society (National Strategic Outcome 8). The NPF notes that in creating Ireland's future energy landscape, new energy systems and transmission grids will be necessary to enable a more distributed energy generation which connects electricity supply to electricity demand. The project is supported by Objective 42, which aims to realise development of Ireland's offshore renewable energy potential.

### National Development Plan 2021-2030

The National Development Plan 2021 – 2030 (NDP) was published on 4th October 2021 and sets out the major public investment project identified by the Government. The NDP set a goal of increasing the share of renewable electricity up to 80% by 2030. This is characterised by the NDP as an '*unprecedented commitment to the decarbonisation of electricity supplies*', which is certainly an ambitious and an explicit driver for the deployment of new renewable generators at the scale of the Project.

### Regional Spatial & Economic Strategy for the Northern and Western Region

The Project is located off the coast of County Galway, which is a member of the Northern and Western Regional Assembly (NWRA). The Regional Spatial Economic Strategy (RSES) specifically endorses the development of offshore wind energy production in suitable locations and recognises that '*Off-Shore renewables will be critically important if the Country is to meet the energy targets set out for 2030*'. Offshore wind energy production is directly supported by Policy Objectives 4.19 and 4.33 of the RSES.

### Regional and Spatial & Economic Strategy for the Southern Region

The Project includes a grid export cable which comes ashore at Killard, County Clare. The grid export cable runs predominantly in the road network, with some sections in third party land, from landfall to the Moneypoint 220kV Substation where it connects to the national grid. County Clare is located in the Southern Region and is a member of the Southern Regional Assembly (SRA). The RSES for the Southern Region supports the development of offshore wind energy and its associated transmission infrastructure through RPO 99 and RPO 96.

### Galway County Development Plan 2022-2028

The Galway County Development Plan 2022-2028 (GCDP) commits to the transition to a low-carbon society in line with the relevant European, national and regional policy. The GCDP recognises that due to population and economic growth, along with the electrification of various sectors, the demand for energy will increase substantially in the coming years. In order to meet electricity demand, the GCDP supports the development of renewable energy infrastructure. This includes marine renewables, which

is specifically supported by the GCDP under MRE 1 and MCE 1. The Project is also in compliance with Galway County Council's Local Authority Renewable Energy Strategy and the County Galway Tourism Strategy 23-31.

**Clare County Development Plan 2023-29**

The Clare County Development Plan 2023 – 2029 (CCDP) identifies the need for the continued support of, and investment in, renewable energy infrastructure. The Onshore Grid Connection, which comes ashore in the townland of Killard, is entirely located within County Clare. Grid infrastructure, particularly infrastructure connecting renewable energy to the national electricity grid, is supported by the CCDP. Offshore wind energy development is also supported. The most relevant policies, CDP 13.5 and CDP 11.45, support offshore wind energy and its associated transmission infrastructure.

Volume 7 of the CCDP is the Strategic Integrated Framework Plan for the Shannon Estuary (SIFP). The SIFP specifically supports the '*development of marine related industry on lands adjacent to Moneypoint'* and aims to promote the development of Moneypoint as a hub for the offshore wind energy sector.

## Planning History

A MAC was granted for the Project in December 2022. The permitted maritime usage is for the construction and operation and maintenance of an Offshore Wind Farm and associated infrastructure. A MAC is required to make an application under Section 291 of the Planning and Development Act 2000 (as amended).

The planning history of the Project site is outlined in Section 2.6 of this EIAR. A search was carried out through the various databases and online planning portals in December 2024 for relevant planning applications and maritime consents within the planning application boundary of the Project. In total, 9 terrestrial planning permissions were identified within the planning application boundary. The planning applications relate to electricity infrastructure and small-scale, minor development. 5 no. foreshore licences were identified within the planning application boundary, and only 1 no. has been determined, which is for the existing IRIS sub-sea fibre optic cable.

## Scoping and Consultation

Section 2.7 presents detail of the EIA Scoping undertaken with regards the Project. A scoping report, providing details of the Proposed Project, was prepared by MKO, and circulated in September 2023. MKO requested the comments of the relevant personnel/bodies in their respective capacities as consultees with regards to the EIAR process.

Community engagement has been undertaken by the Applicant, details of which can be found in Appendix 2-3 of this EIAR. In summary, the report was prepared to record the consultation carried out with the local community in respect of the Project. The applicant has carried out consultation in relation to the Project with local residents and interested parties in the wider community. The objective of the consultations was to ensure that the views and concerns of all were considered as part of the Project design and EIA process.

The Project has the potential to have significant benefits for the local economy, by means of job creation, and economic opportunities for local contractors, suppliers and service providers. An important part of the Project is the Community Benefit Fund, which is estimated to be €3.5 million per year.

The EIAR also includes details of the pre-planning meetings undertaken prior to the planning application being lodged, including engagement with An Bord Pleanála under the provisions of Section 287 of the Planning and Development Act 2000, as amended. Pre-application consultation meetings

took place with An Bord Pleanála on 3 occasions between September 2023 and July 2024. An Bord Pleanála closed out the pre-application process in September 2024. Pre-application consultation meetings also took place with Galway and Clare County Council.

# 3 Site Selection and Alternatives

This section of the EIAR contains a description of the reasonable alternatives that were considered by the Applicant for the Project, in terms of site location and other renewable energy technologies, as well as site layout incorporating size and scale of the project, connection to the national grid and infrastructure delivery options to the site. This section also outlines the design considerations in relation to the Project. It provides an indication of the main reasons for selecting the chosen design and layout option, including a comparison of the environmental effects. The consideration of alternatives is an effective means of avoiding potential environmental impacts. As set out in the Environmental Protection Agency's (EPA) document: *'Guidelines on The Information to be Contained in Environmental Impact Assessment Reports'* (EPA, 2022), the presentation and consideration of reasonable alternatives investigated is an important part of the overall EIA process.

## Do-Nothing Alternative

A 'Do-Nothing' alternative describes the outcome of the Project if it did not progress and would mean that the Project would not achieve any of the below aims;

- Supply electricity generated from wind energy to meet energy demand;
- Support the transition to a net-zero economy;
- Contribute to Irish, European and international commitments to climate change and renewable energy;
- Contribute directly to Ireland's target of at least 5 GW of offshore wind energy by 2030;
- Provide a secure source of energy in the form of renewable electricity; and,
- Deliver sustainable low-carbon economic growth.

Both the Offshore Site and Onshore Site would remain as it currently exists. The Offshore Site would remain as a marine area utilised for fishing and marine activity. The Onshore Site would remain with its current land-use practices of low-intensity agriculture, transport along the public road corridor, and recreational amenity. Both the offshore and onshore elements of the Project would not be constructed, and no wind farm would become operational off the west coast of Ireland as part of the Phase One projects. There would be a loss of approximately 450 MW of offshore wind capacity. This could result in a knock-on effect for all future phases of offshore wind developments in Ireland. Ireland cannot be expected to meet its target for 5 GW of offshore wind energy by 2030 if the Project does not proceed.

If the Project doesn't proceed, the opportunity to capture the available renewable energy resource and connect it to Ireland's electricity grid would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.

The opportunity to generate local employment and investment would also be lost. It is likely that the trends of population decline and rural deprivation that have been recorded within the Population Study Area would continue in the absence of investment, as discussed in Chapter 6 of this EIAR on Population and Human Health.

## Site Selection Process

In the case of this Project the OREDP in 2014 identified Assessment Area 5 – West Coast, within which the Project is located, as having the capacity to accommodate 500MW of fixed bottom offshore wind

energy without likely significant adverse effect on the environment. The site was designated pursuant to the OREDP Assessment Area 5 and the MAC. The EIAR details the Foreshore Licence/Lease Applications, Relevant Project Status and the subsequent MAC.

## Suitability of the Offshore Site

Following an initial screening, the Sceirde Rocks area was selected as the most suitable location for an offshore wind farm due to its favourable site characteristics and location between 5 km and 11.5 km from the coast. The site provides an excellent wind resource with favourable metocean conditions due to the Sceirde Rocks themselves providing shelter from Atlantic waves and tidal streams, and with water depths suitable for developing a fixed foundation offshore wind farm.

The site selection process has been fully informed by national, regional and local policy at a macro level (see Chapter 2: Background and Policy), as well as site-specific factors that influence the turbine layout and project design on site at a micro level (see Section 3.2.5 below). The key policy, planning and environmental considerations for the selection of a potential offshore wind farm site in the Sceirde Rocks area included:

- Offshore Renewable Energy Development Plan
- Planning Policy: Site location relative to the Galway County Development Plan Renewable Energy Strategy 2024
- Environmental Sensitivities: Sufficient area of unconstrained seabed that could potentially accommodate offshore wind farm development and turbine spacing requirements;
- Designated Sites: Located outside areas designated for protection of ecological species and habitats;
- Wind Speeds: Consistent wind speeds
- Grid Connection: Access to the National Grid;

Further information on the above consideration are detailed in Chapter 3.

## Suitability of the Onshore Site

Once the Sceirde Rocks area was confirmed, an initial review of the west coast was undertaken in order to determine the most appropriate location for a landfall, the most appropriate route for the onshore grid connection as well as a suitable location for the onshore compensation compound.

In 2021, Xodus and MKO undertook a coastal screening assessment, taking into account landfall locations that would be viable for connecting to either Cashla Substation or Moneypoint 220kV Substation. The coastal search targeted sandy beaches to allow for open cut trenching or burial of the cable as well as looking to minimise interaction with areas of rock/ hard substrate, designated sites, other marine infrastructure etc. A total of 14 areas along the coast were selected and these were considered against the following criteria:

- Technical Constraints (i.e. distance to grid connection, local technical challenges for installation, anticipated seabed conditions, bathymetry etc)
- Designated Nature and Geological Conservation Sites (SAC, SPA, NHA, pNHA)
- Onshore
    - Landscape & Visual Amenity (Local Council Designations)
    - Ecological Constraints
    - Forestry (Ancient & Native Woodland)
    - Proximity to Residential Receptors (<100m)
    - Archaeology and Cultural Heritage (National Monuments and NIAH sites)
    - Hydrology (River and Surface Water Flood Risk)
    - Tourism and Recreation (PRoWs attractions and recreational areas)

- Land Use
- Offshore
  - Benthic Habitats
  - Marine Archaeology
  - Other Sea Users
  - Commercial Fisheries
  - Aquaculture Sites
  - Shipping and Navigation

Risks were identified along all 14 areas as shown in *Appendix 3-1 – Coastal Screening Process*, and determination of whether there was a potential landfall location was also identified. A total of 8 locations were then selected that would either connect into the Cashla Substation or Moneypoint 220kV Substation.

After further analysis, using criteria to assess constraints (both onshore and offshore) at each potential landfall location, the options for connecting into Cashla Substation were excluded from the Project Design Envelope for the current application. These options all posed higher technical and environmental risks than the landfall options for connection into Moneypoint Power Station.

Following the initial coastal screening, four potential landfall locations for connection into Moneypoint 220kV Substation were taken forward in the feasibility process and considered in further detail as potential landfall locations.

In addition, an onshore grid connection route feasibility study was completed by MKO to determine a connection route from the 4 landfall options to Moneypoint 220kV. Constraints were identified along all onshore grid connection route options, as shown in *Appendix 3-2 – Onshore Grid Connection Feasibility Assessment.*

The design of the Onshore Site was constraints-led, thereby avoiding the most environmentally sensitive parts of the site. Constraints are restrictions that inform the design of a project by highlighting onsite sensitivities and providing appropriate setback buffers. The design of the Onshore Site has also been an informed and collaborative process from the outset, involving the designers, Applicants, engineers, landowners, environmental, ecological, hydrological, geotechnical, and archaeological specialists and traffic consultants. The aim was to reduce the potential for environmental effects while designing a project capable of being constructed that is also economically viable. Key policy, planning and environmental considerations relevant to the onshore area were also included.

## Alternative Renewable Energy Technologies

Both onshore and offshore wind and solar energy development will be required to ensure that Ireland reaches the target set in the Climate Action Plan 2024 to source 80% of our electricity from renewable energy by 2030. It is not a case of 'either/or'. When considering other renewable energy technologies in the area, the Applicant considered other forms of offshore renewable energy, as well as onshore wind and commercial solar energy production as an alternative to the Project, as detailed in Section 3.2.4.

## Alternative Turbine Numbers and Model

The Project will have a Maximum Export Capacity of 450MW. It is proposed to install 30 no. WTGs at the OAA in order to achieve this output. Consideration has been given to reducing the capacity of the turbines and increasing the number of proposed turbines. Many smaller turbines would result in the wind farm occupying a greater footprint within the OAA, with a larger amount of supporting infrastructure being required (i.e., foundations etc), and increasing the potential for environmental impacts to occur. The 30-WTG layout selected for the Project will achieve the optimum output at a more consistent level than would be achievable using different turbines.

## Alternative Turbine Layout and Development Design

The design of the Offshore Site has been an informed and a collaborative process from the outset, involving a wide team of designers, engineers and various experts from specialist areas such as geotechnical, environmental, archaeological, ecological, and shipping and navigation specialists. The overall aim being to develop an optimal layout, considering site specific data, whilst ensuring an overall objective to reduce any potential for environmental effects while designing a viable project capable of being constructed.

Throughout the preparation of this EIAR, the layout of the Offshore Site has been revised and refined to take account of the findings of all site investigations, which have brought the design from its first initial layout to the current proposed layout. The design process has also taken account of the recommendations and comments of the relevant statutory and non-statutory organisations, the local community and local authorities as detailed in Sections 2.7 and 2.8 of Chapter 2 of the EIAR.

## Alternative Turbine and Offshore Substation Foundations

Foundation choice in wind farm sites located offshore is primarily driven by:

- Water depth (structure size through the water column and the practicalities of installing same)
- Ground conditions (structure penetration and fixity on/in the seabed)
- Metocean conditions (the forces of the sea and winds on the structure directly and caused by interaction of these with the turbine positioned atop the structure)

The Offshore Site is located in an area with water depths ranging between approximately 0m and 60m. The seabed within the OAA comprises rocky outcrops, which means that any piled structures, such as monopiles or piled jackets, would need to be carefully installed drilling into the rock where necessary. The metocean conditions at the site are favourable. This meant that piled structures could be suitable, as they would be designed to withstand the site metocean conditions, however the length of time required to install these foundations is significantly increased. Alternatively, gravity base structures (GBS) are suitable as they would not need to penetrate the rocky seabed but can be designed to withstand the sites metocean conditions.

As the engineering requirements and design of the Project progressed, the engineers became satisfied that both piled jacket foundations and GBS foundations could suitably support and anchor the WTGs within the OAA, considering metocean conditions of the site. However, the practicalities of installing piled jacket foundations was not considered to be advantageous or efficient. This is because the installation vessel would need to be operating at the OAA for significant periods of time, due to the time needed to pile into the rock on and below the seabed. For GBS, the installation is more straightforward as the GBS is floated into position, therefore the need for a vessel for long durations is not required.

The activities associated with piling foundations for site preparation or reverse-circular drilling would have greater seabed disturbance, increased underwater noise, and more significant impacts on ecological receptors, both benthic and pelagic. This, combined with the longer duration for installation of piled foundations meant that piled foundations were no longer considered as a viable foundation design for the project. The GBS was therefore deemed to be the best option in terms of efficiency for installation and the potential for significant environmental effects at the OAA.

## Alternative Offshore Substation Location

Similar to the selection and finalisation of the WTG positions within the OAA, the selection of the location for an OSS was influenced by seabed conditions (seabed topography), geotechnical data, geophysical data, metocean and benthic conditions.

Other considerations for the OSS include;

- Accessibility both for Transportation and Installation (T&I) and for Operations and Maintenance (O&M)
- EirGrid Requirements – particularly 500m working zone
- Inter Array cable lengths (particularly the length of the last string from the WTG to OSS)
- Export Cable lengths

The final location was selected and considered to be optimal in terms of the benthic, environmental and metocean conditions and its exposure to the conditions that exist on site. The chosen OSS location also provides the most efficient and economical solution in consideration of the placement of the inter-array cabling and the route of the OEC from the OSS to the Landfall Location.

### Alternative Inter-Array Cable Route

Key considerations in positioning the IAC is turbine position, IAC string lengths, topography, environmental constraints, metocean constraints and instability. On review of the IAC layout considered as shown in Figure 3-6, it was found that this layout intersected with maerl beds identified in the benthic surveys. In order to reduce the potential environmental impact, the IAC was relocated with the chosen route now being the most optimal route which avoids the most sensitive benthic habitats.

### Alternative Disposal Sites

Five locations within the OAA were identified as potentially suitable for disposal of dredged material. When looking at these locations, three different constraints were considered, these were –

- EUNIS Habitats / Biotopes,
- Protected Benthic Features
- Marine Physical Processes.

