1. INTRODUCTION

1.1 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, which intends 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 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 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 to produce electricity.

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 23rd 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).

1.1.1 References to the Project

For the purposes of this EIAR:

Where the 'Project' is referred to, this encompasses both the 'Offshore Site' and the 'Onshore Site'. Where the 'Offshore Site' is referred to, this includes the Offshore Array Area, Offshore Substation, Offshore Export Cable, 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 (WTGs), 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 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' - 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 TJB to the Onshore Compensation Compound, and a second section of cabling connecting the

Onshore Compensation Compound to the National Grid at the existing 220kV Substation at Moneypoint Power Station; and,

- The 'Onshore Compensation Compound' - Compound containing Eirgrid 220kV Gas Insulated Switchgear (GIS) building, ESB 220kV Gas Insulated Switchgear (GIS) building, Customer SCADA and MV power building, Statcom building and other electrical equipment.

In addition, where the Offshore Site, the Onshore Site, or the site are referred to, this relates to the primary study area for the Environmental Impact Assessment Report (EIAR), as delineated in green on Figure 1-1, and hereafter referred to as the EIAR Site Boundary. The EIAR Site Boundary identifies the primary EIAR study area for the Project, however, each individual topic, i.e. chapter, has its own study area for assessment purposes relevant to that topic which will be clearly identified in the relevant chapters; for example, the Population and Human Health study area. The EIAR Site Boundary encompasses an area of approximately 43,714 hectares (ha).

In relation to the development permission application site boundary (Red Line Boundary), this boundary occupies a smaller area within the EIAR Site Boundary. The RLB encompasses an area of approximately 43,698 ha.

This EIAR, along with a Natura Impact Statement ('NIS'), 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 and other applicable planning legislation. 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 development permission 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 Board Pleanála to undertake an EIA.

The Project is described in detail in Chapter 5: Project Description of this EIAR.

1.1.2 Site Location

The Project site is located within the Atlantic marine area adjacent to the Connemara 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.

480000

520000

720000

680000

N

ATLANTIC OCEAN
An tAigéan Atlantach

GALWAY BAY
Cuan na Gaillimhe

Galway City

Ennis

Kilrush

THE BURREN

Aran Islands
Oileáin Árann

0 10 20 km
Kilometres

SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

- Offshore Array Area
- EIAR Site Boundary

Data Source

PROJECT TITLE

Sceirde Rocks

MAP TITLE

Site Location

VER	REMARKS	DATE	Drawn	Approved
V2		2024-12-08	KB	OM

DRAWING NO

Figure 1-1

SCALE	PAPER SIZE	DATUM	PROJECTION
1:400,000	A4	WGS84	UTM 29N

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. The OGC will connect to an Onshore Compensation Compound (OCC) at Ballymacrinnan 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 townlands associated with the Onshore Site are listed in Table 1-1 below.

Table 1-1 Townlands associated with the Onshore Site

Townlands	
Killard	Durha
Doonmore	Ballykett
Carrowmore South	Parknamoney
Tullaher	Kilcarroll
Einagh	Feagarroge
Moanmore North	Dysert
Moanmore Upper	Clooneylissaun
Moanmore South	Ballymacrinan
Moanmore Lower	Carrowdotia North
Carnaun	Carrowdotia South

1.2 Legislative Context

1.2.1 Environmental Impact Assessment

The consolidated European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by the EIA Directive 2014/52/EU (the 'EIA Directive'), has been transposed into Irish legislation primarily by the Planning and Development Act 2000 as amended and the Planning and Development Regulations 2001 as amended.

This EIAR complies with the EIA Directive and its transposing legislation.

The Environmental Impact Assessment (EIA) of the Project will be undertaken by An Bord Pleanála, as the competent authority.

Article 5 of the EIA Directive provides that where an EIA is required, the developer shall prepare and submit an environmental impact assessment report (EIAR). The information to be provided by the developer shall include at least:

a) *a description of the project comprising information on the site, design, size, and other relevant features of the project.*
b) *a description of the likely significant effects of the project on the environment.*
c) *a description of the features of the project and/or measures envisaged in order to avoid, prevent, or reduce and, if possible, offset likely significant adverse effects on the environment.*
d) *a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.*
e) *a non-technical summary of the information referred to in points (a) to (d); and*
f) *any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.*

This EIAR complies with Article 5(1) of the EIA Directive, which sets out what the developer must include as a minimum in the EIA Report, with Annex IV further expanding on these requirements. In

addition, Article 94 of the Planning and Development Regulations 2001 (as amended) sets out the information to be contained in an EIAR, with which this EIAR complies.

MKO was appointed as lead environmental consultant on the Project, and together with partner Xodus, were commissioned to prepare this EIAR in accordance with the requirements of the EIA Directive and the transposing Irish legislation, namely Planning and Development Act 2000 as amended, and the Planning and Development Regulations 2001 as amended.

Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended, identifies classes and scales of development that require Environmental Impact Assessment (EIA). The relevant class of development in this case relates to "installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts", as per Item 3(i) of the Schedule. The Project exceeds 5 Megawatts in scale and proposes more than 5 turbines, and therefore is subject to EIA.

The EIAR provides information on the receiving environment and assesses the likely significant effects of the Project on it and proposes mitigation measures to avoid or reduce these effects.

1.2.2 EIAR Guidance

The Environmental Protection Agency (EPA) published its *'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* in May 2022, which is intended to guide practitioners preparing an EIAR in line with the requirements set out in the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018). This guidance has been followed.

This EIAR has also followed the *'Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment'*, published by the Department of Housing, Planning and Local Government (DHPLG) in August 2018.

The European Commission also published a number of guidance documents in December 2017 in relation to Environmental Impact Assessment of Projects (Directive 2011/92/EU as amended by 2014/52/EU) including *'Guidance on Screening'*, '*Guidance on Scoping*' and '*Guidance on the preparation of the Environmental Impact Assessment Report'*. MKO and Xodus have prepared the EIAR in accordance with these guidelines also.

In addition, this EIAR has been prepared in accordance with the relevant guidance and considerations under the *'Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects'* (Department of Communications, Climate Action and Environment, 2017), as well as under *'Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects Part 1 and Part 2* (Department of Communications, Climate Action and Environment, 2018).

1.2.3 Marine Legislative Context

The Maritime Area Planning Acts 2021 and 2022, as amended (MAP Act) is the legislative foundation for the new marine planning system in Ireland, aiming to balance the country's marine development potential with protecting the marine environment. The MAP Act established a new regime for the entire maritime area underpinned by a statutory Marine Planning Policy Statement and guided by the National Marine Planning Framework (NMPF), which was adopted by the Government in May 2021. A key feature of the MAP Act is the establishment of a new "State consent", namely the Maritime Area Consent (MAC). The MAC allows for the occupation of a specific part of the maritime area subject to development permission and achieving a route to market and is therefore, a pre-requisite for project development. For the purposes of offshore renewable projects, the MAC replaced the foreshore lease as

a first step in the planning process. FST was awarded a MAC by the Minister for the Environment, Climate and Communications (the Minister) in December 2022.

Through the MAP Act, the Irish planning system has been extended into the entire maritime area with An Bord Pleanála assessing development permission applications including environmental assessment of all offshore wind energy projects.

1.2.4 National Marine Policy and Guidelines

1.2.4.1 National Marine Planning Framework

The EU adopted an EU Directive 2014/89/EU in 2014 ('establishing a framework for maritime spatial planning'), that establishes an EU-wide framework for Maritime Spatial Planning ('MSP') and required Member States to put in place Marine Spatial Plans.

The National Marine Planning Framework (NMPF) sets out, over a 20-year horizon, how we want to use, protect and enjoy our seas. The NMPF sits at the top of the hierarchy of plans and sectoral policies for the marine area. It is informed by existing sectoral plans and will, in turn, be used to inform future cycles of those plans in an ongoing feedback loop. It provides a coherent framework in which those sectoral policies and objectives can be realised. It has become a decision-making tool for regulatory authorities and policy makers in a number of ways including, decisions on individual consent applications which will have to have regard to the provisions of the plan in the same way that terrestrial plans form part of the decision-making toolkit in the on-land planning process. The NMPF is a parallel document to the National Planning Framework issued by the Government under Project Ireland 2040.

The final National Maritime Planning Framework was published 30th June 2021. This document will be revised every 6 years with an update to be expected in June 2027.

There are a number of policies set out in the NMPF that are relevant to the Project, and these are detailed in Chapter 2, Section 2.5.1.

1.2.4.2 National Marine Planning Policy Statement

The Government published Ireland's first Marine Planning Policy Statement (MPPS) alongside the Draft NMPF in November 2019.

The MPPS draws together and describes the existing components of Ireland's marine planning system, outlines a vision for the future development of the marine planning system, sets out the overarching policies and principles the Government expects marine planning bodies and other public bodies that engage with the marine planning system to observe and sets out high-level priorities for the enhancement of the marine planning system in Ireland.

The MPPS has underpinned the development of marine planning policy and legislation, such as the Maritime Area Planning Act 2021 and the NMPF. The MPPS has 10 strategic principles that continue to guide marine planning in Ireland. These strategic principles, *inter alia*, relate to forward planning, development management, the enforcement of EU and national law, ecosystem protection and restoration, heritage preservation, climate change and sea safety. Further information on the MPPS is detailed in Chapter 2, Section 2.5.1.

1.2.4.3 Offshore Renewable Energy Development Plan

In February 2014, the Department of Communications, Energy and Natural Resources issued the Offshore Renewable Energy Development Plan (OREDP) which identifies Ireland's coast as one of the most energy productive in Europe, with a long-term potential of 70GW of ocean energy opportunity (wind, wave and tidal) within 100 km of the Irish coastline and sets out a vision for the sector. The OREDP sets out key policy objectives and actions to enable Ireland to utilise its significant offshore energy resources. In this way, the OREDP provides a framework for the sustainable development of Ireland's offshore renewable energy resources. It is intended to also develop an offshore electricity grid, in tandem with new interconnection. This will allow Ireland to balance its significant renewables potential with security of electricity supply and develop long-term ambitions to export its offshore renewable resources.

This document describes the government's policies, strategy and objectives for the development of offshore renewable energy in Ireland. The plan highlights the importance of 'Cost-effective harnessing of the potential of the clean, sustainable, indigenous, renewable energy resources that Ireland is fortunate to have in abundance and is crucial to reducing our dependence on expensive fossil fuel imports, improving our national competitiveness over time, reducing harmful emissions and delivering growth and jobs in the green economy'. These policies will be in line with EU renewable energy targets and policies to transition Ireland toward a decarbonised society. The OREDP is relevant for the assessment of offshore wind projects against 'marine spatial planning objectives' and 'proper planning and sustainable development'.

A Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) was undertaken to determine the appropriate level of marine renewable development that could potentially take place without likely significant adverse effect on the environment. The study area for the purpose of carrying out the SEA was split into six assessment areas. The Project is located in Assessment Area 5 – West Coast, in which wind and wave energy are assessed. The OREDP provides guidance to planning authorities when considering the appropriate levels of development to permit from an environmental perspective, it does not consider commercial or technical feasibility. The OREDP states that *"In the event offshore wind is successful in finding a route to market, the findings and recommendations of the SEA and AA, which underpin this OREDP, will provide valuable environmental information to assist in the development planning decision making process".*

The overall conclusion of the SEA and AA found that it would be possible to achieve the high scenario of 4,500 MW from offshore wind without likely significant adverse effect on the environment. The total development potential of fixed bottom offshore wind turbines in Assessment Area 5 without causing likely significant adverse effects on the environment is found to be 500MW. This development potential figure is based on the cumulative assessment findings of the SEA and AA. These figures are presented based on the assumption that the mitigation measures will be implemented in full, to ensure significant adverse effects do not occur on the marine environment. Two forms of mitigation are identified, plan level mitigation and project level mitigation. The OREDP provides suggested project level mitigation measures, which have been considered in the identification of the mitigation measures proposed for the Project, detailed in Chapter 33 of this EIAR.

The Project is in full compliance with the provisions of the OREDP, Assessment Area 5 is identified as having the capacity to accommodate 500MW of fixed bottom offshore wind energy without likely significant adverse effect on the environment. The project level mitigation measures set out in the OREDP have been strongly considered when determining the necessary mitigation measures for the Project.

1.2.4.4 Offshore Renewable Energy Development Guidelines

At time of writing, it is recognised within the industry that specific guidelines relating to offshore wind are still required. The Government has yet to issue Planning Guidelines for Offshore Renewable Energy development, and it is understood that these are in preparation at the time of writing.

1.2.5 Wind Energy Development Guidelines

As mentioned above, there currently no industry specific guidelines relating to offshore wind. For onshore wind, the relevant guidelines are the *'Wind Energy Development Guidelines for Planning Authorities'* (Department of the Environment, Heritage, and Local Government (DOEHLG), 2006). These guidelines were the subject of a targeted review, and proposed changes were outlined in the document *'Draft Revised Wind Energy Development Guidelines'* (December 2019). At time of writing, the Draft Guidelines have not yet been adopted, and the relevant guidelines remain those issued in 2006. It is stated in both the 2006 Guidelines and the 2019 Draft Revised Guidelines that "*these guidelines relate solely to land use and environmental issues related to on-shore wind energy and do not deal with issues concerning purchasing agreements, matters relating to grid capacity or off-shore wind energy*". Despite this, the 2006 Guidelines remain the only enacted guidelines relevant to wind energy development in Ireland and have, where deemed appropriate, been considered during the preparation of this EIAR.

1.3 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.

1.4 Brief Description of the Project

The Project will comprise the construction of 30 no. WTGs with a maximum blade tip height of 325 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 will come ashore in the townland of Killard, Co. Clare and run underground predominantly in the road network. A proposed 220kV Onshore Compensation Compound will be built as part of the Project and will connect to the national grid via the 220kV Moneypoint Substation, Co. Clare.

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

i. 30 no. offshore Wind Turbine Generators (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 offshore export cable 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 Transition Joint Bay (TJB) at the landfall point in the townland of Killard, Co. Clare connecting the offshore export cable to the onshore grid connection cable. The TJB consists of an underground concrete chamber (20m x 5m wide, with a depth of 2.5m), where the proposed offshore export cable will be connected to the onshore grid connection 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 roads, 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 new 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 export 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 development permission and 38-year operational life from the date of commissioning of the Project. Current and future WTG technology will ensure that the wind turbine model, chosen for the Project, will have an operational lifespan greater than the 38-year operational life that is being sought as part of the development permissions application.

The Project has a maximum export capacity (MEC) of 450MW.

The design and layout of the Offshore Site and the Onshore Site has been led by consideration of constraints and facilitators, thereby avoiding the 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 977.51km^2. Excluding the OECC, the MAC Array Area boundary covers an area of approximately 37.22km^2. The final MAC boundary will be confirmed post-planning following refinement of the OECC.

1.5 History of the Project

1.5.1 Original Foreshore Lease/Licence

Work on the Project commenced over 20 years ago, and since then the Project has evolved through several stages, with advances in technology significantly increasing the potential export capacity of the Project.

In October 2001, a foreshore licence application (Reference Deed Number 016/02) was submitted to the then Minister for the Marine and Natural Resources. The licence was granted "for the purpose of testing the suitability of the foreshore for the construction and operation of a wind powered electricity generating station". An extension on the period of the foreshore licence was granted in May 2007, which extended the validity of the licence to May 2008.

In May 2008, a foreshore lease application (Reference FS006461) was submitted to the then Foreshore Unit in the Department of Housing, Local Government and Heritage to occupy an area at Sceirde (Skerd) Rocks, County Galway. The lease application sought to provide for up to 20 turbines with a rotor diameter of up to 120m, on a monopile foundation. An Environmental Impact Statement (EIS) was prepared which accompanied the lease application.

