1. INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by McCarthy Keville O'Sullivan Ltd. (MKO) on behalf of Hibernian Wind Power Ltd. (Hibernian) who intend to apply to Wexford County Council (WCC) for planning permission to extend the operational life of the existing Carnsore Wind Farm and all associated infrastructure in the seven townlands of Bunarge, Burrow, Bush, Nethertown, Shilmore, St. Vogue's and Summerstown, County Wexford (the Proposed Development). Hibernian Wind Power is a wholly owned subsidiary of the ESB.

The Proposed Development is located approximately 8 kilometres (km) south of Rosslare Harbour and approximately 15km east of Kilmore Quay in Co. Wexford. The approximate grid reference location for the centre of the site is E711919, N604394. The area of the Proposed Development lands covers approximately 77.4 hectares (ha), in total.

The Proposed Development is being brought forward in response to local, national, regional and European policy regarding Ireland's transition to a low carbon economy and associated climate change policy objectives.

The Proposed Development comprises of 14 No. wind turbines (existing) with a maximum tip height of 75 metres (m) and will have a maximum export capacity (MEC) of up to 11.9 megawatts (MW).

The Proposed Development is below the threshold for wind energy set out in the Seventh Schedule of the Planning and Development Acts 2000 to 2020 and is therefore not considered as a Strategic Infrastructure Development (SID), and as such, Wexford County Council are the planning authority.

This EIAR accompanies the planning application for the Proposed Development submitted to Wexford County Council. The planning application is also accompanied by a Natura Impact Statement (NIS) prepared by ecological consultants RSK Biocensus.

Access to the site for general traffic such as maintenance vehicles will be via the current existing entrance from Nethertown Lane, a local road, at the northern site boundary, which in turn is accessed from the L3060 local road, approximately 360m to the west.

The existing wind farm became operational in 2002 and is connected to the National Grid by a medium voltage 38 kilovolt (kV) underground cable of approximately 1.2km, and a 38kV overhead transmission line of approximately 11.2km, running from the on-site substation, in a general north and northwest direction from the wind farm to the Killinick 38kV substation, located at the junction of the R740 and N25, approximately 9.4km northwest of the wind farm (straight-line distance). The grid connection is assessed as a cumulative project only within this EIAR, as it is subject to a separate planning permission, as detailed further in Chapter 2: Background to the Proposed Development and Chapter 4: Description of the Proposed Development.

No construction activities or alterations to the existing wind farm are proposed beyond routine maintenance of the turbines and electrical infrastructure during the operational phase of the Proposed Development.

Based on turbine condition assessments carried out by Hibernian, the wind turbines can operate efficiently for at least a further 15 years, and therefore a 15-year extension to the operational life of the facility is being sought.

A full description of the Proposed Development for the purposes of the planning application and the additional elements that form part of the overall project, assessed in this EIAR, are contained in Chapter 4 of this EIAR.

The townlands within which the Proposed Development and ancillary infrastructure are located are listed in Table 1-1. A Proposed Development location map is provided as Figure 1-1.

Table 1-1 Townlands within which the Proposed Development is located.

Element of Proposed Development	Townland
Wind turbines, site access roads	Bunarge, Burrow, Bush, Nethertown, Shilmore, St. Vogue's and Summerstown
Substation, control building and associated compound	Shilmore
Meteorological mast and associated compound	Bush

ROSSLARE HARBOUR
Calafort Ros Láir

CARNSORE POINT
Ceann an Chairn

Tagoat
Teach Gót

Kilrane
Cill Ruáin

Greenore Point
Rinn na Binne

Lady's Island

Tacumshin Lake

Lady's Island Lake
Loch Tóchair

CELTIC SEA

To Fishguard & Pembroke Ferry (V)
To Cherbourg & Le Havre Ferry (V)
To Brest (Seasonal)

Drawing Legend

EIAR Study Boundary

N

DRAWING TITLE:

Location Context Map

PROJECT TITLE:

Carnsore Wind Farm EIAR

DRAWING BY:	CHECKED BY:
Joseph O'Brien	Eoin Hurst
PROJECT No.: 210202	DRAWING No.: Figure 1-1
SCALE: 1:50,000 @ A3	DATE: 25.05.2021
OS SHEET No.: OS3010	

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@www.mkoireland.ie
Website: www.mkoireland.ie

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 (the 'EIA Directive'), was transposed into Irish planning legislation by the Planning and Development Acts 2000 to 2019 and the Planning and Development Regulations 2001 to 2019. The EIA Directive was amended by Directive 2014/52/EU which has been transposed into Irish law with the recent European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

Accordingly, this EIAR complies with the EIA Directive as amended by Directive 2014/52/EU. To the extent relevant and necessary, regard has been had to the existing provisions of the Planning and Development Act 2000 to 2019 and the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

The European Union Directive 2011/92/EU, amended by EU Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive'), requires Member States to ensure that a competent authority carries out an assessment of the likely significant effects of certain types of project, as listed in the Directive's, prior to development consent being given for the project. This EIAR complies with the EIA Directive as amended by Directive 2014/52/EU. The Environmental Impact Assessment (EIA) of the Proposed Development will be undertaken by Wexford County Council as the competent authority. Article 5 of the EIA Directive as amended by Directive 2014/52/EU provides 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; and,*
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.*

In addition, Schedule 6 to the Planning and Development Act 2000 to 2019 sets out the information to be contained in an EIAR, with which this EIAR complies.

MKO was appointed as environmental consultant on the Proposed Development and commissioned to prepare this EIAR in accordance with the requirements of the EIA Directive as amended by Directive 2014/52/EU.