On reflection of sensitivities and areas identified for the dredge disposal, there were no significant differences determined between the habitats present, with all locations being represented by a highly varied bathymetry of sediment and rocky substrata and a corresponding complex range of currents. However, locations 1 and 2 were located the furthest from the Kilkieran Bay and Islands SAC and therefore were determined lower risk to the qualifying features of the SAC.

### Alternative Offshore Export Cable

After the location of the Landfall location was determined, the most appropriate design for the OEC route was determined. A full route screening assessment was undertaken which reviewed the seabed bathymetry and topography along various OEC route options as a means to determine the route with minimum effect on the environment. Consideration of the location of the OSS position also influenced the design and route of the OEC route, as it determined the starting point of the OEC. Two options were considered initially. Option 1 travels north of the Aran Islands as it travels towards Killard. Due to the additional length of this route and its interaction with marine traffic such as ferries crossing to the Aran Islands and marine traffic travelling in and out of Galway Harbour, this route was not considered any further. Option 2, south and around Loop Head, was considered but through landfall screening, Ballynacrinnan was no longer an option based on its position in the Shannon Estuary and the potential interactions with the Lower River Shannon SAC. Option 2 was therefore no longer considered. Therefore, a more direct route, that avoids all environmentally sensitive areas was considered. This Option 3 follows a route west and south of the Aran Islands and Designated Sites (SACs and SPAs) are avoided. This route was considered optimal in minimising environmental impacts while also being the most economically viable.

## Alternative Onshore Grid Connection

The potential 220kV grid connection route went through numerous iterations, considering different in-road and off-road underground cable options as well as the potential to connect to the grid by overhead line. A full review of the options is detailed in *Appendix 3-2 – Onshore Grid Route Feasibility*. Criteria included in the feasibility reports included:

- Technical Constraints;
- Eirgrid Policy which recommends cables in the road network rather than in third party lands, to aid operational access and maintenance;
- Designated Nature and Geological Conservation Sites (SAC SPA, NHA, pNHA);
- Landscape & Visual Amenity (Local Council Designations);
- Ecological Constraints;
- Proximity to Residential Receptors (<100 m);
- Archaeology and Cultural Heritage (National Monuments and NIAH sites);
- Forestry (Ancient & Native Woodland);
- Hydrology (River and Surface Water Flood Risk);
- Tourism and Recreation (Public Right of Ways (PRoWs), attractions and recreational areas) and

The final underground cable route takes account of all site environmental constraints (e.g., ecology, archaeology, hydrology, peat depths etc.) and design constraints (e.g., third party lands). The main constraint that allowed the route to be progressed was the length of cable. The route from Killard allowed for the shortest route, which therefore reduced the environmental effects overall. In addition, the route avoids all villages and towns, including the main hub of Kilrush, which reduced the impacts on residents, tourism, services and recreation in this area.

## Alternative Onshore Compensation Compound

A 2.5km search area around Moneypoint 220kV Substation was considered, to ensure that the proposed substation would be located within close proximity to the connection point at Moneypoint. Specific technical requirements and environmental constraints were considered as detailed in Section 3.2.5.2.4 of the EIAR.

There was only one site that was identified as being suitable when consideration was given to land availability, environmental sensitives; with none being identified within the chosen location, as well as technical constraints i.e. the site had suitable soil conditions and no steep slopes.

## Temporary Construction Compound Considerations

Various locations along the OGC were considered where the construction team would be able to utilise areas adjacent to the cabling and joint bay areas. Consideration was given to areas that already had existing access, infrastructure or a hardstanding present, as means to reduce any environmental effects. Although a few options were considered along the OGC, the preferred options were the Landfall area, the Kilrush Golf Club and the area within the Onshore Compensation Compound, as infrastructure was already being proposed there as part of the Onshore Site. Proximity to proposed infrastructure, in particular the Onshore Landfall Location and Onshore Compensation Compound, existing surfacing at Kilrush Golf Club along with no significant environmental constraints at any of the three potential compound locations made these suitable locations for temporary construction compounds.

## Alternative Construction Methodologies

The best practice design and mitigation measures set out in this EIAR will contribute to reducing any risks and have been designed to break the pathway between the site and any identified environmental receptors.

# 4 Environmental Impact Assessment Methodology

This chapter sets out the approach and methods used in the EIA for the Project in support of the application for consent. It provides an overview of the key stages followed in line with EIA best practices and in accordance with the EIA guidance and legislation set out in Section 1.2 of Chapter 1: Introduction. The assessment of impacts on each environmental receptor is provided in separate chapters within this EIAR (Chapters 6-34).

The principal aim of undertaking an Environmental Impact Assessment (EIA) is to ensure that the authority granting consent (the 'Competent Authority') for a proposed development makes its decision in full knowledge of any likely significant effects on the environment.

EIA is a means of systematically drawing together and evaluating a proposed development's likely environmental impacts and effects, both beneficial and adverse. This helps to ensure that the significance of the predicted effects, and the scope for reducing any adverse effects, is properly understood by the public and the Competent Authority before it makes its decision. Early identification of likely significant effects also leads to the identification and incorporation of appropriate mitigation measures into a proposed development's design.

## Impact Assessment

Each chapter within Volume 1, 2 and 3 of the EIAR provides a description of the relevant aspects of the existing environmental conditions within the Offshore Site and Onshore Site, as defined in Chapter 1

This characterisation of the existing environment is undertaken in order to determine the baseline conditions in the area covered by the Project, including relevant study areas for those issues scoped into the EIA Report. This involves the following steps:

- Define study areas for each receptor based on the relevant characteristics of the receptor (e.g. mobility / range);
- Review available information (e.g. publicly available data / reports and site-specific surveys);
- Identify likely or potential impacts that might be expected to arise from the offshore Project;
- Determine if there is sufficient data to make the EIA judgements 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;
- Review information gathered to ensure the environmental baseline can be sufficiently characterised in appropriate detail;
- Identify any remaining data gaps or limitations and describe the implications of these on the baseline characterisation; and
- Consideration of the future baseline and potential changes in the baseline over the lifetime of the Project, including climate change, changes in practices and other reasonably foreseeable changes.

## Assessment of Potential Effects

The primary purpose of this EIAR is to identify, describe and present an assessment of the likely significant effects of the Project on the environment. This assessment informs the Competent Authority's impact assessment process, its decision on whether or not to grant consent, and if granting consent, what conditions to attach. The Project has the potential to have effects on the environment during the

construction, operation and maintenance, and decommissioning phases. The EIAR focuses on effects that are both likely and significant, and descriptions of effects that are accurate and credible.

Throughout this EIAR, the likely significant effects related to the Project have been identified and described in accordance with all of the guidance documents identified in Section 4.2.2 of Chapter 4, (Environmental Impact Assessment Methodology). , including the EPA's *'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* (EPA, May 2022), hereafter referred to as the EPA Guidelines.

## The Likelihood of Effects

To ensure that the EIAR adds value to the Competent Authority undertaking the EIA as part of the consent process, the EIAR focuses on those effects that are probable, planned or likely to occur. Examples of likely effects include the project emissions, the proposed earthmoving etc, and those which can be reasonably foreseen to be inevitable outcomes during the construction and operation and maintenance, and decommissioning of the Project. The Scoping process aids in focusing attention on the key areas of concern and identifying effects that are reasonably predicted to be likely. The EIA Directive further requires unforeseen or unplanned effects to be addressed through consideration of the vulnerability of the Project to risk of major accidents and natural disasters relevant to the Project, as detailed in Chapter 33 of this EIAR.

## The Significance of Effects

Significance of effects refers to the importance attributed to the outcome of the effects, i.e. the consequence of the change that has occurred. The decision process related to defining whether or not a development is likely to significantly affect the environment is the core principle of the EIA process. The EIA Directive does not provide a specific definition of "significance". However, the methods used for identifying and assessing effects should be transparent and verifiable. Significance is determined by a combination of scientific and subjective inputs. Determination of significance relies on the professional judgement of competent experts, in addition to guidelines and standards.

The EIAR sets out the basis of these determinations so that the varying degrees of significance attributed to different factors are made clear. According to the EPA Guidelines, there are seven generalised degrees of effect that are commonly used in EIA: Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound, each of which is defined in Table 4-1 of Chapter 4. Certain topics, such as biodiversity and SLVIA, have more topic specific definitions of effect. However, in the absence of topic specific definitions, the generalised definitions provided in Table 3.4 of the EPA Guidelines have been utilised within this EIAR.

The EIA Directive and associated guidance documents state that as well as considering any direct, indirect, secondary, transboundary, short, medium, and long term, permanent and temporary, positive and negative effects of the Project (all of which are considered in the various chapters of this EIAR), the description of likely significant effects should include an assessment of cumulative impacts that may arise. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the Project. Cumulative effects result from the addition of many minor or insignificant effects, such as effects of other projects, plans and activities, to create larger, more significant effects.

The cumulative impact assessment of projects has three principle aims:

- To establish the range and nature of existing and approved projects within the cumulative impact study area of the Project.
- To summarise the relevant projects which have a potential to create cumulative impacts.

- To identify the projects that hold the potential for cumulative interaction within the context of the Project and discard projects that will neither directly or indirectly contribute to cumulative impacts (note: this is done by individual experts with respect to their specialist area of expertise.)

The cumulative effects assessment considers developments that are 'reasonably foreseeable' such as:

- Existing developments either built or in construction;
- Approved developments, awaiting implementation; and
- Potential developments awaiting determination within the planning process with design information in the public domain.

Additional offshore activities and industries which have been considered in the cumulative assessment include (but are not limited to):

- Marine renewables (offshore wind, wave and tidal);
- Coastal developments, including but not limited to port and harbour developments;
- Marine aggregate extraction, dredging and licensed disposal sites;
- Oil and gas activities;
- Carbon capture and storage;
- Subsea cables and pipelines;
- Foreshore licences;
- Aquaculture licences; and
- All proposed developments and activities within the Cumulative Study Area of the Project.

## Transboundary Effects

Transboundary effects arise when impacts from a development within one European Economic Area (EEA) state's territory affect the environment of another EEA state(s). The EIA Directive requires assessment of transboundary effects. Consideration of transboundary environmental effects is also required in line with The Espoo (EIA) Convention adopted in 1991 in Espoo, Finland. The Convention sets out the obligations of involved Parties, including Ireland, to assess the environmental impact of certain activities and the obligation of States to notify and consult each other on all major developments under consideration that are likely to have a significant adverse environmental impact across boundaries. Where there is a potential for a transboundary effect as a result of the Project, such effects are assessed and detailed within the relevant topic specific chapter.
Potential transboundary impacts are identified and assessed within each topic chapter within this EIAR. Where no transboundary effects have been identified this is also stated.

# 5 Project Description

This chapter of the Environmental Impact Assessment Report (EIAR) describes the design details of the Project, which includes the Offshore Site and the Onshore Site.

Consultation with An Bord Pleanála confirmed that the development permission application for the Project will be submitted under Section 291 of the Planning and Development Act, 2000, as amended.

The Offshore Site comprises the OAA which will include 30 wind turbine generators (WTGs) with a Maximum Export Capacity (MEC) of 450MW, an Offshore Substation (OSS), Gravity Base Structure (GBS) foundations and IACs, as well as the OECC and associated OEC which will eventually make landfall in the townland of Killard, Co. Clare (the Landfall).

The Onshore Site comprises the OLL which will include the TJB infrastructure, the OGC from the TJB to the connection to the national grid at the existing Moneypoint 220kV Substation, and the proposed Onshore Compensation Compound (OCC) in the townland of Ballymacrinan.

This application seeks a ten-year planning permission and a 38-year operational life from the date of commissioning of the Project. The Plate below shows the principal components of the Project.

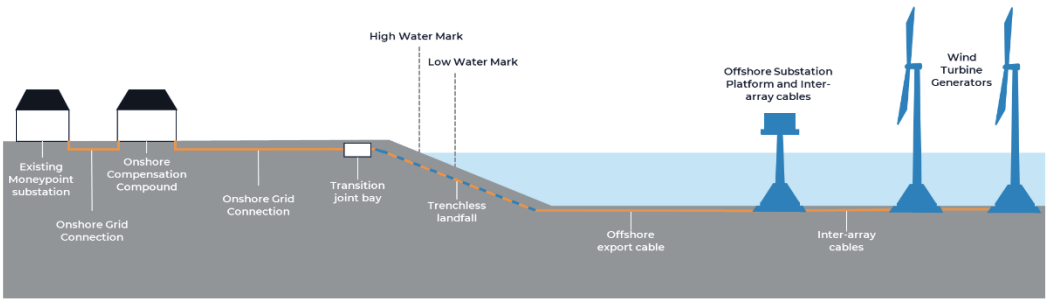


*Plate 5-1 Diagram showing the principal components of the Project.*

## Offshore Site

The Offshore Site includes the Project infrastructure below the High-Water Mark (HWM). The components of the Offshore Site are:

- Seabed preparation for the installation of 31 GBS foundations;
- Transport and installation of 31 GBS foundations;
- 30 fixed foundation WTGs, installed on GBS foundations;
- One OSS, installed on a GBS foundation;
- A network of IACs connecting WTGs to the OSS;
- One OEC, between OSS and Landfall Point;
- Cable protection measures (where required);
- Trenchless technology landfall works including ancillary activities (e.g., excavation of exit pit).

## GBS Foundations

Through careful consideration of site-specific parameters, it was determined that the most suitable WTG foundation for this project is a concrete self-buoyant GBS. The GBS foundation comprises a disc

shaped foundation platform and a concrete shaft and it is temporarily self-buoyant during the installation stage.

Upon arrival at installation location, GBS foundations will require ballasting to obtain negative buoyancy for seabed installation. Ballast could be water, sand, gravel or an alternative high-density aggregate.

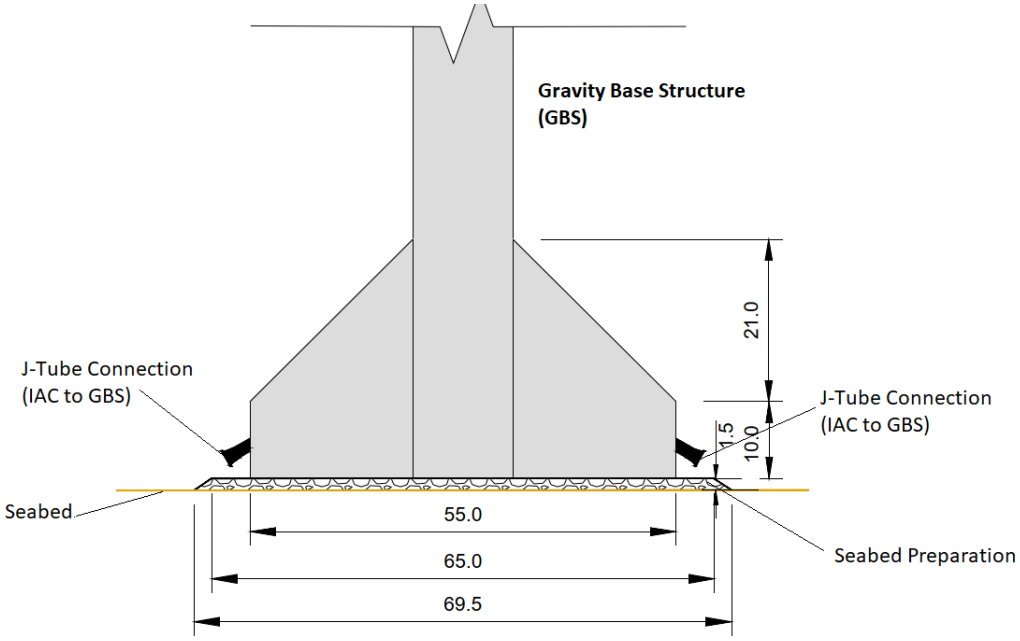


*Plate 5-2 Cross section of the 'ELI' GBS foundation to be used for the Project*

## Wind Turbines

The WTGs convert wind energy to electricity and consist of rotor blades, towers, generators, transformers, power electronics and control equipment. Each WTG will consist of a tower supported by a GBS foundation, a nacelle atop of the tower which contains the mechanical and electrical generating components, and three rotating blades

## Offshore Substation

A single OSS will be installed in the OAA, with its location in eastern landward side of the area. The OSS topside contains electrical equipment and components required to transform the voltage of the electricity generated at the WTGs to a higher voltage suitable to export to the onshore grid network. The OSS will export HVAC electricity with a system voltage of 220 kV on the primary side, with one export cable and two main transformers. Its secondary side will have a Medium Voltage Alternating Current (MVAC) with a system voltage of up to 132 kV. The OSS houses the relevant ancillary components (e.g., service crane, antennas, helideck) and electrical equipment (i.e., switchgear). The total height of the OSS is 45 m above LAT (excluding the crane) and 55 m above LAT (including the crane).