1.5.2 Relevant Project Status Confirmation

In 2019, the Marine Planning and Development Management Bill (MPDM) was published. As the Project had already initiated the application for a Foreshore Lease under the Foreshore Act 1933, as amended (through the 2008 application), in 2020 it was designated as one of seven 'Relevant' or 'Phase One' offshore wind development projects under the Transitional Protocol. The Project was then eligible to progress with a MAC Application and a Grid Connection Assessment (GCA).

1.5.3 Maritime Area Consent

The Project was granted a MAC by the Minister in December 2022, along with the five other Phase One projects. The MAC covers the original Foreshore Lease application area. The MAC was granted to the Project following a comprehensive assessment by the Department of the Environment, Climate and Communications of the Applicant's financial and technical competency. According to the Minister

at the time, the awarding of MACs represented "*a significant milestone on the pathway to decarbonising our energy supply and securing energy independence. These first MACs have been carefully drafted to promote the speedy and efficient deployment of offshore renewable energy, while ultimately protecting the State's rich and unique maritime resource, in line with the principles of the National Marine Planning Framework.*" The awarding of a MAC allows the Project to formally apply to An Bord Pleanála for permission for development. The Project was also awarded a Grid Connection Assessment (GCA) by Eirgrid in December 2022. This confirmed a potential connection to the national grid with a Maximum Export Capacity (MEC) of 450 MW. A grid connection offer for this MEC was subject to success in ORESS 1 and satisfaction of other conditions. The grid connection offer will be valid for the later of either 6 months after issuance of the Full Connection Offer (FCO), or 3 months following a successful development permission decision. The Project, including the Offshore Site and Onshore Site, is submitting a development permission application under Section 291 of the 2000 Act (as amended) and provides for applications for certain developments in the maritime area to be made directly to An Bord Pleanála.

1.5.4 Foreshore Licences

Two further Foreshore Licence applications for offshore site investigations of the OAA (Ref. FS007161)[1], and another for offshore site investigations along the OECC (Ref. FS007543)[2] were applied for in February 2022 and April 2022, respectively, and were both granted to the Applicant in September 2023. The Foreshore Licences allowed for further offshore site investigation works, including geotechnical, geophysical, metocean, and benthic surveys.

1.5.5 ORESS 1 Auction

The awarding of a MAC along with the GCA also meant that the Project could compete in Ireland's first Offshore Renewable Energy Electricity Support Scheme (ORESS 1). The ORESS 1 auction was run by EirGrid in May 2023. The Project was announced as one of four successful projects to be awarded long-term contracts based on the strike price submitted at auction (weighted average price of €86.05/MWh). After being selected in the first offshore wind auction, the Project announced plans to provide an estimated €70 million of funding over 20 years to local communities through a new Community Benefit Fund. The Project will be one of the largest infrastructure projects to be developed in the Connemara region, in what is one of the most economically deprived areas of the country. 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.

1.5.6 MAC Amendments

In May 2024, amendment A.1, was granted to the original MAC which provides for an extension of the date by which the application for development permission should be submitted. In January 2024, FST applied to MARA for a Material Amendment of the MAC under Section 86(1) of Maritime Area Planning Act 2021. In June 2024, Amendment B.1, was granted to the original MAC which sought to increase the OAA for the Project. This resulted in a ca. 26.7% increase in the OAA boundary, and this updated boundary is the subject of the development permission application to An Bord Pleanála.

[1] https://www.gov.ie/en/foreshore-notice/7a077-fuinneamh-sceirde-teoranta-site-investigations-for-the-proposed-sceirde-rocks-offshore-wind-farm
[2] https://www.gov.ie/en/foreshore-notice/1ae0f-fuinneamh-sceirde-teoranta-site-investigations-for-the-proposed-sceirde-rocks-offshore-wind-farm-export-cable-corridor/

1.6 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. The below sections detail the need for the Project as a means to reach energy targets and reduce Ireland's reliance on fossil fuels.

1.6.1 Overview

In July 2021, the Climate Action, and Low Carbon Development (Amendment) Act 2021 was signed into law, committing Ireland to reach a legally binding target of net-zero emissions no later than 2050, and a cut of 51% by 2030 (compared to 2018 levels). On this pathway to decarbonisation, the Government published the Climate Action Plan 2023 announcing a renewable electricity target of 80% by 2030, without compromising security of energy supply. Another important measure within the plan is a target of at least 5GW of offshore wind energy, plus a further 2GW from green hydrogen associated with offshore wind by 2030. The Project is expected to be operational by 2030 and would therefore contribute to both of these 2030 targets.

In May 2024, the Government approved the most recent Climate Action Plan 2024 (CAP 24), which builds on CAP 23 by refining and updating the status of the actions required to deliver the decarbonisation required under the carbon budgets and sectoral emissions ceilings. The target of achieving 80% of electricity demand from renewable sources by 2030 is in line with targets previously announced in the Climate Action Plan 2021 and 2023. CAP 24 states that in order to meet the required level of emissions reduction by 2030 and the 80% renewable electricity generation target by 2030, the installed generation capacity will need to reach 9GW for onshore wind and at least 5GW for offshore wind. CAP 24 was published in the same year that saw global temperatures exceeding 1.5°C above pre-industrial times for 12 straight months for the first time since records began.

A report issued by the SEAI[3] in 2023 notes that *'In 2023, Ireland had 4.74 GW of installed wind capacity, up 4.5% on the previous year. SEAI's provisional estimate for installed wind capacity in 2024 is 4.85 GW, based on Eirgrid data to the end of August, and ESB-Networks data to the end of September'* Ireland fell just short of meeting the 2020 renewable energy target of 40% with a renewable share in electricity of 39.1%. In 2023, there was an increase in the renewable share in electricity generation rising from 38.6% to 40.7% from 2022 to 2023, with wind accounting for 33.7% of electricity supply (up from 33.1%), according to EPA data[4]. With the Government setting an ambitious target of having an 80% share of electricity generation supplied by renewable sources by 2030 to create a more sustainable and resilient energy system for the future, as well as a target of at least 5GW installed offshore wind by 2030, it is now more critical than ever that we continue to progress renewable energy development in Ireland if we are to have any chance of meeting our 2030 targets.

Further detail on the EU 2030 targets is noted in Section 1.6.6 and in Chapter 2 of this EIAR. It is noteworthy that numerous sources have made it clear that based on our current trajectory, Ireland will fall short on our legally binding renewable energy targets. For example, an opinion published by the European Commission in February 2024[5] indicated that Ireland is projected to fall short of the target of 43% of energy coming from renewable sources. While that figure in 2021 was 12.5%, Ireland's target of 31.4% is "*significantly below the share of 43% resulting from the formula in Annex II of Regulation (EU)*

[3] Sustainable Energy Authority of Ireland (2023) Energy in Ireland – 2024 Report
[4] https://www.epa.ie/our-services/monitoring–assessment/climate-change/ghg/energy-/?
[5] https://commission.europa.eu/publications/commission-recommendation-assessment-swd-and-factsheet-draft-updated-national-energy-and-climate-20_en

2018/1999 on the Governance Regulation of the Energy Union and Climate Action ('Governance Regulation')".

An EPA report[6] published in July 2024 stated a provisional total of national greenhouse gas emissions in 2023 to be 55.01 million tonnes (Mt) carbon dioxide equivalent (CO_2eq), which is 6.8% lower (or 4.00Mt CO2eq) than emissions in 2022 (59.00 $MtCO_2eq$) and follows a 1.9% increase on 2021 levels reported in 2022. Ireland's emissions in 2023 were the lowest in three decades with reductions in almost all sectors and were below the 1990 baseline for the first time in three decades. The EPA report noted that *'the increase in renewables combined with the increase in imported electricity from interconnectors caused emissions intensity of power generation to decrease by 23.3%, from 332g CO_2/kWh in 2022 to a historic low of 255g CO_2/kWh in 2023'*. In 2023, the energy industries, transport and agriculture sectors accounted for 73.5% of total GHG emissions. Agriculture is the single largest contributor to the overall emissions, at 37.8%. Transport, energy industries and the residential sector are the next largest contributors, at 21.4%, 14.3% and 9.7%, respectively. The report also states that there was a substantial reduction in coal, oil and natural gas used in electricity generation (-44.2%, -78.2% and -7.2% respectively), and renewables increased from 38.6% in 2022 to 40.7% in 2023. The report highlights that whilst emissions are beginning to reduce, transformative measures will be needed to meet National Climate ambitions.

Despite the progress in 2023 noted above, Ireland continues to face highly complex climate challenges, as detailed in a more recent EPA publication from July 2024 titled '*Ireland's State of the Environment Report 2024*'[7]. This report states that *"Ireland has set a national objective to transition by 2050 to a climate-resilient, biodiversity-rich, environmentally sustainable and climate-neutral economy. Achieving this multifaceted objective will be the most complex and interconnected societal challenge for the next 25 years, and each step towards its achievement will present opportunities and challenges. Efficiencies will not get us there. Incrementalism will not get us there. Collectively we must shift our society to a sustainable trajectory.*" The report further notes that the overall current assessment for climate in Ireland is 'poor' and *"largely not on track to meet policy objectives and targets"* and urges the full implementation of actions set out in the Climate Action Plan, in addition to various other actions, for Ireland to have any chance of meeting its 2030 and 2050 climate targets. According to an SEAI report[8] published in November 2024, there are significant projected gaps to all legally binding targets in Ireland, including national carbon budgets and sectoral emissions ceilings, and EU obligations on renewable energy, energy efficiency and greenhouse gas emissions. The report highlights the risks faced over the delayed achievement of the majority of Climate Action Plan targets, including renewable electricity, and that "*actions to address these risks are critically important*".

The Project will help to bridge the gap between the reduction in greenhouse gas emissions in 2023 and the further reductions that are urgently needed to meet Ireland's legally binding commitment to achieving net-zero emissions no later than 2050.

As such, the Project is critical to helping Ireland address these challenges. The need for the Project is driven by the following factors:

I. *A legal commitment from Ireland to limit greenhouse gas emissions under the Kyoto protocol to reduce global warming.*
II. *A requirement to increase Ireland's national energy security as set out in Ireland's Transition to a Low Carbon Energy Future 2015-2030.*

[6] *Ireland's Provisional Greenhouse Gas Emissions (1990-2023)* <https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-Provisional-GHG-Report-Jul24-v6.pdf>
[7] https://www.epa.ie/publications/monitoring--assessment/assessment/state-of-the-environment/EPA-SOE-Report-2024-BOOK-LOWRES-FINALfor-WEB.pdf
[8] https://www.seai.ie/sites/default/files/publications/National-Energy-Projections-Report-2024.pdf

III. *A requirement to diversify Ireland's energy sources, with a view to achievement of national renewable energy targets and an avoidance of significant fines from the EU (the EU Renewables Directive).*
IV. *Climate Action Plan 2024 which aims to ensure that Ireland achieves its legally binding target (the Climate Action and Low Carbon Development (Amendment) Act 2021) of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030.*
V. *Increasing energy price stability in Ireland through reducing an over reliance on imported fossil fuels.*
VI. *Provision of cost-effective power production for Ireland which would deliver local benefits; and*
VII. *To facilitate the Government in meeting its ambitious 80% renewable energy target by 2030.*
VIII. *To facilitate the Government in meeting its ambitious target of at least 5GW offshore wind energy by 2030.*

These factors are addressed in further detail below. Section 2.1 in Chapter 2 of this EIAR on Background and Policy, presents a full description of the international and national renewable energy policy context for the Project. Section 2.2 addresses climate change, including Ireland's current status with regard to meeting greenhouse gas emission reduction targets.

1.6.1.1.1 Climate Change and Greenhouse Gas Emissions

At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal. The agreement sets out a global action plan to avoid dangerous climate change by limiting global warming to well below 2°C above pre-industrial levels. Under the agreement, Governments also agreed on the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries and to undertake rapid reductions thereafter in accordance with the best available science. At the most recent Dubai climate conference (COP28) in December 2023 it was agreed to transition away from fossil fuels, triple renewable power and double energy efficiency by 2030.

The International Panel on Climate Change (IPCC) put forward its clear assessment in their Fifth Assessment Report[9], that the window for action on climate change is rapidly closing and that renewable energy sources such as wind will have to grow from 30% of global electricity at present to 80% by 2050 if we are to limit global warming to below 2 degrees and in accordance with the COP 21 agreement to limit global warming to well below 2°C above pre-industrial levels. Former Minister Kelly remarked in 2015 that "*As a nation we must do everything in our power to curb our emissions".*

In February 2022, the International Panel on Climate Change (IPCC) released the report 'Working Group II-Climate Change 2022: Impacts, Adaptation and Vulnerability' regarding the impacts of climate change on nature and human activity. The report states that global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO_2 and other greenhouse gas emissions occur in the coming decades. The report identifies four key risks for Europe with most becoming more severe at 2°C global warming levels (GWL) compared with 1.5°C GWL. From 3°C GWL, severe risks remain for many sectors in Europe. The four key risks identified are:

- Key Risk 1: Mortality and morbidity of people and changes in ecosystems due to heat.
- Key Risk 2: Heat and drought stress on crops.
- Key Risk 3: Water scarcity.
- Key Risk 4: Flooding and sea level rise

[9] IPCC Fifth Assessment Synthesis Report, Intergovernmental Panel on Climate Change AR5 Report

In April 2022, the IPCC released the report 'Working Group-III – Climate Change 2022: Mitigation of Climate Change, which assesses literature on the scientific, technological, environmental, economic, and social aspects of mitigation of climate change. The report reflects new findings in the relevant literature and builds on previous IPCC reports, including the WGIII contribution to the IPCC's Fifth Assessment Report (AR5), the WGI and WGII contributions to AR6 and the three Special Reports[10] in the Sixth Assessment cycle. This report outlines developments in emission reduction and mitigation efforts, assessing the impact of national climate pledges in relation to long-term emissions goals in a global context and states that '*Unless there are immediate and deep emissions reductions across all sectors, limiting global warming to 1.5°C will be beyond reach.*' In June 2023, the EPA[11] reported, for the 2021 year, that the energy sector contributed to 17% of Ireland's total emissions. Under a With Existing Measures (WEM) scenario, emissions from the energy industries sector are projected to decrease by 50% from 10.3 to 5.2 $MtCO_2eq$; under a With Additional Measures (WAM) scenario, emissions from the energy sector are projected to decrease by 60% from 10.3 to 4.2 $MtCO_2eq$ over the period 2021-2030.

The EPA '*Ireland's Provisional Greenhouse Gas Emissions 1990-2023*' report stated that in 2023, overall electricity generation in Ireland increased by 2.1% and renewable electricity generation increased from 38.6% in 2022 to 40.7% in 2023with wind accounting for 33.7% of electricity supply (up from 33.1%). The increase in renewables combined with the increase in imported electricity from interconnectors caused emissions intensity of power generation to decrease by 23.3%, from 332g CO_2/kWh in 2022 to a historic low of 255g CO_2/kWh in 2023.

It is estimated that the Project will have a potential output of 450MW. On this basis, the Project will result in the net displacement of approximately 462,196 tonnes of carbon dioxide (CO_2) per annum, culminating to approximately 17.56 million tonnes of CO_2eq emissions over the proposed 38-year operational lifetime of the Project from traditional carbon-based electricity generation. The carbon offsets resulting from the Project are described in detail in Section 30.4 of Chapter 30: Climate of this EIAR.

1.6.2 Energy Security

At a national level, Ireland currently has one of the highest external dependencies on imported sources of fuel for energy use. A report by the Sustainable Energy Authority of Ireland (SEAI), published in September 2020 (Energy Security in Ireland, 2020 Report), presents national energy statistics on energy production and consumption in Ireland during 2018. Renewable energy sources (which include wind) accounted for 32.5% of Ireland's gross electricity consumption in 2018, which was well over halfway to Ireland's 2020 target of 40%.