The relevant classes/scales of development that require EIA are set out in Schedule 5 of the Planning and Development Regulations 2001 to 2020. 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 paragraph 3(i) of Part 2 of Schedule

5. The Proposed Development exceeds 5 turbines and 5 MW in scale, and therefore is required to be subject to EIA.

The EIAR provides information on the receiving environment and assesses the likely significant effects of the proposed project on it and proposes mitigation measures to avoid or reduce these effects. The function of the EIAR is to provide information to allow the competent authority to conduct the EIA of the proposed project.

All elements of the overall project, including the wind turbines and associated infrastructure (substation, site access roads, meteorological mast) have been assessed as part of this EIAR.

1.2.2 EIAR Guidance

The Environmental Protection Agency (EPA) published its 'Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, August 2017), 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).

In preparing this EIAR regard has also been taken of the provisions of 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 to the extent these guidelines are relevant having regard to the enactment of the revised EIA Directive.

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 has prepared the EIAR with regard to these guidelines also.

1.2.3 Wind Energy Development Guidelines for Planning Authorities

The relevant considerations under the *Wind Energy Development Guidelines for Planning Authorities* (Department of the Environment, Heritage and Local Government (DEHLG, 2006) have also been taken into account in this EIAR.

The *Wind Energy Development Guidelines for Planning Authorities* (DEHLG, 2006) were the subject of a targeted review in 2013. The proposed changes to the assessment of impacts associated with onshore wind energy developments are outlined in the document *Proposed Revisions to Wind Energy Development Guidelines 2006 – Targeted Review* (December 2013). A consultation process in relation to the document is currently being undertaken by the Department of Communications, Climate Action and Environment (DCCAE) and as of December 2019, the proposed changes to the assessment of impacts associated with onshore wind energy developments are outlined in the document *Draft Revised Wind Energy Development Guidelines* (December 2019). A consultation process in relation to the 2019 document commenced on the 12th December 2019 and concluded on February 19th, 2020. The final *Revised Wind Energy Development Guidelines* have yet to be published by the Department of Housing, Planning and Local Government (DHPLG).

At time of writing, the *2019 Draft Guidelines* have not yet been adopted, and the relevant guidelines for the purposes of Section 28 of the Planning and Development Act 2000, as amended, remain those published, issued in 2006. Notwithstanding this, however, due to the timelines associated with the planning process for renewable energy projects, it is possible that a version of the *Draft Guidelines* may

be finalised and issued during the consideration period for the current Proposed Development. Should the *2019 Draft Guidelines* be adopted in advance of a planning decision being made on the Proposed Development, it is anticipated that the Carnsore Wind Farm will be capable of complying with the revised guidance in all aspects, other than the proposed minimum setback distance from a turbine to a residential property of 500m.

There are five no. residential dwellings located within 500m of a turbine. Of these five dwellings, two were granted planning permission in the 1970's, one was granted permission in 2001 at the same time as the wind farm construction, and two were granted permission in 2006 and 2010, post wind farm commissioning.

The visual amenity setback distance to residential dwellings will achieve the proposed 4-times turbine tip-height of 300m in all cases. A full assessment of relevant setback distances is included in Chapters 5, 11 and 13 of this EIAR. It is also noted that revised noise and shadow flicker requirements can be achieved by implementing mitigation measures.

1.3 The Applicant

The applicant for the Proposed Development, Hibernian Wind Power Limited (Hibernian), is a wholly owned subsidiary company of ESB, which is the oldest and largest state-owned Irish energy utility, responsible for power generation, transmission and distribution, and supply. ESB are committed to the development of renewable energy as part of the transition to a low-carbon future, including onshore wind. They currently own, operate and maintain 17 onshore wind farms within the Republic of Ireland, with 10 additional onshore sites throughout the United Kingdom, capable of supplying approximately 1 gigawatt (GW) of energy in total. ESB have a proven track record of delivering wind energy projects in Ireland for over 20 years.

1.4 Brief Description of the Proposed Development

Hibernian Wind Power (the Applicant) is seeking planning permission to extend the operational lifetime of the existing Carnsore Wind Farm, a 14 turbine wind energy development on a 78.8 hectare (ha) site at Carnsore Point, approximately 8km south of Rosslare Harbour and approximately 15km east of Kilmore Quay in Co. Wexford. The Proposed Development is located in the townlands of Bunarge, Burrow, Bush, Nethertown, Shilmore, St. Vogue's and Summerstown.

The Proposed Development (all elements pre-existing) comprises:

a. *14 no. Vestas 850 kilowatt (kW) wind turbines with a maximum overall blade tip height of 75 metres (m);*
b. *1 no. 38 kilovolt (kV) permanent electrical substation and control building with total footprint of approximately 575 square metres (m^2), including welfare facilities, associated electrical plant and equipment, security fencing, associated underground cabling and a 1,000 litre septic tank;*
c. *1 no. permanent meteorological mast with a maximum height of 50m, an associated 153m^2 fenced compound containing an 18m^2 site cabin, with an air monitoring mast of 10m total height;*
d. *All associated underground electrical and communications cabling connecting the turbines to the on-site substation;*
e. *Existing site tracks of circa of 4.0 kilometres (km) total length, 5 no. car parking spaces, and 14 no. turbine hardstands;*
f. *Existing gated site entrance way from Nethertown Lane (local public road);*
g. *Site drainage; and,*
h. *Associated site fencing and signage.*

This application seeks a fifteen (15) year planning permission for extension of the operational life of the existing wind farm from the date of expiration (August 2022) of the current An Bord Pleanála (ABP) permission (ABP Ref. PL26.116487).

Hibernian have demonstrated that the existing turbine technology (Vestas V52 850kW) on the site is capable of continuing to operate efficiently for a further 15 years without a significant loss in the total current generating capacity of 11.9MW. Further details of technical feasibility assessments undertaken for the Carnsore Wind Farm are provided in Chapter 3: Consideration of Reasonable Alternatives, Section 3.3. No significant changes to the existing turbines are proposed as part of this application above what is considered routine operation and maintenance (O&M) works.