## Inter Array Cables

The IACs collect the power from the WTGs and connects to the OSS. The IACs will transport HVAC electricity in one three-phase circuit, with each phase having a separate metallic conductor (e.g. aluminium or copper) within an armoured trefoil cable. IACs will either be buried to a target depth of lowering of 1.0 metres or will be surface-laid and protected with either a cast-iron shell (CIS), rock placement, concrete mattresses or rock/grout bags.

## Offshore Export Cable

HVAC cables are designed to facilitate connection/integration of renewable energy to the existing grid. The OEC will transport electricity in one three-phase circuit, with each phase having a separate metallic conductor (e.g. aluminium or copper) within an armoured trefoil cable (Plate 5-4). The cable will have a voltage of 220 kV and a diameter of approximately 300 mm. The OEC will be approximately 63.5 km long and run from the OSS to the Landfall Point at Killard, Co. Clare. The cable will make the onshore transition via a trenchless technology landfall from a pop-out location below the Low Water Mark (LWM) to avoid the intertidal zone, through an approximately 1 km drilled duct. The OEC will either be buried to a target depth of 1.0 metres or will be surface-laid and protected with either a cast-iron shell (CIS), rock placement, concrete mattresses or rock/grout bags.

## Offshore Landfall

The OEC landfall connection will be installed using trenchless technology. This means a duct will be drilled from an onshore location, under the intertidal region and below the seabed to a subtidal emergence location, approximately 1 km offshore at approximately 30 metres water depth.

## Onshore Site

This section describes the components of the Onshore Site. Further details regarding Site Drainage (Section 5.3.2.7), Construction Management (Section 5.6) and Construction Methodologies (Section 5.7) are provided in Chapter 5.

The Onshore Site includes the Project infrastructure from the TJB to the National Grid. The components of the Onshore Site are:

- A temporary trenchless technology compound, with associated temporary access track in the townland of Killard, to facilitate the operations at landfall;
- The TJB and associated underground infrastructure;
- A high voltage (220kV) alternating current export cable laid underground for approximately 19.3 km between the TJB in the townland of Killard, Co. Clare to the new Onshore Compensation Compound in the townland of Ballymacrinan, Co. Clare;
- Fibre optic cables for operation and control purposes, and earthing cables, laid underground with the export cable between the TJB in the townland of Killard, Co. Clare to the new 220kV Onshore Compensation Compound in the townland of Ballymacrinan, Co. Clare and onwards to the connection at the 220 kV substation in Moneypoint;
- 43 no. joint bays along the OGC route;
- 1 no. onshore 220kV electrical Onshore Compensation Compound (OCC) located in the townland of Ballymacrinan, Co. Clare. The OCC consists of an Eirgrid 220kV Gas Insulated Switchgear (GIS) Building, an ESB 220kV GIS Building, a Customer SCADA and MV power building and a statcom building, welfare facilities, outdoor compounds, all associated electrical plant and apparatus, security fencing, underground cabling, drainage, wastewater holding tanks, and all ancillary works.
- 3 no. temporary construction compounds with temporary site offices and staff facilities;
- Reinstatement of the road or field surface above the proposed cabling trench along the OGC route;

## Onshore Landfall Location

The location of the Landfall will be in the townland of Killard, approximately 1km northwest of White Strand, near Doonbeg in Co. Clare.

The OLL is the point at which the OEC will come ashore and connect to the TJB located above the High Water Mark. It is proposed to construct a temporary construction area at the Onshore Landfall Location. The compound will be utilised for the landfall construction activities including construction of the TJB. In addition, a temporary winch base pad will be required approximately 20m to the south of the TJB.

## Transition Joint Bay

At the OLL, a TJB will be required to house the interface joint between the OEC and the OGC. The TJB is an underground concrete chamber that will provide a firm, solid base for the cable jointing, while also protecting the jointing from weathering and deterioration. The TJB is buried and will measure approximately 100 square metres in area and 2.5m deep. Following connection of the cables, the TJB will be backfilled to protect the joint. The area will then be reinstated. A temporary working area will also be required to construct the TJB infrastructure, in addition to the Landfall infrastructure. The design parameters for the TJB are summarised in Table 5-12 of Chapter 5.

The EirGrid functional specifications require access tracks at the OLL to provide vehicular access to the TJB during the operation and maintenance stages of the Project. The access to the OLL location from the existing local access track to the south will be used for this purpose.

## Onshore Grid Connection Cabling Route

The OGC will originate at the OLL after exiting the TJB in the townland of Killard. From there, the OGC will be routed underground in a mostly south-southeasterly direction towards the OCC near Moneypoint. Upon exiting the TJB, the export cables will travel along third-party lands and the local road network before crossing the N67 in the townland of Doonmore and continuing south into the townland of Carrowmore South and along local road L2034. The OGC route extends south-southeast along the L2034 for approximately 6.7 km through the townlands of Tullaher, Einagh, Moanmore North, Moanmore Upper, Moanmore South, Moanmore Lower, Druha and Carnaun, before travelling east and through private lands and the Kilrush Golf Club in the townlands of Ballykett and Parknamoney. After exiting the Kilrush Golf Club, the cable will then travel across the N68 into third party lands, travelling south for approximately 660m before entering onto local road L6150. The cable will travel through the townlands of, Parknamoney, Kilcarroll, Kilrush Demesne, Dysert, Clooneylissaun, and Ballymacrinan. Within the townland of Ballymacrinan, the underground electrical cabling will connect into the OCC. From the OCC, the OGC continues 800m south on the local road network where it joins the N67. From here, it travels adjacent to the N67 for approximately 1.7km east through the townlands of Carrowdotia North and Carrowdotia South to the Moneypoint 220kV substation.

The OGC will primarily be located within the public road corridor, except for some portions to the south of the Onshore Landfall Location that will be laid in private agricultural land, and another portion northeast of Kilrush that will run through private agricultural land and the Kilrush Golf Club. Surrounding land uses along the OGC include agriculture, low density housing, recreational amenity, and the wider road network. The underground cable will consist of a single circuit, single trench along the entirety of the proposed route.

## Environmental Management

All proposed activities on the site of the Project will be provided for in an environmental management plan. A Construction and Environmental Management Plan (CEMP) has been prepared for the Project

and is included in Appendix 5-4 of this EIAR. The CEMP includes details of drainage, spoil management and waste management and outlines clearly the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner. In the event that development permission is granted for the Project, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions.

## Construction phasing and Timing

It is estimated that the construction phase at the Offshore Site (including pre-construction surveys and seabed preparations) will take approximately 40 months, and the construction of the Onshore Site will take approximately 26 months. Subject to development permission and other timelines, it is anticipated that construction of both the Onshore and Offshore Sites will begin from 2026.

## Offshore Operation and Maintenance

Operations and Maintenance (O&M) activities can be categorised into two main types: planned/preventative and unplanned/corrective maintenance. The O&M period of the project's life cycle commences once the Project is commissioned. The operational life of the Project is anticipated to be 38 years. Planned and unplanned O&M activities will be conducted out of the O&M base except where specialist vessels are required. Crew Transfer Vessels (CTVs), Service Operational Vessel (SOVs) and helicopters will be used for O&M of the Project, with up to two CTVs used for up to four daily return trips. Any major repairs may require the deployment of a Wind Turbine Installation Vessel (WTIV) or Heavy Lift Vessel (HLV) or a semi-submersible crane vessel.

Planned maintenance follows scheduled servicing and includes general inspection and servicing, oil sampling/change, cleaning of equipment, investigation of faults, minor fault rectification and replacement of consumables. These types of maintenance activities will generally take place during the summer months.

Unplanned maintenance covers fault rectification, unexpected minor repairs and major component replacements/repairs. As these cannot be foreseen, they may take place at any time of the year across the Project's life cycle and may require urgent intervention to rectify any critical issues as quickly as possible.

O&M activities will be conducted in accordance with offshore wind industry best practices with compliance with:

- Original Equipment Manufacturer (OEM) guidance;
- Laws and regulations; and
- Maintaining safety and optimizing yield and availability.

Cable maintenance and repairs may also be required during the lifetime of the Project. Cable surveys will be conducted annually in the first five years at least, to determine if intervention is needed, and less frequently as conditions are established. Interventions required could include increasing the cable depth of lowering in locations along the cable route where a mobile seabed may lead to cable exposure risk. If a need for cable maintenance or repair is identified, the location, scale and type of damage will determine the repair methodology and timing. The affected area may require cable cutting, replacement and/or jointing of the cable sections and installation of additional cable protection. Additionally, planned and unplanned maintenance for the OSS will be conducted as necessary. It is anticipated the GBS foundations will require maintenance during the Project lifetime.

## Onshore Operation and Maintenance

The proposed OCC components will require periodic maintenance throughout the operational phase. It is proposed to manage wastewater from the staff welfare facilities in the control building by means of a sealed underground storage tank, with all wastewater being tankered off site by a licenced waste contractor to wastewater treatment plants. Hydrocarbons and oils will be present during the operation of the substation however these will be stored in an appropriately bunded area.

The site tracks will also require periodic maintenance. Although the level of activity required for the maintenance of the Onshore Site is not significant, the impacts associated with traffic volumes for this period are assessed in Chapter 29: Traffic and Transportation.

## Decommissioning of the Offshore Site

Up to three vessels will be used for WTG removal and up to four tugs for foundation removal. For infrastructure removal the construction process is reversed using WTIV vessels to remove the WTGs and then to de-ballast the foundations and tow them from the site. Rock placed during seabed preparation will be decommissioned in situ. The IAC and OEC decommissioning plans that any exposed/unburied and accessible cable will be removed and buried cables will be decommissioned in situ. Rock berms will remain undisturbed, as this method is likely to result in the lowest environmental impact.

During decommissioning a thorough investigation of the Offshore Site infrastructure will be conducted. The electrical systems will be de-energised and isolated from the grid and any hazardous material or loose items will be removed from structures (e.g. lubricants from WTGs). The general decommissioning approach can be seen in Table 5-29 in Chapter 5: Project Description. The decommissioning base locations could include Shannon Foynes, Cork and/or Belfast depending on what facilities are available at the time of decommissioning.

A Rehabilitation Schedule has been prepared for the Project (Appendix 5-18). The Rehabilitation Schedule will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and any proposed changes will be agreed with the competent authority at that time. The potential for effects during the decommissioning phase of the Offshore Site has been fully assessed in each relevant section of this EIAR.

## Decommissioning of the Onshore Site

The TJB infrastructure at the OLL will remain in situ; the cable will be cut within the TJB to allow for the onshore cable to be pulled through and removed. Given that the TJB will be buried below ground, its presence is not visible. Leaving the TJB in situ is considered a more environmentally prudent option, as to remove and dispose of that volume of reinforced concrete from the ground could result in environmental nuisance such as noise, dust and/or vibration.

For the OGC, the ducts and joint bay infrastructure will remain in situ and can be used for future cable installation if required. Leaving the ducts and joint bay infrastructure is considered to be the most environmentally practicable option, to avoid significant noise, dust and/or vibration generation, as well as traffic impacts. The joint bays will be opened up and the cables will be cut. Once cut, the cables will be pulled through the ducting and removed. The joint bays are then backfilled and reinstated to the relevant road standards, or to original condition for those located on private lands.

The above ground components of the OCC building and compound will be removed fully from site. The underground components, such as the foundations and non-electrical infrastructure, will remain in situ.

As mentioned above, a Rehabilitation Schedule has been prepared for the Project and is included in Appendix 5-18. The potential for effects during the decommissioning phase of the Onshore Site has been fully assessed in each relevant section of this EIAR.

## Offshore Renewable Electricity Support Scheme

The Offshore Renewable Electricity Support Scheme (ORESS) is a Government scheme that provides support to offshore renewable electricity projects in Ireland. ORESS is a pivotal component of the Programme for Government and is a major step in achieving Ireland's target of at least 80% renewable electricity by 2030, and at least 5 GW of offshore wind energy by 2030. Eligible projects compete to deliver the lowest price of electricity for the consumer. The projects with the lowest price of electricity are accepted into the scheme and the price that they bid is the price that they will receive for each unit of electricity produced for the 20 year duration of the scheme.

Each ORESS project, when built, sells its electricity into the market. When the market price is lower than the bid price, the government tops up the payments so that the bid price is achieved. When the market price is higher than the bid price, the project must return the difference to the government. The average bid price for ORESS1 was €86.05/MWhr which is lower than the average price of electricity in 2021, 2022, 2023 and so far in 2024 (up to end July). If the Projects was operating over this time it would have generated money for the government. This long-term price assists projects to get finance but also provides price stability and security of supply for Irish consumers. The Sceirde Rocks project was one of 4 projects out of 6 that were eligible that were successful in ORESS 1.

## Community Benefit Fund

It is a condition of the Offshore Renewable Electricity Support Scheme (ORESS1) that for each megawatt hour (MWh) of electricity produced by the wind farm, the project will contribute €2 into a community fund for the first 20 years of operation of the Project.

Based on proposed layout and technology, this will deliver a community contribution in the region of approximately €3,500,000 per annum for the local community. The value of this fund would be directly proportional to electricity generated by the wind farm. The Project will be one of the largest infrastructure projects to be developed in the Connemara region, in an area that has limited economic opportunity. The Community Benefit Fund will deliver lasting, tangible benefits to the region through community-driven initiatives. It will also help to preserve the Gaeltacht language, culture and traditions of the area.

The Community Benefit fund belongs to the local community. The premise of the fund us that it should be used to bring about significant, positive change in the local area. To make this happen, the first task will be to form a benefit fund development working group that clearly represents both the close neighbours to the project as well as nearby communities. The group will then work on designing the governance and structure of a community committee that will set the development aims of the Community Benefit Fund in consultation with the local communities.

# 6 Population and Human Health

This section of the Environmental Impact Assessment Report (EIAR) identifies, describes and assesses both the potential offshore and onshore effects of the Project on population and human health.

One of the principal concerns in the development process is that human beings, as individuals or communities, should experience no significant diminution in their quality of life from the direct, indirect or cumulative effects arising from the construction, operation and maintenance and decommissioning of the Project. Ultimately, all the effects of a development impinge on human beings, directly and indirectly, positively and negatively. The key issues examined in this assessment of Population and Human Health include population, employment and economic activity, sea use and land use, residential amenity (including visual amenity, marine traffic, noise for the Offshore Site and visual amenity, traffic, noise and dust for the Onshore Site), tourism, property values, human health, community facilities and services, health and safety, air quality, water quality and traffic.

The Project proposes the development of a renewable energy development, an offshore wind farm, capable of offsetting carbon emissions associated with the burning of fossil fuels. The Maximum Export Capacity of the Project is 450MW, displacing approximately 462,196 tonnes of CO2e emissions each year of operation, culminating to approximately 17.56 million tonnes of CO2e emissions over the proposed 38-year operational lifetime of the Project from traditional carbon-based electricity generation, therefore having a positive effect on climate. This in turn will have a long term, significant, positive effect on population and human health.

To assess the Population and Socio-Economic Baseline in the vicinity of the Project, both the Offshore and Onshore Population Study Areas for the population section of this EIAR were defined in terms of the Electoral Divisions (EDs) where the Project is located, and where relevant, nearby EDs, which have the potential to be affected by the Project.

The Offshore Population Study Area lies closest to 11 EDs and has a total population of 7,055 as of 2022 and comprises a total land area of approximately 591.3km$^2$ (Source: CSO Census of the Population 2022).

The Onshore Population Study Area lies within 7 EDs and has a total population of 5,152 as of 2022 and comprises a total land area of approximately 168.64km$^2$ (Source: CSO Census of the Population 2022).

The Offshore Site supports a diverse range of marine users, namely fishing, commercial transport, recreation, aquaculture and submarine cables. Although not considered in the Offshore Population Study Area, they have the potential to be affected by the Offshore Site and are therefore considered and assessed for potential effects within Chapter 13: Commercial Fisheries, Chapter 14: Shipping and Navigation and Chapter 18: Other Users of the Marine Environment. Nonetheless, although direct impacts on these marine users are not assessed within this chapter, in-direct impacts from services these marine users provide to human populations within the Offshore Population Study area are considered.

Current land use along the OGC comprises of public road corridor, discontinuous urban fabric and agriculture. The predominant surrounding land use within the Onshore Population Study Area is pastoral agriculture.

There is the potential for negative effects on human health during the construction, operation and maintenance and decommissioning phases of the Project related to potential emissions to air of dust, potential emissions to land and water of hydrocarbons, release of potentially silt-laden runoff into watercourses, noise emissions and other potential effects which are addressed within this EIAR. There are also potential effects on services, navigation, access to areas within the vicinity of the Project during various stages of construction, operation and maintenance, and decommissioning activities. The assessments show that the residual effects are not significant and will not lead to significant effects on

any environmental media with the potential to lead to health effects for humans. The Project will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, as detailed in Section 6.11.2.2.1.