EirGrid in their *'All Island Generation Capacity Statement 2022 - 2031'* (October 2022), states that new wind farms commissioned in Ireland in 2021 brought total wind installed capacity to over 4,300MW, contributing to the overall RES-E percentage of 36.4% with wind energy accounting for 32.5%.Prior to 2015, Irelands import dependency of energy was over 90% but dropped to 71% in 2016 with the Corrib gas field starting production. Since 2018, Ireland's import dependency has been increasing as the output from the Corrib gas field reduces faster than we are adding new renewable sources. In 2021, our import dependency for energy was 80% compared to the EU average of 57.5%[12].

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[10] *The three Special Reports are: Global Warming of 1.5°C: an IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (2018); Climate Change and Land: an IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems (2019); IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (2019)*

[11] *Ireland's Greenhouse Gas Emission Projections 2022-2040* <https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-GHG-Projections-2022-2040_Finalv2.pdf>

[12] *Energy in Ireland – 2022 Report, SEAI, December 2022*

Total indigenous energy production in Ireland reached the highest level ever in 2018 of 5,048 kilotonnes of oil equivalent (ktoe) but has fallen since due to declining natural gas and peat production. The overall renewable energy share for gross final energy consumption for 2021 was 12.5%, however, due to a low wind year for renewable generation in 2021, we used more coal and oil for electricity generation, which increased the carbon intensity of our electricity by 12.5%. We also supplemented our indigenous electricity generation with 1600 GWh of net imports through the interconnection with Northern Ireland ('*Energy in Ireland – 2022 Report*, SEAI, December 2022).

Ireland continues to be hugely energy import-dependent leaving it exposed to large energy price fluctuations and the possibility of fuel shortages as a result of the ongoing and/or future energy crises. The international fossil fuel market is growing increasingly expensive and is increasingly affected by international politics which can add to price fluctuations. This volatility will be increased as carbon prices increase in the future. This has implications for every Irish citizen.

The SEAI has stated that our heavy dependence on imported fossil fuels, *"is a lost opportunity in terms of keeping this money here in Ireland and further developing our abundant renewable resources"*[13].

More recently, a report by the Department of the Environment, Climate and Communications (DECC), published in November 2023 (Energy Security in Ireland to 2030) noted that in the year 2022, 82% of Ireland's energy needs came from imports; with 48% coming from imported oil and nearly 31% from natural gas. It is noted that 74% of Ireland's natural gas came from imports through two interconnectors from the UK.

The cost of carbon credits is included in all electricity traded, and the price of electricity generated by coal is particularly vulnerable due to its high carbon emissions per unit of electricity generated. Coal and peat generate almost 5% of Ireland's electricity, while gas generates 51%, but the Climate Action Plan requires Ireland to achieve a 51% reduction in GHG emissions by 2030 (relative to 2018 levels), and net-zero emissions by no later than 2050. Any steps to reduce this dependence on imported fossil fuels will add to financial autonomy and stability in Ireland. The use of Ireland's indigenous energy resources, such as wind, will contribute to a reduction in energy imports.

The Energy White Paper 2015[14] notes "There will be a substantial increase in the cost of carbon in the short and medium term, through the EU Emissions Trading Scheme". Any steps to reduce dependence on imported fossil fuels will add to financial autonomy and stability in Ireland. As the White Paper notes:

> *"In the longer term, fossil fuels will be largely replaced by renewable sources".*

1.6.3 REPowerEU

In a Communication from the European Parliament on Joint European Action for more affordable, secure, and sustainable energy[15], the European Commission proposed an outline of a plan to make Europe independent from Russian fossil fuels well before 2030 in light of Russia's invasion of Ukraine. Commission President Ursula von der Leyen stated:

> "*We must become independent from Russian oil, coal, and gas. We simply cannot rely on a supplier who explicitly threatens us. We need to act now to mitigate the impact of rising energy prices, diversify our gas supply for next winter and accelerate the clean energy*

[13] *Dr Eimear Cotter, Head of Low Carbon Technologies, SEAI - "Energy Security in Ireland 2015"*
[14] *Ireland's Transition to a Low Carbon Energy Future 2015-2030 (Department of Communications, Energy & Natural Resources, 2015)*
[15] *European Commission (March 2022) REPowerEU: Joint European Action for more affordable, secure, and sustainable energy. Strasbourg.* https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511

transition. The quicker we switch to renewables and hydrogen, combined with more energy efficiency, the quicker we will be truly independent and master our energy system.".

In May 2022, the EU published the REPowerEU Plan[16] in light of Russia's invasion of Ukraine in February 2022. The core purpose of the plan, in addition to accelerating the EU's transition from the use of fossil fuel to renewable energy sources, is to end the dependence on Russian fossil fuels.

In April 2022, the Government published the National Energy Security Framework (NESF) providing a single overarching and initial response to address Ireland's energy security needs in the context of the war in Ukraine. This framework mirrors that of the EU, in which accelerating Ireland's transition from the use of fossil fuel to renewable energy sources is a key objective.

1.6.4 Competitiveness of Wind Energy

While Ireland has a range of renewable resources, the Government's White Paper *Ireland's Transition to a Low Carbon Energy Future* states that *"Ireland's sea area is around ten times the size of its landmass and the country has one of the best offshore renewable energy resources in the world. This offers significant potential for offshore wind, wave and tidal energy. Offshore wind has been effectively used in other EU Member States and can yield a higher relative energy output than onshore wind."*

In fact, the cost of support is more than offset by the fact that adding large quantities of wind to the wholesale market drives down auction prices in any half hour trading period when the wind is blowing, i.e. for 80% of the hours of the year. Offshore wind has a capacity factor of approximately 50%[17], which is its average output throughout the year relative to its maximum output. However, wind is generating power at some level for 80% of the hours of the year.

Following Ireland's first offshore wind auction (ORESS 1), the Minister for the Environment, Climate and Communications, Eamon Ryan, welcomed the results of the auction as "hugely positive"[18] for Irish energy consumers, and the country as a whole. The auction secured a very competitive price – at an average of €86.05/MWh – which has been described as *"one of the lowest prices paid by an emerging offshore wind market in the world. For comparison, the average wholesale electricity price in Ireland over the previous 12 months was in excess of €200/MWh. It is expected that this price will save Irish electricity consumers hundreds of millions of euros per year".* This demonstrates the competitiveness of wind energy, and in particular offshore wind energy.

1.6.5 European Renewable Energy Policy and Targets

1.6.5.1 Renewable Energy Directive

The burning of fossil fuels for energy creates greenhouse gases, which contribute significantly to climate change. These and other emissions also create acid rain and air pollution. Sources of renewable energy that are utilised locally with minimal impact on the environment are necessary to meet the challenges of the future. The EU adopted the Renewable Energy Directive (2018/2001 EU) on the Promotion of the Use of Energy from Renewable Sources in December 2018 which sets EU 2030 Renewable Energy Targets. The Directive sets a legally binding mandatory national target for the overall share of energy from renewable sources for each Member State. This package is designed to achieve the EU's overall 20:20:20 environmental target, which consists of a 20% reduction in greenhouse gases, a 20% share of renewable energy in the EU's total energy consumption and a 20% increase in energy efficiency by 2020. To ensure that the mandatory national targets are achieved, Member States must follow an

[16] https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131
[17] *Ireland's Offshore Wind Potential – From Net Zero to Net Export (Wind Energy Ireland*
[18] https://www.gov.ie/en/press-release/f2ac5-minister-ryan-welcomes-hugely-positive-provisional-results-of-first-offshore-wind-auction/

indicative trajectory towards the achievement of their target as outlined in Ireland's National Renewable Energy Action Plan (NREAP).

The first Renewable Energy Directive (RED)[19] is legislation that influenced the growth of renewable energy in the EU and Ireland for the decade ending in 2020. From 2021, RED was replaced by the second Renewable Energy Directive (RED II),[20] which continues to promote the growth of renewable energy out to 2030. Ireland's mandatory national target for 2020 was to supply 16% of its overall energy needs from renewable sources. This target covered energy in the form of electricity (RES-E), heat (RES-H) and transport fuels (RES-T). The overall renewable energy share from renewables in 2020 was 13.5% of gross final consumption (GFC), meaning Ireland fell short of its target. REDII introduced a binding EU-wide target for overall RES of 32% by 2030 and requires Member States to set their national contributions to the EU-wide target. As per the National Energy and Climate Plan (NECP) 2021-2030, Ireland's overall RES target is 34.1% by 2030.

Under RED, the RES-E target was for 40% of gross electricity consumption to come from renewable sources by 2020. The actual RES-E achieved in 2020 by Ireland was 39.1%, falling just short of the national target. Under REDII, Ireland's National Energy and Climate Plan 2021-2030 included a planned RES-E of 70% by 2030, which has been replaced by the 80% by 2030 RES-E target as detailed in the more recent CAP23, which will ensure that renewable electricity continues to form the backbone of Irish renewable energy use for the coming decade and beyond.

In November 2023, a revision of the Renewable Energy Directive (RED III), came into force. RED III increases the EU wide renewable energy target from 32% set under the previous revision of the directive to at least 42.5%, with an ambition to reach 45% by 2030.

Article 3(4a) of RED III requires Member States to establish a framework to enable the deployment of renewable energy to a level consistent with its national contribution to the Union's target and at a pace that is consistent with the indicative trajectories in Climate Action Regulation 2018/1999. In addition, the Directive requires Member States which fall under the indicative goals for offshore renewable energy generation to be deployed within each sea basin, identified in accordance with Article 14 of Regulation (EU) 2022/869, to publish information on the volumes of offshore energy which they plan to achieve through tenders. Such information must consider the technical and economic feasibility of the grid structure and any ongoing activities.

Member States are also required to allocate space for renewable energy projects in their maritime spatial plans. A significant addition is the requirement for Member States to reduce the complexity and to increase the efficiency and transparency of the offshore permit-granting procedure. There is an 18-month period to transpose most of the directive's provisions into national law, with a shorter deadline of July 2024 for some provisions related to permitting for renewables.

Ireland's statutory national climate objective and 2030 targets are aligned with Ireland's obligations under the Paris Agreement and with the European Union's objective to reduce GHG emissions by at least 55% by 2030, compared to 1990 levels and to achieve climate neutrality in the European Union by 2050.

[19] *Directive 2009/28/EC on the promotion of the use of energy from renewable sources. Available from: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:en:PDF*
[20] *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable resources (recast). Available from: https://eurlex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018L2001*

1.6.5.2 EU Strategy on Offshore Renewable Energy (2020)

In November 2020, the EU Commission published its strategic plan for Offshore Renewable Energy, with the objective of increasing Europe's current offshore wind capacity of 12 GW to a minimum of 60 GW by 2030 and reaching 300 GW by 2050.

1.6.5.3 Revised TEN-E Regulation

The revised TEN-E (Trans-European Networks for Energy) Regulation (EU/2022/869) entered into force in June 2022, aiming to enhance the EU's energy infrastructure policy. Under the revised regulation, member states agreed to non-binding offshore wind energy goals to achieve by 2050, with intermediate goals for 2030 and 2040. The cumulative goal committed to by member states across all five of the EU's five sea basins is 111GW, nearly twice as much as the initial objective of at least 60 GW set out in the 2020 EU Offshore Renewable Energy Strategy. To bridge the disparity between the 111 GW committed by Member States and the existing capacity as of 2022, an average annual installation of almost 12 GW is required – a significant increase compared to the 3 GW installed in 2023. Ireland is a part of the Northern Seas offshore priority corridor and the Atlantic offshore priority corridor. The Atlantic basin includes the Atlantic Ocean area to the west, north-west and south-west of Ireland. As the only 'Phase 1' offshore wind project in the Atlantic Sea basin, the Sceirde Rocks Offshore Wind Farm Project is the only offshore wind energy project capable of being constructed by 2030 and enabling Ireland to reach its goal set under the requirements of the revised TEN-E regulation.

Further details on EU policies and targets relevant to the Project are outlined in Chapter 2: Background and Policy.

1.6.6 Increasing Energy Consumption

As detailed above, the Climate Action Plan identifies a need for 7GW of offshore wind generation in order for Ireland to meet its 2030 targets. In their '*All Island Generation Capacity Statement 2022 - 2031'* (October 2022), EirGrid estimate that installed capacity of wind generation is set to increase to at least 12 GW between onshore and offshore capacity as Ireland endeavours to meet its renewable targets in 2030 and beyond.

Failure to meet Ireland's targets for renewable energy will result in substantial EU sanctions. The Department of Public Expenditure and Reform (DPER) in their report '*Future Expenditure Risks associated with Climate Change/Climate Finance'*[21] concluded that *"potential costs of purchasing non-ETS GHG compliance for the Irish Exchequer for the 2020 to 2030 period could have a cumulative total in the billions in the absence of any further policy changes*." If Ireland decided to backfill shortfalls in the RES-H target with additional renewable electricity this could significantly reduce these costs.

It is noted that the key driver for electricity demand in Ireland for the next number of years is the connection of new large energy users, such as data centres. This statement notes that '*Large industrial connections normally do not dominate a country's energy demand forecast but this is the case for Ireland at the moment*'. EirGrid analysis shows that demand from data centres could account for 28% of all demand by 2031 in a median demand scenario (accounts for the connection of all 1400MVA of potential demand in the connection process). The median demand scenario is now higher than for last year's forecast for high demand, indicating the progression of many of the data centre projects.

In 2015, IWEA commissioned a study '*Data Centre Implications for Energy Use in Ireland'* which concluded that an extra approx. 1 Gigawatt (GW) of electricity demand could materialise between 2015

[21] https://www.gov.ie/pdf/?file=https://assets.gov.ie/310106/a450dcbf-9568-4263-a78b-3eb4f0661b4a.pdf#page=null

and 2020 due to growth in data centres. More recently, data available from Bitpower[22] at the end of 2020 noted that there are currently 66 operational data centres in Ireland, totalling 834MW; with an additional 778MW having received planning approval and 295MW under construction. The increase in growth of data centres means an increase in electricity demand, with many of the proposed data centres committing to using 100% renewable energy which will result in an increased demand for renewable electricity as detailed above.

In the context of increasing energy demand and prices, uncertainty in energy supply and the effects of climate change, our ability to harness renewable energy such as wind power plays a critical role in creating a sustainable future. The Department of the Environment, Climate and Communications have set a target for Ireland of 80% of total electricity consumption to come from renewable resources by 2030, this target forms part of the Government's strategy to make the green economy a core component of its economic recovery plan for Ireland. It is envisaged that wind energy will provide the largest source of renewable energy in achieving this target, with a target of 5 GW offshore wind installed generation capacity.

The Department of Communications, Energy & Natural Resources (DCENR) noted in their Draft Bioenergy Plan 2014, that achieving the anticipated renewable energy usage in the three energy sectors will be challenging, with the 12% for renewable heat being particularly so. SEAI estimate that the shortfall could be in the region of 2% to 4% of the 12% RES-H target. Given that individual member states 2030 targets are set at a more challenging level than 2020, fines could persist for an extended number of years, and so the total cost to Ireland could run to billions. For comparison, the entire wholesale electricity market has an annual value of around €3bn.

In the medium-term, with the introduction of electric vehicles and uptake of smart demand such as storage heating and heat pumps, emissions in the heat and transport sector will be substantially reduced. A high renewables electricity system is the foundation of such a transformation.

The Energy White Paper published by DCENR in December 2015 expanded on the vision set out above. It outlines a radical transition to a low carbon future which will involve amongst other things, *'generating our electricity from renewable sources of which we have a plentiful indigenous supply'* and *'Increasing our use of electricity and biogas to heat our homes and fuel our transport'*.