When originally designed, the layout of the Carnsore Wind Farm was constraints-led, thereby avoiding environmentally sensitive parts of the site. No change or upgrade to the existing site roads or layout is proposed. The Proposed Development makes use of the existing on-site access roads and tracks, with approximately 3.2km of existing roadway within the wind farm site boundary. Site roads are constructed of consolidated gravel with a running width of approximately 4m.

The Carnsore Wind Farm is connected to the National Grid via an existing medium voltage 38 kilovolt (kV) underground cable of approximately 1.2km, and a 38kV overhead transmission line of approximately 11.2km, running from the on-site substation, in a general north and northwest direction from the wind farm to the Killinick 38kV substation, located at the junction of the R740 and N25, approximately 9.4km northwest of the wind farm (straight-line distance). The grid connection is assessed as a cumulative project only within this EIAR, as it is subject to a separate planning permission and does not form part of the Proposed Development.

The overall Proposed Development, including wind turbines, substation, site access roads, and met mast have been assessed as part of this EIAR.

The Proposed Development is described in detail in Chapter 4 of this EIAR.

1.4.1 References to Proposed Development

For the purposes of this EIAR, where the 'Proposed Development' is referred to, this relates to all the project components described in detail in Chapter 4 of this EIAR. Where 'the site' is referred to, this relates to the primary study area for the development, as delineated by the EIAR Site Boundary in red as shown on Figure 1-1. Individual topics for assessment purposes, i.e., each chapter, indicate the study area used for that topic. The actual site boundary for the purposes of the planning permission application occupies a similar area to the primary EIAR study area.

The EIAR Site Boundary encompasses an area of approximately 77.4ha. The permanent footprint of the Proposed Development measures approximately 1.72ha, which represents approximately 2.3% of the primary EIAR study area. The Planning Application site area is 78.75ha with the Planning Application red line boundary detailed in Appendix 4-1 of this EIAR.

1.5 Need for the Proposed Development

1.5.1 Overview

In March 2019, the Government announced a renewable electricity target of 70% by 2030 as part of the governments Climate Action Plan. The Proposed Development would likely be operational until 2037 and would therefore contribute to this 2030 target. More recently, the EPA reported that Ireland is set to fall far short of all of its carbon emissions reduction targets for 2030, despite climate action measures in the National Development Plan (EPA, June 2019). The proposed extension of operation of the

Carnsore Wind Farm is key to helping Ireland address these challenges as well as addressing the country's over-dependence on imported fossil fuels.

The need for the Proposed Development is driven by the following factors:

1. *A legal commitment from Ireland to limit greenhouse gas emissions under the Kyoto protocol to reduce global warming;*
2. *A requirement to increase Ireland's national energy security as set out in the Energy White Paper;*
3. *A requirement to diversify Irelands 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);*
4. *Provision of cost-effective power production for Ireland which would deliver local benefits; and*
5. *Increasing energy price stability in Ireland through reducing an over reliance on imported gas.*

These factors are addressed in further detail below. Sections 2.1 and 2.2 in Chapter 2 of this EIAR on Background to the Proposed Development, presents a full description of the international and national renewable energy policy context for the proposed project. Section 2.3 addresses climate change, including Ireland's current status with regard to meeting greenhouse gas emission reduction targets.

1.5.2 Climate Change and Greenhouse Gas Emissions

At the Paris Climate Conference of the Parties (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal, referred to as 'The Paris Agreement'. The Paris 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 Paris Agreement, the EU and 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.

The International Panel on Climate Change (IPCC) has put forward its clear assessment 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[1] and in accordance with the COP 21 agreement to limit global warming to well below 2°C above pre-industrial levels.

In this regard, the Government enacted the Climate Action and Low Carbon Development Act 2015 which provides for the approval of plans by the Government in relation to climate change for the purpose of pursuing the transition to a low carbon, climate resilient and environmentally sustainable economy.

The IPCC published an article on the 6th October 2018 titled '*Global Warming of 1.5°C*[2], which notes the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas (GHG) emission pathways, in the context of mitigation pathways, strengthening of the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. It provided detail on the impact of climate change if emissions are not reduced.

The Energy White Paper notes that:

[1] *IPCC Fifth Assessment Synthesis Report, Intergovernmental Panel on Climate Change AR5 Report*
[2] *Global Warming of 1.5°C, Intergovernmental Panel on Climate Change, http://www.ipcc.ch/report/sr15/*

'The use of renewables in electricity generation in 2014 reduced CO_2 emissions by 2.6 Mt and avoided €255 million in fossil fuel imports'

It is estimated that the proposed renewable energy development has an output of up to approximately 11.9MW from 14 No. wind turbines. The Proposed Development will result in the net displacement of approximately 32,000 tonnes (t) of carbon dioxide (CO_2), 430t of sulphur oxides (SO_x) and 100t of nitrogen oxides (NO_x) per annum[3], including accounting for back-up generation. The carbon offsets resulting from the Proposed Development are described in detail in Chapter 10: Air and Climate, Section 10.3.5.

1.5.3 Energy Security

At a national level, Ireland currently has one of the highest external dependencies in the EU on imported sources of energy, such as coal, oil and natural gas.

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 2020 - 2029' (August 2020), states that new wind farms commissioned in Ireland in 2019 brought total wind capacity to over 4,127MW, contributing to the increase in overall RES-E percentage to 35.7% with wind energy accounting for 32%.