The assessments within this chapter, and within the other chapters in this EIAR mentioned above, show that the residual effects following the implementation of associated mitigation measures is imperceptible and do not have the potential to cause negative health effects for human beings.

A standalone Economic Impact Assessment was conducted by Biggar Economics to assess the potential economic effect of the development, construction, operation and maintenance and decommissioning stages of the Project. The report assesses the potential economic impact of each stage of the project within the regions of County Galway, the Atlantic Region and Ireland, under different capacity scenarios within each region. The report estimates the direct and indirect impacts associated with all stages of the Project. In an Irish context, the Project would represent direct, indirect and induced impacts of an estimated €81 million Gross Value Added (GVA) and 837 full time equivalent jobs annually during the development and construction phase, €13 million annual (GVA) and support 174 full time equivalent jobs annually and an estimated €4 million GVA and support 69 full time equivalent jobs annually during the decommissioning phase, with Project lifetime GVA amounting to approximately €564 million. The report also provides recommendations for maximising economic impacts from the Project, through the development of Ireland's wider offshore wind supply chain.

There is currently no peer reviewed scientific evidence to positively link wind turbines with adverse health effects. The main publications supporting the view that there is no evidence of any direct link between wind turbines and health are summarised in this chapter of the EIAR.

The absence of studies which specifically focus on the effects of offshore wind farms on property prices means that there is some uncertainty in this area. However, based on the conclusions which have been reached in the literature described in the chapter which relate to impacts associated with onshore wind turbines which are often located in much closer proximity to sensitive receptors, it demonstrates that there is insufficient evidence from the scientific literature and studies conducted to determine that there is the potential for a significant effect on property values as a result of the Project. The likelihood for a significant effect on property prices, considering the minimum distance to the nearest full time occupied residential property on the mainland is over 5.5km from the nearest turbine, is very unlikely.

Residential amenity relates to the human experience of one's home, derived from the general environment and atmosphere associated with the residence. The quality of residential amenity is influenced by a combination of factors, including site setting and local character, land-use activities in the area and the relative degree of peace and tranquillity experienced in the residence.

When considering the amenity of residents in the context of the Offshore Site, there are three main potential effects of relevance: 1) Noise 2) Visual Amenity and 3) Marine Traffic. Effects on human beings during the construction, operation and maintenance, and decommissioning phases of the Offshore Site are assessed in relation to each of these key potential effects. When considering the amenity of residents in the context of the Onshore Site, there are four main potential effects of relevance: 1) Noise and 2) Visual Amenity, 3) Traffic and 4) Dust. Effects on human beings during the construction, operation and maintenance, and decommissioning phases of the Project are assessed in relation to these key issues in the chapter. The effect on residential amenity is then derived from an overall assessment of the combination of effects.

Noise is a quantifiable aspect of residential amenity while visual amenity is more subjective. Detailed noise assessments for both the Offshore Site and Onshore Site have been completed as part of this EIAR and are discussed further in Chapter 19: Offshore Air Quality and Airborne Noise and Chapter 26: Onshore Noise and Vibration. A comprehensive landscape and visual impact assessments for the Project has also been carried out, as presented in Chapter 16: SLVIA and Chapter 27: LVIA of this EIAR. Project marine traffic has been assessed in Chapter 14: Shipping and Navigation, while the potential impact of the Onshore Site in facilitating the Project on traffic and transport has been assessed

within Chapter 29: Traffic and Transportation. Chapter 25: Onshore Air Quality contains a thorough assessment of the potential effect of dust from the Onshore Site.

The factors for which potential impacts on residential amenity could be incurred due to construction, operation and maintenance and decommissioning of the Offshore Site are discussed in Section 6.10.1 of this Chapter. There is the potential for impacts on residential amenity from the Offshore Site due to visual impacts, marine traffic and noise with the presence of additional infrastructure in the marine environment. The extent and significance that each factor plays in influencing residential amenity is dependent on the phase of the Project, however based on the assessment detailed in Chapter 6, the effect on residential amenity due to the construction, operation and maintenance and decommissioning of the Offshore Site is Not Significant.

Regarding the Onshore Site, the factors for which potential impacts on residential amenity could be incurred due to the operation and maintenance are discussed in Section 6.10.2 of this Chapter. The extent and significance to which these factors may influence residential amenity effects is dependent on the phase of the Project, but based on the assessment provided in Chapter 6, there is No Significant Effect on residential amenity during the construction, operation and maintenance or decommissioning phase of the Onshore Site.

A standalone Tourism Impact Assessment of the Project has been completed, which provides an in-depth assessment of the potential effect that the Project could potentially have on tourism in Connemara. This Tourism Impact Assessment includes a survey conducted both with the local community and a variety of tourists to the area, with the focus on potential impacts due to the presence of the Project, and tourism development opportunities which may be represented by the development of the Project. The report suggests that the presence of Project will not have an adverse effect on tourism in the area, and can, in some cases, have a positive impact on tourism. These positive impacts are illustrated by a number of offshore wind farms worldwide which have become a tourist attraction, through the provision of tours and visitor centres in local communities which are centred around the offshore wind farm. The establishment of a community benefit provides the tourism sector with opportunities to support and create new tourism and recreation facilities, and other sustainable tourism options.

Provided that the Project is constructed, operated and decommissioned in accordance with the design, best practice and mitigation that is described within this application, significant negative effects on population and human health through effects on population, employment and economic activity, sea use and land use, residential amenity, community facilities and services, tourism, air quality, water quality, noise, traffic property values and health and safety are not anticipated at any scale. The Project, an offshore wind farm and associated infrastructure, with a Maximum Export Capacity of 450MW is capable of offsetting carbon emissions associated with the burning of fossil fuels, therefore having a positive effect on climate. This in turn will have a long term, significant, positive effect on population and human health, due to the provision of renewable energy in place of traditional carbon-based electricity generation

# 7 Marine Physical Processes

The assessment of marine physical and coastal processes considered the seabed, coastal processes at the Landfall, designated sites with physical receptors, tidal currents, wave climate, and sediment transport regimes. This assessment identified pathways potentially influencing other environmental receptors. The study covered a 15 km buffer around the Offshore Site, intersecting nine Special Areas of Conservation (SACs), though no designated sites overlap the OAA or the OECC.

Baseline conditions were determined through data acquired via site specific surveys, public data, and hydrodynamic modelling. Where relevant, these data also informed the impact assessment.

Water depths in the OAA typically range from 0 m LAT to 60 m LAT. Depths along the OECC are observed around 25 m LAT at the boundary with the OAA, increasing to about 90 m LAT to the west

and offshore of Inishmore island, before shallowing towards landfall, reaching a depth of around 30 m LAT, approximately 1 km offshore from the coast.

Within the OAA, the seabed is characterised by rocky outcrops. Sediment cover is sparse, with coarse sandy, gravelly sand, or sandy gravel sediments often overlying bedrock or filling gullies, faults and joints that exist within the rocky outcrops. Little to no fine sediment content is present within surficial sediments across the OAA. Moving shoreward from the OAA, for the first 8 km surficial sediments along the OECC are analogous to those observed within the OAA. Beyond this and for the majority of the OECC, the seabed is classified as silty or muddy sand, with small, isolated patches of sand and gravelly sand, which is coarser towards the Landfall where boulder fields and intermittent rock outcrops are also found. The OECC makes landfall on a rocky section of coast. To the northeast and southwest of the Landfall location, the coastline is characterised by areas of erosion resistant rock/cliffs and sandy beaches, some with rocky platforms.

The assessment evaluated potential impacts from construction, operation, maintenance, and decommissioning. This included effects on the geomorphological and oceanographic environment, including changes to seabed levels and coastal morphology, changes to sediment properties including the effects of suspended sediment originating from Offshore Site activities, and the likelihood of effects on protected sites.

Construction activities were predicted to cause localised changes to seabed properties and seabed levels. The disturbance of seabed sediments during clearance, trenching and installation of infrastructure is anticipated to increase suspended sediment concentrations temporarily before the suspended sediments are dispersed rapidly in the energetic metocean environment of the Western Irish Shelf. No significant effects are anticipated on proximal designated sites or the morphology at the coast.

During the operation and maintenance stage, changes to tidal flows and waves due to the presence of infrastructure in the OAA, and to a lesser extent the OECC, drives changes to the sediment transport regime due to direct blockage effects. However, as the physical properties of the seabed across this part of the western Irish continental shelf are observed to have a much greater influence on the metocean and sediment transport regimes, and sediment presence is limited across the OAA due to the more frequent occurrence of exposed bedrock, changes to the sediment transport regime are expected to be limited. Due to the distances between them, effects at the coastline and to designated sites are also anticipated to be negligible, as were potential effects resulting from scour, stratification, and changes in coastal processes, due to their localised nature.

Decommissioning effects were anticipated to be similar to or less than construction, with shorter durations.

It was concluded that impacts would be highly localised and no significant effects to any marine physical and coastal processes receptors are predicted, either for the Project alone, or cumulatively with other developments.

## 8 Water and Sediment Quality

The Water and Sediment Quality assessment considered any potential reductions in water and sediment quality resulting from the Offshore Site and assesses the potential effects on designated waters.

The water and sediment quality study area encompassed a 15 km buffer around the OAA and the OECC. The baseline characterisation was informed by a desk-based assessment supplemented by the site-specific surveys conducted between 2022 – 2024, which included water and sediment sampling and contaminants analysis.

There are two designated waterbodies that overlap with the Offshore Site, Shannon Plume and Aran Islands, Galway Bay, Connemara both defined as being in high condition.

Six additional designated waterbodies and nine bathing waters are located within the wider study area. The results of the site-specific surveys and the associated contaminants analysis indicate that there were generally low levels of contamination across the Offshore Site. Only concentrations of arsenic and chromium were found to exceed lower limit thresholds, at a very small number of sampling locations.

The impacts of the Project's construction phase, operation and maintenance phase and decommissioning phases were assessed, including the potential release of contaminated sediments from seabed disturbance (e.g., from trenching of cables) and the resulting impacts on designated water bodies.

The assessment concluded that due to the low levels of sediment contamination and the highly localised and temporary nature of the impacts, no significant effects to any water and sediment quality receptors were predicted, either for the Offshore Site alone or cumulatively with other plans or developments. There were also no transboundary effects predicted.

Appropriate mitigation measures will be in place to manage and control marine pollution, and this will be implemented through the Marine Pollution Contingency Plan (MPCP) that is contained within the Offshore Environmental Management Plan (OEMP).

The whole project assessment concluded that although there was the potential for coastal waterbodies to be affected by surface water contamination resulting from the Project, standard mitigation measures and the use of a trenchless landfall method would minimise these effects. Overall, the potential combined effects of the Project's activities on water and sediment quality receptors, alone or cumulatively with other developments, were expected to be minimal with no significant effects anticipated.

# 9 Benthic Ecology

This chapter of the EIAR assesses the potential effects of the Project on the presence and distribution of benthic ecology receptors (e.g. benthic species and habitats). Benthic ecology receptors have been assessed within the benthic ecology study area which is consistent with that of Chapter 7: Marine Physical and Coastal Processes which covers the area over which effects on marine physical processes may occur.

The benthic ecology baseline has been characterised through a desk-based assessment of the most up-to-date publicly available literature and data sources, supplemented with data and information gained through consultation and surveys carried out for the Project. The OAA has been characterised as predominantly rocky outcrops with sparse areas of coarse sediment overlying bedrock or in the narrow channels and gullies, whereas the OECC is predominantly comprised of sand, muddy sand and finer sediments throughout. The key benthic ecology receptors within the benthic ecology study area taken forward to the impact assessment include:

- Stony and bedrock reef;
- Subtidal sands and gravels;
- Subtidal muds; and
- Maerl beds.

The potential effects of the Project during construction (including pre-construction), operations and maintenance and decommissioning phases include: temporary habitat or species loss / disturbance, long term loss / damage to benthic habitats and species, increased Suspended Sediment Concentrations (SSC) and associated deposition, increased risk of Invasive Non-Native Species (INNS), hydrodynamic changes leading to scour around subsea infrastructure, colonisation of hard structures, effect of cable thermal load or Electromagnetic Fields (EMF) on benthic ecology and removal of hard substrate during construction, operations and maintenance and decommissioning.

Following the identification of maerl beds in the environmental survey data, measures were undertaken to design around the maerl to avoid direct disturbance. The indirect effect on maerl beds resulting from increased SSC and associated deposition during the construction, and operational and maintenance phases, as well as risks associated with the spread of INNS was assessed.

Temporary habitat or species loss / disturbance will result from seabed preparation activities, the installation of infrastructure (e.g. gravity-based foundations, cable laying), during cable repair / replacement activities and from long-term placement of material on the seabed during preparation activities within the Offshore Site. The temporary habitat or species loss / disturbance does not consider the temporary disturbance associated with the indirect effects from increased SSC, which is covered in the assessment of increased SSC and associated deposition. Temporary habitat or species loss / disturbance will have a likely, temporary negative effect on benthic ecology receptors; however, effects will be highly localised and spatially limited to the area of construction and installation activities. Additionally, increased SSC and associated deposition will result from the sediment resuspension and deposition resulting from seabed clearance, trenching activities and cable repair/replacement.

There is potential for the increased risk of introduction and spread of INNS as a result of seabed preparation and construction activities. This can occur via Marine INNS which could be introduced or transferred by vessels, such as through biofouling (e.g. attachment of organisms to boat hulls) or discharge of ballast water. INNS may also be introduced through towing of infrastructure to the Offhsore site, such as with the GBS following temporary anchorage, potentially within the Shannon Estuary. The benthic survey identified two non-native invertebrates within the Offshore Site, as well as two non-native seaweeds. These species have not been identified as high-risk INNS in Ireland. The effect is considered to be short-term in duration and will cease following the completion of construction activities.

Based on the applied water depths, the assumed rock size for cable protection and the representative spring and neap flow speeds that occur across the Offshore Site, the assessment within Chapter 7: Marine Physical and Coastal Processes concludes there will be little to no development of edge scour. Therefore, given that hydrodynamic changes leading to scour around subsea infrastructure is very unlikely to occur, and if it does will occur at a very low frequency or intensity, the residual effect is concluded to be not significant for all benthic ecology receptors.

The potential for colonisation of hard structures will result from the presence of installed hard infrastructure in regions of previously soft sediment during the operational lifespan of 38 years. While the effect is long-term in nature, it is anticipated to be highly localised at a low frequency of occurrence, with the wider region remaining unaffected.

The effect of cable thermal load and/or EMF on benthic ecology receptors will result from the presence of installed cables, including the IACs and offshore export cables (OECs). The EMF has been calculated for the Offshore Site and it was found that given the background geomagnetism of the Earth in this region, the EMF levels will not be detectable above background geomagnetism beyond the immediate proximity of the cable and the potential effects of thermal load will be highly localised.

Appropriate mitigations will be implemented through the Offshore Environmental Management Plan (OEMP), including an INNS management plan, to avoid introduction and spread of INNS and designing the project to avoid areas such as maerl beds. In conclusion, the benthic ecology impact assessment has assessed all residual effects as not significant given the mitigation by design, and no cumulative effects have been identified.

# 10 Fish and Shellfish Ecology

The Fish and Shellfish Chapter assesses the abundance and distribution of fish and shellfish ecology receptors relevant to the location of the Project.

The fish and shellfish study area encompassed the four International Council for Exploration of the Sea (ICES) rectangles that the Offshore Site overlaps. The baseline was characterised using a combination of desk-based studies and site-specific survey data. The results of the site-specific environmental surveys were also used to understand the potential for fish spawning habitat in the Offshore Site.

A range of species utilise the study area for spawning, foraging, migration, or as a nursery habitat. Key species of conservation importance include those with declining populations and/or those that are protected through national or international legislation and policy, such as Atlantic salmon, flapper skate, cod, herring and sandeel. Additionally, the Connemara Bog Complex Special Area of Conservation (SAC), Lough Corrib SAC, and Lower River Shannon SAC are all located within the fish and shellfish study area (although none of these designated sites directly overlap with the Offshore Site). These SACs are designated for fish and shellfish features (namely Atlantic salmon, and associated freshwater pearl mussel, and species of lamprey). It is assumed that these species may migrate through the Offshore Site

The main species targeted by the inshore fisheries include lobster, brown crab, spider crab, crayfish, velvet crab, shrimp and wrasse species. In particular, the eDNA results indicated that Atlantic salmon have been found within the Offshore Site.

The effects of the construction (including pre-construction), operation and maintenance and decommissioning phases of the Project at the Offshore Site were assessed, including the effects of underwater sound, habitat disturbance and loss, disruption of habitats due to sediment suspension and pollution, and the effects of electromagnetic fields and thermal emissions.