The DCENR confirmed in the publication of the White Paper '*Ireland's Transition to a Low Carbon Future' 2015 – 2030*, that wind is the cheapest form of renewable energy:

> *"(Onshore wind) is a proven technology and Ireland's abundant wind resource means that a wind generator in Ireland generates more electricity than similar installations in other countries. This results in a lower cost of support."*

EU countries have agreed on a new 2030 Framework for climate and energy, including EU-wide targets and policy objectives for the period between 2020 and 2030. These targets aim to help the EU achieve a more competitive, secure, and sustainable energy system and to meet its long-term 2050 greenhouse gas reductions target. It is noted that a binding EU target of 32% for renewable energy by 2030 has been set by the EU 2030 Framework for Climate and Energy, with Ireland confirming its own targets for 2030 as detailed below.

Ireland will therefore have to meet even more demanding climate change and renewable energy supply obligations in order to play its part in achieving the European climate and energy ambitions. As announced in December 2022, the Irish Government have pledged to generate 80% of the country's electricity supply from renewable sources by 2030. The development of additional indigenous wind energy generating capacity, such as that generated through the Project, will not only help to reduce

[22] *http://www.bitpower.ie/images/Reports/2020_H2_Report.pdf*

carbon emissions but will also improve Ireland's security of energy supply. Such penetration levels of wind are technically and economically feasible once paired with other energy system changes such as increasing electric vehicle penetration and electrification of heat. Further information on the 2030 commitments for Ireland are detailed in Chapter 2: Background and Planning Policy.

These sources of 'flexible demand' allow the system to match intermittent renewable energy resources with minimal extra cost. Additional interconnection is also planned with the UK and France, further assisting in the integration of wind (and in the future solar) on the power system.

A number of alternative energy types have been examined when considering how best to meet this renewable energy target.

The Joint Committee on Climate Action published its cross-party report entitled, '*Climate Change: A Cross- Party Consensus for Action'* (March 2019). This report highlights the requirements for alternate energy production. More specifically, the report notes that it is currently planned to stop burning coal at Moneypoint by 2025 as well as peat at Bord na Móna and ESB stations by 2030. In December 2022, the Department of Environment, Climate and Communications published its Climate Action Plan (CAP), which notes the need for renewable alternatives to coal and peat. Further information on the CAP can be seen in Chapter 2, Section 2.2.2.

The Climate Action Plan 2021 states that in Ireland, total electricity demand over the next ten years is forecast to grow by between 19% and 50%, largely driven by new large energy users, many of which are data centres, based on existing policies and strategies. In the high demand scenario outlined in the Programme for Government, electricity demand will almost double by 2030, while electricity emissions are to be reduced by 60-80% at the same time. While building upon the demands identified in the Climate Action Plan 2021, the Climate Action Plan 2023 identified specifically the increase of 3.5 TWh of electricity demand from the electrification of heat in industry.

Underlying drivers of changes in electricity demand include:

- Data centres are forecast to continue to grow by up to ~9 TWh in 2030 (~2316% of total demand)
- Transport electricity demand is forecast to grow (~23% p.a.) as a result of fast uptake of EV charging.
- Electrical heating in industry will increase by more than 2.5 times in 2030 from 2017 levels.
- Building energy efficiency improvements from an extensive retrofit programme will moderate the growth in electricity demand from new heat pumps in buildings.

Against this backdrop, the importance of wind energy as the main component of Ireland's renewable energy development is acknowledged, and wind energy is accepted as the main contributor to meeting the Country's national climate change and energy supply obligations. Furthermore, whilst it is accepted that there are other renewable energy technologies in operation, for the foreseeable future, many areas will be unable to deliver significant renewable energy output. This primarily applies to the more populous areas.

National and international renewable energy and climate change targets are legally binding, and it is crucial that these are appropriately translated and implemented at regional and local levels.

1.6.7 Reduction of Carbon Emissions and Other Greenhouse Gases

The production of renewable energy from the Project will assist in achieving the Government's and EU's stated goals of ensuring safe and secure energy supplies, promoting an energy future that is

sustainable and competitively priced to consumers whilst combating energy price volatility and the effects of climate change. The Energy White Paper in 2015 outlines an ambitious Greenhouse gas reduction target of between 80% to 95% compared to 1990 levels out to 2050. Furthermore, if national carbon emissions targets are divided out amongst each county, each Local Authority may be responsible for meeting its own targets.

In addition to a reduced dependence on oil and other imported fuels, the generation of electricity from wind power by the Project will displace approximately 462,196 tonnes of carbon emissions per annum from the largely carbon-based traditional energy mix, the detail of which is presented in Section 30.4 of Chapter 30: Climate of this EIAR.

The World Health Organisation (WHO) has estimated that ambient (outdoor) air pollution caused 4.2 million deaths worldwide in 2019. The Environmental Protection Agency (EPA) report '*Air Quality in Ireland 2022*'[23] noted that in Ireland, the premature deaths attributable to poor air quality are estimated at 1,300 people per annum. The European Environmental Agency (EEA) Report, '*Air Quality in Europe – 2022 Report'* highlights the negative effects of air pollution on human health. The report assessed that poor air quality in Europe accounted for premature deaths of approximately 238,000 people in Europe in 2021, with regards to deaths relating to $PM_{2.5}$. The estimated impacts on the population in Europe of exposure to NO_2 and O_3 concentrations in 2021 were around 49,000 and 24,000 premature deaths per year, respectively. From this, 1,300 Irish deaths were attributable to fine particulate matter (PM2.5), 30 Irish deaths were attributable to nitrogen oxides (NO2) and 50 Irish deaths were attributable to Ozone (O3) (Source: Air Quality in Europe – 2021 Report', EEA, 2021).

Of these numbers, 610 deaths due to poor air quality were estimated in Ireland in 2020, with 490 Irish deaths attributed to $PM_{2.5}$, 50 Irish deaths attributed to nitrogen oxides (NO_2) and 70 Irish deaths attributed to Ozone (O_3). These emissions, along with others, including sulphur oxides (SO_x), are produced during fossil fuel-based electricity generation in various amounts, depending on the fuel and technology used, emissions from industry and power plants, vehicles emissions and transport fuels.

The EPA 2016 report '*Ireland's Environment – An Assessment'* states that the pollutants of most concern are NOx, (the collective term for the gases nitric oxide and nitrogen dioxide, PM (particulate matter) and O_3 (ozone). The EPA 2016 report goes on to state that:

> *"Ireland has considerable renewable energy resources, only a fraction of which are utilised to address our energy requirements.*
>
> ***Wind,** ocean, solar, hydro, and geothermal energy **do not produce GHG (greenhouse gas) emissions or emissions of air pollutants such as particulates, sulphur dioxide and nitrogen dioxide. Use of these renewable resources can have considerable co-benefits for human health and ecosystems**. Meeting energy requirements from renewable resources can provide significant economic and employment benefits at local to national scales." (Emphasis added)*

The Project therefore represents an opportunity to further harness Ireland's significant 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 avoided emissions 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.

1.6.8 Economic Benefits

In addition to helping Ireland avoid significant fines and reducing environmentally damaging emissions, the Project will have significant economic benefits. At a national level, Ireland currently has one of the highest external dependencies on imported sources of energy, such as coal, oil, and natural gas. As detailed in the SEAI Report '*Energy in Ireland 2022*', Ireland has a high import dependence on oil and gas and is essentially a price-taker on these commodities. The report states that 2021 was the first year since 2016, in which Irelands indigenous production of energy from renewables (17,500 GWh) exceeded that of indigenous gas (14,600 GWh); as well the data shows that electricity emissions were 'on trajectory' in 2021 (10.3 MtCO2), despite the greater dependence on coal- and oil-fired electricity generation resulting from the continued decline in outputs from the Corrib Gas Field and a low wind year which increased Ireland's carbon intensity by 12.5% ('*Energy in Ireland 2022*', SEAI, 2022).

The SEAI report '*Energy in Ireland 2022*' indicated that wind energy:

- Accounted for 84% of renewable energy generated in 2021;
- Capacity increased by an average of 12% (about 300MW) annually between 2009 to 2019.

The 2014 report '*The Value of Wind Energy to Ireland*', published by Pőyry, stated that growth of the wind sector in Ireland could support 23,850 jobs (construction and operation and maintenance phases) by 2030. If Ireland instead chooses to not develop any more wind, then by 2030 the country will be reliant on natural gas for most of our electricity generation, at a cost of €671 million per annum in fuel import costs.

A 2020 study *'Economic and employment impacts of offshore wind for Ireland: A value chain analysis'* estimated the domestic Gross Value Added (GVA) of the offshore wind sector in Ireland, to evaluate its economic and employment potential. The study suggested that "*2.5-4.5GW of domestic offshore wind development could create between 11,424 and 20,563 supply chain jobs and generate between €763m and €1.4bn in gross value added".* This analysis also estimated that, through timely investment in training and infrastructure improvements to accommodate offshore wind farm projects, Ireland could also act as a major player in the European or Global offshore market through exports.

In May 2024, Biggar Economics prepared a report *Economic Impact of Sceirde Rocks Wind Farm,* which is included in Appendix 6-2 of this EIAR. Focusing solely on the Project, the report noted that with an initial capital investment of approximately €1.4 billion, the Project will represent one of the largest ever private sector investments in the Atlantic Region. During the lifetime of the Project, it is expected that €2.4 billion will be spent on the development, construction, operation and decommissioning of the wind farm. Companies and organisations in County Galway are estimated to be awarded contracts worth approximately €430 million during this period, and the Atlantic Region is expected to benefit from contracts valued at €587 million. On a national basis, Ireland will benefit from contracts valued at €708 million. Based on the current industrial structure in Ireland, and the ability of businesses to provide relevant goods and services associated with the Project, it is expected that businesses across Ireland would receive €110 million. The largest short term economic opportunity will be during the development and construction phase of the Project, however the long-term operation and maintenance (O&M) activity will be the main economic benefit from the Project. This expenditure will drive economic activity through the Gross Value Added (GVA) and jobs that it supports.

If the full impact of the Project over its lifetime is considered, including the induced impacts (i.e., impacts from staff spending across the wider economy), the Project will generate:

- €202 million GVA in County Galway;
- €338 million GVA in the Atlantic Region; and
- €564 million GVA in Ireland.

The report prepared by Biggar Economics also determined that in an Irish context, the Project would represent direct, indirect and induced economic impacts of an estimated €81 million Gross Value Added (GVA) and 837 full time equivalent jobs during the development and construction phase, €13 million annual (GVA) and support 174 full time equivalent jobs annually, totalling an estimated 5,095 full time equivalent jobs over the operation and maintenance phase and an estimated €4 million GVA and support 69 full time equivalent jobs during the decommissioning phase, with Project lifetime GVA amounting to approximately €564 million and supporting 1,080 annual full time equivalent jobs.'

- Construction Phase - €81 million Gross Value Added (GVA) and 837 full time equivalent jobs
- Operation and maintenance Phase - €13 million annual (GVA) and support 174 full time equivalent jobs
- Decommissioning Phase - €4 million GVA and support 69 full time equivalent jobs

The Project will have a maximum export capacity of 450MW, and total annual MWh generation over the operation and maintenance phase of 2,010,420, and the total MWh generation over the 38-year operational lifetime of 76,395,960, as presented in the calculations in Section 30.4.2.4 of Chapter 30 of this EIAR.

The Project will help to supply the rising demand for electricity, resulting from renewed economic growth. The EirGrid report '*All-Island Generation Capacity Statement 2022 – 2031'* (December 2022) notes that the median electricity demand forecast on the island of Ireland is expected to grow by 21% in 2030. Much of this growth is expected to come from new data centres in Ireland.

The Project will have both long-term and short-term benefits for the local and wider economy including job creation, work opportunities for local businesses and service providers, local authority commercial rate payments, a significant Community Benefit Scheme and development and operational levy fees for the State under the MAC.

The Economic Impact Assessment included in Appendix 6-2 of the EIAR notes that during the construction phase, the Project is expected to support 140 Annualized Full-Time Equivalent Jobs (aFTEs) in Co. Galway, 250 aFTEs in the Atlantic Region, and 610 aFTEs nationally. These figures include those employed directly by the Project and its contractors, as well as the supply chain companies who will allocate a proportion of their time to the Project. The construction phase will also generate income through local employment from the purchase of local services, i.e. travel, goods, and lodgings. In an average year during the operation and maintenance phase of the Project, it is expected that 80 jobs in Co. Galway, 110 jobs in the Atlantic Region, and 130 jobs nationally will be supported as a result of the Project. The economic impacts during the operation and maintenance phase will be long-term, which represents a significant opportunity for both the regional and Irish economies.

Should the Project receive development permission, there are substantial opportunities available for the local area in the form of Community Benefit Funds. Based on the current proposal, for every megawatt-hour (MWh) of electricity generated by the Project, €2 will be put into the Community Benefit Fund. Contributions will be made to the fund for the first 20 years of operation of the Project and the fund is expected to total €70 million over its lifetime. The exact value of this fund will be directly proportional to the installed capacity and/or energy produced at the site and will support and facilitate projects and initiatives including youth, sport and community facilities, schools, educational and training initiatives, and wider amenity, heritage, biodiversity enhancement and environmental projects.

Further details on the proposed Community Gain proposals are presented in Section 5.9 of Chapter 5 of this EIAR.

1.7 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 served 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.

It is important to distinguish the Environmental Impact Assessment (EIA) to be carried out by An Bord Pleanála, from the EIAR accompanying the development permission application. The EIA is the assessment carried out by the competent authority, which includes an examination of the information contained in the EIAR, any supplementary information provided where necessary and any relevant information received through consultation and the formation of a reasoned conclusion by the competent authority on the significant effects on the environment of the Project. It includes an examination, analysis and evaluation by An Bord Pleanála that identifies, describes, and assesses in an appropriate manner, in the light of each individual case and in accordance with Articles 4 to 11 of the Environmental Impact Assessment Directive, the direct and indirect significant effects of the Project on the following:

a) *population and human health*
b) *biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC.*
c) *land, soil, water, air, and climate*
d) *material assets, cultural heritage, and the landscape*
e) *major accidents and natural disasters*
f) *the interaction between the factors referred to in points (a) to (e)*

The EIAR submitted by the applicant provides the relevant environmental information to enable the EIA to be carried out by the competent authority. The information to be contained in the EIAR is prescribed by Article 5 of the revised EIA Directive described in Section 1.2 above.

1.8 Structure and Content of the EIAR

1.8.1 General Structure

This EIAR uses the grouped structure method to describe the existing environment, the likely significant effects of the Project thereon and the proposed mitigation measures. Background information relating to the Project, scoping and consultation undertaken and a description of the Project are presented in separate sections. The grouped format sections describe the likely significant effects of the Project in terms of both its offshore and onshore elements under Directive 92/43/EEC and Directive 2009/147/EEC.

The EIAR is comprised of the following volumes:

Volume 1: Main EIAR Chapters and Non-Technical Summary

Volume 1 of the EIAR consists of the main chapters of the EIAR, including the introductory chapters, offshore chapters, onshore chapters, and whole project chapters (which incorporate both offshore and onshore elements). Volume 1 also includes a Non-Technical Summary (NTS), which is a condensed and easily comprehensible version of the EIAR document. The NTS is laid out in a similar format to the main EIAR document and comprises a description of the Project followed by a description of the existing environment, any likely significant effects of the Project, and mitigation measures presented in the grouped format. The NTS is provided in both the English and Irish language.

The EIAR Chapters included in Volume 1 are listed in Table 1-2 below.