It is estimated that in 2015 the cost of all energy imports to Ireland was approximately €4.6 billion; this fell to €3.4 billion in 2016 due mainly to reduced gas imports but increased again in 2017 to €4 billion. Irelands import dependency varied between 85% and 90% until 2016, where it fell to 69% with the Corrib gas field starting production and then has fallen further to 66% in 2017 but has increased again to 69% in 2019, however Ireland is still one of the more import dependent countries in the EU, with the EU average being just over 50%. In 2019, although noted that the cost of energy imports to Ireland was approximately €4.5 billion; renewables made up 12% of gross final consumption relative to a 2020 target of 16%. This avoided 5.8 million tonnes of CO2 emissions and €500 million of fossil fuel imports ('Energy in Ireland - 2020 Report, SEAI, December 2020).

Ireland continues to be hugely energy import-dependent leaving it exposed to large energy price fluctuations as a minimum and possibility of fuel shortages if a major energy crisis were to occur. 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".

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 still generates almost 25% of Ireland's electricity, but the National Climate Policy calls for an aggregate reduction in carbon dioxide emissions of at least 80% (compared to 1990 levels) by 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.

[3] *Based on ESB data for Carnsore Wind Farm, https://www.esb.ie/our-businesses/generation-energy-trading-new/generation-asset-map#carnsore-wind-farm*

The Energy White Paper 2015 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*'.

1.5.4 Competitiveness of Wind Energy

While Ireland has a range of renewable resources, as the White Paper states; '[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.'

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. Wind is capable of an average capacity factor of 35%[4] , 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. EirGrid's website has more detailed information. A Pőyry study from 2015 showed that reaching our targets in 2020 would reduce wholesale prices by more than costs of new grid infrastructure, backup and the subsidies paid to wind, resulting in a net saving of €43m per year in 2020. The EU has noted that Ireland has one of the lowest costs of supporting renewables mainly because onshore wind is on a par with the cost of power from conventional generation when a full cost benefit analysis is undertaken.

1.5.5 EU 2020 Renewable Energy Targets

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 Directive (2009/28/EC) on the Promotion of the Use of Energy from Renewable Sources in April 2009 which includes a common EU framework for the promotion of energy from renewable sources.

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

Ireland's mandatory national target is to supply 16% of its overall energy needs from renewable sources by 2020. This target covers energy in the form of electricity (RES-E), heat (RES-H) and transport fuels (RES-T). The contribution of renewables to gross final consumption (GFC) was 11% in 2018, compared to the 2020 target of 16%. ('*Energy in Ireland – 2019 Report*, SEAI, December 2019). Furthermore, the Department of Communications, Climate Action and Environment (DCCAE) reported in their '*Fourth Progress Report on the National Renewable Energy Action Plan'* (December 2017) that Ireland will achieve 13% of its 16% RES target by 2020.

[4] *Baringa (October 2018), 70 by 30 – a 70% Renewable Electricity Vision for Ireland in 2030 (Table A.6),. Report available at: https://www.iwea.com/images/files/70by30-report-final.pdf*

For RES-E alone, Ireland has set a national target of 40% by 2020 as outlined in NREAP. Government policies identify the development of renewable energy, including wind energy, as a primary strategy in implementing national energy policy.

Noted above and further emphasised in the most recent SEAI report, *'Renewable Energy in Ireland – 2019 Report'* (SEAI, January 2019); the share of renewable electricity (RES-E) was recorded at 30.1% in 2017, out of their 40% target; further reporting that Ireland is not on track to meet its 2020 renewable energy target.

More recently, new analysis from EirGrid, has shown that 32% of electricity demand in Ireland during 2018 was met by renewable sources[5]. This shows a positive increase in renewable energy in Ireland from that previously recorded in 2017, but still highlights the progress required to meet our 2020 target.

1.5.6 EU 2030 Renewable Energy Targets

In March 2019, the then Minister for Communications, Climate Action, and the Environment, Richard Bruton, announced a renewable electricity target of 70% by 2030 for Ireland. The Joint Committee on Climate Change Action recommended in their recent report, '*Climate Change: A Cross- Party Consensus for Action'* (March 2019)[6], that new climate change legislation be enacted by the Oireachtas in 2019 to include:

- A target of net zero economy-wide GHG emissions by 2050;
- A provision for a 2030 target, consistent with the GHG emissions reduction pathway to 2050 to be set by 2020 by Statutory Instrument requiring the formal approval of both Houses of the Oireachtas following receipt of advice from the Climate Action Council;
- Provision for five-yearly carbon budgets, consistent with the emissions reduction pathway to 2030 and 2050 targets, to be set by Statutory Instrument requiring the formal approval of both Houses of the Oireachtas following receipt of advice from the Climate Action Council; and
- A target for the renewable share of electricity generation of 70% by 2030.

This commitment made by the Department of Communications, Climate Action, and the Environment also forms part of a new Climate Action Plan released in August 2019. The plan, which is further detailed in Section 2.3.4, Chapter 2 of this EIAR, identifies a need for 8.2GW of onshore wind generation with Ireland needing more than double its current installed capacity of wind generation.

As noted previously, Ireland has missed their 2020 renewable energy targets. It is now more critical than ever that we continue to progress renewable energy development in Ireland so that we are successful in meeting our 2030 target. Further detail on the EU 2030 targets is noted in Chapter 2.

1.5.7 Reduction of Carbon Emissions and Other Greenhouse Gases

This production of renewable energy 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 GHG reduction target of between 80%

[5] http://www.eirgridgroup.com/newsroom/renewables-demand-record/index.xml
[6] https://data.oireachtas.ie/ie/oireachtas/committee/dail/32/joint_committee_on_climate_action/reports/2019/2019-03-28_report-climate-change-a-cross-party-consensus-for-action_en.pdf

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 by the Proposed Development will displace approximately 11,821 tonnes of carbon emissions per annum from the largely carbon-based traditional energy mix, the detail of which is presented in Section 10.3.5 of this EIAR.