Any habitat loss or disturbance was anticipated to be highly localised in the context of the wider availability of habitats. Underwater noise will be generated through Unexploded Ordnance (UXO) clearance (if required, although not expected based on assessments undertaken to date), vessel operations, seabed preparation activities and cable installation. However, this is also considered to be short-term. With regards to increases in suspended sediment concentrations (SSC), any plumes generated will have a relatively localised spatial extent and will be short-term in duration. Due to the dynamic nature of the Offshore Site, suspended sediments will be readily reincorporated into the local sediment transport regime. Similarly, mitigation measures will act to reduce impacts on fish and shellfish ecology receptors associated with the accidental release of pollutants, e.g. MARPOL compliance and implementation of the Marine Pollution Contingency Plan which will act to effectively eliminate the risk of release and minimise the impact of any pollution.

Electromagnetic fields (EMF) emissions and heat are generated by operational cables. Both of these impacts were assessed as highly localised (limited to within metres of the cables) and unlikely to affect the long-term functioning of the wider available spawning and nursery grounds or migratory routes for fish or shellfish. Potential increases in fish or predator aggregation, resulting from habitat creation and fish aggregation due to the physical presence of installed infrastructure, were also assessed as highly localised and with a potentially positive or negative outcome. Barrier effects on diadromous species are not expected to affect migration success.

Overall, no significant effects to any fish and shellfish ecology receptors were predicted, either for the offshore Project alone, or cumulatively with any other developments.

# 11 Marine Ornithology

Offshore ornithology refers to the study of populations of birds found in the marine environment, including seabirds, seaducks and divers. These species typically spend the majority of their life cycle at sea, coming ashore only to breed and rest. The offshore ornithology assessment also considered migratory non-seabird species that may cross the sea on migration in the vicinity of the Offshore Site.

The marine ornithology baseline for the Project was characterised using a desk-top study and site-specific surveys. The site-specific surveys were carried out in the Offshore Ornithology Study Area and consisted of the OAA and a surrounding 4 km buffer. Monthly digital aerial surveys were flown over this area between October 2021 and September 2023.

Standard analytical techniques were used to estimate the densities of birds in the study area. A desktop study used data sources for the wider area to provide contextual information about seabird densities off the west coast of Ireland, as well as providing details on regional breeding and non-breeding populations.

The site-specific data and desktop study were used to determine the key bird species in the Offshore Ornithology Study Area. These are Manx shearwater, gannet, lesser black-backed gull, great black-backed gull, herring gull, kittiwake, Arctic tern, common tern, guillemot, razorbill, and puffin, with the populations of these species within the Offshore Ornithology Study Area varying seasonally. These species are all protected in Irish waters through designation within a number of Special Protection Areas (SPAs).

The potential impacts assessed included:

- The direct impacts of disturbance and displacement associated with construction and decommissioning activities or the presence and operation of the turbines;
- Indirect effects resulting from changes to prey and habitats (all phases); and,
- Collision risk to birds flying through or within the operating offshore wind farm.

Disturbance and displacement as a result of construction or decommissioning activities was considered for guillemot, razorbill and great northern diver. Due to the localised and temporary nature of the activities and the small number of birds predicted to be affected as a result, the effects on these species were predicted to be not significant.

During the operational and maintenance phase of the Offshore Site, the potential for long-term displacement and barrier effects to affect 11 seabird species (great northern diver, Manx shearwater, gannet, shag, eider, kittiwake, common tern, Arctic tern, guillemot, razorbill and puffin) was assessed as not significant.

Operational turbines may present a risk of collision to birds flying through the offshore wind farm area. Many seabird species, such as Manx shearwater, auks and fulmar tend to fly very low above the sea surface and are not considered to be at risk. Other species such as gannet and gulls frequently fly at the height of the turbine blades and are more at risk of collision. The risk of collision as a result of the Project was assessed for eight seabird species: gannet, kittiwake, common gull, great black-backed gull, herring gull, lesser black-backed gull, common tern and Arctic tern. In the context of additional mortality in their regional populations, the effects were predicted to be not significant. The potential collision risk to migratory non-seabird species passing through the OAA on migration was also predicted to be not significant.

Indirect effects resulting from changes to prey and habitats were assessed as not significant for all seabirds.

Cumulative impacts on marine ornithology from the Project together with other offshore wind farm and marine developments within approximately 500 km were considered. However, as there are no operational, consented or submitted offshore wind farm projects within approximately 500 km, it was concluded that there will be no cumulative effects on offshore ornithology arising in the breeding or non-breeding seasons.

In conclusion, the marine ornithology assessment has concluded that the effect pathways would be Not Significant for all offshore ornithology receptors. This includes the conclusions of the cumulative effects assessment.

## 12 Marine Mammals and Other Megafauna

The marine mammals and megafauna assessment considered the abundance and distribution of marine megafauna receptors of relevance to the Project and any likely significant effects on these receptors as a result of the Project.

The marine mammals Study Area is defined as the OAA and OECC plus a 50 km buffer zone. The baseline characterisation was informed by a desk-based assessment using site-specific, digital aerial surveys undertaken from October 2021 to September 2023. This data was supplemented by publicly available data and information sources.

Harbour porpoise, common dolphin, bottlenose dolphin and minke whale were taken forward for further assessment due to their occurrence and abundance within the study area. All of these species are highly protected under the Habitats Directive. Harbour seals and grey seals are also observed within, and in the vicinity of, the Offshore Site. Both seal species are protected under the Habitats Directive, as well as other Irish legislation and policy. Basking sharks and leatherback turtles may also be present within the Study Area.

The impacts of the Project during construction (including pre-construction), operations and maintenance and decommissioning phases were assessed, including the effects of underwater sound, disturbance and risk of collision due to the presence of vessels and disruption of habitats due to sediment suspension, release of pollutants, electromagnetic field effects and barrier effects.

The assessment concluded that no significant effects to marine mammals or megafauna were predicted. Cumulative effects were screened out except for effects upon water quality; however, the effect was found to be not significant.

Appropriate mitigation measures will be in place to manage and control obstruction and disruption towards marine mammals and other megafauna such as implementing and adhering to a Marine Mammal Mitigation Protocol (MMMP) and a Vessel Management Plan (VMP), alongside habitat mapping and unexploded ordnance (UXO) identification.

The assessment concluded that although there was the potential for marine mammals and megafauna to be affected by construction sounds, increased vessel traffic and sediment suspension and potential release of pollutants from the Offshore Site, mitigation by design and additional mitigation measures would minimise these effects to levels that are not significant. Overall, the potential combined effects of Offshore Site activities on marine mammals and megafauna were expected to be minimal with no significant effects anticipated.

# 13 Commercial Fisheries

This Chapter of the Environmental Impact Assessment (EIA) Report (EIAR) assesses the likely significant effects of the Project on commercial fisheries receptors. Recreational fishing is assessed within Chapter 18: Other Sea Users. Commercial fisheries have been assessed within the commercial fisheries study area, which encompasses the three International Council for the Exploration of the Sea (ICES) rectangles in which the Offshore Site overlaps (ICES rectangles 34E0, 35E0 and 35D9) in addition to ICES rectangle 34D9 which is within close proximity to the Offshore Site.

The commercial fisheries baseline has been characterised through a desk-based assessment of the most up-to-date publicly available literature and data sources, supplemented with data and information gained through consultation and site-specific surveys. The key commercial fisheries within the commercial fisheries study area include:

Static gear (e.g. pots, nets and traps):

- Lobster; and
- Crabs (brown, velvet, and spider).

Demersal trawlers and seines:

- Norway lobster (*Nephrops*);
- Monkfish; and
- Megrim.

Pelagic trawlers:

- Mackerel; and
- Horse mackerel.

The fishing activity within the OAA is primarily smaller vessels deploying static gear, whereas demersal and pelagic trawling is widespread in the vicinity of the OECC at low levels. There are also low levels of static gear fishing activity along the OECC, concentrated close to the OAA and near landfall.

The potential effects of the Project during the construction (including pre-construction), operational and decommissioning phases include loss of access to fishing grounds, displacement of fishing activity into other areas, interference with fishing activity as a result of increased vessel traffic, increased steaming times and safety issues for fishing vessels.

Displacement of fishing activity in other areas will occur as a result of the construction and operation activities described for loss of access above. Additionally, the displacement of fishing activity resulting from Project activities may lead to secondary displacement as vessels are driven into areas where other fishing fleets are present. Secondary displacement may lead to increased competition for fishing grounds and conflict as well as changes to target species. The potential effect on commercial fisheries receptors has been characterised against the spatial extent and duration of activities as described for loss of access above in comparison with fishing activity, availability of fishing grounds, operational ranges and potential for conflict and / or competition.

Increased vessel traffic associated with works may lead to interference with fishing activity (e.g. fouling of static gear markers), or damage and / or loss of gear, which in turn may lead to economic effects on fishers. Increased vessel traffic includes the presence of Project vessels on site during works as well as vessels transiting to and from the Offshore Site. Overall, there will be up to 23 construction vessels and three operation and maintenance vessels.

The potential effects detailed above, including temporary loss or restricted access to fishing grounds, displacement of fishing activity into other areas and increased vessel traffic may result in vessels needing to alter transit routes to fishing grounds and therefore increase steaming times. Smaller vessels (i.e. those under 15 metres in length) have limited operational ranges and are more likely to be affected by increased steaming times than larger vessels. The requirement for changes in steaming routes to avoid advisory safety clearance ranges during construction and operation will be limited.

Safety issues for fishing vessels include risks associated with snagging, entanglement and / or dropped objects. The frequency of occurrence is considered to be unlikely. During operation and maintenance, the presence of infrastructure on or near the seabed, exposed cables and / or dropped objects may result in snagging or entanglement for vessels deploying static and/or mobile gear. All infrastructure will be marked on admiralty charts, with ongoing monitoring of cables. There will be procedures in place for dropped objects and claim processes for loss or damage of fishing gear.

There will be a likely, temporary negative effect on commercial fisheries receptors as a result of the temporal overlap with the dumping at sea locations during the pre-installation activities which are planned to be undertaken in 2026. This temporal overlap will result in a cumulative effect on loss of accessing to fishing grounds and displacement of fishing activity into other areas, including the potential for cumulative effects to secondary displacement where alternative fishing grounds being utilised as a result of pre-installation activities are further spatially restricted by the dumping activities.

Appropriate mitigation measures will be in place to manage disruption to commercial fisheries such as implementing a 50 m advisory safety clearance range around installations and a 500 m safety clearance range around vessels and within areas of cable awaiting burial or protection along the OECC. There will also be development of cooperation measures through discussions with affected fishers to ensure co-existence during the construction phase.

In conclusion, given the short-term to temporary duration of activities, with the relatively small footprint of works at any one time, and the characterisation of the sensitivity of the receptors and magnitude of effect, and with the implementation of the proposed mitigation measures, the assessment has concluded that the residual effect is Not Significant for all commercial fisheries receptors. Additionally, the cumulative effects assessment has assessed all residual effects as Not Significant

## 14 Shipping and Navigation

Shipping and Navigation refers to the regular activity and behaviour of surface based vessels. The Shipping and Navigation baseline in vicinity to the OAA was characterised by Admiralty charts (which provided the navigational features of the area), maritime incident data (which provided an indication of existing incident rates) and vessel traffic data (which captured local vessel traffic patterns).

The review of Admiralty charts indicated the presence of a key aid to navigation at Croaghnakeela Island, for which the westernmost WTG position intersects. The closest ports to the OAA are Kilronan and Inishmore in the Aran Islands, and the fishing harbour of Rossaveel which is northeast of Cashla Bay. Pilot boarding stations for the Aran Islands and Rossaveel are also located in proximity, with each located approximately 11.8 NM east of the OAA. The IRIS subsea cable between Iceland and Galway intersects the OECC south of the Aran Islands, while no subsea cables intersect with the OAA.

Incidents reported to the RNLI between 2013 and 2022 were analysed, with approximately four unique incidents per year within 10 NM of the OAA - all responded to out of either the Aran Islands or Clifden station. The most common incident types were “machinery failure” (42%) and “person in danger” (21%). The most common vessel types recorded in incidents were fishing vessels (27%) and recreational vessels (23%). A total of three incidents in the region with reports released by the MCIB were identified between 1992 and 2023, comprising one grounding and two instances of a man overboard. Additionally, a fishing vessel ran aground on the rocks off the west coast in this area in 2000, resulting in the fatalities of 12 of the 13 crew and the loss of the vessel.

Shore-based vessel traffic surveys captured 28 days of vessel traffic survey data in August/September and November 2022. An average of five to six unique vessels per day were recorded within 10 NM of the OAA during both the summer and winter survey periods. Fishing vessels (53%), 'other' vessels (19%), and recreational vessels (15%) were the most prominent vessel types, noting that recreational vessels and passenger vessels were only present in the summer survey period. Three main commercial routes were identified from the vessel traffic survey data, comprising a fishing vessel route in/out of Rossaveel fishing harbour, a cargo vessel and passenger vessel route in/out of the Port of Galway, and a cargo vessel route to/from Limerick. There were no vessels identified that were likely to be at anchor.

The construction, operation and decommissioning of the Offshore Site will increase the number of vessels in the sea and will introduce new structures that will need to be avoided by other sea users. On this basis a number of potential impacts on Shipping and Navigation, associated with the construction, operation and maintenance, and decommissioning phases of the Offshore Site were identified. These entail displacement of third-party vessels and resulting increased collision risk, collision risk between third-party and Project vessels, reduced access to local ports, creation of third-party allision risk (where one object only is moving), reduction in under-keel clearance, anchor interaction with subsea infrastructure, and reduction in emergency response capability. With the proposed mitigation measures in place, these impacts result in effects that are Not Significant.

## 15 Civil and Military Aviation

The civil and military and aviation assessment evaluated the potential effects from the Offshore Site on military and aviation receptors (e.g., airports, air traffic control and air defence radars, military activities and helicopters).

The military and aviation study area was determined through a desktop review and consultation with the relevant stakeholders. The study area considered the presence of potentially affected aviation receptors, particularly air traffic control and air defence primary surveillance radars. The study area included any radars that could potentially detect WTGs within the OAA; and was defined by the furthest potential aviation receptor.

The WTGs will be located outside the safeguarding area of any civil airports and also outside the coverage of any civil air traffic control radars, military air traffic control / air defence radars or weather radars. The effects assessed include the creation of physical obstacles capable of affecting air traffic, and interference with radar systems.

A number of mitigations have been included in the Project design and will be implemented at all phases of the Project. Notably, these include publishing relevant information on the nature of any aviation hazards, such as the construction of tall structures. Additionally, the Project's Lighting and Marking Plan will be implemented and complied with.

The effects of the Project's construction (including pre-construction), operation and maintenance and decommissioning were assessed. Any potential effects will be mitigated through the adherence to the Project's Lighting and Marking Plan. Therefore, no significant impacts to any military and aviation receptors were predicted, either for the Offshore Site alone or cumulatively with other plans or developments.

## 16 Seascape, Landscape, and Visual Impact Assessment

This chapter of the EIAR consists of an assessment of effects from the Offshore Site relating to Seascape, Landscape and Visual factors during its construction, operation and decommissioning phases. Although closely linked, seascape / landscape and visual impacts are assessed separately. Collectively, the assessment of these impacts is referred to throughout as SLVIA.

The SLVIA was undertaken by Richard Barker (BA-Env, PG Dip Forestry, MLA, MILI) who is an appropriately qualified, professionally affiliated and vastly experienced Landscape Specialist, and in accordance with relevant guidelines and best practice for SLVIA in Ireland and the UK.

The methodology for SLVIA involves the weighing of seascape / visual receptor sensitivity against the magnitude of seascape / visual impacts to determine the significance of effects as well as what the quality (positive, neutral or negative) and duration of those effects will be. The seascape and visual effects are ultimately determined to be either significant or not significant in EIA terms. Cumulative effects are also considered.

A 60km radius SLVIA study area has been used for the assessment, the land area of which encompasses County Galway as well as small parts of both County Clare to the southeast and County Mayo to the north. The County Development Plans of all of these counties are considered, but with due focus on the nearer County Galway. The overarching 'Regional Seascape Character Assessment for Ireland (Marine Institute – 2020)' is also relevant to the assessment and provides a structure around which seascape effects are assessed (i.e. by character unit). Thirty eight representative viewpoints were used for the assessment of visual effects and verifiable photomontages (photo-real depictions of the offshore turbines) were prepared from each of them including night-time views from 4 sample locations.