Table 1-2 EIAR Chapters included in Volume 1

Chapter Number	Chapter Name
Introductory Chapters	
1.	Introduction
2.	Background and Planning Policy
3.	Site Selection and Alternatives
4.	Environmental Impact Assessment Methodology
5.	Project Description
6.	Population and Human Health
Offshore Chapters	
7.	Marine Physical and Coastal Processes
8.	Water and Sediment Quality
9.	Benthic Ecology
10.	Fish and Shellfish Ecology
11.	Marine Ornithology
12.	Marine Mammals and Other Megafauna
13.	Commercial Fisheries
14.	Shipping and Navigation
15.	Civil and Military Aviation
16.	Seascape, Landscape and Visual Impact Assessment
17.	Marine Archaeology
18.	Other Sea Users
19.	Offshore Air Quality and Airborne Noise
Onshore Chapters	
20.	Terrestrial Biodiversity
21.	Terrestrial Ornithology

22.	Land, Soils, and Geology
23.	Water (Hydrology and Hydrogeology)
24.	Onshore Cultural Heritage
25.	Onshore Air Quality
26.	Onshore Noise and Vibration
27.	Landscape and Visual Impact Assessment
28.	Material Assets
29.	Traffic and Transportation
Whole Project Chapters	
30.	Climate
31.	Major Accidents and Natural Disasters
32.	Interactions
33.	Schedule of Mitigation
34.	Nature Positive Aspects

Volume 2 – Photomontages

- SLVIA and LVIA Photomontage Booklet

Volumes 3 & 4 – Appendices

1.8.2 Description of the Likely Significant Effects

As stated in the *'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* (EPA, May 2022), an assessment of the likely significant effects of the potential impacts of a development is a statutory requirement of the EIA process. The statutory criteria for the presentation of the characteristics of potential impacts requires that the likely significant effects of potential impacts are described with reference to the extent, magnitude, complexity, probability, duration, frequency, reversibility, and trans–boundary nature (if applicable) of the effects.

The classification of effects in this EIAR follows the definitions provided in the Glossary of Impacts contained in the EPA 2022 Guidelines document. Standard definitions are provided in this glossary, which permit the evaluation and classification of the quality, significance, duration, and type of impacts associated with a proposed development on the receiving environment. A replication of this glossary from the 2022 EPA Guidelines is provided in Table 4-1 of Chapter 4: EIA Methodology. The use of pre-existing standardised terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across all disciplines covered in this EIAR. The consistent application of terminology throughout this EIAR facilitates the assessment of the Project on the receiving environment.

Each effect is described in terms of its quality, significance, duration, and type, where possible. A 'Do-Nothing' effect is also predicted in respect of each environmental theme in the EIAR. Residual impacts are also presented following any effect for which mitigation measures are prescribed. The remaining effect types are presented as required or applicable throughout the EIAR. Any potential interactions between the various aspects of the environment assessed throughout this EIAR are presented in Chapter 32: Interactions.

1.9 Project Team

1.9.1 Project Team Responsibilities

The companies and staff listed in Table 1-3 were responsible for completion of this EIAR of the Project. Further details regarding project team members are provided below.

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. The qualifications and experience of the principal staff from each company involved in the preparation of this EIAR are summarised in Section 1.9.2 below. Each chapter of this EIAR has been prepared by a competent expert in the subject matter.

Órla Murphy was the lead project manager overseeing the EIAR and Planning Application, assisted by Robert Kennedy as Assistant Project Manager, both of MKO. Michael Watson and Sean Creedon, also of MKO, both worked as Project Directors. Throughout the compilation of the EIAR and Planning Application, MKO worked closely with and were supported on an ongoing basis by partner and offshore specialists Xodus. Within Xodus, Ewan Edwards fulfilled the role of Offshore Project Manager and Kenneth Couston fulfilled the role of Offshore Project Director. The aforementioned project members worked as part of a wider project team, detailed in Section 1.9.2 below.

Table 1-3 Companies and Staff Responsible for EIAR Completion

Consultants	Principal Staff Involved in Project	EIAR Input*
MKO Tuam Road, Galway, H91 VW84 9c Beckett Way, Park West Business Park, Dublin 12, D12 XN9W	Gus McCarthy Brian Keville Michael Watson Sean Creedon Órla Murphy Robert Kennedy Keelin Bourke Ciarán Fitzgerald Ellen Costello Catherine Johnson Colm Ryan John Willoughby Ronan Dunne John Hynes Pat Roberts Padraig Desmond Dervla O'Dowd Padraig Cregg Tom Rea Mark Higgins Aoife Joyce Jack Bousfield	Project Managers, Scoping and Consultation, Preparation of Natura Impact Statement, EIAR Report Chapters: 1. Introduction 2. Background and Planning Policy 3. Site Selection and Alternatives 4. Environmental Impact Assessment Methodology 5. Project Description 6. Population and Human Health 11. Marine Ornithology 20. Terrestrial Biodiversity 21. Terrestrial Ornithology 22. Land, Soils, and Geology 23. Water (Hydrology and Hydrogeology) 24. Onshore Cultural Heritage 25. Onshore Air Quality 26. Onshore Noise and Vibration 28. Material Assets 29. Traffic and Transportation

Consultants	Principal Staff Involved in Project	EIAR Input*
	James Newell Killian Devereux	30. Climate 31. Major Accidents and Natural Disasters 32. Interactions 33. Schedule of Mitigation 34. Nature Positive Aspects
Xodus The Capitol Building, 431 Union St Aberdeen AB11 6DA, Scotland	Ewan Edwards Kenneth Couston Jonathan Ashburner Anni Mäkelä Anna-Marie Chaffey Ashleigh Fenton John Spence Jane Gordon Monika Kosecka Femke de Boer Mairi Dorward Craig Stenton Anthony Millais	Project Managers, Scoping and Consultation, Preparation of Natura Impact Statement, EIAR Report Chapters: 1. Introduction 3. Site Selection and Alternatives 5. Project Description 6. Population & Human Health 7. Marine Physical and Coastal Processes 8. Water and Sediment Quality 9. Benthic Ecology 10. Fish and Shellfish Ecology 12. Marine Mammals and Other Megafauna 13. Commercial Fisheries 14. Shipping and Navigation 15. Civil and Military Aviation 17. Marine Archaeology 18. Other Sea Users 19. Offshore Air Quality and Airborne Noise 30. Climate 34. Nature Positive Aspects
Anatec	Samantha Westwood James Milne	14. Shipping and Navigation
Macroworks	Richard Barker	16. SLVIA 27. LVIA
Coleman Aviation	Mike Coleman	15. Civil and Military Aviation
Maritime Archaeology	Christin Heamagi	17. Marine Archaeology
Hoare Lea	Matthew Cand	19. Offshore Air Quality and Airborne Noise
Subacoustec	Tim Mason	Underwater Noise Modelling
Cork Ecology	Colin Barton	11. Marine Ornithology
Tom Gittings	Tom Gittings	11. Marine Ornithology
HiDef Aerial Surveying	Catherine Irwin David Thain Ben Cockshull Dr Kelly Macleod Diane Pavat Polly Brown Rory Thomson	11. Marine Ornithology: Offshore Surveys Apportioning Report Ornithological Baseline

Consultants	Principal Staff Involved in Project	EIAR Input*
Hydro Environmental Services 22 Lower Main Street, Dungarvan, Co. Waterford	Michael Gill David Broderick	Flood Risk Assessment, Water Framework Compliance Assessment (Onshore), Preparation of EIAR Chapters: 22. Land, Soils, Geology 23. Water
AWN Consulting Ltd The Tecpro Building, 17 Clonshaugh Business & Technology Park, Dublin 17	Dr. Aoife Kelly Dermot Blunnie	Baseline Noise Survey, Preparation of EIAR Chapter 26: Onshore Noise and Vibration
Tobar Archaeological Services Saleen Midleton Co. Cork	Miriam Carroll	Preparation of EIAR Chapter 24: Onshore Cultural Heritage
Alan Lipscombe Traffic and Transport Consultants Claran, Headford, Co. Galway	Alan Lipscombe	Traffic Management Plan, Preparation of EIAR Chapter 29: Traffic and Transportation
Michael Gibbons	Michael Gibbons	Input to Chapter 17: Marine Archaeology

*A Statement of Authority is included in each chapter of this EIAR detailing the experts who contributed to the preparation of this report, identifying for each such expert the part or parts of the report which he or she is responsible for or to which he or she contributed, his or her competence and experience, including relevant qualifications in relation to such parts, and such additional information in relation to his or her expertise that demonstrates the expert's competence in the preparation of the report and ensures its completeness and quality.

1.9.2 Project Team Members

1.9.2.1 MKO

Gus McCarthy BA, MRUP, MIPI

Augustine (Gus) McCarthy is a Company Director with MKO and is a professional planner with over 35 years of experience in both private practice and local authorities combined. Prior to establishing AP McCarthy Planning Consultants in 2000, Gus worked as a Senior Planner for both Galway County Council and Galway City Council. Gus has significant experience in a wide range of projects and extensive experience in both terrestrial and coastal/marine based developments. He is retained as planning advisor for development programmes of large organisations and has been the lead planning consultant on a wide range of infrastructure, energy, commercial and other projects throughout the Country.

Brian Keville B.Sc. (Env.)

Brian Keville has over 18 years' professional experience as an environmental consultant having graduated from the National University of Ireland, Galway with a first-class honours' degree in Environmental Science. Brian was one of the founding directors of environmental consultancy, Keville & O'Sullivan Associates Ltd., prior to the company merging in 2008 to form McCarthy Keville O'Sullivan Ltd. Brian's professional experience has focused on project and environmental management, and environmental impact assessments. Brian has acted as project manager and lead-consultant on numerous environmental impact assessments, across various Irish counties and planning authority areas. These projects have included large infrastructural projects such as roads, ports, and municipal services projects, through to commercial, mixed-use, industrial, and renewable energy projects. The majority of this work has required liaison and co-ordination with government agencies and bodies, technical project teams, sub-consultants, and clients.

Michael Watson, MA; MIEMA, CEng, PGeo

Michael Watson is Project Director and head of the Environment Team in MKO. Michael has over 19 years' experience in the environmental sector. Following the completion of his Master's Degree in Environmental Resource Management, Geography, from National University of Ireland, Maynooth, he worked for the Geological Survey of Ireland and then a prominent private environmental & hydrogeological consultancy prior to joining MKO in 2014. Michael's professional experience includes managing Environmental Impact Assessments, EPA License applications, hydrogeological assessments, environmental due diligence, and general environmental assessment on behalf of clients in the wind farm, waste management, public sector, commercial and industrial sectors nationally. Michaels key strengths include project strategy advice for a wide range and scale of projects, project management and liaising with the relevant local authorities, Environmental Protection Agency (EPA) and statutory consultees as well as coordinating the project teams and sub-contractors. Michael is a key member of the MKO senior management team and as head of the Environment Team has responsibilities to mentor various grades of team members, foster a positive and promote continuous professional development for employees. Michael also has a Bachelor of Arts Degree in Geography and Economics from NUI Maynooth, is a Member of IEMA, a Chartered Environmentalist (CEnv) and Professional Geologist (PGeo).

Sean Creedon BSc, MSc

Sean is an Associate Director in the Environment Team at MKO. He oversees a team of highly skilled environmental professionals working on EIAR for large-and medium scale Renewable Energy infrastructure. Sean has directed and overseen multiple renewable energy projects across wind, solar, battery and hydrogen as well as a range of thermal and other energy related developments. He is a member of the MKO senior management team responsible for developing the business, mentoring team members, fostering a positive culture and promoting continuous employee professional development. Sean has over 22 years' experience in program and project development of renewable energy projects, holds an MSc from NUI Galway and a Diploma in Project Management from Institute of Project Management Ireland.

Órla Murphy BSc, MSc

Órla Murphy is a Senior Environmental Scientist with McCarthy O'Sullivan Ltd. with over 8 years of experience in private consultancy, specifically in renewable energy. Órla holds BSc (Hons) in Geography from Queens University Belfast & a MSc in Environmental Protection and Management from the University of Edinburgh. Prior to taking up her position with McCarthy Keville O'Sullivan in January 2018, Órla worked as an Environmental Project Assistant with ITPEnergised in Scotland. Órla's key strengths and areas of expertise are in Environmental Protection and Management, EIA, Project Management, Renewable Energy and Peatland Management, where she has carried out research

projects and site work relating to restoration and management of peatland sites in both Scotland and Northern Ireland. On joining MKO Órla has been involved on a range of renewable energy infrastructure projects, mostly onshore and offshore wind in her role as a project manager, Órla works with and co-ordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments as well as sub-contractors from various fields in the preparation and production of EIARs. Within MKO, Órla plays a role in the management of and sharing of knowledge with junior members of staff and works as part of a large multi-disciplinary team to produce EIA Reports.

Robert Kennedy BSc, MSc

Robert is a Project Environmental Scientist working as part of MKO's Renewables Team, having joined the company in June 2022. Robert holds a BSc in Environmental Biology and an MSc in Environmental Policy, both from University College Dublin. Robert's key strengths and areas of expertise are in project management, environmental impact assessment, renewable energy, report writing, policy analysis, and research. Since joining MKO, Robert has gained experience in working with and coordinating large multi-disciplinary teams that are involved in the production of EIA Reports for large-scale renewable energy developments. Robert has experience in working on both onshore and offshore wind farm projects. Robert also played a role in developing MKO's new service offering around Biodiversity Net Gain and other nature-positive mechanisms. Prior to taking up his position with MKO, Robert worked in various roles in Canada and Ireland, giving him a broad mix of skills and experience to apply to his current role with MKO. Robert also holds a membership with the Institute of Environmental Management and Assessment (IEMA).

Keelin Bourke

Keelin is an Environmental Scientist with MKO, with over 1 years' experience in private consultancy, having joined the company in September 2023. Keelin holds a BSc (Hons) in Environmental Science from University College Cork and an MSc (Dist) in Environmental Engineering from Trinity College Dublin. Prior to taking up her position with MKO, Keelin worked as an Environmental Health and Safey Officer in an EPA licensed Waste Transfer Facility in Cork City. Keelin's current key strengths and areas of expertise are in environmental surveying, report writing and environmental mapping. Since joining MKO, Keelin has become a member of the MKO Environmental Renewables Team and has been involved in preparing and managing Environmental Impact Assessments and in leading large multi-disciplinary teams in order to produce robust Environmental Impact Assessment Reports for large-scale onshore and offshore wind energy developments.

Ciarán Fitzgerald

Ciarán Fitzgerald is a Graduate Environmental Scientist who has been working with MKO since June 2024. Ciarán holds a B.Sc. (Honours) in Marine Science from the National University of Ireland Galway and a PG. Dip in Geographic Information Systems from University College Cork. Ciarán works as part of the Environmental renewables team as well as a larger multidisciplinary team. Ciarán's role involves undertaking tasks such as report writing, EIAR chapter writing, and QGIS mapping. Prior to joining MKO, Ciarán spent time aboard the Research Vessel "Celtic Explorer" working as part of a team undertaking chemical water data sampling, pelagic species abundance and sorting, bathymetric GIS mapping, data collection and report writing. Ciarán's key strengths lie in GIS mapping and communication. Since joining the company Ciarán has been involved in in a range of wind farm projects, reviewing EIAR chapters and assisting with project development.

Ellen Costello

Ellen Costello is a Project Environmental Scientist with MKO. Ellen holds a BSc (Hons) in Earth Science, and a MSc (Hons) in Climate Change: Integrated Environmental and Social Science Aspects where she focused her studies on renewable energy development in Europe and its implications on environment and society. Ellen's key strengths and expertise are Environmental Protection and Management, Environmental Impact Statements, Project Management, and GIS Mapping and Modelling. Since joining MKO, Ellen has been involved in a range of renewable energy infrastructure projects. In her role as a project manager, Ellen works with and co-ordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments as well as sub-contractors from various fields in the preparation and production of EIARs.

Catherine Johnson

Catherine Johnson is an Environmental Scientist with expertise in international climate law and policy, earth sciences and ESG/sustainability policy. Catherine has a BSc in Earth and Ocean Science and a LLM in Global Environment and Climate Change Law. This has provided Catherine with a unique background with extensive knowledge on EU and International law and policy, a variety of earth sciences, and expertise in the emerging new space of ESG and climate/sustainability policy. Catherine joined MKO in August 2022 and since then has been working extensively on carbon management and sustainability services for the company and as a new service offering for the company.