Recent EU and World Health Organisation (WHO) reports estimate that poor air quality accounted for premature deaths of almost 600,000 people in Europe in 2012. In Ireland, the premature deaths attributable to air pollution are estimated at 1,200 people ('*Ireland's Environment – An Assessment*', Environmental Protection Agency, 2016.) The 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 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.'*

The Proposed Development 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 emission savings of carbon dioxide (CO_2), oxides of nitrogen (NOx), and sulphur dioxide SO_2, thereby resulting in cleaner air and associated positive health effects.

1.5.8 Economic Benefits

In addition to helping Ireland avoid significant fines and reducing environmentally damaging emissions, the proposed project will have significant economic benefits. At a national level, Ireland currently has one of the highest external dependencies in the EU on imported sources of energy, such as coal, oil and natural gas. As detailed above, in 2019 the cost of all energy imports to Ireland was approximately €4.5 billion with imported fossil fuels accounting for 57% of all energy consumed ('Energy in Ireland 2020, Sustainable Energy Authority of Ireland, December 2020).

The SEAI report 'Energy in Ireland 2020' indicated that renewable electricity (mostly wind energy):

- Displaced over €500 million of fossil fuel imports; and
- Reduced CO2 emissions by 5.8 million tonnes.

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 operational phases) by 2030. The reduction in fuel imports not only benefits security of supply but also creates a net transfer to the Irish economy with large reductions in the energy import potentiality allowing for a saving of almost €671m of expenditure on fuel imports per annum by the time we reach 2030.

The Proposed Development will be capable of providing power to approximately 7,600 households every year, which is more than 13% of all County Wexford households.

At a Regional Level, the Proposed Development will help to supply the rising demand for electricity, resulting from renewed economic growth. The EirGrid report '*All-Island Generation Capacity Statement 2019 – 2028*' (SONI and EirGrid, 2019) notes that electricity demand on the island of Ireland is expected to grow by between 25% and 47% over the next ten years. Much of this growth is expected to come from new data centres in Ireland.

The Proposed Development will have several significant long-term benefits for the local economy including job creation, landowner payments, local authority commercial rate payments and a Community Benefit Scheme.

Carnsore Wind Farm is expected to contribute €2.9 million in county council rates through the proposed extension of operation. The annual commercial rate payments from the Proposed Development to Wexford County Council, will be redirected to the provision of public services within Co. Wexford. These services include provisions such as road upkeep, fire services, environmental protection, street lighting, footpath maintenance etc. along with other community and cultural support initiatives.

It is estimated that the proposed extension of operation will maintain approximately 2-3 part-time roles in the wind farm operation and maintenance (O&M) which will endure throughout the project's lifetime. Additional employment will be created in the region through the supply of services and materials to the development. In addition to this, there will also be income generated by local employment from the purchase of local services i.e., travel and lodgings.

There are substantial opportunities available for areas where wind farms and other types of renewable energy developments are located, in the form of Community Gain Funds. Based on the current proposal, a Community Gain Fund in the region of €179,000 will be made available over the lifetime of the project. The value of this fund will be proportional to the level of installed capacity (megawatts) 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, and environmental projects.

Further details on the proposed Community Gain proposals are presented in Chapter 2: Background to the Proposed Development, Section 2.6.3.

1.6 Purpose and Scope of the EIAR

The purpose of this EIAR is to document the current state of the environment in the vicinity of the Proposed Development and to quantify the likely significant effects of the Proposed Development on the environment in accordance with the requirements of the EIA Directive, as amended. 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 negative impacts arising from the Proposed Development.

It is important to distinguish the Environmental Impact Assessment (EIA) to be carried out by the Planning Authority, from the EIAR and the accompanying planning application. The EIA is the assessment carried out by the competent authority, which includes an examination 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 effects of the Proposed Development 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. the interaction between the factors referred to in points (a) to (d)

The EIAR which will be 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 Article 5 of the revised EIA Directive described in Section 1.4 above.

1.7 Structure and Content of the EIAR

1.7.1 General Structure

This EIAR uses the grouped structure method to describe the existing environment, the potential impacts of the Proposed Development thereon and the proposed mitigation measures. Background information relating to the Proposed Development, scoping and consultation undertaken and a description of the Proposed Development are presented in separate sections. The grouped format sections describe the impacts of the Proposed Development in terms of population and human health, biodiversity, ornithology, soils and geology, hydrology and hydrogeology, air and climate, noise and vibration, landscape and visual, cultural heritage and material assets such as traffic and transportation, together with the interaction of the foregoing.

The chapters of this EIAR are as follows:

1. Introduction
2. Background to the Proposed Development
3. Consideration of Reasonable Alternatives
4. Description of the Proposed Development
5. Population and Human Health (including Shadow Flicker)
6. Biodiversity (Flora and Fauna)
7. Ornithology (Birds)
8. Land, Soils and Geology
9. Water (Hydrology and Hydrogeology)
10. Air and Climate
11. Noise and Vibration
12. Archaeological, Architectural and Cultural Heritage
13. Landscape and Visual
14. Material Assets (including Traffic and Transport, Telecommunications and Aviation)
15. Interactions of the Foregoing
16. Schedule of Mitigation Measures

The EIAR also includes a non-technical summary, which is a condensed and easily comprehensible version of the EIAR document. The non-technical summary is laid out in a similar format to the main EIAR document and comprises a description of the Proposed Development followed by the existing environment, impacts and mitigation measures presented in the grouped format.

1.7.2 Description of Likely Significant Effects and Impacts

As stated in the *Guidelines on the Information to be contained in Environmental Impact Statements* (EPA, 2017), an assessment of the likely impacts of a Proposed Development is a statutory requirement of the EIA process. The statutory criteria for the presentation of the characteristics of potential impacts requires that potential significant impacts are described with reference to the extent, magnitude, complexity, probability, duration, frequency, reversibility and trans-frontier nature (if applicable) of the impact.