The OAA is predominantly located on the landward side of the Sceirde Rocks formation which lies to the southwest of the complex Connemara coastline of rocky shorelines and a labyrinth of islands and inlets, which extend well over 10km inland in some areas. The closest part of the site is also around 12km to the northwest of Inishmore, which is the northernmost of the Aran Islands occupying the mouth of Galway Bay. In combination with Inishmore to the southeast, the Connemara coastline serves to wrap around the site to the north so that the open seaward horizon only extends to about 180 degrees in the southwestern quarters. There are a number of coastal promontory hills which punctuate the otherwise low-lying coastline and coastal bogs. Notwithstanding the considerable length of coastline that is proximal and indeed envelopes the site to the northeast, there is relatively sparse and dispersed population inhabiting this area, which tends to be served by narrow local roads and causeways that link each island to the mainland. Views tend to be quite enclosed with surprisingly few opportunities for open seaward views. Inland from the complex coastline is a broad area of coastal bog interspersed with lakes which transitions seamlessly from the enclosed sea inlets closer to the coast. The coastal bog is enclosed further inland by the Connemara Mountains, which sweep up steeply to form a dramatic backdrop and containment to the Connemara coastal context.

In terms of effects, the assessment is similar for both seascape / landscape effects and visual effects. The Project is considered to give rise to Major / Negative seascape effects only within approximately 10km of the site, which envelops the coastal waters and nearshore Islands of Macdara, Mason and Mweenish as well as the complex Connemara coastline of the seaward end of the promontory peninsula they extend from. Major / Negative visual effects are also assessed from some, but not all, of the representative viewpoint locations within this part of the central study area that are afforded open coastal vistas towards the site. This includes from the uninhabited Macdara Island and from Mweenish Island. These are the only SLVIA effects that are considered to be significant in EIA terms. It is important to note that these represent localised significant effects and there are also many visual receptors within 10km of the site that incur little or no visual effect where open sea views are more restricted.

Notwithstanding the effects described above, Major-moderate seascape and landscape effects are considered to occur within the exposed coastal areas between approximately 10-15km where the OWF will be a notable feature of the seascape setting contributing strongly to the seascape character, but without being a defining element. Likewise, those representative viewpoints contained within approximately15km that have open seaward visibility also tend to attract Major-moderate visual effects. These SLVIA effects are not considered to be significant.

At distances beyond 15km the Project becomes more peripheral and discrete from the immediate seascape / landscape and visual setting and it becomes more of a noticeable background feature rather

than a key contributor to seascape / landscape character and visual amenity. The significance of effect tends to reduce to Moderate and below for most representative viewpoints beyond 15km of the site, depending largely on the degree of visual exposure to the proposed turbines and the contribution of coastal views to visual amenity.

Principally due to the physical and contextual separation between the Project and other operational or permitted wind farms as well as the complexity of combined visibility within the undulating landscape / seascape that lies between themthere will be no significant cumulative effects arising from the proposed development.

# 17 Marine Archaeology

This section of the Environmental Impact Assessment Report (EIAR) sets out the approach to the characterisation of known and potential underwater cultural heritage, including shipwrecks, across the project and within the wider context of the Irish Sea. Specifically, this chapter considers the likely significant effects of Sceirde Rocks Offshore Wind farm during its construction, operation and maintenance (O&M), and decommissioning phases associated with the OAA and OECC.

There is one known wreck within the Marine Archaeology Study Area. The wreck is that of MFV *Arosa*, wrecked on 3 October 2000, off Doonguddle rock. During the night, *Arosa* struck rocks and became grounded in bad weather conditions and 12 of the 13 crew died in the wrecking.

The age of *Arosa* would mean that the vessel would not usually be required to have an Archaeological Exclusion Zone (AEZ); however, the circumstances of the loss of crew means a 100 m AEZ is to be put in place in the event that human remains are within the wreck or in the immediate vicinity.

Archaeological Diving Company Ltd was appointed to carry out an archaeological review of marine geophysical survey data acquired in 2022, and 2024 for the Project.

The assessment concluded that a series of contact features was recorded throughout the survey area, the majority of the features appear to be boulders, and while there are some debris items there are no defined items of archaeological interest or potential. The location of W09419 as charted by the HSI appears to be incorrect, and the correct location of the MFV *Arosa* lies on the exposed shoreline of Sceirde Rocks outside the surveyed area.

No other features of archaeological potential were identified, however there remains a chance that archaeology may be encountered during works. To account for this, mitigation measures are set out in the Archaeological Management Plan in order to assure that no impact occurs to marine archaeological receptors.

In conclusion, the marine archaeology and cultural heritage impact assessment has assessed all residual effects as Not Significant, both for the Project alone and cumulative with other developments, given the mitigation by design and the additional mitigation measures described within the Archaeological Management Plan.

# 18 Other Users of the Marine Environment

The Other Sea Users assessment considered any effects on Other Sea Users resulting from the Project.

The Other Sea Users Study Area encompassed a 20 km buffer around the OAA and the OECC. The baseline characterisation was informed using publicly available data and data sources, and through consultation on the Project Scoping Report.

The primary industries which will directly interact with the Other Sea Users Study Area are aquaculture sites, the IRIS submarine cable, marine recreational users including recreational boating activities, blue

flag beach users and research vessels. The Other Sea Users Study Area does not interact with any oil and gas operations, marine dredge disposal sites or areas of military activities.

The impacts of the Offshore Site construction, operation and maintenance and decommissioning phases were assessed, including the potential obstruction to other industries (e.g., oil and gas, offshore renewable energy developments and military activities) and effects on aquaculture due to sediment suspension and release of pollutants.

The assessment concluded that due to the highly localised and temporary nature of the impacts, no significant effects to any Other Sea Users were predicted. Cumulative and transboundary effects on Other Sea Users were all screened out.

Appropriate mitigation measures will be in place to manage and control obstruction and disruption such as disseminating information to Other Sea Users and establishing crossing and proximity agreements with other operators and asset owners.

The whole project assessment concluded that although there was the potential for Other Sea Users to be affected by increased vessel traffic, sediment suspension and potential release of pollutants from the Project, standard mitigation measures would minimise these effects. Overall, the potential combined effects of the Projects' activities on Other Sea Users were expected to be minimal with no significant effects anticipated.

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## Offshore Air Quality and Airborne Noise

The offshore air quality and airborne noise assessment considered any potential changes to air quality, effects on meteorological or air quality monitoring, and airborne noise emissions resulting from the Project and assesses the potential effects on human receptors.

The offshore air quality and airborne noise study area encompassed a 15 km buffer around the Offshore Site. The baseline characterisation was informed by a desk-based assessment supplemented by airborne noise monitoring at several properties closest to the OAA.

Baseline airborne pollutant levels are not collected offshore, however the air quality across most of the island of Ireland, including the study area, is generally very good because of the clean air mass over the Atlantic Ocean to the west. Wind speeds in the study area (monitored at Mace Head) average 7.6 m/s.

Mace Head Atmospheric Monitoring Station is situated ca. 6 km north of the OAA and provides data on air quality for Europe including greenhouse gases, hydrocarbons and other pollutants.

Noise sensitive properties were considered to be the properties closest to the OAA on the shoreline of the islands or peninsulas of Ard (ca. 6 km from OAA), Mweenish (ca. 5.5 km from OAA), and Mason (ca. 4 km from OAA). These locations have a mixture of holiday houses and residential properties. Noise monitoring indicated that in westerly wind conditions, ambient noise levels at the onshore monitoring locations closest to the OAA typically vary between 40 to 50 $dB_{LA90}$ in windy periods.

The assessment concluded that due to low levels of pollutants originating from Project vessels, the highly dispersive wind conditions and the short-term and reversible nature of the effect. no significant air quality effects to any onshore receptors were predicted, either for the Offshore Site alone or cumulatively with other plans or developments.

With respect to airborne noise, due to the intervening distance between the Offshore Site and onshore receptors, and accounting for baseline noise levels at coastal properties, no significant airborne noise effects were predicted, either for the Offshore Site alone or cumulatively with other plans or developments.

Appropriate mitigation measures will be in place to manage and control marine pollution, including compliance with MARPOL and the implementation and adherence to a Vessel Management Plan. The Applicant is working with Mace Head to relocate sensitive monitoring equipment, including a period of dual monitoring to ensure continuity of long-term monitoring.

In conclusion, the assessment found that the residual effects will be Not Significant for all air quality and noise receptors

## 20 Biodiversity – Flora and Fauna

The Terrestrial Biodiversity Chapter of the EIAR was prepared by MKO and assesses the potential impacts on habitats, flora and fauna as a result of the Onshore Site. The habitats, flora and fauna of the Onshore Site, including protected species and habitats, were assessed by means of a desk study of literature pertinent to the Onshore Site and surrounding area, and field surveys which included several multi-disciplinary walkover surveys and targeted faunal surveys.

The key objectives of the Biodiversity assessment were to (i) Undertake a review of desktop and field survey information to inform an assessment of the current baseline ecological characteristics of the Onshore Site in relation to biodiversity, (ii) Evaluate the ecological significance of the proposals to construct the Onshore Site in the context of biodiversity, and (iii) Assess the potential for direct, indirect and cumulative impacts of the proposals in the context of biodiversity.

Habitat and protected fauna surveys were undertaken between July 2023 and October 2024 to inform the current biodiversity baseline for the Onshore Site. Habitats within the site were classified based on vegetation present and management history. During the multi-disciplinary ecological walkover surveys, the potential for the Onshore Site to support protected birds, mammals, amphibians and additional fauna was assessed.

Habitat types classified as Local Importance (higher value) were recorded within and adjacent to the Onshore Site and included Hedgerows (WL1), Treelines (WL2), Mixed broadleaved woodland (WD1) and Scrub (WS1). The remaining habitats, classified as Local Importance (lower value), comprised of highly modified habitats such as road infrastructure and agricultural fields. Whilst the Onshore Site is located in close proximity to Annex I habitats, these were buffered from the works area by features such as roads, grassy verges or hedgerows. No habitats greater than Local Importance (higher value) were identified within or adjacent to the Onshore Site.

A landscape plan has been included which provides for the establishment of new, and bolstering of existing, hedgerows within the Onshore Compensation Compound site, as well was native woodland and species rich grasslands, to mitigate the losses of habitats of Local Importance (higher value).

The Onshore Site is located within two hydrological catchments: Mal Bay and Shannon Estuary North, and crosses 11 EPA mapped watercourses which discharge into either the Shannon Estuary or Doonbeg Bay downstream. As both Nationally and Internationally protected sites are located downstream of these watercourses and potential indirect impacts have been identified, aquatic receptors were classified as Local Importance (higher value) to International Importance and were included as Key Ecological Receptors (KERs).

There are no instream works proposed to facilitate the OGC, nor any other component of the Onshore Site. Potential indirect impacts in the form of surface water deterioration will be prevented by adherence to the mitigation described in Chapter 23: Water of the EIAR and therefore, no significant impacts to aquatic Key Ecological Receptors or protected sites exists, as a result of indirect impacts.

Protected species such as badger, otter, marsh fritillary, freshwater pearl mussel, and bats were considered in the valuation of the site as Local Importance (higher value) and are fully considered

within the Chapter. No potential for significant impacts on any protected species exists as a result of the Onshore Site.

Two species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No 374 of 2024) were recorded within or directly adjacent to the Onshore Site: Japanese knotweed (*Fallopia japonica*) and rhododendron (*Rhododendron ponticum*). This Biodiversity chapter provides mitigations to ensure that these high impact invasive species will not spread as a result of the Onshore Site and no significant impacts on biodiversity are anticipated as a result of the invasive species within the Onshore Site or in the local area.

Effects upon European Sites are fully discussed within the Natura Impact Statement (NIS) which accompanies this application. The NIS concludes:

> *Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly prevented through the use of avoidance, appropriate design and/or mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation and decommissioning of the Onshore Site does not adversely affect the integrity of European sites.*
>
> *Therefore, it can be objectively concluded following an examination, analysis and evaluation of the relevant information, including in particular the nature of predicted impacts from the Onshore site, and with the implementation of mitigation measures proposed, that the Onshore Site, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site and there is no reasonable scientific doubt in relation to this conclusion.*

Provided that the Onshore Site is constructed, operated, and decommissioned in accordance with the best practice and mitigations that are described within this application, significant individual or cumulative effects on biodiversity are not anticipated at any geographical scale

## 21 Biodiversity -Terrestrial Ornithology

This chapter assesses the likely significant effects that the Onshore Site may have on bird species. Firstly, a brief description of the Onshore Site is provided. This is followed by a comprehensive description of the methodologies that were followed in order to obtain the information necessary to complete a thorough assessment of the potential effects of the Onshore Site on bird species. The survey data is presented in full in the Environmental Impact Assessment Report (EIAR) appendices, with a summary of the information presented within this chapter. An analysis of the results is then provided, which discusses the ecological significance of the birds recorded within the study area. The potential effects of the Onshore Site are then described in terms of the construction, operation and maintenance, and decommissioning phases of the development. An accurate prediction of the effects is derived following a thorough understanding of the nature of the Onshore Site along with a comprehensive knowledge of bird activity within the study area. The identification of Key Ornithological Receptors (KORs) and the assessment of effects follow a precautionary approach.

The potential for effects on designated sites is fully described in the Natura Impact Statement (NIS) that accompanies this application. Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction and operation of the Onshore Site does not adversely affect the integrity of European sites.

Following consideration of the residual effects (post-mitigation), it is concluded that the Onshore Site will not result in any significant effects on any of the identified KORs. No significant effects on receptors of International, National or County Importance were identified. Provided that the Onshore Site is constructed, operated and decommissioned in accordance with the design and best practice mitigation that are described within this application, significant individual or cumulative effects on the identified KORs are not anticipated

# 22 Land, Soils and Geology

This chapter assesses the likely significant effects that the Project may have on land, soils and geology and sets out the mitigation measures prescribed to avoid, reduce or offset any potential significant effects that are identified. This includes the assessment of likely significant effects associated with the construction, operation and decommissioning phases of the Project.

The land, soils and geology of the Onshore Site has been characterised using a combination of desk study and site investigation data. Several walkover inspections of the Onshore site have been completed as well as trial pit excavations and borehole drilling at the OLL, trial pit excavations at the Onshore Compensation Compound (OCC) and laboratory analysis of the recovered soil/subsoil samples. A visual assessment of exposed soils, subsoil and bedrock and topographic changes and peat probe investigations were completed along the Onshore Grid Connection (OGC). Additional investigations comprising of hand augering and geophysical surveys were completed where peat was recorded along the OGC.

The OLL is located in the townland of Killard, approximately 1km northwest of White Strand and approximately 3.5km northwest of the village of Doonbeg in west County Clare. The OLL stands at an elevation of approximately 10 metres above Ordnance Datum (mOD). The site on which the OLL is located is currently a greenfield site in agricultural use.

The OGC has a total length of 22.3 km and is divided into 2 no. sections. The first section extends from the OLL to the OCC in the townland of Ballymacrinan and has a total length of 19.3 km. The second section extends from the OCC to Moneypoint Power Station and has a total length of 3km. The OGC comprises an underground cable connection which will travel along third-party lands and the local public road network. The local topography is relatively flat to gently undulating with elevations ranging from approximately 5mOD to 55mOD.

The OCC is located within the townland of Ballymacrinan, approximately 3.5km to the southeast of the town of Kilrush. The local ground elevations stand at approximately 20mOD. The Lower Shannon Estuary is located about 700m to the south. The site on which the OCC is located is currently a greenfield site in agricultural use.

The subsoils encountered during the site investigations at the OLL and the OCC correspond to the local GSI mapped subsoils which are mapped as till derived from Namurian sandstones and shales. The full subsoil profile at the OLL extends to a maximum depth of 1.8m where weathered rock was encountered. The underlying bedrock is mapped as the Gull Island Formation which comprises of grey siltstone and sandstone. No bedrock was encountered during the site investigation works at the OLL.

The Project will involve the removal of soils and subsoils (spoil) for the construction of the onshore elements of the Project. With the implementation of the mitigation measures detailed in this EIAR chapter, including best practice measures detailed in relation to spoil management and the storage and handling of hydrocarbons, no significant effects on soils or subsoils will occur during the construction, operation or decommissioning phases of the Project.

Similarly, with the implementation of the mitigation measures outlined in this EIAR, no significant effects on the underlying bedrock geology will occur during the construction, operation, or decommissioning phases of the Project.

There will be no significant effects on the land environment due to the small footprint of the proposed permanent infrastructure. The works locations at the OLL will be reinstated following construction and the majority of the OGC will be restored to a comparable ground surface. The only permanent effects on land will occur along at the OCC and where new access tracks are proposed along the OGC.

An assessment of potential cumulative effects associated with the onshore components of the Project and other developments on land, soils and geology has been completed. The land, soils and geology assessment confirms that there will be no significant cumulative effects on land, soil and geology as a result of the works at the Onshore Site.

## 23 Water

This chapter assesses the likely significant effects that the onshore elements of the Project may have on hydrology and hydrogeology and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified.