Colm Ryan

Colm Ryan is the Planning Director of MKO, Planning & Environmental Consultants, with over 16 years of experience as a planner in both private practice and public sector combined. Prior to joining MKO, Colm worked as a planner with a UK and Ireland based Renewable Energy developer. Colm has also spent part of his career in local authority as a planner with Laois County Council. Colm has significant experience in a wide range of projects and extensive experience in large scale residential, renewables and marine based developments. Colm currently heads up the Planning Division in MKO with responsibility for Planning, Project Management, Health & Safety and Project Communications. Colm holds BA (Hons) in Geography & Irish and Masters in Civic Design Town & Regional Planning. Prior to taking up his position with MKO in May 2017, Colm worked as a Senior Planner with Lightsource Renewable Energy Ltd. and held previous posts with Partnerships for Renewables, South Kesteven District Council, Planning Aid, Frank O Gallachoir & Associates in Bray and Laois County Council. Colm is a chartered town planner with specialist knowledge in renewable energy, mixed use development and residential. Colm's key strengths and areas of expertise are in large scale renewable energy development particularly in the ground mounted solar, delivery of local community engagement processes on contentious planning applications, management of community and developers' interest through the planning process and post or pre-planning due diligence. Since joining MKO as a Senior Planner Colm has been overseeing and managing a wide range of development projects such as large-scale solar applications, site feasibility work for potential wind energy projects, large scale housing and mixed use schemes. Within MKO Colm plays a large role in the management of staff members including several aspects of business development. Colm has proven negotiation skills and stakeholder relationship building across numerous development projects in Ireland and the UK and is a corporate member of the Irish Planning Institute.

John Willoughby

John Willoughby is a Project Planner with MKO with over 7 years of experience across planning consultancy and environmental management. John holds a BA (Hons) in Geography, Planning and Environmental Policy, and an MSc (Hons) in Environmental Policy, both from UCD, and completed an Advanced Diploma in Planning and Environmental Law at Kings Inns in 2021. Prior to taking up his position with MKO in 2022, John worked in planning consultancy from 2017, managing and assisting

with the coordination of development projects throughout the statutory planning process, from feasibility stage to final grant and planning compliance, carrying out due diligence, feasibility assessments, development potential reports, appeals, submissions and bespoke planning advice on a wide range of development projects. John also has previous experience in environmental management in both the Pharmaceutical and Infrastructure sectors. Through his professional and academic experience, John has gained skills in urban planning, Environmental Impact Assessment, spatial planning, regeneration, development management, project management, strategic planning and research.

John is a corporate member of the IPI with specialist knowledge in national, regional and local planning policy and guidance, development management and strategic planning analysis for a wide range of projects across the renewable energy, residential, infrastructure, commercial, mixed-use, semi-state and retail sectors. Within MKO, John works as part of a larger multidisciplinary team to coordinate and project manage the development of planning applications for renewable energy infrastructure for submission to both Local Authorities and An Bord Pleanála.

Ronan Dunne

Ronan Dunne is a Planner with MKO having joined the company in June 2022. Ronan holds a BSc (Hons) in City Planning and Environmental Policy, and a MSc (Hons) in Urban and Regional Planning from University College Dublin where he focused his studies on wind energy development.

Since joining MKO, Ronan has been involved in a range of infrastructure projects, including onshore wind, solar, battery storage and grid infrastructure developments. In his role as a planner, Ronan works with multidisciplinary teams including members from MKO's Environmental, Ecological and Ornithological departments as well as sub-contractors from various fields in the develop/deliver reports to facilitate the planning process.

John Hynes

John Hynes is the Ecology Director at MKO, with over 12 years' professional experience in the public and private sector. John oversees MKO's Ecology, Ornithology, Forestry, Bats, and GIS teams. John holds a B.Sc. in Environmental Science and a M.Sc. in Applied Ecology.

John's key strengths and areas of expertise are in Appropriate Assessment of plans and projects, Ecological Impact Assessment, Flora and Fauna survey methods and design, project management and project strategy. John is experienced as a coordinator or large multi-disciplinary teams on complex ecological projects. John has been involved as a lead Ecologist on a range of energy infrastructure, commercial, transport, housing, forestry, biodiversity net gain and nature restoration projects. John is a Full member of the Chartered Institute of Ecology and Environmental Management, a member of Galway County Council Climate and Biodiversity Special Policy Committee (SPC) and a contributor to the Wind Energy Ireland (WEI) Biodiversity and Sustainability Working Group.

Pat Roberts

Pat Roberts is Principal Ecologist with MKO with over 18 years post graduate experience of providing ecological services in relation to a wide range of developments at the planning, construction and monitoring stages. Pat holds B.Sc.(Hons) in Environmental Science. Pat has extensive experience of providing ecological consultancy on large scale industrial and civil engineering projects. He is highly experienced in the completion of ecological baseline surveys and impact assessment at the planning stage. He has worked closely with construction personnel at the set-up stage of numerous construction sites to implement and monitor any prescribed best practice measures. He has designed numerous Environmental Operating Plans and prepared many environmental method statements in close conjunction with project teams and contractors. He has worked extensively on the identification, control

and management of invasive species on numerous construction sites. Prior to taking up his position with MKO in June 2005, Pat worked in Ireland, USA and UK as a Tree Surgeon and as a nature conservation warden with the National Trust (UK) and the US National Park Service. Pats key strengths include his depth of knowledge and experience of a wide range of ecological and biodiversity topics and also in his ability to understand the requirements of the client in a wide range of situations. He is currently responsible for staff development, training and ensuring that the outputs from the ecology team are of a very high standard and meet the requirements of the clients and relevant legislation and guidelines. He is a full member of the Chartered Institute of Ecologists and Environmental Managers (CIEEM).

Padraig Desmond

Pádraig is a Project Ecologist with MKO with 4 years post graduate ecological experience and over 3 years of which have been in ecological consultancy. Pádraig holds a BSc (Hons) in Ecology and Environmental Biology from University College Cork. Pádraig took up his position with MKO in December 2021, prior to which he worked as a Junior Ecologist with Envirico. Through these consultancy roles Pádraig has gained excellent experience in producing ecological reports such as Natura Impact Statements, Ecological Impact Assessments, Biodiversity chapters, Invasive Species Management Plans, and Constraints Reports for a wide range of projects including small private developments to housing developments and renewable energy projects such as solar and wind farms. Prior to the above roles, Pádraig worked as a field ecologist for the Department of Conservation in New Zealand, where he developed a strong field-based skill set.

Pádraig's key strengths and areas of expertise are in terrestrial ecology, including vegetation surveys, habitat identification, invasive species surveys, mammal surveys, Appropriate Assessment and Ecological Impact Assessment. Pádraig is also skilled in GIS.

Dervla O'Dowd

Dervla O'Dowd is Associate Director with responsibility for MKO's dedicated Ornithology Team with nineteen years of experience in environmental consultancy as a Senior Ecologist and Project Manager. Dervla graduated with a first-class honours B.Sc. in Environmental Science from NUI, Galway in 2005 and joined Keville O'Sullivan Associates in the same year. Dervla has gained extensive experience in the project management and ecological assessment of the impacts of various infrastructural projects including wind energy projects, water supply schemes, road schemes and housing developments nationwide and has also been involved in the compilation of Environmental Impact Reports and acted as EIAR co-ordinator on many of these projects. Dervla has also extensive experience in the provision of ecological site supervision for infrastructural works within designated conservations areas, in particular within aquatic habitats, and has also been involved in the development of environmental/ecological educational resource materials. Currently, Dervla is responsible for the management of MKO's dedicated Ornithology Team coordinating MKO's portfolio of bird survey and assessment work required on major infrastructural projects, with emphasis on wind energy projects. Dervla's key strengths and areas of expertise are in project management, project strategy, business development and survey co-ordination to ensure the efficient operation of the Ornithology team's field survey schedule. Dervla holds full membership of the Chartered Institute of Ecology and Environmental Management and current Safe Pass card.

Padraig Cregg

Padraig Cregg is a Senior Ornithologist with McCarthy O'Sullivan Ltd. with over 7 years of experience in both private practice and NGOs. Padraig holds a BSc (Hons) in Zoology and Masters in Evolutionary and Behavioural Ecology. Prior to taking up his position with McCarthy Keville O'Sullivan in December 2018, Padraig worked as a Senior Ornithologist and held previous posts with TOBIN Consulting Engineers, Energised Environments Ltd in Scotland, WSP Environment and Energy

Ltd in Scotland and BirdWatch Ireland. Padraig has specialist knowledge in designing, executing and project managing ornithological assessments, primarily in the renewable industry. Padraig's key strengths and areas of expertise are in ornithology and ecology surveying and in writing Natura Impact Statements (NIS) and the Biodiversity chapter of Environmental Impact Assessment Reports (EIAR) to accompany planning applications. Since joining MKO Padraig has been involved in designing, executing and project managing the ornithological assessment on over 20 proposed wind farm developments. He has played a key role in project managing these planning applications through the statutory planning system, with more projects in the pipeline. Within MKO Padraig plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIAR and NIS Reports.

Tom Rea

Tom Rea is an ornithologist with MKO having joined the company in May 2021. Tom holds a BSc in Freshwater and Marine Biology, where he focused his studies on marine ecology and has 6 years' experience in environmental consultancy. Tom's key strengths and expertise are in bird identification. Since joining MKO, Tom has been involved in a range of wind energy development projects. In his role as an ornithologist, Tom has experience across various bird survey methodologies including breeding raptor, adapted brown and shepard and waterfowl distribution.

Mark Higgins

Mark Higgins is Communications Specialist with MKO, working in the dedicated Project Communications unit. Mark has ten years of professional experience, having worked as a journalist with the Western People, one of the leading regional newspapers in the West of Ireland, for nearly a decade prior to joining MKO in March 2023. Mark holds a BA (Hons) in English and Sociological & Political Studies, and a Masters in Journalism, both from the University of Galway.

Since joining MKO as a Communications Specialist, Mark has worked in community engagement and public consultation on several large-scale renewable energy projects, including on- and off-shore wind farms, solar farms, and battery energy storage systems. Mark's role involves proactively engaging with local communities on behalf of developers, providing information on renewable projects and responding to questions and concerns. Mark has also worked in the area of town planning, running public consultation events on multiple Town Centre First plans. He has also been involved in stakeholder engagement on projects across the residential and educational sectors, as well as projects relating to environmental protection and climate resilience. Prior to joining MKO, Mark worked as a sports journalist for a local newspaper in the West of Ireland, and latterly as a deputy sports editor with responsibility for managing a roster of reporters and photographers. He developed the ability to work to tight, strict deadlines with careful management of time and resources. Mark's key strengths and areas of expertise are in communications, stakeholder consultation and public relations. Mark also has the role of Project Manager on several projects, with responsibility for all aspects of the delivery of communications strategies and programmes of works for public consultations. Mark holds associate membership of the Public Relations Institute of Ireland (PRII).

Aoife Joyce

Aoife Joyce is a Project Director (Ecology) with MKO Planning and Environmental Consultants with experience in research and consultancy. Aoife is a graduate of Environmental Science (Hons.) at NUIGalway, complemented by a first-class honours MSc in Agribioscience. Prior to taking up her position with MKO in May 2019, Aoife held previous posts with Inland Fisheries Ireland and Treemetrics Ltd. She has a wide range of experience from bat roost identification, acoustic sampling, sound analysis, electrofishing, mammal and habitat surveying to GIS, soil and water sampling, Waste Acceptability Criteria testing, Environmental Impact Assessments (EIAs) and mapping techniques. Since joining MKO, Aoife has been involved in managing bat survey requirements for a variety of

renewables planning applications, as well as commercial, residential and infrastructure projects. This includes scope development, roost assessments, remote bat detector deployment, dawn and dusk bat detection surveys, bat handling, sonogram analyses, mapping, impact assessment, mitigations and report writing. Within MKO, she oversees the bat team and works as part of a wider multidisciplinary team to help in the production of ecological reports and assessments. Aoife is a member of Bat Conservation Ireland and CIEEM and holds current Bat Roost Disturbance and bat photography licenses.

Jack Bousfield

Jack is a Senior Geographical Information System (GIS) Technician for MKO with over 7 years' experience in industry. This has spanned working in the public sector, private sector and as a GIS software supplier. Having graduated from Northumbria University with a BSc in Physical Geography in 2015 Jack has focussed on providing high quality GIS outputs and support to software users. This varies from traditional data management, drawing production and analysis skills to more contemporary digital reporting, surveying and application configuration. Jack has worked across a variety of disciplines providing GIS support for projects relating to hydrology and flooding, geotechnical investigation, ecology, environment, engineering, active travel and more recently for renewables projects focal to wind and solar. Jack is a team lead and efficiently organises and delegates tasks. Jack is also a Chartered Geographer (Cgeog).

James Newell

James Newell is a Graphics Technician with MKO with over 20 years of experience in private practice. James holds a City and Guilds CAD Certificate in 2D and 3D. Prior to taking up his position with MKO 2006, James worked as a pre-press graphic designer with Clodoiri Lurgan Teo. Inverin, Co. Galway. James is a highly creative individual with proficient in numerous graphic & GIS applications. James's key strengths are in 3d photomontage development for the wind & solar energy sector and design production of reports illustrating their visual impacts. Since joining MKO James has contributed to EIS reports in the areas of Wind & Solar farm site drawing design, photomontage, ZTV mapping & shadow flicker analysis. Within MKO James works as part of a shared resources team supporting a variety of teams with varied skillsets in addition to managing the KOS's Information technology (I.T.) needs, such as computer & software training &maintenance, virus threats & daily Backups.

Killian Devereux

Killian is currently the Project CAD Technician at MKO he has over 8 years of drafting experience in various sectors of the building industry. He holds BSc (Hons) in Architectural Technology from Galway Mayo Institute of Technology. Prior to taking up his position with MKO in October 2022, Killian worked as a Structural CAD/BIM Technician for Tobin Consulting Engineers and as an Architectural Technician for some smaller-scale Engineering Consultants. He was primarily involved in a variety of Commercial / Residential projects where he was responsible for the structural drawing packages but also has experience working in RC concrete Drawings, Architectural and Civil drawings, FSC's /DAC's and one-off housing planning applications. His key strengths and areas of expertise are in Auto CAD, Revit, Cads RC and Google Sketch up. Since Joining MKO Killian has been the lead CAD technician on multiple Renewable Energy Planning Applications.

1.9.2.2 Xodus

Ewan Edwards, PhD

Dr Ewan Edwards has 16 years of experience in marine research, government and consultancy roles, across a range of disciplines including offshore energy and marine infrastructure Environmental Impact Assessment, as well as applied research. Prior to joining Xodus he spent seven years in the Science

division of Marine Scotland, the Scottish Government's directorate of marine affairs, primarily as an adviser to the Scottish marine industries regulator. For two years he was Renewables Science Advice Leader, where he led the provision of technical advice on EIAs, Habitats Regulations Appraisals, Marine Licence and Consent applications and other environmental reports for a wide range of infrastructure projects, including 20 offshore wind farms from pre-consent to operational phase. He also had a research scientist role. Ewan holds a PhD in Marine Predator Ecology and a BSc (Hons) in Marine and Environmental Biology.