The classification of impacts in this EIAR follows the definitions provided in the Glossary of Impacts contained in the following guidance documents produced by the Environmental Protection Agency (EPA):

- *Guidelines on the Information to be contained in Environmental Impact Assessment Reports – Draft August 2017* (EPA, 2017).
- *Revised Guidelines on the Information to be contained in Environmental Impact Statements – Draft September 2015* (EPA, 2015)
- *Advice Notes for Preparing Environmental Impact Statements – Draft September 2015* (EPA, 2015).
- *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements'* (EPA, 2003)
- *Guidelines on the Information to be contained in Environmental Impact Statements* (EPA, 2002).

Table 1-2 presents the glossary of impacts as published in the EPA guidance documents. 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. 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 the EIAR. The consistent application of terminology throughout the EIAR facilitates the assessment of the Proposed Development on the receiving environment.

Table 1-2 Impact Classification Terminology (EPA, 2017)

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment
Significance	Imperceptible	An effect capable of measurement but without significant consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Very significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
	Profound	An effect which obliterates sensitive characteristics
Extent & Context	Extent	Describe the size of the area, number of sites and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions
Probability	Likely	Effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented
	Unlikely	Effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented
Duration and Frequency	Momentary	Effects lasting from seconds to minutes
	Brief	Effects lasting less than a day
	Temporary	Effects lasting less than a year
	Short-term	Effects lasting one to seven years
	Medium-term	Effects lasting seven to fifteen years
	Long-term	Effects lasting fifteen to sixty years

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

Each impact is described in terms of its quality, significance, extent, duration and frequency, and type where possible. A 'Do-Nothing' impact is also predicted in respect of each environmental theme in the EIAR. Residual impacts are also presented following any impact for which mitigation measures are prescribed and any interactions between the impacts are assessed. The remaining impact types are presented as required or applicable throughout the EIAR.

1.8 Project Team

1.8.1 Project Team Responsibilities

The companies and staff listed in Table 1-3 were responsible for completion of the EIAR of the Proposed Development. 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 1.8.2 below. Each chapter of this EIAR has been prepared by a competent expert in the subject matter. Further details on project team expertise are provided in the Statement of Authority at the beginning of each impact assessment chapter.

Table 1-3 Project Team

Consultants	Principal Staff Involved in Project	EIAR Input
McCarthy Keville O' Sullivan Ltd. (MKO) Tuam Road Galway H91 VW84	Michael Watson Jimmy Green Thomas Blackwell Eoin Hurst Ellen Costello Paul Sweeney Padraig Cregg John Hynes Audrey Williams James Newell Joseph O'Brien	Project Management, Scoping and Consultation, Preparation of the following Report Sections: 1. *Introduction* 2. *Background to the Proposed Development* 3. *Consideration of Reasonable Alternatives* 4. *Description of the Proposed Development* 5. *Population & Human Health* 8. *Land, Soils & Geology* 9. *Water (Hydrology and Hydrogeology)* 10. *Air & Climate* 13. *Landscape & Visual* 14. *Material Assets* 15. *Interaction of the Foregoing* 16. *Schedule of Mitigation*
RSK Biocensus Redwood House 66 Newforge Lane Belfast, BT9 5NF Northern Ireland	Mark Lang Nick Henson Liz Turley Laura Cawley	Baseline Habitat and Bird Survey, Preparation of Natura Impact Statement (NIS) and EIAR Sections: 6. *Biodiversity* 7. *Ornithology*
Amplitude Acoustics G2 The Steelworks Foley Street Dublin 1, D01 KP03	Benny Cryan Dr. Emmet English	Baseline Noise Survey, Preparation of EIAR Section: 11. *Noise and Vibration*
Tobar Archaeological Services Saleen Midleton Co. Cork	Annette Quinn Miriam Carroll	Preparation of EIAR Section: 12. *Archaeological, Architectural and Cultural Heritage*

1.8.2 Project Team Members

1.8.2.1 MKO

Michael Watson MA MIEMA CEnv PGeo

Michael Watson is Project Director and head of the Environment Team in MKO. Michael has over 18 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).

Jimmy Green BA MRUP MIPI

Jimmy Green holds the position of Senior Planner in MKO and has a wide range of experience in project management and coordination, planning research, analysis, and retail planning. Jimmy has extensive planning experience in both the public and private sectors having worked as an Assistant Planner in Donegal County Council and subsequently as both an Executive and Senior Executive Planner in Galway County Council prior to joining private practice in October 2004. Since moving into the private sector he has provided consulting services to a wide range of private and public sector clients, and his experience includes planning application project management, environmental impact assessment preparation, retail impact assessment, development potential reporting, preparation of linguistic impact statements and submissions to Development Plans/Local Area Plans. Jimmy has a Bachelor of Arts Degree in Human and Physical Geography from National University Ireland Galway and a Masters in Regional and Urban Planning from University College Dublin. Jimmy is also a corporate member of the Irish Planning Institute.

Thomas Blackwell M.Sc. BA PWS

Thomas is a Senior Environmentalist with MKO with over 15 years of progressive experience in environmental consulting. Thomas holds a BA (Hons) in Geography from Trinity College Dublin and a M.Sc. in Environmental Resource Management from University College Dublin. Prior to taking up his position with MKO in August 2019, Thomas worked as a Senior Environmental Scientist with HDR, Inc. in the United States and held previous posts with private consulting firms in both the USA and Ireland. Thomas is a registered Professional Wetland Scientist with the Society of Wetland Scientists with specialist knowledge in wetland assessment and delineation, mitigation planning and design, stream geomorphic assessment, and stream and wetland restoration design. Thomas' professional experience includes managing Environmental Impact Assessments, environmental permitting, environmental due diligence and compliance, and general environmental assessment on behalf of clients in the solar farm, mining, solid waste management, residential and commercial development, and public sectors. Thomas' key strengths and areas of expertise are in project management and strategy development, environmental permitting and assessment for renewable energy projects, fluvial geomorphology and stream restoration design. Since joining MKO, Thomas has been involved as an Environmental Consultant on a range of energy infrastructure, and residential projects.