The hydrology and hydrogeology of the Onshore Site has been characterised using a combination of desk study and site investigation data. Several walkover surveys and detailed drainage mapping of the Onshore Site have been completed in addition to surface water sampling and flow monitoring. Intrusive site investigations comprising of trial pits, peat probes, hand augers and geophysical surveys have also informed the assessment presented in this EIAR chapter.

Regionally, the Onshore Site is located across 2 no. surface water catchments. The OLL and the northern section of the OGC are located in the Mal Bay surface water catchment whilst the southern section of the OGC and the Onshore Compensation Compound (OCC) are located in the Shannon Estuary North surface water catchment.

The Onshore Site is drained by several 1$^{st}$ and 2$^{nd}$ order streams and in places the natural drainage is further facilitated by a network of manmade drains. These manmade drains are concentrated within the peatland areas along the OGC. No significant hydrological features have been recorded at the OLL while a stream is mapped immediately to the north of the OCC.

Designated sites located near the Onshore Site include Tullaher Lough and Bog SAC which is located immediately adjacent to the OGC. However, this section of the OGC will be completed using directional drilling which will significantly reduce the potential for effects on the SAC. Other hydrologically connected designated sites include the River Shannon and Fergus Estuaries SPA and the Lower River Shannon SAC. However, due to the minor and transient nature of the proposed works, coupled with the prescribed mitigation measures, there will be no significant effects on designated sites.

There will be no significant effects on groundwater as the Onshore Site is underlain by rocks of poor permeability (Locally Important Aquifers) and mitigation measures have been prescribed for the protection of groundwater quality.

No significant effects to surface water (quality and flows) and groundwater (quality and quantity, and any local groundwater wells) will occur as a result of the onshore elements of the Project provided the proposed mitigation measures are implemented. This EIAR presents proven and effective mitigation measures to mitigate the release of sediment which will reduce the concentration of suspended solids to acceptable levels. The storage and handling of hydrocarbons/chemicals will be carried out using best practice methods which will ensure the protection of surface and groundwater quality. The proposed operational phase drainage system at the OCC has been designed to ensure that there will be no discharge of untreated or unattenuated waters. This will ensure that the Project does not alter downstream surface water flows and will not contribute to downstream flooding.

A Water Framework Directive (WFD) Compliance Assessment has been completed for all waterbodies (surface water and groundwater bodies) with the potential to be impacted by the onshore elements of

the Project. With the implementation of the mitigation measures detailed in this EIAR there will be no change in the WFD status of the underlying groundwater body or downstream surface waterbodies as a result of the onshore elements of the Project. The Project has been found to be fully compliant with the WFD and will not prevent any waterbody from achieving its WFD objectives.

An assessment of potential cumulative effects associated with the onshore elements of the Project and other developments on the hydrological and hydrogeological environment has been completed. With the implementation of the mitigation measures detailed in this EIAR, the cumulative assessment found that there will be no significant effects on the hydrological and hydrogeological environments.

No significant effects on the water environmental will occur during the construction, operation or decommissioning of the onshore elements of the Project.

## 24 Archaeology and Cultural Heritage

An assessment of the potential effects of the proposed Onshore Site in Co. Clare on the Cultural Heritage resource was carried out. Cultural Heritage includes archaeology, architectural heritage and any other tangible assets. The assessment was based on desktop research, field surveying and GIS-based mapping. A detailed examination of the available baseline data was undertaken in addition to a comprehensive site inspection. The latter comprised a walk-over survey of the OLL and the OCC, in addition to a combined field and windscreen survey of the OGC route where it extends along public roads.

No recorded monuments are located at the OLL or at the OCC. All cultural heritage assets within 100m of either side of the OGC route were assessed for potential effects to same. No direct effects to the recorded archaeological, architectural or cultural heritage resource as a result of the OGC have been identified. Mitigation measures are proposed where deemed appropriate, and include archaeological monitoring of construction works along the OGC where the latter extends through the Zone of Notification for ringfort CL057-040— and at the level crossing on the dismantled South Clare Railway.

Where potential effects have been identified, such as to potential sub-surface archaeology, appropriate mitigation measures have been proposed in order to minimise any such effects. Proposed mitigation includes a 15m buffer zone around ringfort CL057-040— prior to the commencement of construction works and monitoring of ground works within the Zone of Notification for that monument. Pre-development archaeological testing of all greenfield areas of the Project and archaeological monitoring during the construction stage of same is also proposed.

Potential indirect effects on the setting of any UNESCO World Heritage Sites and those on a Tentative List within 5km, National Monuments within 2km, recorded monuments within 2km and RPS/NIAH structures within 2km were included in order to assess potential effects on setting in the wider landscape. No UNESCO WHS or those on a Tentative List are located within 5km of the Onshore Site and no National Monuments in State Care are located within 2km of same.

An assessment of potential cumulative effects was also undertaken, taking into consideration other extant planning applications and existing and proposed projects within 200m of the OGC route and 3km of the OCC. No potential cumulative effects are identified.

No significant effects to the cultural heritage resource as a result of the Onshore Site have been identified through this assessment process.

# 25 Air Quality

This chapter identifies, describes and assesses the potential significant direct and indirect effects on air quality arising from the construction, operation and decommissioning of the Onshore Site of the Project.

The Onshore Site encompasses the Landfall area, where the OEC will be brought ashore to Moneypoint Power Station. The Onshore Site refers to all onshore elements of the Project, which includes the Landfall Location, Onshore Grid Connection, Onshore Compensation Compound and Onshore Export Cable to Moneypoint 220kV Substation.

Moneypoint Power Station is located within the vicinity of the site. Moneypoint is currently a coal fired power station, with oil used as a secondary fuel. Moneypoint Power Station was granted permission by An Board Pleanála in September 2024 (ABP Pl. Ref: PA03.319080), for the transition and conversion of the existing 900MW electricity generating station from coal fuel to heavy fuel oil (HFO).

Air Quality Sampling at the Onshore Site was deemed to be unnecessary for this EIAR due to both the non-industrial nature of the current site and surrounding landscape and following the EPA's Air Dispersion Modelling from Industrial Installations Guidance Note (AG4), which recommends the use of "fully validated EPA data .... where available in preference to site specific monitoring data" for pollutants which are regulated under the CAFE Directive, in line with the approach used in Moneypoint Power Station conversion application.

The Onshore Site, in supporting the Project, represents an important opportunity to harness Ireland's significant offshore renewable energy resources, with valuable benefits to air quality and in turn to human health. The consumption of fossil fuels for energy results in the release of particulates, sulphur dioxide and nitrogen dioxide to our air. The use of wind energy, by providing an alternative to electricity derived from coal, oil or gas-fired power stations, results in emission savings of carbon dioxide ($CO_2$), oxides of nitrogen ($NO_x$), and sulphur dioxide ($SO_2$), thereby resulting in cleaner air and associated positive health effects.

Whilst there is the potential of such emissions to be generated from the construction, operation and decommissioning phases of the Project, mitigation measures will be implemented at this site to reduce the impact from these emissions,

A review of EPA collated baseline air quality data, namely Sulphur Dioxide ($SO_2$), Particulate Matter ($PM_{10}$), Nitrogen Dioxide ($NO_2$), Carbon Monoxide (CO) and Ozone ($O_3$) was undertaken to determine the representative levels of such emissions for the Onshore Site.

The EPA has designated four Air Quality Zones for Ireland:

- Zone A: Dublin City and environs
- Zone B: Cork City and environs
- Zone C: Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise.
- Zone D: Rural Ireland, i.e., the remainder of the State excluding Zones A, B and C

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the CAFE Directive. The Onshore Site lies within Zone D, which represents rural areas located away from large population centres.

A number of potential impacts on air quality, were identified that are associated with the construction, operation and decommissioning phases of the Project: These include;

Increased exhaust emissions associated with vehicles and plant such as $NO_2$, Benzene and $PM_{10}$ will arise as a result of construction activities.

Increased Dust emissions when particulate matter becomes airborne making it available to be carried downwind from the source. Dust emissions can lead to elevated $PM_{10}$ and $PM_{2.5}$ concentrations and may also cause dust soiling

Mitigation measures are presented to reduce the impacts on air quality during the construction, operational and decommissioning phases of the Project.

Following consideration of the residual effects (post-mitigation) it is noted that the Onshore Site will not result in any significant effects on air quality in the area surrounding the Onshore Site.

Potential cumulative effects on air quality between the Onshore Site as part of the Project and other plans and projects in the vicinity of this EIAR, were also considered in this assessment. During the construction phase, there will be no cumulative negative effects on air quality, during the operational phase there will be a cumulative positive impact on air quality and during the decommissioning phase there will be no negative cumulative effects.

Provided that the Onshore Site is constructed, operated and decommissioned in accordance with the design, best practice and mitigation that is described within this application, significant effects on air quality through effects on exhaust and dust emissions are not anticipated at international, national or county scale.

## 26 Noise and Vibration

Chapter 11 Onshore Airborne Noise and Vibration of the EIAR considers the airborne noise and vibration impacts on sensitive human receptors from the Onshore site construction, operation and decommissioning phases of the Project and describes the likely effects.

The key findings of the assessment are summarised below, with full details presented in Chapter 11 of the EIAR. This includes details of the legislation, policy and guidance that has informed the approach to the assessment.

The onshore elements of the Project considered by this chapter comprises several components. These are selected based on a full review of all proposed onshore activities and selection of those elements that have the potential to generate significant noise and vibration effects, namely:

- OLL where the OEC will be brought ashore and meets the TJB – assessed for short-term construction / decommissioning noise and vibration impacts only;
- OGC from OLL to OCC and on to the existing 220kV substation at Moneypoint – assessed for short-term construction / decommissioning noise and vibration impacts only; and
- Onshore Compensation Compound (OCC) – assessed for short-term construction / decommissioning noise and vibration and potential long term operational and maintenance (O&M) phase noise and vibration impacts.

A study area for the assessment has been defined to review and characterise the existing environment with respect to noise and vibration and to identify potential human receptors (noise sensitive locations, NSLs) against which effects from the Project can be assessed.

NSLs include areas where people spend significant periods of time and where concentration, sleep and amenity are important considerations. Examples of these sensitive locations include residential dwellings, schools and other educational establishments, hospital and nursing homes, hotels and other

short-term accommodation buildings, buildings of religious sensitivity, recreational and noise sensitive amenity areas and offices.

The baseline onshore noise environment has been established through noise monitoring surveys undertaken at six locations representative of the NSLs at the OCC, OGC, OCC and substation at Moneypoint. The existing noise environment in the vicinity of the closest NSLs are dictated by transportation sources, agriculture and foliage noise

A detailed description of the noise and vibration assessment methodologies that have been applied is presented in Chapter 11 of the EIAR.

The assessment identified the requirement for some additional construction and vibration mitigation measures in the event that evening or night-time works are proposed.

The appointed contractor will put in place the most appropriate noise control measures to ensure that the works in each area comply with the limits detailed in Chapter 11 and so that minimisation of noise is achieved by best means practicable. Measures to control noise from construction activities are described in Chapter 11. In summary, the additional mitigation measures include:

Noise control at source, site compound hoarding, managing hours of operation, liaising with the public, strict construction noise limits, and noise monitoring during this phase will minimise the impact of construction noise experienced at NSLs.

Similarly, vibration impacts during the construction phase will be well controlled through the use of low impact equipment and adherence to strict limit values which will be subject to monitoring at the nearest sensitive buildings.

During the detailed design of the onshore OCC plant, the selection and location of mechanical and electrical plant will be undertaken in order to ensure the relevant noise emission limits set out in Chapter 11 for the operational phase are not exceeded. Depending on the final selection of operational plant at the OCC, a 7.5m noise barrier to the north and east of the harmonic filter compound will be installed to achieve the relevant noise emission limits set out in Chapter 11.

In summary, taking into account the additional mitigation measures described above, there are no significant noise and vibration effects predicted on human receptors during the construction, operational and decommissioning phases.

Chapter 11 also considered the potential for significant cumulative effects to occur because of the combined impact of the Project and other planned developments. No significant noise and vibration cumulative effects on human receptors were identified.

No significant noise and vibration effects are predicted on human receptors from the onshore element of the Project alone or cumulatively with other proposed developments.

## 27 Landscape and Visual Impact Assessment

This chapter of the EIAR consists of an assessment of potential impacts from the Project within the context of Landscape and Visual impacts relating to the onshore aspects of the Project during its construction, operation and decommissioning phases. Collectively, the assessment of these impacts is referred to throughout as LVIA.

The SLVIA was undertaken by Richard Barker (BA-Env, PG Dip Forestry, MLA, MILI) who is an appropriately qualified, professionally affiliated and vastly experienced Landscape Specialist, and in accordance with relevant guidelines and best practice for LVIA in Ireland and the UK.

The methodology for LVIA involves the weighing of landscape / visual receptor sensitivity against the magnitude of landscape / visual impacts to determine the significance of effects as well as what the quality (positive, neutral or negative) and duration of those effects will be. Cumulative effects with other plans and projects are also considered. The landscape and visual effects are ultimately determined to be either significant or not significant.

For the Onshore Compensation Compound (OCC), which is the only long-term overt (above ground) feature of the onshore development, a 3km radius study area from the redline boundary surrounding the OCC has been applied. For the Onshore Grid Connection (OGC), a lesser 500m buffer either side of the alignment defines the study area. These variant study areas reflect the potential for each aspect of the Project to generate significant effects. All of the Onshore Site is contained within County Clare and is subject to the provisions of the Clare County Development Plan and associated Landscape Character Assessment.

The landscape setting of the proposed landfall area at Killard, is an area of agricultural farmland located 900m northwest of the White Strand Beach, northwest of the settlement of Doonbeg. The OGC route initially runs south from the landfall TJB, primarily across pastoral farmland and then follows a sequence of local roads generally southwards towards the OCC. The route circumvents Kilrush to the north passing through Kilrush Golf Course and private lands and back onto a local road on the way to the OCC at Ballymacrinan. The OGC exits the OCC and runs alongside the N67 to the south and continues to the grid connection point at Moneypoint Power Station. With regards to the Landscape Character Areas (LCA) from the Clare County Development Plan, the initial 12km of the OGC from the landfall site prior to the hinterlands of Kilrush is contained within LCA 21, '*Loop Head'* LCA. The remainder of the OGC is contained within 'LCA 18 '*Shannon Estuary Farmland.*

The proposed OCC at Ballymacrinan is contained within an agricultural landscape, 600m north of the Shannon Estuary. Kilrush is the closest settlement in relation to the proposed development located 2.8km northwest of the Onshore site and the outskirts of the settlement occupy the northwest periphery of the study area. The N67 national route is located 580m south of the Onshore site at its nearest point and traverses east to west through the study area. In terms of land use, the study area is dominated by a broad tapestry of agricultural farmland and forestry. Moneypoint Power Station is the largest utilitarian element within the study area, located 1km southeast of the OCC and this also hosts wind turbines.

The Wild Atlantic Way (WAW) is located in the south of the OCC Study Area where it primarily follows the coastline, initially along Coast Road, then along part of the N67 before ending as it reaches the Moneypoint Power Station. The Study Area associated with the OCC is contained entirely within 'LCA 18 '*Shannon Estuary Farmland*' from the Clare County Landscape Character Assessment.

There will be construction stage effects from all of the proposed onshore elements, but these will be temporary/short term in duration and for some aspects, including the OGC, Construction Compounds and Laydown Areas there will be no material operational stage effects as they will remain underground with the landcover above reinstated.

The only material consideration in terms of permanent operational stage landscape and visual effects relates to the OCC at Ballymacrinan. Although this will be a substantial scale electrical infrastructure facility, it is proposed in a robust agricultural landscape setting with existing large-scale electrical infrastructure and industrial activity established in the immediate vicinity at Moneypoint Power Station and is located in an area indicated as a Rural Area Under Strong Urban Influence in the Clare County Development Plan 2023-2029.

Ten viewpoints were selected to assess the visual impact of the proposed Substation facility on the proposed development. The highest level of impact is deemed to occur in respect of local receptors on the adjacent road to the east of the OCC (represented by VP7 and VP8). At both of these viewpoints, a clear and close view of the proposed Substation is considered to give rise to a Moderate visual impact in a pre-mitigation scenario. Once the perimeter screen planting has become established and dispersive and recessive colour scheme is applied to the proposed buildings, the significance of impact is

considered to reduce to Moderate-slight. This level of effect is Not Significant, either before or after mitigation

# 28 Material Assets

This chapter of the EIAR assesses the likely significant effects of the Project's Onshore Site on Telecommunications, Electromagnetic Fields and Other Material Assets, which are economic assets of human origin. Waste Management is also considered within the EPA 2022 Guidelines as part of Material Assets and is assessed in this chapter. EPA Waste Management Best Practice Guidelines pertaining to the construction, operation and decommissioning of the Onshore Site is summarised in Chapter 5 of the EIAR, and further information pertaining to waste management is provided in Appendix 5-16: Onshore Construction Environmental Management Plan.