Kenneth Couston, BSc, MSc, MIEMA

Kenneth Couston joined Xodus in 2008 from research positions at Marine Scotland and the Sea Mammal Research Unit (SMRU), with the first 10 years here spent working within our Environment Division as an Impact Assessment consultant. Latterly, he led our Environmental Impact Assessment team, before moving to our Renewables Division as Energy Transition Lead. There, Kenneth was responsible for helping embed zero carbon thinking within our technical divisions, and for supporting our clients with their journey to net zero. Following a 2 year period leading Shell's ScotWind bids, Kenneth returned to the Environment Division as UK Manager, and he now has responsibility for the development of our 55-strong team. From a technical perspective, Kenneth has significant experience in scoping and executing EIA for marine projects, spanning offshore wind, marine renewable energy, cables, and oil and gas. Kenneth holds a MSc in Marine and Fisheries Science and a BSc in Marine and Environmental Biology.

Jonathan Ashburner, BSc(Hons), MRes, PIEMA

Jonathan (Jon) Ashburner is a Marine Environmental Consultant, with 13 years' experience. He began his career as a research scientist for the British Antarctic Survey, gaining a wealth of marine ecological survey experience. Since moving to consultancy, Jonathan has provided support to numerous marine projects in Scotland through the permitting, post-consenting, and construction phases.

His skillset combines a sound background of marine ecology, with an excellent understanding of Marine Licencing regimes, construction techniques, and experience providing environmental supervision to numerous major marine infrastructure projects. This combination of skills enables the provision of practical environmental advice and facilitating effective and proportionate mitigation, in order to deliver projects to the highest environmental standards, whilst remaining sensitive to commercial implications. He has recently led the successful consenting of three long distance HVDC marine cable projects, and managed environmental, technical feasibility and route optioneering studies for numerous Scotwind export cable projects, as well as power from shore cables in Scottish waters. Jon has a Master of Science by Research (MRes) in Marine Mammal Science and a BSc (Hons) in Marine and Environmental Biology.

Anni Mäkelä, PhD

Dr Anni Mäkelä is a marine environmental professional with 13 years of experience in marine research, government and consultancy roles. Anni is an experienced marine regulator with a background in benthic ecology research, with over five years of experience in delivering statutory marine licensing functions on behalf of the Scottish Ministers. She has extensive experience in Scottish and UK marine licensing regulations, marine policies, stakeholder engagement, Habitats Regulations Appraisals and Environmental Impact Assessment project delivery, including some of the largest marine infrastructure projects in the UK. Anni joined Xodus in February 2024 as a Principal Environmental Consultant within the environment team. Anni holds a PhD in Marine Biology, a MSc in Marine Biology and a BSc in Marine and Freshwater Biology.

Anna-Marie Chaffey, PhD, CSc, CMarSci, MIMarEst

Dr Anna-Marie (Anna) Chaffey is a Chartered Scientist, Chartered Marine Scientist and Member of the Institute of Marine Engineering, Science and Technology (MIMarEST). She is a Senior Environmental Consultant and specialises in marine physical processes, with over 15 years' experience in offshore, coastal and estuarine environments. Anna holds a PhD in Coastal Engineering and a MSc in Geographical Information Science.

In her previous roles, she has delivered a wide variety of projects, across the offshore wind, cables and pipelines, coastal infrastructure and port and harbor sectors. Through her technical specialism in nearshore and offshore seabed morpho dynamics, she has provided input into projects in support of the Development Consent Order (DCO) process and front-end engineering design (FEED) for Round 2 and 3 offshore windfarms in English, Scottish and Irish waters. She has contributed to the Planning Inspectorate (PINS) Examination process for offshore wind and port developments and the Habitat Regulations Assessment (HRA) process for Scottish national scale plans. She has also completed the Water Framework Directive (WFD) assessments for capital and maintenance dredge projects. She is an experienced project manager, proficient in the production and delivery of reports tailored to meet the client's requirements and facilitating stakeholder and client engagement in relation to project demands.

Ashleigh Fenton, BSc(Hons)

Ashleigh Fenton is a Senior Environmental Consultant at Xodus with over 7 years' experience in environment and consenting services primarily in marine energy projects. Ashleigh has a leading role within Xodus undertaking EIA and environmental assessments for offshore wind and subsea cable projects. Notably, Ashleigh has been the EIA Coordinator and Project Manager for the Pentland Floating Offshore Wind Farm Project including both the offshore and onshore applications. Her experience in this role has included EIA scoping, full EIA, public consultation, marine licencing application support, determination support, S36 consent variation management and consent advice services, as well as stakeholder engagement with regulators, local planning authorities, local communities, and other key stakeholders.

Ashleigh has supported several other marine developments including assisting the delivery of the West of Orkney Offshore Wind Farm EIA and associated onshore planning applications. Her experience in supporting marine energy developments has primarily been focused on renewables within Scotland, notably in the North Scotland and Highlands region, however, her experience also extends to other marine developments, including subsea cables, across the wider UK and Ireland. From this experience Ashleigh has a thorough understanding of marine consenting process and a robust technical knowledge of the marine environment, including potential environmental issues surrounding offshore wind and subsea cable scopes across site selection, pre-construction, construction, operation and maintenance, and decommissioning phases. Ashleigh holds a BSc (Hons) in Geology and Petroleum Geology.

John Spence, BSc(Hons)

John Spence is a Principal Environmental Consultant in the Compliance Team within the Environment Division of Xodus. Since joining Xodus in May 2019, John has supported Altera Infrastructure and Teekay on part time secondments for asset permitting, operational compliance support and as the Environmental Advisor for the decommissioning of the Voyageur FPSO (Huntington field) and Banff FPSO (Banff and Kyle Fields). John holds a BSc (Hons) in Applied Marine Biology.

John is also Project Sponsor for all CNOOC compliance projects. John is also client focal point and project manager for EIA projects conducting ENVIDs, stakeholder engagement and ES delivery undertaken at Xodus. In addition, John provides senior support to the Environment Division, assisting with chapters for ES delivery as well as permit preparation and undertakes Quality Assurance activities for a wide range of Xodus' client deliverables. John also provides technical expertise in the area of

environmental survey and benthic ecology including survey design, developing scopes of work and assisting in the analysis video footage for habitat assessment. John is a qualified ISO 14001 and 9001 Auditor and can identify non-compliances and observations to aid in continual improvements. John also has experience of incident investigation and reporting.

Jane Gordon, BSc, MSc

Jane Gordon is a Lead Environmental Consultant with over four years' experience in EIA and marine consenting. Jane has provided support across various aspects and phases of renewables and subsea cables projects, including environmental assessments, Habitats Regulations Appraisal (HRA), marine consenting (e.g. EPS licensing) and stakeholder engagement, from scoping through to post-consent, across the UK and internationally. Key recent projects include the West of Orkney Windfarm, the Pentland Floating Offshore Wind Farm and Cambois Connection, in which Jane has held both technical and project management roles. From this experience, Jane has a solid understanding of the regulatory frameworks that underpin the consenting process of offshore energy projects, and the interactions between developments and the marine environment. Jane holds a MSc in Environmental Science and a BSc in Zoology.

Monika Kosecka, MSc

Monika Kosecka is a Lead Environmental Consultant. She is a marine mammal and underwater noise specialist with 14 years of professional experience, including marine mammal and fish acoustic studies, policy and commercial advisory roles. She is a co-author of several peer reviewed publications on marine mammals, underwater noise and its impacts on marine life and specialises in marine mammal ecology within Xodus Ltd. She holds MSc in Oceanography. She has a broad knowledge on marine mammal ecology, monitoring techniques, environmental impacts of noise on marine life and EIA methodology in relation to marine mammals and the development of marine renewables. Prior to joining Xodus Monika worked as a Marine Bioacoustican for Marine Scotland Science, part of the Scottish Government, serving technical advice to Scottish Ministers, on underwater sound and its impacts on marine life in relation to various marine infrastructure projects.

Femke de Boer, BSc, MSc

Femke de Boer joined Xodus in November 2021 as Commercial Fisheries Specialist to assist with the commercial fisheries side of offshore wind projects. Femke completed her MSc in Applied Marine and Fisheries Ecology at the University of Aberdeen, she started her career as inshore policy officer at the Scottish White Fish Producers Association. During this time, she was involved in liaison with many wind farm projects: Beatrice, Moray East, Moray West, Inch Cape, Neart na Gaoithe, SeaGreen 1 (Alpha and Bravo), SeaGreen 2 (Berwick Bank), Forthwind Offshore, Kincardine Offshore, Hywind, Pentland Offshore, Sofia Offshore, proposed projects in the ScotWIND leasing and some INTOG-related projects. She worked on cable projects as well, including but not limited to Eastern Link, Scotland-NI cable, NorthConnect and local SSE cable repairs. Besides direct liaison, she was involved in both Commercial Fisheries Working Groups (Moray Firth, Forth & Tay), FLOWW, ScotMER, the ICES Working Group on Offshore Wind Development and Fisheries and the Sectoral Evidence Group from Marine Scotland. Femke holds a MSc in Applied Marine and Fisheries Ecology and a BSc in Biology.

Mairi Dorward, EngD, CEnv, MIEMA

Dr Mairi Dorward is an environmental expert and renewable energy specialist and has significant offshore environmental and regulatory knowledge and project management experience coupled with a delivery focus gained from experience in environmental and offshore operations in the oil, gas and renewables sectors. Mairi has completed an Engineering Doctorate (EngD) in wave and tidal energy

and supported ocean testing of a prototype wave energy device in Orkney. Additionally, Mairi holds an MSc in Environmental Change and Management and a BSc (Hons) in Environmental Science. Mairi worked for 10 years with bp, latterly as the Environmental Team Lead for two multi-billion oil and gas developments West of Shetland. She embedded design and implementation of environmental management measures throughout major project delivery and into operations. This included emission reduction programmes, carbon management, policy development and systematic identification, management and mitigation of environmental risk.

Craig Stenton, PhD

Dr Craig Stenton is a Lead Environmental Consultant. His specialism is underwater noise and multiple co-occurring marine stressors. His knowledge and expertise in underwater noise impacts spans marine mammals, pelagic fish, and benthic invertebrates, addressing potential impacts spanning from cellular to population-level scales. Before joining Xodus, Craig spent two years working as an Acoustician supporting the offshore energy sector. He was principally responsible for the project management and delivery of acoustic projects, whilst also providing analytical services and in support of a wide variety of clients and offshore activities, with a particular focus on marine mammal impacts. Craig is a specialist in acoustic analysis and interpretation, with experience in signal processing, noise characterisation, and acoustic propagation modelling. Craig holds a PhD in Underwater Sound and Environmental Chemistry and a BSc (Hons) in Marine Biology and Oceanography.

Tony Millais, PhD

Dr Anthony (Tony) Millais is an Environmental Specialist and the Environmental Engineer Team Lead at Xodus. Tony is the subject matter expert for environmental chemistry and dispersion modelling. Tony has been responsible in developing and delivering Xodus modelling and Oil Pollution Emergency Planning, Environmental impact assessment (including COMAH, Major Environmental Impact Assessment, Financial Liability assessment) and wider environmental engineering support offering (BAT, BPEO, ECE). Tony has wide experience of risk assessment of inorganic and organic chemicals, response planning and mitigations for all environmental compartments. Tony has led the delivery of both onshore and offshore environmental engineering scopes for a diverse range of energy projects including solar, deep geothermal, green hydrogen, green ammonia, LNG, oil and gas. Tony has also guided and delivered projects for industry bodies (Energy Institute Environmental Critical Elements Guidance, OEUK Shoreline Response Planning Database) and Government (MCA Forecasting Oil Spill Risk to the UK from Shipping and Fixed Installations). Tony holds a PhD in Biochemistry, MSc in Toxicology and BSc (Hons) in Biochemistry and Microbiology.

1.9.2.3 HiDef Aerial Surveying

Catherine Irwin

Catherine completed a Geography BSc at the University of Glasgow with a background in physical geography and spatial analysis. As Head of Projects, leads the Projects team to ensure the smooth day-to-day running of our DAS program. She has over 10 years' experience in the DAS sector and is responsible for the delivery of many high-profile projects and has also contributed to peer-reviewed studies and papers.

David Thain

David is a Senior Project Manager responsible for the planning and oversight of a variety of projects. He works closely with the operations team to observe that deliverables are met on time and to scope, whilst administering change controls that effect's the project plan. David has over 10 years' experience

in Project Management, initially from an Architectural management aspect. More recently he has moved to projects that focus on digital modelling of spatial GIS data.

Ben Cockshull

Ben is a Project Manager at HiDef and studied at the University of Exeter for a BSc in Biological Sciences including marine biology, microbial ecology and operations management. He has over four years project management experience, having previously worked as a Scientific Consultant in the maritime sector working on a wide range of projects across Europe, the Middle East and West Africa. At HiDef, Ben has been involved with projects for Offshore Wind Farms and conservation.

Dr Kelly Macleod

Kelly, as Associate Director (Science), is a marine mammal scientist with more than 20 years' experience working for the JNCC and the Sea Mammal Research Unit. She provides scientific oversight to all our projects and has direct responsibility for the delivery of technical reports. Kelly continues to author numerous scientific papers and regularly undertakes peer-review for journal manuscripts.

Diane Pavat

Diane is an Ecological Consultant and studied for a BSc in Biology from the Université Grenoble Alpes and her MSc in Marine Conservation from the University of Aberdeen. She has over three years' experience in using R-studio and ArcGIS to interrogate and analyse offshore wind farm DAS data. Recently, she presented a poster at the international Conference for Wind energy and Wildlife impact 2023 on her research on black-legged kittiwake flight height trends in the UK and Ireland.

Polly Brown

Polly joined HiDef in 2024 as an Ecological Consultant after completing her BSc in Zoology at the University of Glasgow and MRes in Biodiversity and Conservation from the University of Leeds. During her MRes she studied foraging ranges of seabirds to assess the impact of offshore wind farms on colonies in southeast Asia. Polly prepares technical reports to support HiDef's clients, including offshore wind developers, alongside Government departments and agencies.

Rory Thomson

Rory Thomson is a Marine Data Scientist at HiDef, who has a background in quantitative methods and statistics. He has over two years of experience in environmental consenting and studied for an MSc in Quantitative Methods in Biodiversity, Conservation and Epidemiology at the University of Glasgow. With his strong background in R-studio, Rory assists in analysing and modelling DAS data.

1.9.2.4 Macroworks

Richard Barker

Richard Barker (BA-Env, PG Dip Forestry, MLA, MILI) is a Divisional Director at Macro Works Ltd (part of APEM group); a consultancy firm specialising in Landscape and Visual Assessment and the preparation of associated maps and graphics. Relevant experience includes over 19 years of assessing a broad range of infrastructural, industrial and commercial projects, incorporating over 100 onshore wind farms and numerous coastal development projects including the planning and pre-planning stages of five offshore wind farms. Richard has presented guest lectures on LVIA to the UCD EIA Management course and also presented two conference papers to the Irish Landscape Institute relating to best

practice in LVIA and a case study on the use of relevant guidelines (GLVIA-3) for a large onshore wind farm.

Tom Gittings

Tom Gittings is an ecologist with 27 years' experience in professional consultancy work and research. Tom specialises in ecological surveying, monitoring and evaluation, ecological impact assessment, habitat management, and avian, invertebrate, wetland and woodland ecology. He is currently working as an independent ecological consultant. His previous experience includes working for the RPS Group (a multi-disciplinary environmental consultancy) and carrying out research into forest and wetland biodiversity in the Department of Zoology Ecology and Plant Science at University College Cork. He has a BSc (Hons) and a PhD in Ecology and is a member of the Chartered Institute of Ecology and Environmental Management. His recent consultancy work includes assessments for planning applications (including Appropriate Assessments, Environmental Impact Statements, and expert witness work at oral hearings), large-scale habitat surveys, preparation of management plans, contributions to multi-disciplinary conservation plans, and specialist ecological survey and research.

Tom has specific expertise in ornithological assessments for wind farm projects. He has been involved in numerous wind farm projects. His input to these projects has variously included field surveys, collision risk modelling, population modelling, writing the ornithological sections of EIS/EIAR and NIS reports, expert witness services at oral hearings, and provision of scoping advice and peer review services. He also has a wide range of other ornithological expertise, with a particular focus on waterbird ecology.