Eoin Hurst BE MSc DIC MIEI

Eoin Hurst is a Project Environmental Engineer with MKO. He has over 12 years of experience in civil and environmental engineering consulting services in the private sector. Eoin holds a BE Civil Engineering and a MSc in Environmental Technology. Prior to taking up his position with MKO in September 2019, Eoin worked as an Environmental Engineer with Tetra Tech in the United States and held previous posts with Apex Companies (US), Arcadis (UK), CDP (UK) and Egis Projects (Dublin). Eoin has specialist knowledge of environmental and geotechnical site investigations, contaminated land remediation, water/groundwater resource management, environmental due diligence, environmental policy development and research. Eoin's key strengths and areas of expertise are in the management and planning of complex site assessments, remedial technology appraisal for groundwater, soil, sediment and surface water, environmental risk assessment, data analysis and regulatory compliance. Since joining MKO Eoin has been involved as a Project Environmental Engineer on a range of renewable energy, transport, commercial, and residential projects. Within MKO Eoin plays a role in the management and confidence building of junior members of staff and works as part of a multi-disciplinary team to deliver EIA Reports. He currently holds full professional membership with Engineers Ireland (MIEI) and is a former member of the American Society of Civil Engineers (ASCE).

Ellen Costello BSc (Hons) MSc

Ellen Costello is an Environmental Scientist with MKO having joined the company in November 2019. 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.

Paul Sweeney BA (Hons) M.Plan

Paul Sweeney is a Planner at MKO, Planning & Environmental Consultants. Paul holds a BA (Hons) as well as a Masters in Planning and Sustainable Development (M.Plan) from University College Cork where he graduated in 2017. Since joining MKO, Paul has developed a wide range of experience in a number of sectors including energy, infrastructure, commercial and housing. Paul works primarily on large scale energy projects which include wind farm development, solar farm developments and large-scale energy infrastructure projects. He has become experienced in a wide range of planning issues having been involved as a planning consultant across a wide scope of projects. As part of his role Paul has both managed and assisted with the coordination of Planning Applications through the statutory planning process from preparation to final grant of permission. Paul has a current focus within the environmental and energy sector where has had a key involvement in numerous projects including the renewable energy sector.

Padraig Cregg M.Sc B.Sc (Hons)

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 EIA Reports 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.

John Hynes M.Sc. (Ecology) B.Sc.

John Hynes is a Senior Ecologist with McCarthy O'Sullivan Ltd. with over 7 years of experience in both private practice and local authorities. John holds a B.SC in Environmental Science and a M.Sc. in Applied Ecology. Prior to taking up his position with MKO in March 2014, John worked as an Ecologist with Ryan Hanley Consulting Ltd. and Galway County Council. John has specialist knowledge in Flora and Fauna field surveys. Geographic Information Systems, data analysis, Appropriate Assessment, Ecological Impact Assessment and Environmental Impact Assessment. John's key strengths and areas of expertise are in project management. GIS and impact assessment. Since joining MKO John has been involved as a Senior Ecologist on a significant range of energy infrastructure, commercial, national roads and private/public development projects. Within MKO John 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 EIS/EIAR Reports. John has project managed a range of strategy and development projects across the Ireland and holds CIEEM membership.

Audrey Williams BLA (Hons.)

Audrey Williams is a Landscape Architect and Landscape and Visual Impact Assessment Specialist with McCarthy Keville O'Sullivan Ltd. Audrey graduated in 2018 from the University of Guelph, Canada with a Bachelor of Landscape Architecture (BLA, Hons.). Audrey has a combined three and a half years of landscape design and project management experience from Ireland, Sweden and Canada, with a focus on residential and park planning design and renewable energy projects. Audrey specialises in preparing landscape and visual impact assessment reports for large-scale renewable energy projects including wind farms, solar farms, quarry extraction and strategic housing schemes, as well as preparing landscape masterplans for residential and commercial spaces. Prior to taking up her position with MKO she worked in Sweden at SLU as a landscape architecture research assistant, responsible for organising and teaching several university level courses in both English and Swedish.

James Newell

James holds the position of CAD and Information Technology Technician with MKO since joining the Company in May 2006. Prior to joining MKO, he worked as a graphic designer and illustrator for over eight years. In recent years James' role has extended to include all wind farm visual modelling completed by the company. He is proficient in the use of MapInfo GIS software in addition to AutoCAD and other design and graphics packages.

Joseph O'Brien

Joseph O'Brien holds the position of CAD Technician. Joseph holds a BA Honours Level 8 Modelmaking, Design and Digital Effect, Institute of Art Design and Technology (IADT), Dun Laoghaire & City & Guilds Level 3 2D &3D AutoCAD certificates. Joseph's role entails various wind and solar farm projects which require various skills such as mapping, aerial registration and detailed design drawings for projects. Prior to joining us, Joseph worked as a free-lance Modelmaker and CAD Technician. His previous experience included designing various models and props through CAD and then making them for various conventions such as Dublin Comic Con and Arcade Con.

1.8.2.2 RSK Biocensus

Mark Lang

Mark is an experienced ornithologist with over 25 years ecological consultancy experience. He joined RSK Biocensus in July 2019, after 12 years with Arcadis. He is a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) a Chartered Ecologist (CEcol) and a Chartered Environmentalist (CEnv). His previous responsibilities were divided between his technical expertise (botany and ornithology) and as a line manager with a remit for survey training and development of staff. As an Associate Director, Mark takes a key role in project management, providing technical expertise with regard to habitat survey and ornithology. Mark is leading RSK in switching from the established Phase 1 habitat survey classification to a new pioneering habitat classification system called the UK habitat classification. Mark is the RSK ecology lead for the South West region with the Bristol and Stonehouse teams falling under his leadership. Recent high-profile projects include: HS2 (Phase 1 Central) and leading the ecology input to the nuclear new-build at Sizewell, in Suffolk. As a line manager, Mark is involved in recruitment and performance management. He leads the technical development of staff, coaching and mentoring on technical issues and assisting with chartered institute membership. He is an assessor on behalf of CIEEM for both Chartered Environmentalist and Chartered Ecologist status.

Nick Henson

Nick is an accomplished ecologist with a BSc and an MEnvSci in Environmental Science. He is a full member of CIEEM and a Chartered Environmentalist (CEnv). Nick joined RSK Biocensus in March 2021 and has more than 15 years' experience in ecological consultancy. As an Associate Director, Nick takes a key role in project management and staff development, providing technical leadership and overview as well as managing the delivery of specialised ecological components of projects. Nick also has extensive experience in ecological aspects of Nationally Significant Infrastructure Projects. He has managed, coordinated and authored the ecological inputs of many environmental and planning deliverables and is well-versed in report writing. This includes providing the specialist ecological inputs to Preliminary Ecological Appraisals, Environmental Impact Assessments (EIA) and Habitat Regulations Assessments (HRA). Recent high-profile projects have included HS2 (Phase 1 Central), Lower Thames Crossing (Highways England) and North West Coast Connections (National Grid).

Liz Turley

Liz, a Principal Ecologist with RSK Biocensus, has a BSc (Hons) in Environmental Biology and is a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Liz joined RSK Biocensus in January 2020, after 16 years' working as part of the Ecology Team at Arcadis and its precursor companies (Cresswell Associates and then Hyder Consulting). She has extensive ecological consultancy experience, focussing on impact assessment and Habitats Regulations Assessment (HRA), and is well-versed in report writing. Liz has built up her expertise working on a variety of small- and large-scale schemes, including Nationally Significant Infrastructure Projects (NSIPs) such as the A585 Windy Harbour to Skippool Creek road Scheme (Highways England) and the Number 9 Feeder Gas Transmission Pipeline, River Humber Pipeline Replacement Project. In recent years, Liz has focussed on writing HRAs of Local Plans as well as providing HRA support to the wider Ecology Team (including internal training, mentoring and technical reviews). All of Liz's HRA work follows best practice industry guidance produced by David Tyldesley Associates (DTA).

Laura Cawley

Laura, a Principal Ecologist with RSK Biocensus is a Chartered Environmentalist with a Master's degree in Ecology and Management of the Natural Environment. She joined RSK Biocensus in March 2020, after 14 years' working as part of the Ecology Team at Arcadis and its precursor companies (Cresswell Associates and then Hyder Consulting).

Laura is an experienced project manager specialising in the ecology and conservation of protected species. She has worked on a wide variety of projects, including several large Nationally Significant Infrastructure Projects. Her responsibilities include project management, ecological report writing, client liaison, undertaking ecological surveys and coordinating survey teams. She has extensive experience of undertaking Environmental Impact Assessments and inputting to Habitats Regulations Assessments. Laura also holds a Natural England survey licence for dormice. Before beginning her career in consultancy, Laura worked for the Environment Agency. Working with the Biodiversity and Ecological Appraisal teams, her responsibilities included reviewing planning applications, land drainage and discharge consents, and undertaking water quality and fish surveys.

1.8.2.3 Amplitude Acoustics Consulting Ltd.

Benny Cryan PgDip BA BAI MIEI

Benny is a Senior Acoustic Consultant with Amplitude Acoustics. He joined Amplitude in 2017, having 11 years of diverse previous experience in audio systems, instruments and live sound. Benny holds a degree in Computer & Electronic Engineering and a Post Graduate Diploma in Acoustics and Noise Control and is a full professional member of Engineers Ireland (MIEI). He has been involved in numerous projects where a high attention to detail in acoustic assessment, design and advice have been critical. Benny specialises in environmental noise including energy and renewables, industrial, commercial and transport. He combines his technical background in engineering and acoustics with extensive hands-on experience and effective communication skills to provide practical bespoke solutions to complex acoustic issues.

Dr Emmet English PhD BA BAI MIOA MIEI

As Company Director and Principal Consultant of Amplitude Acoustics Ireland, Emmet has over 17 years of experience as a professional acoustic consultant with experience on significant projects in Ireland, the United Kingdom, Australasia, the Middle East and the USA. Emmet holds a PhD in Acoustics and a Degree in Mechanical Engineering. Emmet specialises in acoustics and vibration, with expertise in a variety of areas including environmental noise (including renewable energy), vibration isolation and design, building acoustics design and transportation noise. He is a member of Engineers Ireland, the Institute of Acoustics and is a former committee member of the Australian Acoustical Society. Emmet has a strong technical understanding of acoustics and combined with his experiences provides clear, straight forward and practical solutions to potentially complex noise and vibration problems.

1.8.2.4 Tobar Archaeological Services

Tobar Archaeological Services is a Cork-based company in its 16th 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 Directors, Annette Quinn and Miriam Carroll, are licensed by the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs to carry out excavations in Ireland and have 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.

1.9 Difficulties Encountered

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

1.10 Viewing and Purchasing of the EIAR

Copies of this EIAR including the Non-Technical Summary (NTS), will be available online, via the dedicated Carnsore Wind Farm project website; https://www.carnsorewindfarm.ie/ .

This EIAR and all associated planning documentation will also be available for viewing at the offices of Wexford 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:

Wexford County Council
Planning Department
County Hall
Carricklawn
Wexford
Y35 WY93

The EIAR will also be available to view online via the Department of Planning, Housing and Local Government's EIA Portal, which will provide a link to the planning authority'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).