Material Assets pertaining to the Offshore Site, including undersea cables, telecommunications, fishing equipment and other marine infrastructure are addressed in Chapter 13: Commercial Fisheries, Chapter 14: Shipping and Navigation, Chapter 15: Civil and Military Aviation, Chapter 17: Marine Archaeology and Chapter 18: Other Sea Users.

As part of the EIAR scoping and consultation process, MKO contacted the relevant national and regional authorities and bodies to identify any potential impact on material assets. Responses were received from several authorities and bodies, and these are presented in Table 28-1 of Chapter 28: Material Assets, and formal scoping responses are provided in Appendix 2-2.

There are a number of underground electricity cables present along the OGC route, in particular in the vicinity of Moneypoint Power Station. Damage to underground electricity cables during construction operations could potentially result in serious injury or death of site staff. The OGC has been designed in consultation with ESB and Eirgrid to minimise any effects associated with works adjacent to any identified third-party services. Standard mitigation measures are in place for cable crossings including a minimum of 300mm clearance which must be maintained from the edge of the OGC ducts to the edge of third-party ducts, and the implementation of standard construction site management practices for protection of overhead lines. All works adjacent to third-party services and third-party service crossings will be completed in line with Eirgrid specifications. Further information on the construction methodologies that will be employed during the construction phase in order to avoid conflict with Third Party Services is provided in the Onshore Grid Construction Methodology Report in Appendix 5-17.

There are a number of telecommunication assets at or within the vicinity of the Onshore Site, which run both adjacent to and cross the OGC route on national, regional and local roads, as observed from the Topographical Survey. However, no impacts on telecommunications infrastructure are likely to occur due to the nature of the underground cabling installation works. Due to the nature of the Onshore Site and the type of infrastructure proposed, the decision was made to not scope with non-statutory telecommunications providers, as the likelihood of interaction between the OGC and any above ground telecommunications infrastructure such as masts is very low. Further information on the protection of existing infrastructure during the construction, operation and decommissioning of the Onshore Site is provided in the Onshore Grid Construction Methodology Report in Appendix 5-17.

Other telecommunications operators and statutory consultees relevant to aviation and radar (such as Coimisiún na Meán and the Irish Aviation Authority), which may have the potential for interaction with the Offshore Site, have been addressed in Chapter 15: Civil and Military Aviation

There are no gas pipelines assets in or within the vicinity of the Onshore Site as confirmed by Gas Networks Ireland during the scoping exercise and therefore no potential for effect.

There is water and wastewater supply drain and pipe infrastructure within the within the Onshore Site as per the topographical survey data. Damage of underground services during construction activities

could potentially result in disruption to those local services, and a risk to the health and safety of site staff. The Onshore Site has been designed to avoid existing underground services and Uisce Éireann requirements for appropriate separation distances have been maintained. The Onshore Site does not intend to connect to any existing water supply or wastewater infrastructure, and thus will not impact the capacity of water services.

A Waste Management Plan (WMP) has been prepared and forms part of Chapter 5: Project Description, and the Onshore Construction and Environmental Management Plan (CEMP) in Appendix 5-16 of the EIAR. As material is removed during construction, it is to be taken off-site by a licensed haulier and brought to a licenced facility for disposal in-line with the WMP. Records of any materials taken off-site are to be maintained and recorded throughout the construction of the Onshore Site. Receipts from the licenced waste disposal facility are to be included in the project safety file upon completion.

There are currently no known effects of EMF from the proposed infrastructure on material assets, but however mitigation measures have been put in place in order to avoid any conflict with third-party telecommunication operators.

There is no aviation and electromagnetic interference associated with a grid connection, and therefore this was not considered further in the assessment of the Onshore Site. Electromagnetic interference resulting from the Offshore Site has been considered in further detail in Chapter 9: Benthic Ecology, Chapter 10: Fish and Shellfish Ecology, and Chapter 12: Marine Mammals and Other Megafauna, and Appendix 14-1: Navigational Risk Assessment.

Following consideration of the residual effects (post-mitigation) it is noted that the Onshore Site, in facilitating the Project, will not result in any significant effects on any material assets, either alone or cumulatively with other projects.

Provided that the Onshore Site is constructed, operated and decommissioned in accordance with the design, best practice and mitigation measures that are described within this application, significant effects on material assets will not occur

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# Traffic and Transportation

An assessment of the traffic effects on the local highway network was undertaken for the Sceirde Rocks Offshore Wind Farm. The assessment considers the likely impacts that will be incurred by existing local traffic during the construction, operation and maintenance, and decommissioning of the Onshore Site. This includes the impacts of local traffic diversions that will be required during temporary road closures as part of the construction of the OGC, and the impacts that the additional traffic that will be generated on the local road network will have during the 3 year construction period.

## Onshore Grid Connection cable route (OGC)

The OGC is 22.3km in length, with 16.2km travelling along the public road network (approximately 0.7km of this is in the road verge), and 6.1km being off-road. Of the 16.2km of the route that travels along the public road network, 15.3km is on the local road network, 0.2km travels along regional roads, and 0.7km of the route is in the verge of the national road network.

The OGC is considered in short sections for the purpose of the traffic assessment which are determined by the proposed diversions routes considered to be appropriate for each part of the route. During the construction of the sections of the OGC on the public road network, temporary road closures and associated traffic diversions will be required. The exception to this is the section of the route on the N67 approaching the existing Moneypoint 220kV Substation, where two-way traffic flow will be retained.

It is estimated that the construction of the OGC will take approximately 319 days to complete, during which an additional 129 passenger car units (PCUs) generated by construction activity will travel on the local road network each day. An additional 180 days will be required for the installation of the cables, during which an additional 48 PCUs will travel on the local road network each day. The diversions that will be incurred by local traffic during the construction of the OGC will result in an average increase in trip length of 3.70km and an increased journey time of 4 minutes and 26 seconds, for the trips that will be impacted.

In terms of the impacts on traffic flows on the local road network during the construction of the OGC, during which development generated traffic is greatest, the sections of road that are forecast to be busiest are the sections of the R483 and R473 regional roads which are forecast to operate at 41% capacity for the background traffic only scenario, increasing by a maximum of 3% points to 44% during the construction of the OGC.

### Onshore Compensation Compound (OCC)

The proposed Onshore Compensation Compound (OCC) is located on the west side of the L-6150 in the townland of Ballymacrinan, approximately 2.95 km northwest of the existing Moneypoint 220kV Substation. All deliveries will be made to the OCC via the N68 Ennis Road to Kilrush, followed by the N67 south from Kilrush before turning north on the L-6150 to the OCC site.

A proposed access junction to the OCC has been designed in accordance with current design guidelines to provide access to the OCC site during the construction stage, and to facilitate access during the operational and maintenance stage. Three laybys are proposed on the L-6150 between the N67 and the OCC access junction to facilitate construction and local traffic to pass.

It is estimated that the construction of the OCC will take up to 244 working days, during which an additional 39 PCUs will travel on the local road network each day.

All link capacities are forecast to operate well within link capacity for the background and with Onshore Site development traffic scenarios.

### Operational and Maintenance Port facility, Rossaveel County Galway (O&M)

An assessment of the additional traffic that will be generated on the road network in Rosssaveel, Co. Galway, the preferred O&M Port facility, was undertaken. It is forecast that the facility will generate a maximum of 25 daily trips, or 50 PCUs, to and from the facility. Based on the busiest winter days, it is estimated that traffic flows will increase by 3.3% on the R372, and by 0.7% on the R336 due to the additional traffic generated by the O&M Port Facility. It is noted that that these increases in traffic flows do not exceed the +10% threshold set out in the TII Guidelines that would require a detailed traffic assessment.

### Mitigation and Summary

A range of mitigation measures will be implemented during the construction of the Onshore Site, including a Traffic Management Plan to minimise impacts to local traffic and liaison with Clare County Council and TII. With the implementation of the mitigation measures outlined in the EIAR, no significant effects on the traffic and transportation will occur during the construction, operation and maintenance, or decommissioning phases of the Project.

An assessment of potential cumulative effects was also undertaken, taking consideration of developments within 500m of Onshore Site and large infrastructural developments such as wind farms, energy and public transport developments within a 50km buffer from Onshore Site. No significant cumulative effects are identified.

In conclusion, provided that the Onshore Site is constructed, operated and decommissioned in accordance with the design, best practice and mitigation that is described within this application, no significant effects on traffic and transport as a result of the Onshore Site are anticipated.

30 # Climate

This chapter identifies, describes and assesses the potential significant direct and indirect effects on climate arising from the construction, operation and decommissioning of the Project. The aim of the Project when in operation is to reduce the input of carbon intensive energy into the national grid and reduce the amount of greenhouse gas emissions being released to the atmosphere that are associated with electricity generation. The Project will assist in delivering Irelands national climate targets, a 51% reduction in greenhouse gas emissions by 2030 as compared to 2018 levels.

Although variation in climate is thought to be a natural process, the rate at which the climate is changing has been accelerated rapidly by human activities. Increasing human emissions of greenhouse gases cause a positive radiative imbalance at the top of the atmosphere, meaning energy is being trapped within the global climate system. Climate change is impacting air temperature, precipitation patterns, intensity of wind patterns, storms and waves, sea level rise and coastal erosion rates, ocean temperatures/acidification, and ocean circulation capabilities in the Northern European region, with a range of observable effects including increased frequency of heatwaves, storms, extreme precipitation events, as well as the loss of low-lying land areas, sea level rise, and a reduction in ocean stratification.

A detailed carbon assessment of the Project is presented in the EIAR under two main sections. The biogenic carbon assessment addresses potential impacts on biogenically sequestered carbon e.g. disturbance to peat and forestry (onshore) and disturbance to carbon stores in marine habitats and seabed sediments (offshore). The non-biogenic carbon assessment details potential impacts associated with the materials and emissions associated with the construction, operation, and maintenance of the Project.

Onshore biogenic carbon refers to the carbon stored in soil, wetlands, and vegetation such as peatlands, grasslands and forests. In Ireland, peat soils cover approximately 1.46 million ha or 20% of the land surface and store approximately 2.3 billion tonnes of carbon. The excavation of peat will be required along two sections in of the OGC route. In order to minimise the volume of peat excavations arising, sections of the OGC route located in peatland will be Horizontal Directionally Drilled (HDD). Carbon stored in the marine environment (‘blue carbon') refers to carbon captured by the soft tissues, shells and skeletons of plants and animals. In Ireland, maerl beds qualify as a blue carbon ecosystem, this ecosystem was identified in the Offshore Site. Any habitat loss or disturbance on peat and maerl from the Project will be minimal, based on the low magnitude of disturbance/loss expected to occur due to the design of the Project.

The non-biogenic carbon assessment provides details on the carbon lifecycle emissions resulting from the construction (including pre-construction activities), operation, and decommissioning phases of the Project in terms of $CO_2e$ emissions. Non-biogenic emissions result from embodied carbon, direct emissions due to combustion of fuel, estimated $CO_2e$ emissions which the Project will avoid due to the displacement of other more carbon-intensive forms of electricity generation, and the impact of the Project on the global climate, using the Irish Carbon Budget as a proxy.

Total emissions associated with the Project over the entire lifecycle of the development will equate to **2,287,973 tonnes $CO_2eq$**. Over this period, a total of **17,563,431 tonnes or 17.56 million tonnes** of $CO_2e$ emissions will be displaced from the national grid. This represents **767.6%** of the total amount of $CO_2e$ emissions associated with the Project over its lifetime. The Project payback period (a cumulative calculation of emissions and displaced emissions over time to identify the point in the Project operations phase when more $CO_2e$ emissions have been displaced than produced) is approximately **three** years following full commissioning. The Project will displace approximately **462,196 tonnes of $CO_2e$** emissions from traditional carbon-based electricity generation each year of operation.

A climate change risk assessment, inclusive of a climate resilience review and in-combination climate impact (ICCI) assessment, was carried out for the Project to review the ability of the Project to withstand, respond to and recover from the projected changes in climate and consider how any impacts from the Project (from all relevant EIAR sections) could be exacerbated or reduced as a result of climate induced changes. Overall, the Project is resilient to climate change and there is low potential for in-combination and future climate impacts to adversely impact offshore or onshore receptors. The climate change risk assessment, based on the best-available data and the likelihood of these future occurrences has resulted in the overall risk of impacts on climate change being assessed as imperceptible.

Following consideration of the residual effects there will be no significant negative effects on climate through greenhouse gas emissions arising from the Project.

Furthermore, the Project is expected to have a long-term significant positive effect on climate due to the displacement of approximately **17.56 million tonnes** of $CO_2e$ emissions over the proposed 38-year operational lifetime of the Project from traditional carbon-based electricity which will serve to assist the Irish Government's ability to meet any individual future carbon budget.

## 31 Major Accidents and Natural Disasters

Chapter 31 of the EIAR describes the likely significant adverse effects on the environment arising from the vulnerability of the Project as detailed in Chapter 5 to risks of major accidents and/or natural disasters, as well as the potential for the Project itself to cause potential major accidents and/or natural disasters.

Major accidents or natural disasters are hazards which have the potential to affect the Project and consequently have potential impacts on the environment. These include accidents during construction, operation and decommissioning caused by operational failure and/or natural hazards. The assessment of the risk of major accidents and/or disasters considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., population and human health, biodiversity, ornithology, land, soils & geology, water, air quality, climate, material assets, cultural heritage and the landscape.

A desk-study has been completed to establish the baseline environment for which the proposed risk assessment is being carried out. This will influence both the likelihood and the impact of a major accident or natural disaster. Local and regional context has been established prior to undertaking the risk assessment to develop an understanding of the vulnerability and resilience of the area to emergency situations. The Major Emergency Plans for counties Galway and Clare, SEVSEO sites in the surrounding area (including counties Clare, Galway, Limerick and Kerry) and other potential sources of risk are considered.

Further detail on the baseline environment for both the Offshore Site and Onshore Site of the Project is provided in Section 31.3 of Chapter 31 of this EIAR.

An offshore wind farm and associated offshore and onshore grid infrastructure is not a recognised source of pollution. It is not subject to Industrial Emissions Directive regulation and apart from a Dumping at Sea licence which is required, no other Environmental Protection Agency environmental regulatory consents are required. Should a major accident or natural disaster occur the potential sources of pollution both onshore and offshore during the construction, operational and maintenance, and decommissioning phases are limited and of low environmental risk.

As outlined in Section 31.4.1 of Chapter 31, the scenarios with the highest risk score in terms of the occurrence of major accident and/or disaster during construction, operation and maintenance, and decommissioning was identified as 'Severe weather' (Construction and Decommissioning) and 'Fire/Explosion' (Construction only).

The Project will be designed and built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. In accordance with the provision of the European Commission's *'Guidance on the preparation of the Environmental Impact Assessment Report'*, a Risk Management Plan will be prepared and implemented on site to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures.

It is considered that when embedded mitigation is implemented, and all further mitigation detailed in the EIAR is implemented, there will not be significant residual effect(s) associated with the construction, operation and maintenance, and decommissioning phases of the Project, and therefore no significant effects will occur. Additionally, there is no potential for significant cumulative or in combination impacts with other plans or projects.

# 32 Interactions

The preceding Chapters 6 to 31 of this EIAR identify the potential significant environmental effects that may occur in terms of Population and Human Health, Marine Physical and Coastal Processes, Water and Sediment Quality, Benthic Ecology, Fish and Shellfish Ecology, Marine Ornithology, Marine Mammals and Other Megafauna, Commercial Fisheries, Shipping and Navigation, Civil and Military Aviation, SLVIA, Marine Archaeology, Other Sea Users, Offshore Air Quality and Airborne Noise, Terrestrial Biodiversity, Terrestrial Ornithology, Land, Soils, and Geology, Water, Onshore Cultural Heritage, Onshore Air Quality, Onshore Noise and Vibration, LVIA, Material Assets, Traffic and Transportation, Climate (Project) and Major Accidents and Natural Disasters (Project) as a result of the Project as described in Chapter 5 of this EIAR. All the potential significant effects of the Project and the measures proposed to mitigate these effects have been outlined in the preceding chapters of this EIAR.

However, for any development with the potential for significant environmental effects, there is also the potential for interaction between these effects. The result of interactive effects may exacerbate the magnitude of the effects, or ameliorate them, or have a neutral effect. A matrix is presented in Chapter 32 of the EIAR to identify interactions between the various aspects of the environment already discussed in the EIAR. The matrix highlights the occurrence of potential positive or negative impacts during the construction, operation and maintenance, and decommissioning phases of the Project. Effects that potentially interact have been assessed in detail in the individual chapters of the EIAR as part of the impact assessment process, and summarised in Chapter 32 of this EIAR. Where any potential interactive effects have been identified, appropriate mitigation is included in the relevant sections (Chapters 6–31) of the EIAR