Tom has also lectured on Appropriate Assessment, Environmental Impact Assessment, Habitat Survey, Woodland Management, and Invertebrate Ecology to a number of courses in University College Cork and University College Dublin. Tom was the recipient of the Distinguished Recorder Award 2014 from the National Biodiversity Data Centre in recognition of his contribution to invertebrate recording in Ireland.

1.9.2.5 Cork Ecology

Colin Barton

Established in November 2001, Cork Ecology is an independent environmental consultancy run by Colin Barton and based in Clonakilty in south-west Ireland. Colin has been working on offshore wind projects since 2001, specialising in all aspects of ornithology. He has provided ornithological support for several offshore wind projects off the coasts of Ireland, and five offshore wind projects in UK waters, with key inputs including seabird survey design, planning and management, provision of ESAS surveyors and equipment, ESAS training, data input and validation, database management, data analysis, assessment of displacement and barrier effects, writing baseline and impact assessment chapters on birds and input into HRA/NIS documents on birds.

Colin recently produced the offshore ornithology chapter for the Berwick Bank Offshore Wind Farm project off the east coast of Scotland and is currently providing ornithological input for the Dublin Array Offshore Wind Farm, off the east coast of Ireland. In addition, Colin is also currently providing ornithological support and advice for several Phase 2 offshore wind projects around the coast of Ireland for a range of clients.

Colin has also been involved with the Neart na Gaoithe Offshore Wind Farm project off the east coast of Scotland since 2009, and remains an ornithological advisor for the project through the construction period. He wrote the baseline and impact assessment chapters on birds for the 2018 Environmental Impact Assessment Report and also had input on birds in the associated Habitats Regulations Appraisal Report.

1.9.2.6 Anatec

Sam Westwood, BSc

Samantha (Sam) Westwood has 25 years' experience within the maritime industry dealing with port and vessel operations as well as offshore installations. Since joining the marine consultancy industry, Sam has been actively involved in the majority of offshore renewable projects in the United Kingdom (UK), as well as projects across Europe, US, Asia and Australia. Pre consent expertise includes as a marine navigation advisor for offshore developments, hazard assessments and workshops, spatial planning, individual site design, stakeholder management and mitigation strategies. Sam has managed Navigational Risk Assessments (NRA) undertaken as part of the wider consenting process for various projects including Ireland Phase One, The Crown Estate (TCE) Rounds 3/4, ScotWind, and Innovation and Targeted Oil and Gas (INTOG). Samantha holds a BSc (Hons) in Shipping and Port Operations.

James Milne, BSc

James has been involved in navigational risk in the marine sector for the last nine years, with experience primarily in the renewable energy industry, and specifically offshore wind farms. James is experienced with considering the viability of potential sites for Shipping and Navigation with consideration of available baseline sources, consideration of relevant guidance, and an understanding of likely stakeholder concerns. James has managed the completion of the NRA for various projects inclusive of vessel traffic analysis, quantitative modelling of future case scenarios and organising stakeholder consultation. Such projects have included Ireland Phase One, TCE Rounds 3/4, ScotWind, and INTOG. James holds a BSc (Hons) in Mathematics.

1.9.2.7 Coleman Aviation

Mike Coleman

Wing Commander Mike Coleman RAF (Retd) has over 35 years' experience in aviation. Coleman Aviation Ltd was set up to provide independent consultancy services to the wind farm industry on aviation issues. Wing Commander Mike Coleman (Retd) retired from the Royal Air Force (RAF) in December 2012 after 27 years' service. His last appointment in the RAF was Head of the Air Traffic Control (ATC) and Air Defence (AD) operational teams responsible for assessing wind farm planning applications on behalf of the Ministry of Defence (MoD). In this role, he defined RAF policy for dealing with the operational impact of wind turbines on ATC radars and was pivotal in deciding whether objections against wind farms should be lodged.

Throughout his career, he was employed at every level within the ATC specialisation from operational controller through to Head of the RAF ATC Standards organisation; he also served at RAF Lossiemouth for 2 years as the Senior Air Traffic Control Officer. Prior to converting to ATC, he completed operational tours as a fast-jet navigator compiling nearly 1000 flying hours on the Tornado GR1. Since leaving the RAF, Mike has worked for over eight years for numerous wind farm developers, ranging from individually owned small companies to multi-national energy corporations, in resolving a plethora of wind farm-related aviation issues; these issues include civil airport radar and safeguarding, MoD ATC and AD radar, Low Flying and aviation lighting, Search and Rescue helicopter operations and Met Office radar. Mike has been required to engage with a wide variety of UK and Ireland aviation stakeholders including National Air Traffic Services (NATS), MoD, Civil Aviation Authority, Irish Aviation Authority, Ireland Department of Defence (DoD), and numerous UK and Irish civilian airports. Most recently, Coleman Aviation has been engaged by SSE plc, Vattenfall Wind Power Ltd, Moray East Offshore Wind Farm Ltd, Moray West Offshore Wind Farm Ltd and Sure Partners Ltd for the Arklow Bank Wind Park project in Ireland. These engagements have ranged from assisting in mitigation negotiations with the IAA, Ireland's DoD and UK MoD to resolve ATC radar issues, development of strategies to resolve MoD AD radar issues, provision of aviation specialist

input into Environmental Impact Assessment Reports (EIARs) and provision of advice in discharging aviation planning conditions.

1.9.2.8 Maritime Archaeology

Christin Heamagi

Christin is a Senior Consultant with Maritime Archaeology (MA). She is responsible for planning and developing a wide range of commissioned archaeological projects making sure objectives are being met as per schedule of works. Christin has developed an extensive knowledge of the geophysical aspects of large projects in terms of managing large datasets, gathering, processing, analysing and identifying archaeological potential from the various datasets. She also leads environmental archaeological projects, including various geoarchaeological aspects. She is highly familiar with onshore and offshore coring techniques and is adept with archaeological sediment recording and sampling. Christin has a strong understanding of the archaeological aspects of our changing landscape, something she draws on when providing archaeological training for geotechnicians and other clients. Her other areas of responsibility include ensuring that any archaeological work is undertaken following current archaeological best practice and guidance by producing Archaeological Written scheme of Investigation documents, Environmental Statements chapters and liaising with clients on a daily basis.

Christin is currently engaged in delivering key aspects of several offshore pre-construction projects, including intertidal and offshore geoarchaeology staged assessments. Christin is also co-ordinating the publication of the archaeological results from several East Anglia One Offshore Windfarm. Aside from offshore renewables, Christin has also recently been the lead consultant on the preparation and completion of EIAs for several marine aggregate and sustainable development projects across the UK.

1.9.2.9 Hoare Lea

Matthew Cand

Matthew is an expert in the assessment of wind farm noise and provided evidence in that capacity at several wind farm planning hearings and inquiries. He is comfortable in expressing in simple terms what is a complex technical subject. He brings a proactive and pragmatic attitude to all my project work. Matthew is passionate about the subject and has been centrally involved in key national research projects and have authored several publications on the subject. He is one of the authors of the IOA's Good Practice Guide on the application of ETSU-R-97 which regulates wind farm noise in the UK. He has spoken at a number of UK and international conferences and provided training on the subject to wind farm developers and local authorities.

Matthew graduated from the Ecole Polytechnique in France, holding a Doctor of Philosophy degree from Imperial College London and is a member of the Institute of Acoustics. Since joining Hoare Lea, Matthew has worked together with many clients on the design and planning of a wide range of construction projects, including architectural acoustic design and large-scale industrial and infrastructure projects.

Matthew has worked on more than 80 wind farm schemes, from small to large scale, including cumulative impact and repowering projects. Matthew led the assessment of noise from the Brechfa Forest West Wind Farm, one of the first applications for a nationally significant energy project (>50MW). He worked with the team to deliver a comprehensive assessment in tight timescales and provided expert evidence at open hearings. The wind farm was then consented in March 2013. Matthew also advised ScottishPower Renewables for the Llandinam Wind Farm Repowering, which was part of the 2013/2014 Mid-Wales Wind farm conjoined planning inquiry. The project was

subsequently consented in 2015. He has been involved as expert witness on several other planning inquiries and noise nuisance cases.

1.9.2.10 Subacoustec

Tim Mason

Tim has continuous post-graduate consultancy experience since 2001 in design and impact assessment of both underwater and traditional airborne noise situations. He is responsible for project management and QA in addition to technical consultancy and reporting. Tim acts as an expert witness for planning enquiries with respect to underwater noise and its effects on marine life. He is experienced in a wide range of acoustic disciplines in addition to underwater noise modelling and monitoring; other disciplines include road, rail and construction noise impacts, industrial noise mapping and control, planning and architectural acoustics, vibration and noise nuisance. Tim has delivered presentations on underwater noise impacts at national and international conferences and has been invited to speak on underwater noise at the Royal Society.

1.9.2.11 Hydro Environmental Services Ltd

Michael Gill

Michael Gill P. Geo (BA, BAI, Dip Geol., MSc, MIEI) is an Environmental Engineer and Hydrogeologist with over 22 years' environmental consultancy experience in Ireland. Michael has completed numerous geological, hydrological, and hydrogeological impact assessments of wind farms and renewable projects in Ireland. He has substantial experience in surface water drainage design and SUDs design and surface water/groundwater interactions. For example, Michael has worked on the EIS for Oweninny Wind Farm, Cloncreen Wind Farm, and Yellow River Wind Farm, and over 100 other wind farm-related projects.

David Broderick

David Broderick P. Geo (BSc, H. Dip Env Eng, MSc) is a Hydrogeologist with over 17 years' experience in both the public and private sectors. Having spent two years working in the Geological Survey of Ireland working mainly on groundwater and source protection studies David moved into the private sector. David has a strong background in groundwater resource assessment and geological, hydrogeological/hydrological investigations in relation to developments such as quarries and wind farms. David has completed numerous geology and water sections for input into EIARs for a range of commercial developments. David has worked on the EIS/EIARs for Derrykillew Wind Farm, and Oweninny Wind Farm, and over 60 other wind farm related projects across the country.

1.9.2.12 AWN Consulting Ltd

Dr. Aoife Kelly

Dr Aoife Kelly (Senior Acoustic Consultant) holds a BSc (Hons) in Environmental Health and PhD in Occupational Noise. Aoife has also completed the IOA Diploma in Acoustics and Noise Control and is a member of the Institute of Acoustics. Aoife has experience in both environmental noise, occupational noise and building acoustics. Aoife also has extensive experience in windfarm baseline noise studies and impacts assessments for numerous windfarm sites across Ireland.

Dermot Blunnie

Dermot Blunnie (Principal Acoustic Consultant) holds a BEng (Hons) in Sound Engineering, MSc in Applied Acoustics and has completed the Institute of Acoustics (IOA) Diploma in Acoustics and Noise Control. He has been working in the field of acoustics since 2008 and is a member of the Institute of Engineers Ireland (MIEI) and the Institute of Acoustics (MIOA). He has extensive knowledge of all aspects of environmental surveying, noise modelling and impact assessment for various sectors including, energy, industrial, commercial, and residential. Dermot has extensive experience in wind turbine noise modelling, assessments, and compliance.

1.9.2.13 Tobar Archaeological Services

Tobar Archaeological Services is a Cork-based company in its 17th year in business. They offer professional nationwide services ranging from pre-planning assessments to archaeological excavation, and cater for clients in state agencies, private and public sectors.

Tobar's Director Miriam Carroll is licensed by the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs to carry out excavations in Ireland and has carried out work directly for the National Monuments Services of the Department of the Environment, Heritage, and Local Government. Tobar Archaeological Services has a proven track record and extensive experience in the wind farm industry from EIS/EIAR stage through to construction stage when archaeological monitoring is frequently required.

Miriam Carroll

Miriam holds a Degree in Archaeology (1993-1996) and a 2-year Masters in Methods and Techniques in Irish Archaeology (1996-1998) from UCC and has over 20 years' experience in private sector archaeology. Miriam has managed and co-ordinated numerous projects from commencement stage to completion on behalf of numerous small and large companies.

1.9.2.14 Alan Lipscombe Traffic and Transport Consultants

Alan Lipscombe

In January 2007 Alan Lipscombe set up an independent traffic and transportation consultancy providing advice for a range of clients in the private and public sectors. Prior to this Alan was a founding member of Colin Buchanan's Galway office having moved there as the senior transportation engineer for the Galway Land Use and Transportation Study. Since the completion of that study in 1999, Alan has worked throughout the West of Ireland on a range of projects including: major development schemes, the Galway City Outer Bypass, Limerick Planning Land-Use and Transportation Study, Limerick Southern Ring Road Phase II, cost benefit analyses (COBA) and various studies for the NUI Galway. Before moving to Galway in 1997, Alan was involved in a wide variety of traffic and transport studies for CBP throughout the UK, Malta, and Indonesia. He has particular expertise in the assessment of development related traffic and transport modelling, including for numerous wind farm developments, and is an accomplished analyst who has experience of a wide variety of modelling packages and methods.

1.9.2.15 Michael Gibbons

Michael is a qualified archaeologist with a BA in Archaeology and History NUIG. Michael is a member of the Institute of Archaeologists of Ireland with 40 years of experience as an archaeologist and completed a 5-year term on the Archaeology Committee of the Heritage Council. After graduating from UCG, he worked with the Department of Antiquities in Jerusalem and for the Museum of London

City Excavation Programme. In Ireland, he worked on the Donegal Archaeological Survey and Galway Archaeological Survey before taking up a position as Co-Director of the National Sites and Monuments Record, Office of Public Works. The work involved carrying out the first comprehensive archaeological survey of 16 counties over a ten-year period.

He has also directed surveys and research on Croagh Patrick and other pilgrimage landscapes along the west coast including Skellig Michael World Heritage Site. In recent years his work has involved mapping the poorly documented intertidal zone archaeology of the Connacht Coast.

He has written and lectured extensively on the management of National Monuments and World Heritage Sites in Ireland and has sought to raise awareness of the role of ICOMOS and UNESCO Guidelines and Charters in Heritage Management. He has served a term with Comhairle Bhéaloideas Éireann / The Folklore of Ireland Council, to which he was nominated by the Minister for Education.

Michael Gibbons works as an independent archaeologists and heritage consultant and works part-time for Notre Dame University He was both a promotor of and project archaeologist on the Marconi Station Heritage Park at Derrigimlagh near Clifden in conjunction the Clifden Chamber Commerce and the Connemara National Park.

1.10 Difficulties Encountered

There were no technical difficulties encountered during the preparation of this EIAR.

1.11 Viewing and Purchasing of the EIAR

The EIAR will be available to view online on its dedicated SID website:
www.sceirderockswindfarmplanning.ie

Copies of this EIAR will also be available online as part of the development permission application, including the Non-Technical Summary (NTS), on the Planning Section of the An Bord Pleanála website, under the relevant Planning Reference Number (to be assigned on lodgement of the application). Hard and soft copies of the development permission application (including the EIAR) will be submitted to An Bord Pleanála.

An Bord Pleanála: http://www.pleanala.ie/

This EIAR and all associated documentation will also be available for viewing at the offices of An Bord Pleanála, Galway County Council, and Clare County Council. The EIAR may be inspected free of charge or purchased by any member of the public during normal office hours at the following address:

- An Bord Pleanála,
  64 Marlborough Street,
  St. Rotunda,
  Dublin 1

- Galway County Council,
  Áras An Chontae,
  Prospect Hill,
  Galway,
  Co. Galway

- Clare County Council,
  New Road
  Ennis

Co. Clare

The EIAR will also be available to view online via the Department of Housing, Local Government and Heritage EIA Portal, which will provide a link to An Bord Pleanála's website on which the application details are contained. This EIA Portal was recently set up by the Department as an electronic notification to the public of requests for development consent which are accompanied by an EIAR (https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal).