1. INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by McCarthy Keville O'Sullivan Ltd. (MKO) on behalf of FuturEnergy Glenard Designated Activity Company (DAC) , who intend to apply to An Bord Pleanála for planning permission for the construction of a wind energy development in Glenard and adjacent townlands near Buncranca, Co. Donegal. 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 wind energy development will encompass 15 No. wind turbines up to a maximum tip height of 173 metres (m) and will have a maximum export capacity (MEC) of 93 megawatts (MW). The application meets the threshold for wind energy set out in the Seventh Schedule of the Planning and Development Acts 2000 to 2021 and is therefore being submitted directly to An Bord Pleanála as a Strategic Infrastructure Development (SID) in accordance with Section 37E of the Planning and Development Acts 2000, as amended.

This EIAR accompanies the planning application for the proposed development submitted to the Board. The planning application is also accompanied by a Natura Impact Statement ('NIS').

The core of the proposed development site is located within existing commercial forestry properties and agricultural lands in the townlands of Glenard, Illies and Meenyanly on the Inishowen Peninsula of Co. Donegal approximately 5.9km east of town of Buncrana which overlooks Lough Swilly and 6.2km west of the village of Quigley's Point (also known as Carrowkeel) which overlooks Lough Foyle. The site location context is shown in Figure 1-1a and Figure 1-1b.

Access to the site, for Heavy Goods Vehicles (HGV) and abnormal loads (e.g. turbine components) will be via a proposed new entrance, in the northeast of the site, off a local access road (L7131-1) which in turn is accessed from the the L1731 local road. The current, existing access junctions, located in the north and south of the site will be utilised to provide access for general site traffic such as construction staff and Light Goods Vehicles (LGV).

It is proposed to connect the development to the national electricity grid via a 110kV underground cable which will connect the proposed onsite substation to the existing Trillick 110kV substation, located 6.2km southwest of the proposed on-site 110kV substation in the townland of Ballynahone. The grid connection cabling route will measure approximately 8.3km in length. The grid connection cabling route will form part of the planning application and is assessed in this EIAR.

Works required along the proposed turbine delivery route, between the R240 Regional Road and the proposed new site entrance will form part of the planning application and are assessed as part of this EIAR.

A full and detailed 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 (i.e. the main proposed wind farm site, the grid connection cabling route and proposed turbine delivery route works) is located are listed in Table 1-1.

Map Legend

EIAR Site Boundary

Drawing Title

Site Location Context

Project Title	Glenard Wind Farm, Co. Donegal
Drawn By: EM	Checked By: MW
Project No.: 190114	Drawing No.: Figure 1-1a
Scale: 1:400000	Date: 18.10.21

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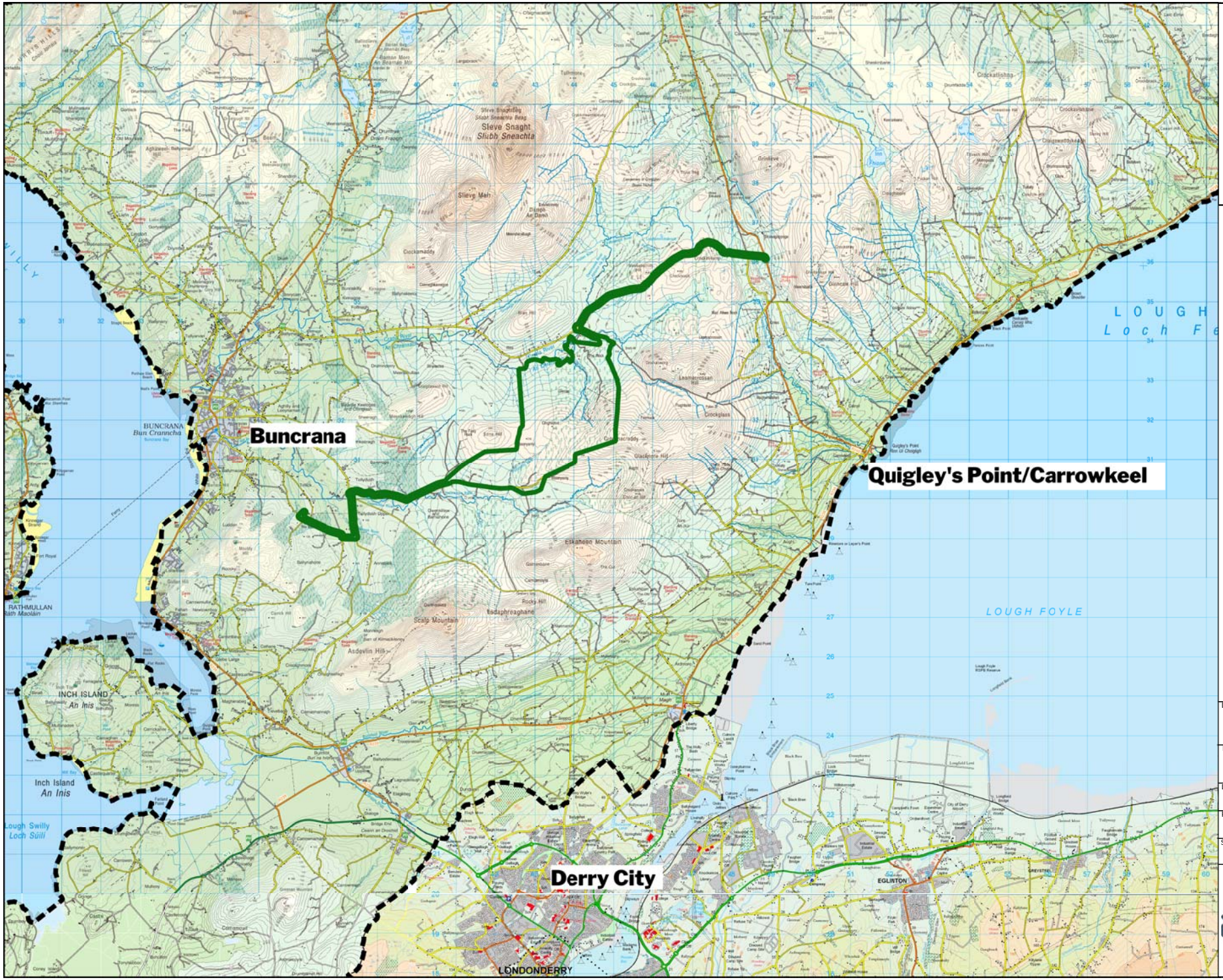

Map Legend

- EIAR Site Boundary
- Donegal County Boundary (and ROI/NI Border)

N

Drawing Title

Site Location

Project Title: Glenard Wind Farm, Co. Donegal	
Drawn By: EM	Checked By: MW
Project No.: 190114	Drawing No.: Figure 1-1b
Scale: 1:125000	Date: 18.10.21

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Table 1-1 Townlands within which the proposed development is located

Townlands within which the proposed development is located:	
Glenard	Meenyanly
Illies	Sorne
Carrowmore or Glentogher	Meenakeeragh
Ballynahone	Tullydush Upper
Carnamoyle	Owenkillew and Barnahone
Annaslee	

1.2 Legislative Context

1.2.1 Strategic Infrastrucuture Development

In relation to projects that may be deemed to be Strategic Infrastrucure Development (SID), Part 1 of the Seventh Schedule of the Planning and Development Act 2000 (Act) , as amended, specifies, inter alia, the following classes of development:

> *"An installation for the harnessing of wind power for energy production (a wind farm) with more than 25 turbines or having a total output greater than 50 megawatts."*

Once an SID determination request is made by a prospective applicant, An Board Pleanála (the Board) must satisfy itself that the proposed development meets one or more of the conditions set out in section 37A(2) of the Planning and Development Act 2000 as amended, namely–

> *"(a) the development would be of strategic economic or social importance to the State or the region in which it would be situate,*
>
> *(b) the development would contribute substantially to the fulfilment of any of the objectives in the National Spatial Strategy or in any regional spatial and economic strategy in force in respect of the area or areas in which it would be situate,*
>
> *(c) the development would have a significant effect on the area of more than one planning authority."*

Background

On the 5th of September 2019, the applicant sought a determination, from the Board, in relation to the Strategic Infrastructure Development (SID) status or otherwise, of a proposed wind farm development at Glenard, Inishowen, County Donegal. This request was made in accordance with Section 37B of the Act (Pl.05E.305388).

A pre-application consultation meeting between the Board and representatives of the applicant and MKO, in relation to the proposed development took place on the 12th of December 2019. At the meeting MKO presented the various background information with regards to the proposed development and development site. Further discussions were also had with regards to the policy context of the site. Following this meeting the Board outlined that its preliminary view was that the

proposed wind farm development would constitute strategic infrastructure and invited the applicant to request a formal closure of the pre-application consultation.

Such a request was made on the 4th of November 2020, on the basis of a 16 no. turbine layout, and the Board issued a notice to the applicant indicating its determination that the proposed development was SID on 9th December 2020 and, accordingly, that an application for permission should be made directly to the Board in accordance with Section 37A of the Act.

However, in December 2020, additional bird survey data was made available to MKO which confirmed the presence of a hen harrier roost site within approximately 300 metres of the nearest proposed turbine location. A roost is a place where hen harrier regularly gather or settle during the winter season (October to March). In order to reduce the potential for significant effects on hen harrier and the roost site, a 750 metre buffer zone was applied to the roost location. Three of the 16 no. proposed turbine locations fell within this buffer zone and, therefore, a revision of the proposed turbine layout was required. Refer to Chapter 7: Ornithology of this EIAR for further details in relation to the hen harrier roost site.

In March 2021, a revised 15 no. turbine layout was confirmed by the applicant. As one turbine had been removed from the previous layout and a number of turbines relocated, it was decided that the best course of action was to seek a new SID determination rather than rely on the original determination.

On the 26th of May 2021, the applicant sought a determination, from the Board, in relation to the Strategic Infrastructure Development (SID) status or otherwise, of the proposed development that is the subject of this EIAR, namely a 15 no. turbine wind farm development at Glenard, Inishowen, County Donegal (ABP-310369-29).

A pre-application consultation meeting between the Board repreentatives of thew applicant and MKO, in relation to the proposed 15-turbine development took place on the 10th of September 2021. At the meeting MKO presented the various background information with regards to the proposed development, development site and the evolution of the development layout. Discussions were also had with regards to the policy context of the site and the scope of the EIAR. As in December 2019, following this meeting the Board outlined that its preliminary view was that the proposed 15-turbine development would constitute strategic infrastructure and invited the applicant to request a formal closure of the pre-application consultation.

This formal closure request was made on the 12th of November 2021, on the basis of a 15 no. turbine layout, and the Board issued a notice to the applicant indicating its determination that the proposed development is SID on the 18th January 2022 and, accordingly, an application for permission should be made directly to the Board in accordance with Section 37A of the Act.

1.2.2 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'), has been transposed into Irish planning legislation by the Planning and Development Act 2000 as amended and the Planning and Development Regulations 2001 as amended. Directive 2011/92/EU 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). Most of the provisions of the new regulations came into operation on the 1st of September 2018 with a number of other provisions coming into operation on the 1st of January 2019.

This EIAR complies with the EIA Directive as amended by Directive 2014/52/EU.

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

Article 5 of the EIA Directive 2011/92/EU 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;*
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 Regulations 2001 to 2020 sets out the information to be contained in an EIAR, with which this EIAR complies.

MKO was appointed as environmental consultant on the proposed project and commissioned to prepare this EIAR in accordance with the requirements of the EIA Directive 2011/92/EU as amended by Directive 2014/52/EU.

Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended, identifies classes andscales 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 proposed development 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 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 Environmental Impact Assessment (EIA) of the proposed project.

All elements of the overall project, (including the wind turbines and associated infrastructure, substation, grid connection,and turbine delivery route) have been assessed as part of this EIAR.

1.2.3 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.

1.2.4 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 (DOEHLG), 2006) have also been taken into account during the preparation of this EIAR.

The '*Wind Energy Development Guidelines for Planning Authorities*' (DoEHLG, 2006) are currently the subject of a targeted review. 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), the '*Review of the Wind Energy Development Guidelines 2006 – Preferred Draft Approach'* (June 2017), and the Draft Wind Energy Development Guidelines (December 2019). A consultation process in relation to the 2019 document concluded on the 19th of February 2020.

At time of writing, the 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 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 issued during the consideration period for the current proposed development. Towards this end it is anticipated that the Glenard Wind Farm will be capable of adhering to the relevant noise and shadow flicker standards albeit without sight of the final, adopted guidelines the processes by which the Glenard Wind Farm will comply with the same cannot be confirmed at this stage. It should be noted that the proposed development layout complies with the required setback distance from residential properties (four times the proposed maximum tip height) in the Draft 2019 document.

1.3 The Applicant

The applicant, FuturEnergy Glenard Designated Activity Company, is a subsidiary of FuturEnergy Ireland . FuturEnergy Ireland is a new joint venture company owned on a 50:50 basis by Coillte and ESB.. Their ambition is to develop more than 1GW of renewable energy capacity by 2030 and make a significant contribution to Ireland's commitment to produce 80% of electricity from renewable sources by the end of the decade.

FuturEnergy Ireland has been involved in the development of 4 operating wind farms including Raheenleagh (Wicklow), Sliabh Bawn (Roscommon), Cloosh (Galway) and Castlepook (Cork) which have a combined total capacity of over 300 megawatts (MW). The company also has a number of proposed wind energy projects currently in the planning system. This project is part of a wider FEI ambition to support the delivery of a further 1 GW of renewable energy.

1.4 Brief Description of the Proposed Development and Overall Project

The proposed development comprises the construction of 15 No. wind turbines and all associated works. The proposed turbines will have a maximum blade tip height of up to 173 metres above the top of the foundation. The applicant is seeking a ten-year planning permission. The full description of the proposed development, as per the public planning notices, is as follows:

1. *Construction of 15 No. wind turbines and associated hardstand areas with the following parameters:*
    a. *a total tip height in the range of 162 metres minimum to 173 metres maximum,*
    b. *hub height in the range of 96 metres minimum to 107 metres maximum, and*
    c. *rotor diameter in the range of 132 metres minimum to 140 metres maximum*
2. *1 no. 110kV permanent electrical substation including a control building with welfare facilities, all associated electrical plant and equipment, security fencing, all associated underground cabling, wastewater holding tank and all ancillary structures and works;*
3. *All works associated with the permanent 110kV connection from the proposed substation to the national electricity grid, via underground cabling within permanent cable ducts in the townlands of Meenyanly, Carnamoyle, Sorne, Owenkillew and Barnahone, Meenakeeragh Tullydush Upper, Annaslee and Ballynahone to the existing Trillick 110kV substation in the townland of Ballynahone;*
4. *All associated underground electrical and communications cabling connecting the turbines to the proposed wind farm substation;*
5. *1 no. Meteorological Mast of 104 metres in height;*
6. *Upgrade of existing tracks and roads, provision of new permanent site access roads including a new site entrance (in the townland of Glenard);*
7. *1 no. borrow pit;*
8. *1 permanent no. peat and spoil repository area;*
9. *Permanent placement of peat and spoil along sections of site access roads as part of the peat and spoil management plan for the site;*
10. *2 no. temporary construction compounds;*
11. *Permanent recreation and amenity works, including marked trails, seating areas, amenity car park, and associated amenity signage;*
12. *All temporary works associated with the facilitation of turbine component and abnormal load delivery;*
13. *Construction of a permanent link road between the R240 Regional Road and the L1731 local road; construction of a second permanent link road on the L1731; permanent road widening at three locations along the L1731 (in the townlands of Carrowmore or Glentogher and Illies) all of which will facilitate the delivery of abnormal loads to the site during the construction period and may be used during the operational period if necessary or to facilitate the decommissioning of the wind farm. Following the construction period, access to the link roads will be closed off;*
14. *Site Drainage;*
15. *Site Signage;*
16. *Ancillary Forestry Felling to facilitate construction and operation of the proposed development; and*
17. *All associated site development works.*

This application is seeking a ten-year permission and 35 year operational life from the date of commissioning of the renewable energy development.

Current and future wind turbine generator technology will ensure that the wind turbine model, chosen for the proposed development, will have an operational lifespan greater than the 35 year operational life that is being sought as part of this application.

Modern wind turbine generators typically have an output of between 4 and 6.2MW. The export capacity of the proposed development will, therefore, range from a minimum of 60MW and a maximum of 93MW.

The layout of the proposed development has been led by consideration of constraints and facilitators, thereby avoiding the environmentally sensitive parts of the site. The roads layout for the proposed development maximises the use of the existing onsite access roads and tracks where possible, with approximately 6.6 kilometres of existing roadway/ tracks requiring upgrading and approximately 9.7 kilometres of new access road to be constructed.

The EIAR Site Boundary for the proposed development encompasses an area of approximately 951 hectares, the majority of which comprises commercial forestry plantation. Where the 'site' is referred to in this EIAR, this means the primary study area for the EIAR, as shown in Figure 1-2. The study area extends beyond the planning application red line boundary depending on the requirements of individual assessments. Where this occurs, the extent of the study area will be outlined in the relevant chapter, as required. The proposed permanent footprint of the proposed development measures approximately 28 hectares, which represents approximately 2.9% of the primary study area.

The EIAR Site Boundary is illustrated on Figure 1-2. An aerial view of the EIAR Site Boundary is shown in Figure 1-3. For clarity, the Planning Application Site Boundary (red line) is shown in Figure 1-4 and in the drawings included in Appendix 4-1 of this EIAR.

It is proposed to construct a 110 kV substation within the site and to connect this to the existing Trillick 110kV substation, located 6.2km southwest of the proposed on-site substation, in the townland of Ballynahone. The proposed grid connection route will be via underground cabling located within existing forestry and local county roads. The cabling route measures approximately 8km in total. The construction of the grid connection cabling route is to be undertaken by a statutory undertaker having a right or interest to provide services in connection with the proposed wind farm development.

The majority of the area encompassed by the EIAR Site Boundary is currently used for commercial forestry, a small proportion of which will be felled to accommodate the wind farm development. A total area of approximately 80.5 hectares of commercial forestry will require replacement elsewhere in the State, subject to licence. Details regarding the area to be felled are outlined in Chapter 4 of this EIAR.

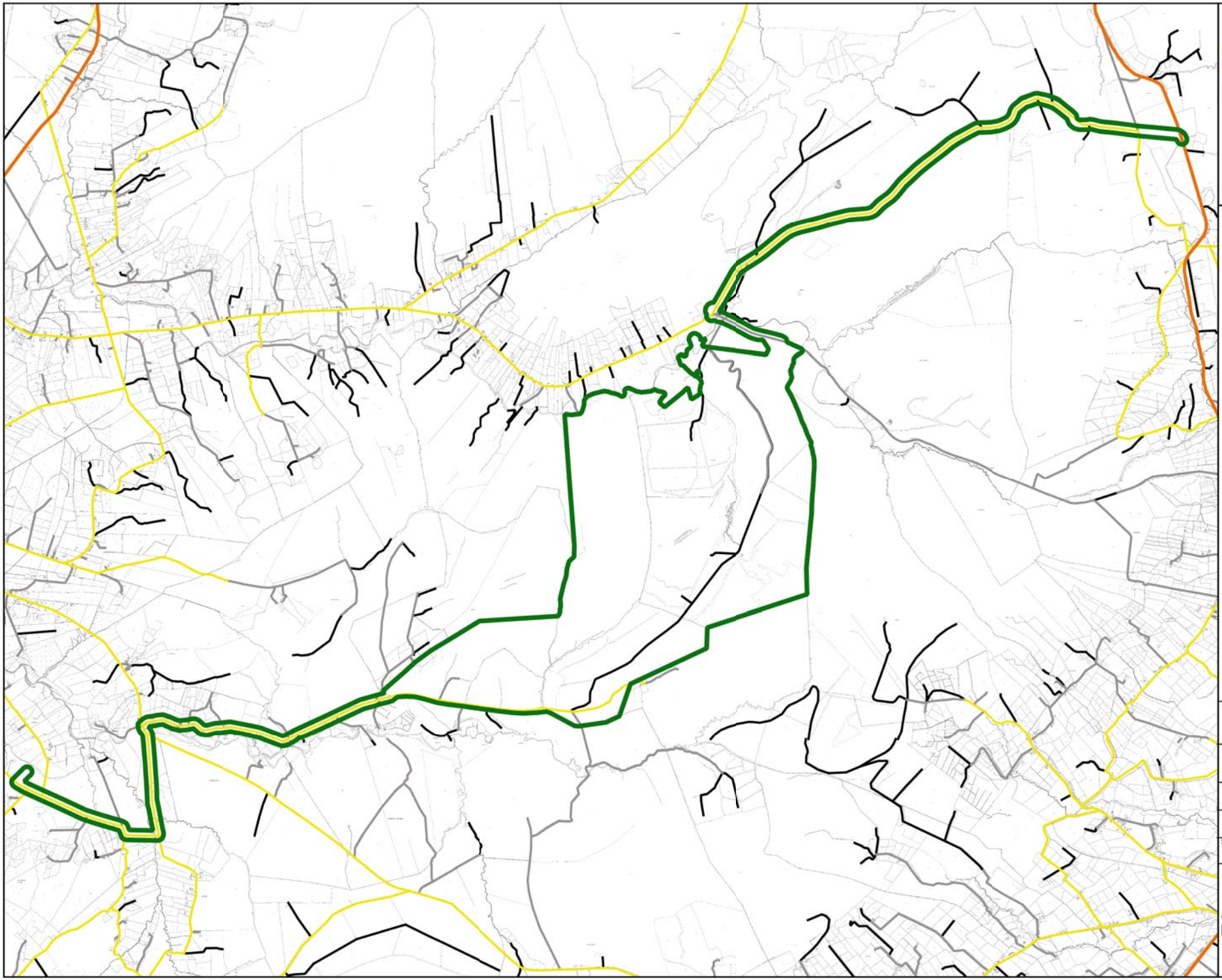
The overall project, including wind farm, grid connection, abnormal load delivery route and forestry felling have been assessed as part of this EIAR.

There are 5 No. occupied and 2 no. unoccupied/derelict (one of which is under the control of the applicant) dwellings located within 1 kilometres of the proposed turbine layout . A minimum separation distance of 740m between occupied, residential dwellings and the proposed wind turbines has been achieved with the project design. The proposed development is described in detail in Chapter 4 of this EIAR.

1.5 Need for the Proposed Development

Ireland faces significant challenges to its efforts to meet EU targets for renewable energy by 2030 and its commitment to transition to a low carbon economy by 2050. Further detail can be found in Chapter 2, Section 2.2 of this EIAR.

The proposed development provides the opportunity to capture an additional part of County Donegal's valuable renewable energy resource. If the Proposed Development were not to proceed the opportunity


Map Legend
EIAR Site Boundary
Regional Road
Local Road
Local Access Road
Existing Access Track
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Microsoft product screen shots reprinted with permission from Microsoft Corporation
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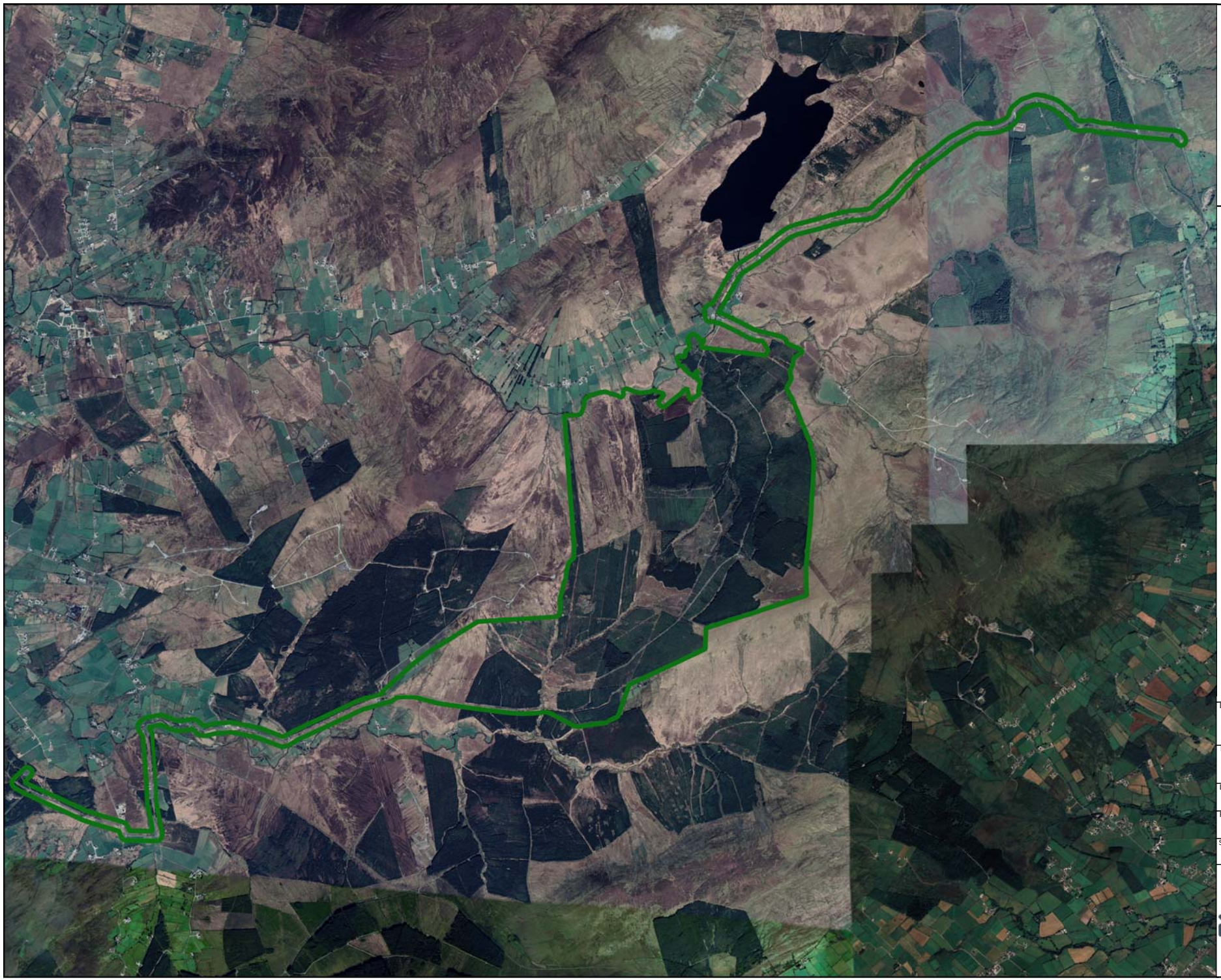

Map Legend

EIAR Site Boundary

N

Drawing Title

Aerial Photography

Project Title: Glenard Wind Farm, Co. Donegal	
Drawn By: EM	Checked By: MW
Project No.: 190114	Drawing No.: Figure 1-3
Scale: 1:50000	Date: 18.10.21

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Project Design Drawing Notes

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5. All contractors, whether main or sub-contractors, must visit the site and are responsible for taking and checking any and all dimensions and levels that relate to the works.
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7. Layout plans shows proposed Maximum Turbine rotor diameter as per turbine drawing.
8. Final levels may vary depending on local ground conditions.

Drawing Legend

- Planning Application Boundary
- Area not part of Application

DRAWING TITLE:

Location Context Map

PROJECT TITLE:

Glenard Wind Farm, Co. Donegal

DRAWING BY: Joseph O Brien	CHECKED BY: Eoin McCarthy
PROJECT No.:	DRAWING No.: Fig 1-4
SCALE: 1:50,000 @ A3	DATE: 03.02.2022
OS SHEET No.: OS2242, OS2442	

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to capture this additional part of Donegal's valuable renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.

The opportunity to generate local employment and investment associated with the Proposed Development would also be lost, and the local economy would continue to rely primarily on agriculture and commercial forestry as the main source of income.

1.5.1 Overview

In March 2019, the Government announced a renewable electricity target of 70% by 2030. The proposed development will be operational before 2030 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). As such, the proposed Glenard wind energy development is critical to helping Ireland address these challenges as well as addressing the country's over-dependence on imported fossil fuels.

The need for the proposed project 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 (Section 1.5.1.1);*
2. *A requirement to increase Ireland's national energy security as set out in the Energy White Paper (Section 1.5.1.2);*
3. *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) (Section 1.5.1.3 to Section 1.5.1.5);*
4. *Increasing energy price stability in Ireland through reducing an over reliance on imported fossil fuels; and*
5. *Provision of cost-effective power production for Ireland which would deliver local benefits (Section 1.5.1.6).*

The Climate Action Plan 2019 (CAP) was published on the 1st of August 2019 by the Department of Communications, Climate Action and Environment (DoCCAE). The CAP sets out an ambitious course of action over the coming years to address the impacts which climate may have on Ireland's environment, society, economic and natural resources. This Plan clearly recognises that Ireland must significantly step up its commitments to tackle climate disruption. The CAP identifies a need for 8.2GW of onshore wind generation. Only 4.13GW is in place as of August 2020, therefore Ireland needs to double its installed capacity of wind generation. The CAP presents clear and unequivocal support for the provision of additional renewable energy generation and presents further policy support for increased wind energy. Further information relating to the Climate Action Plan can be found in Chapter 2, Section 2.2.

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

1.5.1.1 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 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 to achieve 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, as amended, 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. More recently, the Climate Action and Low Carbon Amendment Bill 2021 was passed into law in July 2021. The Bill, entitled an Act, will manage the implementation of a suite of policies to assist in achieving a 7% average yearly reduction in overall greenhouse gas emissions over the next decade.

In accordance with the Governance of the Energy Union and Climate Action Regulation, Ireland's draft National Energy & Climate Plan (NECP) 2021-2030 was submitted to the European Commission in December 2018. The draft NECP took into account energy and climate policies developed up to that point, the levels of demographic and economic growth identified in the Project 2040 process and included all of the climate and energy measures set out in the National Development Plan 2018-2027.

The 2019 NECP was prepared to incorporate all planned policies and measures that were identified up to the end of 2019 and which collectively deliver a 30% reduction by 2030 in non-ETS (non-EU Emission Trading Scheme) greenhouse gas emissions (from 2005 levels).

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 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, published by the Government in 2015, notes that,

> *"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".*

In August 2021, the IPCC released their special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways. The importance of limiting global warming to 1.5°C is stressed. Under all scenarios presented in the report, the threshold is reached by 2040. For any chance of meeting the goal seen as essential to the survival of some vulnerable communities and ecosystems, drastic reductions in CO_2 would be needed this decade and net zero emissions by 2050.

It is estimated that the proposed wind farm development, with a potential installed capacity of 60MW to 93MW from the proposed wind turbines will result in the net displacement of between approximately 67,329 and 104,360 tonnes of Carbon Dioxide (CO_2) per annum. The carbon offsets resulting from the proposed development are described in detail in Section 10.3.4 of Chapter 10: Air and Climate.

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/

1.5.2 Energy Security

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.

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.

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".*

1.5.3 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 31.7%[3], 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 Pöyry 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.

1.5.3.1 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 was 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 were required to 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 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 contribution of renewables to gross final consumption (GFC) was 12% in 2019, compared to the 2020 target of 16% ('Energy in Ireland – 2020 Report, SEAI, December 2020). Reporting on Ireland's target status for 2020 has not yet been published and is due for publication in the coming months.

For RES-E alone, Ireland had 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, 'Energy in Ireland – 2019 Report' (SEAI, December 2019); the share of renewable electricity (RES-E) was recorded at 37.6% in 2019, out of their 40% target. This shows a positive increase in renewable energy in Ireland from that previously recorded in 2018.

The SEAI monthly electricity generation figures for December 2020 indicate that Ireland hit its 40% renewable energy target for 2020 with a share of renewable electricity recorded at 40.2% . Reporting on these figures and official confirmation on Ireland's target status for 2020 is due for publication by the SEAI in the coming months, along with further insight into energy demand trends and usage over the year 2020 in light of Covid-19. As published by the SEAI in May 2020, the impact of Covid-19 on energy demand reduction became evident in energy demand trends from the period January 2020 to May 2020 and so electricity demand and subsequent generation figures for the year 2020 will need to be analysed relative to the impact of Covid-19.

[3] *Energy in Ireland 2019 Report (Table 17) (SEAI, December 2019). Report available at: https://www.seai.ie/publications/Energy-in-Ireland-2019-.pdf*

1.5.3.2 EU 2030 Renewable Energy Targets

In March 2019, the Minister for Communications, Climate Action & 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), 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.

As noted previously, Ireland will not meet its 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 including the implications of the Climate Action Plan 2019 is noted in Chapter 2, Section 2.4.

1.5.4 Increasing Energy Consumption

As detailed above, the Climate Action Plan identifies a need for 8.2GW of onshore wind generation in order for Ireland to meet its 2030 targets. In their '*All Island Generation Capacity Statement 2021 - 2030'* (September 2021), EirGrid estimate that 4.5 – 6.6 GW on-shore wind capacity would be required to meet the 2030 RES-E targets for Ireland.

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' 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.

In April 2016 SEAI estimated the historic build rate for wind energy deployment as 180 MW per year since 2005. If this average build rate over the remaining period between 2018 and 2020 was assumed, then approximately 3.85 GW of wind would be built up to 2020. By October 2021, the installed wind capacity in the Republic of Ireland is over 4.3GW according to Wind Energy Ireland

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 31% of all demand by 2027 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.

It should be noted that each MW of additional data centre load will add at least 1 MW of wind to the 40% RES-E 2020 target[4]. Alternatively, 3 MW of wind could be required per MW of data centre if the data centre wants to commit to being powered 100% by renewable energy. Many of the data centres have made such a commitment and have well-publicised company policies to only use renewable electricity to power their data centres.

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 and 2020 due to growth in data centres. Many of the proposed data centres have committed 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 Environment, Heritage and Local Government set a target for Ireland of 40% of total electricity consumption to come from renewable resources by 2020, within an overall renewable energy target of 16%. 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[5].

The 2016 SEAI report noted that 'meeting 2020 renewable energy and energy efficiency targets could put Ireland on a low-carbon pathway and trajectory in terms of meeting future targets in 2030 and 2050.

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 state 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

[4] Data centres have high load factors of around 80%. Each 1MW uses 24 x 365 x 80% = 7GWh. EU targets require that 40% or 3GWh of that should come from renewables. A 1MW wind turbine produces roughly 3GWh/yr.
[5] Irish Wind Energy Association and Deloitte Ireland (2009). *Jobs and Investment in Irish Wind Energy – Powering Ireland's Economy.*

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 March 2019, the Irish Government have pledged to generate 70% of the country's electricity supply from renewable sources by 2030. This figure is up from the current target for that period of 55% and will form a commitment in the new climate action plan which was published in August 2019 and is being overseen by the Minister for Communications, Climate Action and the Environment. The development of additional indigenous wind energy generating capacity, such as that proposed at Glenard, will not only help to reduce 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 noted in Chapter 2, Section 2.2.

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.

In 2014, a report prepared by UK consultant BW Energy for the Rethink Pylons campaign group suggested that converting Moneypoint generation station (which runs solely on coal) from coal to biomass would enable Ireland to meet 2020 renewable energy targets. Dr Brian Motherway, Chief Executive SEAI refuted this claim. While Dr Motherway agreed that biomass offers benefits and is helping Ireland to move away from fossil fuels he stated that "the conversion of Moneypoint to biomass has been considered a number of times over the years, including actual trials of small amounts of biomass in the station. However, the technical and economic challenges have proven far greater than some would have us believe".

The reason being that the move of Moneypoint from coal to biomass would not entail a clean swap. In fact, 'to allow for combustion of biomass, a full redesign and rebuild of much of the station would be required'. In the UK where this has been done, energy generation stations have required significant financial support to make the process viable and with each unit of energy in the UK being worth approx. 13 cents, almost double that of Ireland which is approx. 7 cents, wind energy works out cheaper in Ireland. Also, the amount of biomass required to feed Moneypoint would require 300,000ha of land; an equivalent area of Counties Wexford and Carlow being planted with willow which is far more than Ireland currently produces which means we would need to import.

Importation raises the question; would this be cost effective? As prices are volatile and availability of biomass is difficult to predict Ireland would become dependent on the uncertainty of imported biomass. It is also noted that there will be emissions from transport and distribution. The further the biomass is transported, the greater the greenhouse gas emissions . So, while biomass is currently contributing to a move to renewable energy production, on its own it is not the sole answer to meeting Ireland's renewable energy targets. Ireland has a legal obligation to diversify its energy sources requiring the development of renewable energy to avoid substantial fines.

More recently, and with the 2030 targets being released; the Joint Committee on Climate Action has 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 Mona and ESB stations by 2030. In August 2019, the Department of Communications, Climate Action and Environment 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 2.2.4.

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. Notwithstanding this, it must also be acknowledged that not every part of Ireland is well endowed with wind resources and therefore, not all counties will be able to deliver wind-based renewable energy. 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 must be achieved, and it is crucial that these are appropriately translated and implemented at regional and local levels. Wind farm development and design involves balancing the sometimes-conflicting interests of constraints (e.g. natural and built heritage, human beings, ecological, ground conditions, hydrological, etc.) with visual amenity and the technological/economic requirements/realities of the specific project and turbines.

1.5.5 Programme for Government – 'Our Shared Future' – 2020

In June 2020, the programme for government was agreed by the leaders of Fine Gael, Fianna Fail and the Green Party. The programme contains commitments under a number of policy headings which inlcude:

- A better quality of life for all;
- Reigniting and renewing the economy;
- A green new deal;
- Universal healthcare;
- Housing for all;
- Balanced regional development;
- A new social contract;
- Building stronger and safer communities;
- Better opportunities through education and research;
- A shared island;
- At the heart of Europe and global citizensip; and
- Reforming and reimagining our public life.

Under the 'Green New Deal', The government is committed to an averarage 7 per cent per annum reduction in overall greenhouse gas emissions from 2021 to 2030, which is a 51 per cent reduction over the decade, with the aim of achieving net zero emissions by 2050. The proposed development is likely to be operational before 2030 and willcontribute to this 2030 target.

1.5.6 Reduction of Carbon Emissions and Other Greenhouse Gases

The production of renewable energy from the proposed development 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, by 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 proposed development will displace between approximately 67,329 and 104,360

tonnes of carbon emissions per annum from the largely carbon-based traditional energy mix, the detail of which is presented in Section 10.3.4 in Chapter 10 of this EIAR.

EU and World Health Organisation reports estimate that poor air quality accounted for premature deaths of almost 600,000 people in Europe in 2012[6]. In Ireland, the premature deaths attributable to air pollution are estimated at 1,200 people per annum as outlined in 'Ireland's Environment – An Assessment' (EPA, 2016.) The report states that the pollutants of most concern are NO_x, (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 (NO_x), and sulphur dioxide SO_2, thereby resulting in cleaner air and associated positive health effects.

1.5.7 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 on imported sources of energy, such as coal, oil and natural gas. As detailed above, in 2018 the cost of all energy imports to Ireland was approximately €5 billion with imported fossil fuels accounting for 67% of all energy consumed ('Energy in Ireland 2019', SEAI, 2019).

The SEAI report 'Energy in Ireland 2019' indicated that renewable electricity (mostly wind energy) during 2018 and compared to 2016:

- Displaced €430 million in fossil fuel imports;
- Reduced CO_2 emissions by 4 million tonnes; and
- Did not add to consumer bills.

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. 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.

The proposed development will be capable of providing power to supply between 43,800 and 67,890 households every year, as presented in the calculations in Section 4.3.1.6 of this EIAR.

6 www.euro.who.int/en/health-topics/environment-and-health/air-quality/news/news/2014/03/almost-600-000-deaths-due-to-air-pollution-in-europe-new-who-global-report

At a Regional Level, the proposed development will help to supply the rising demand for electricity, resulting from renewed economic growth. The 'All-island Generation Capacity Statement 2017 – 2026' (SONI and Eirgrid, 2017) notes that electricity demand on the island of Ireland is expected to grow by 17% over the same period.

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

The annual commercial rate payments from the proposed development to Donegal County Council will be redirected to the provision of public services within those counties. These services include items 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 project will create approximately 100-120 jobs during the construction phase and 2-3 jobs during the operational and maintenance phases of the proposed development. During construction, 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.

Should the proposed development receive planning permission, there are substantial opportunities available for the local area in the form of Community Benefit Funds. Based on the current proposal, a Community Benefit Fund in the region of €7 million will be made available over the lifetime of the project. The 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, and environmental projects.

Further to the above, the recent Renewable Energy Support Scheme (RESS) Terms and Conditions, published by the Department of Communications, Climate Action and Environment on the 29th October 2021, make some high level provisions for how this type of benefit fund will work. Any project which wants to export electricity to the national grid must abide by these broad principles. These include the following:

1. *a minimum of €1,000 shall be paid to each household located within a distance of a 1 kilometre radius from the Project;*
2. *a minimum of 40% of the funds shall be paid to not-for-profit community enterprises whose primary focus or aim is the promotion of initiatives towards the delivery of the UN Sustainable Development Goals, in particular Goals 4, 7, 11 and 13, including education, energy efficiency, sustainable energy and climate action initiatives;*
3. *a maximum of 10% of the funds may be spent on administration. This is to ensure successful outcomes and good governance of the Community Benefit Fund.*
4. *the balance of the funds shall be spent on initiatives successful in the annual application process, as proposed by clubs and societies and similar not-for-profit entities, and in respect of Onshore Wind RESS 1 Projects, on "near neighbour payments" for households located outside a distance of 1 kilometre from the Project but within a distance of 2 kilometres from such Project.*

Further details on the proposed Community Gain proposals are presented in Section 4.5 and Appendix 2-2 of this EIAR.

1.5.8 Recreational Benefits

In addition to the economic and environmental benefits of the proposed development, there will be social and recreational benefits associated with the recreational and amenity proposals that will form part of the project.

The proposed development and all its associated infrastructure creates a unique opportunity to develop an amenity area for use by members of the local and wider community alike. The upland nature of the site is attractive to both locals and visitors to the area. It is proposed to develop recreational walks as part of the Glenard Wind Farm project which will utilise existing forest tracks and include new wind farm roads and designated walkways . This proposal is based on the current use of the wider area as an informal walking route; where the proposed amenity facilities will allow for a safer and improved visitor experience and allow the site to be more openly available to walkers, trail runners, cyclists and other recreational users, as outlined in Section 4.6 of Chapter 4 of this EIAR.

This will provide a long-term benefit to both the local community and visitors to the area.

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 site 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 the competent authorities, 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 significant effects of the proposed development on the following:

- Population and Human Health,
- Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC
- Land, Soil, Water, Air, Climate,
- Material Assets, Cultural Heritage and the Landscape
- Interactions between these factors.

The EIAR provides the relevant environmental information to enable the EIA to be carried out by the competent authorities. The information to be contained in the EIAR is prescribed in Article 5 of the EIA Directive, as amended and described in Section 1.2.2 above.

1.7 Structure and Content of the EIAR

Volume 1 of 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:

- Introduction
- Background to the Proposed Development
- Consideration of Reasonable Alternatives
- Description of the Proposed Development

- Population and Human Health
- Biodiversity (excluding Birds)
- Ornithology
- Land, Soils and Geology
- Hydrology and Hydrogeology
- Air and Climate
- Noise and Vibration
- Landscape and Visual
- Archaeological, Architectural and Cultural Heritage
- Material Assets (including Traffic and Transport, Telecommunications and Aviation)
- Vulnerability of the Project to Natural Disasters
- Transboundary Effects
- Interactions of the Foregoing
- Schedule of Mitigation and Monitoring 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.

The photomontage booklet, pertaining to Chapter 12: Landscape and Visual, is included as Volume 2 of this EIAR.

Appendices to the chapters listed above are included in Volume 3 of this EIAR.

1.7.1 Description of Likely Significant Effects and Impacts

As stated in the Draft *'Guidelines on the Information to be contained in Environmental Impact Assessment Reports'* (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 European Commission (EC) and the Environmental Protection Agency (EPA):

- *'Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report'* (EC, 2017)
- *'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)

The European Commission 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', which have also been consulted.

Table 1-2 below, 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

Impact Characteristic	Term	Description
	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

Impact Characteristic	Term	Description
	'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. The remaining impact 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 15: Interaction of the Foregoing.

Given the location of the site of the proposed development, approximately 7km northwest of the land-border with Nothern Ireland, the potential for transboundary effects is also assessed under each of the environmental topics in this EIAR and this is presented in Chapter 17: Transboundary Effects. The need to consider transboundary impacts has been embodied by The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, adopted in 1991 (the 'Espoo Convention'). The Espoo Convention requires that assessments are extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary impacts. The Espoo Convention has been ratified by the European Union, Ireland and the United Kingdom of Great Britain and Northern Ireland.

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 and scripting 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 EIAR Project Team

Consultants	Principal Staff Involved in Project	EIAR Input
McCarthy Keville O' Sullivan Ltd. Block 1 GFSC Moneenageisha Road Galway	Brian Keville Michael Watson Jimmy Green Meabhann Crowe Paul Sweeney Eoin McCarthy John Hynes Padraig Cregg David McNicholas Patrick Ellison Dr. Una Nealon Aoife Joyce Patrick Manley Ian Hynes David Naughton Joanna Mole Stephen Corrigan Eoin Gilson Karen Mulryan Shaun Doolin James Newell Joseph O'Brien	Project Managers, Scoping and Consultation, Preparation of Natura Impact Statement, Report Sections: › 1. Introduction › 2. Background to the Proposed Development › 3. Consideration of Alternatives › 4. Description of the Proposed Development › 5. Population & Human Health (Karen Mulryan, Shaun Doolin) › 6. Biodiversity (David McNicholas, Patrick Ellison, John Hynes) › 7. Ornithology (David Naughton, Patrick Manly, Padraig Cregg) › 10. Air & Climate (Karen Mulryan, Eoin McCarthy) › 12. Landscape & Visual (Joanna Mole, Eoin McCarthy, Michael Watson) › 14. Material Assets (non-Traffic) (Eoin McCarthy) › 15. Vulnerability of the Project to Accidents and Natural Disasters (Karen Mulryan, Eoin McCarthy) › 16. Transboundary Effects › 17. Interaction of the Foregoing › 18. Schedule of Mitigation Measures
Hydro Environmental Services 22 Lower Main Street Dungarvan Co. Waterford	Michael Gill David Broderick	Flood Risk Assessment, Drainage Design, Preparation of Report Sections: › 8. Land, Soils & Geology › 9. Water

Consultants	Principal Staff Involved in Project	EIAR Input
Fehily Timoney & Company (formerly Applied Ground Engineering Consultants Ltd.) The Grainstore Singletons Lane Bagnelstown Co. Carlow	Paul Jennings Ian Higgins	Preparation of Geotechnical & Peat Stability Assessment and Peat & Spoil Management Plan
AWN Consulting The Tecpro Building Clonsgaugh Business & Technology Park Dublin 17	Dermot Blunnie Mike Simms	Baseline Noise Survey, Preparation of Report Section 11: Noise and Vibration
Tobar Archaeological Services Saleen Midleton Co. Cork	Annette Quinn Miriam Carroll	Preparation of Report Section 13: Cultural Heritage and Archaeology
Alan Lipscombe Traffic and Transport Consultants Claran, Headford, Co. Galway	Alan Lipscombe	Swept Path Analysis, Preparation of Report Section14: Material Assets – Traffic and Transport

1.8.2 Project Team Members

1.8.2.1 MKO

Brian Keville B.Sc. (Env.)

Brian Keville has over 19 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., and whom recently rebranded as MKO (March 2019). 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 CEnv PGeo

Michael Watson is Project Director and head of the Environment Team in MKO. Michael has over 20 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 Principal Planner in MKO and has a wide range of experience in project management and coordination, planning research, analysis, and retail planning. Jimmy holds a BA(Hons) Degree in Human and Physical Geography from National University Ireland Galway, a Masters Degree in Regional and Urban Planning from University College Dublin, and an Advanced Diploma in Planning and Environmental Law from Kings Inns. 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, submissions to Development Plans/Local Area Plans. Over the last decade Jimmy has been involved in dozens of renewable energy developments from site identification, through feasibility, all stages of the planning permission process (from application, through to appeals and Judicial Review) including several Strategic Infrastructure

Developments), as well as co-ordinating condition compliance and due diligence reporting. Jimmy is also a corporate member of the Irish Planning Institute.

Meabhann Crowe BA (Hons.), MURP, MRTPI

Meabhann Crowe is a Project Planner with McCarthy O'Sullivan Ltd with over 13 years' private sector experience. She is a fully chartered member of the Royal Town Planning Institute (MRTPI). Meabhann holds a BA (Hons) in Geography, Sociological and Political Science and a Masters in Urban and Regional Planning. Prior to taking up her position with McCarthy Keville O'Sullivan in October 2018, Meabhann was employed as an Associate Director with Colliers International in their Edinburgh office, prior to which she was employed for several years with Halliday Fraser Munro. In her time in the industry Meabhann has been active on a number of instructions across a broad spectrum of mixed-use, residential, commercial, renewable energy and retail projects.

Meabhann brings particular expertise in initial development feasibility appraisals and development strategies. Her experience in managing large multi-disciplinary teams in the preparation of local and major planning applications across residential and mixed-use and retail developments means she has a wealth of knowledge to draw on in the early stages of development. She has particular experience in preparing and managing site strategies which include both responding to emerging planning policy whilst also preparing and progressing planning applications and appeals.

Eoin McCarthy B.Sc. (Env.)

Eoin is a Project Environmental Scientist with McCarthy O'Sullivan Ltd. with over 10 years of environmental consultancy experience. Eoin holds B.Sc. (Hons) in Environmental Science from NUI, Galway. Eoin took up his position with McCarthy Keville O'Sullivan in June 2011. Eoin's key strengths and areas of expertise are in project management, environmental impact assessment, wind energy site selection and feasibility assessment. Since joining MKO Eoin has been involved as a Graduate, Assistant and Project Environmental Scientist on a significant range of energy infrastructure, tourism, waste permit, flood relief scheme and quarrying projects. He has overseen some of the largest SID wind energy in Ireland in recent years. In his role as project manager, Eoin 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. Eoin is also involved in the development of project strategy for the projects that he manages. He has held the role of project manager on over 500MW worth of wind energy projects. Within MKO Eoin plays a large 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.

Padraig Cregg B.Sc. (Zoo.), M.Sc. (Eco.)

Padraig Cregg is a Senior Ornithologist with McCarthy O'Sullivan Ltd. with over 10 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.

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

John Hynes is a Senior Ecologist with McCarthy O'Sullivan Ltd. with over 9 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 Reports. John has project managed a range of strategy and development projects across the Ireland and holds CIEEM membership.

David Naughton B.Sc. (Env.)

David Naughton is an Ecologist with over five years of professional experience, working within the Ornithology Department for MKO. David graduated with an honours B.Sc. degree in Environmental Science from NUIG in 2016. David has a wide range of ecological experience including bird surveys, vegetation surveys, terrestrial invertebrate surveys, freshwater invertebrate surveys, river surveys for salmonids and other fish species, small mammal surveys and habitat identification. David is also very accomplished in GIS software systems for use in interpreting ecological data. David has experience in report writing and has been involved the production of several EIS/EIARs for various windfarm projects as well as numerous interim bird survey reports issued to clients on an ongoing basis. David has also been responsible for the production of collision risk modelling for bird activities at several windfarm sites over the past year, many of which have been peer reviewed by experts in CRM and were found to be appropriate. David's key strengths and areas of expertise are applications of GIS systems, including viewshed analysis and collision risk modelling, project management, survey planning and analysing & interpreting large scale datasets. Since joining MKO David has been involved in a wide range of various projects, acting as project manager for many bird survey projects while providing a pivotal contact link between clients and field surveyors.

Ian Hynes B.Sc. (Env.)

Ian Hynes is a Graduate Ecologist with McCarthy Keville and O'Sullivan Ltd., joining in December of 2017. Ian holds a B.Sc. (Hons) in Environmental Science from National University of Ireland, Galway. Ian has a broad knowledge of ecology including invertebrate surveys and identification, vegetation surveys, small mammal surveys and habitat identification. Ian also has over two years of experience using GIS software systems including ArcGIS and QGIS and MapInfo to present ecological data.

As part of his final year thesis Ian gained valuable experience in report writing, data input, invertebrate and plant identification. Ian also liaised with members of the AranLIFE project and local landowners on Inis Oirr, Aran Islands in the summer of 2016 while completing his thesis.

Ians key strengths are in Data management and GIS/MapInfo software. Since joining the Ornithology team at McCarthy Keville & O'Sullivan Ltd. He has been involved in a number of windfarm projects, utilizing his skills to compile data and create maps for surveys and figures.

Una Nealon PhD, B.Sc.

Úna Nealon is a Project Ecologist with McCarthy O'Sullivan Ltd. with over 9 years of experience in consultancy, research and conservation management. After gaining a first class honours degree in Environmental Science at NUIG, Úna worked as an Environmental Consultant for OES Consulting where she gained experience in multidisciplinary ecological surveys and impact assessment. In addition,

she has held research roles in Tanzania and Madagascar, studying local flora and fauna, and developing conservation management plans. Before joining MKO in June 2016, she completed her PhD with the Centre for Irish Bat Research, examining the impacts of wind farms on Irish bat species. Úna's primary expertise lies in bat ecology, particularly in relation to wind farm EIA. Beyond this, she is a skilled general ecologist, with experience in flora identification, habitat classification, GIS mapping, mammal surveys, Ecological Impact Assessment and Appropriate Assessment. Since joining MKO, Úna has been responsible for managing bat survey requirements for a variety of wind and solar energy planning applications, as well as other commercial, residential and infrastructure projects. This includes scope development, roost assessments, acoustic surveying, sonogram analyses, impact assessment and report writing. Within MKO, she works as part of a multi-disciplinary team to quickly identify potential ecological constraints and to produce EIS Reports, Appropriate Assessment Screening Reports and Natura Impact Statements. Úna is a member of the Irish Ecological Association, Bat Conservation Ireland and is Secretary of Galway Bat Group.

David McNicholas B.Sc. (Env.), M.Sc. (Env.)

David McNicholas is a Senior Ecologist at McCarthy Keville O'Sullivan, Planning & Environmental Consultants. David holds a BSc (First Class Hons) Environmental Science and an MSc (Hons) Environmental, Health and Safety Management. David has over 10 years' professional ecological consultancy experience. David specialises in the preparation of EIAs, EcIAs and NISs including ecological surveys and monitoring. David has worked on all phases of wind farm development from feasibility/ scoping, ecological surveys, preparation of full EIS chapters, construction phase environmental monitoring and post-construction ecological monitoring. David has worked as an Ecological Clerk of Works (ECoW) during the construction phase of ten large scale wind farms in Ireland and Northern Ireland, gained significant experience on the implementation of the environmental and ecological measures. David is a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM).

Patrick Ellison B.Sc. (Bio.), M.Sc. (Bio.)

Patrick is a Project Ecologist with MKO having joined the company in January 2021. Patrick holds a B.Sc. (Hons) in Applied Marine Biology and an M.Sc. in Wildlife Biology and Conservation. Patrick has over 5 years' experience as a professional ecological consultant, and prior to joining MKO worked as an Ecologist for a dedicated Ecological Consultancy based in the UK, where he undertook a wide range of habitat and protected species survey work and delivered a large variety of ecological projects. Prior to that he worked as a wildlife consultant for a small consultancy based in Greater London. He has also worked for and with a number of other wildlife conservation organisations and charities including the Wildwood Trust, The Fox Project, American Conservation Experience, Hessilhead Wildlife Rescue and the Scottish Wildlife Trust. Patrick's key strengths and areas of expertise are in terrestrial flora and fauna ecology, including habitat mapping, protected species sign surveys, with a particular focus on terrestrial mammals, and bat surveys, including specialist licensed tree climbing inspections and assessment for bats. Since joining MKO Patrick has been overseeing project management of a suite of our renewable energy projects, as well as carrying out a variety of habitat and protected species survey work. Within MKO Patrick plays a large role in carrying out Stage 1 and Stage 2 Appropriate Assessment Reports and contributing to Environmental Impact Statements. Patrick is an Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Aoife Joyce B.Sc. (Env.), M.Sc. (Ag.)

Aoife Joyce is a Project Ecologist with MKO Planning and Environmental Consultants with experience in research, consultancy and drilling contractors. 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 worked as an Environmental Scientist with Irish Drilling Ltd. and 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, soil and water sampling,

Waste Acceptability Criteria testing, electrofishing, mammal and habitat surveying to GIS, Environmental Impact Assessments (EIAs) and mapping techniques. Since joining MKO, Aoife has been involved in managing bat survey requirements for a variety of wind farm planning applications, as well as commercial, residential and infrastructure projects. This includes scope development, roost assessments, deploying static bat detectors and weather stations nationwide, dawn and dusk bat detection surveys, sonogram analysis, mapping, impact assessment, mitigation and report writing. Within MKO, she works as part of a multidisciplinary team to help in the production of ecological reports and assessments. Aoife is a member of Bat Conservation Ireland and CIEEM and holds a current Bat Roost Disturbance licence.

Joanna Mole BSc PGDipLA MSc CMLI

Joanna Mole is a Landscape and Visual Impact Assessment Specialist and Chartered Landscape Architect with McCarthy O'Sullivan Ltd. with over 15 years of experience in both private practice and local authorities. Joanna holds a BSc (Hons) in Landscape Design & Plant Science from Sheffield University, a Postgraduate Diploma in Landscape Architecture from Leeds Beckett University, and a MSc in Renewable Energy Systems Technology from Loughborough University. Prior to taking up her position with MKO in October 2017, Joanna worked as a Landscape Architect with Kav-Banof in Israel and held previous posts with CSR in Cork, LMK in Limerick, Geo Architects in Israel and Groundwork Bridgend in South Wales. Joanna is a Chartered Landscape Architect with specialist knowledge in Landscape and Visual Impact assessments for projects ranging from individual houses to large windfarms, cycle route design and landscape contract management. Since joining MKO Joanna has been involved in projects such as energy infrastructure, extraction industry and residential projects. Joanna holds chartered membership of the British Landscape Institute since 1998 and has been an examiner for British Landscape Institute professional practice exam.

Paul Sweeney BA. MSc.

Paul Sweeney is a Planner with MKO having joined the team in April 2018. Paul holds a BA (Hons) in Geography and English and a Masters in Planning and Sustainable Development from University College Cork where he graduated in 2017. Since joining MKO, Paul has developed experience in a range of sectors through various projects and planning issues with a current focus within the Environmental and Energy sector.

Owen Cahill B.Sc., M.Sc.

Owen is an Environmental Engineer with McCarthy O'Sullivan Ltd. with over 12 years of experience in the environmental management and construction industries. Owen holds BSc. (Hons) and MSc. in Construction Management and a Masters in Environmental Engineering. Prior to taking up his position with MKO in October 2013, Owen worked as an Environmental Officer with Kepak and prior to which he held a post with Pentland Macdonald Contaminated Land & Water Specialist in Northern Ireland. Prior to working in planning and environmental consultancy, Owen was employed within the construction industry where he gained significant experience on a variety of civil, residential and commercial projects. Owen's wide ranging multi sector experience has provided him with specialist knowledge and understanding of the challenges in the planning and delivery of developments with the minimum environmental impact and with practicality and constructability in mind. Owen's key strengths and areas of expertise are in project management, environmental impact assessment, wind energy & solar energy construction & environmental management planning and waste permit management. Since joining MKO Owen has been involved as a Project Manager on a range of energy infrastructure, commercial, residential, waste facility and quarry projects as well as managing the licensing requirements of a number of EPA licensed facilities. Within MKO Owen 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 Reports. Owen has project managed the Environmental Impact Assessment of a range of development projects across the Ireland and holds Affiliate Membership with

the Institute of Environmental Management & Assessment and is currently awaiting interview and assessment to become a Full Member and Chartered Environmentalist.

Karen Mulryan BA MSc ACIfA IAI

Karen is an Environmental Scientist with MKO with over 3 years' experience in the private consultancy sector and over 1-year experience in the commercial archaeology sector. Karen holds a BA International in Archaeology from NUI Galway and a MSc in Archaeology from the University of Edinburgh. Karen has a wide range of experience in the commercial sector including: watching briefs on behalf of South East Water England; watching briefs during the ground works of a solar farms in the UK; field excavation and survey of Iron Age, Roman and Medieval sites in Ireland and the UK; and desk based assessments and heritage walk over surveys for a wide range of projects including solar farms, energy storage facilities, grid routes, mixed use and residential developments in the Republic of Ireland. Karen has project experience coordinating Environmental Assessments and site work for a wide range of developments such as solar, residential, energy storage, small wind projects, retail, EV stations etc. for full, amendment, RFI, Clarification FI, exempted development and SID applications in Ireland and the UK. Karen has experience in report writing, input into EIAR chapters, feasibility studies and EIA screening reports, liaising with planning authorities and managing subconsultants. Karen holds memberships with the Chartered Institute for Archaeologists (ACIfA) and the Institute of Archaeologists Ireland (IAI) and has a CSCS card.

Stephen Corrigan B.Sc.

Stephen Corrigan is an Environmental Scientist with McCarthy O'Sullivan Ltd. with over 4 years of experience in private and public sector positions. Stephen holds a B.SC in Environmental Science. Stephen has specialist knowledge in environmental field surveys, database management, geographic information systems and data analysis. Stephen's key strengths and areas of expertise are in data management and GIS. Since joining MKO Stephen has been involved as an Assistant Environmental scientist on a significant range of energy infrastructure and private/public development projects, hydrological and ecological monitoring projects. Within MKO Stephen has a role in site construction monitoring, report writing and database management. Stephen works as part of a large multi-disciplinary team to produce EIS Reports, operational compliance reports and monitoring reports for MKO.

Eoin Gilson B.Sc., M.Sc.

Eoin was an Environmental Scientist with McCarthy O'Sullivan Ltd. who took up his position in October 2018. Eoin holds a BSc (Hons) in Microbiology and a MSc (Hons) in Applied Environmental Science. Eoin has specialist knowledge in environmental field surveys, data analysis and renewable energy systems. Eoin's key strengths and areas of expertise are in data management, report writing and environmental monitoring and management. On joining MKO Eoin has been involved on a range of renewable energy infrastructure projects, working as part of a large multi-disciplinary team to produce EIA Reports.

Daire O'Shaugnessy B.Sc. (Env.)

Daire O'Shaughnessy joined MKO as a Graduate Environmental Scientist in June 2020. Daire holds a B.Sc (Hons) in Environmental Science from the University of Limerick. Daire completed 8 months placement with MKO between January and August 2019. Daire has a specialist knowledge in environmental field surveys, data analysis and renewable energy systems. Daire's key strengths and areas of expertise are in environmental monitoring and management, data management and GIS. On joining MKO, Daire has been involved on a range of renewable energy infrastructure projects, working as part of a large multi-disciplinary team to produce EIA Reports.

Shaun Doolin BA. (Hons.), M.Sc. (Hons.)

Shaun is a Graduate Environmental Scientist with MKO having joined the company in March 2021. Shaun holds a BA (Hons) in General Science/Geography, and a MSc (Hons) in Environmental Science where he focused his studies on environmental data analysis. Shaun's key strengths and expertise are GIS, data analysis, fieldwork and report writing. Since joining MKO, Shaun has been involved in a range of wind farm projects. In his role as a Graduate Environmental Scientist, Shaun 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.

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 joined MKO in 2016 and his role entails mapping, aerial registration and detailed design drawings for renewable, commercial and residential projects. Prior to joining us, Joseph worked as a free-lance CAD Technician for various projects.

1.8.2.2 Hydro Environmental Services Ltd.

Michael Gill

Michael Gill is an Environmental Engineer with over 12 years' environmental consultancy experience in Ireland. Michael has completed numerous hydrological and hydrogeological impact assessments of wind farms in Ireland. He has also managed EIA/EIS assessments for infrastructure projects and private residential and commercial developments. In addition, he has substantial experience in wastewater engineering and site suitability assessments, contaminated land investigation and assessment, wetland hydrology/hydrogeology, water resource assessments, surface water drainage design and SUDs design, and surface water/groundwater interactions.

David Broderick

David Broderick is a hydrogeologist with over 9 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 hydrogeological/hydrological investigations in relation to developments such as quarries and wind farms. David has completed numerous geology and water sections for input into EIAs for a range of commercial developments.

1.8.2.3 Fehily Timoney & Company

Fehily Timoney & Company Ltd. (FT) recently acquired AGEC Ltd. adding to their growing geotechnical team. The geotechnical aspects of the report, which will be incorporated into the Geology & Soils and Water sections of the EIAR, will be completed by Fehily Timoney & Company Ltd. FT

(previously AGEC) has extensive experience in the production of Peat Stability Assessments for wind energy developments. They provide specialist geotechnical engineering and engineering geology advice to local authorities, contractors and consultants, particularly for infrastructure projects forming part of the National Development Plan and also for private commercial and residential developments as they move on to sites with more complex ground conditions.

Dr. Paul Jennings

Dr. Paul Jennings is a geotechnical engineer with over 30 years' experience of design and construction of sub-surface structures, foundations, earthworks, infrastructure and earth-retaining structures; planning, supervision and interpretation of ground investigation; and providing expert geotechnical advice and reporting. Paul has particular experience in providing expert advice for slope stability problems, soft ground engineering, infrastructure, deep-excavations and forensic investigation of landslides.

Ian Higgins

Ian is a geotechnical engineer with over 18 years' experience in the design and supervision of construction of bulk earthworks, geotechnical foundation design, geotechnical monitoring and reviewing, reinforced earth design and 3rd party checking of piling and ground improvement designs. Ian's experience also includes the design, supervision and interpretation of ground investigations, including desk studies, walkover surveys, hazard mapping of rock excavations and slopes.

Ian has experience in many areas of civil engineering including highways, railways, energy projects and commercial developments. Ian's responsibilities include managing junior engineers, reviewing work carried out for ground investigation, reporting and design. Ian has also experience in using a number of geotechnical software packages including slope stability, finite element, pile design and retaining wall design.

1.8.2.4 AWN Consulting Ltd.

Dermot Blunnie

Dermot Blunnie (Senior Acoustic Consultant) holds a BEng. from the University of South Wales, a M.Sc. from the University of Derby and IOA Diploma in Acoustics and Noise Control from the Institute of Acoustics. He has over 11 years' experience as an acoustic consultant and is a member of the Institute of Acoustics. He has extensive knowledge and experience in relation to commissioning noise monitoring and impact assessment of wind farms as well as a detailed knowledge of acoustic standards and proprietary noise modelling software packages. He has commissioned noise surveys and completed noise impact assessments for numerous wind farm projects within Ireland.

Mike Simms

Mike Simms BE MEngSc MIOA MIET, Senior Acoustic Consultant at AWN, who has worked in the field of acoustics for over 19 years and has been a consultant since 1998. He has extensive experience in all aspects of environmental surveying, noise modelling and impact assessment for various sectors including, energy, industrial, commercial and residential.

1.8.2.5 Tobar Archaeological Services Ltd.

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 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.

Annette Quinn

Annette holds a Degree in Archaeology and Geography (1993-1996) and a 2 year Masters in Methods and Techniques in Irish Archaeology (1996-1998) from UCC. With 20 years' experience in both the public and private sector she has project managed many of the large-scale projects and Environmental Impact Assessments that Tobar Archaeological Services have been involved in.

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.

1.8.2.6 Alan Lipscombe Traffic and Transport Consultants

Alan Lipscombe (B.Eng. Hons.) MIHT

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 and is an accomplished analyst who has experience of a wide variety of modelling packages and methods.

1.9 Difficulties Encountered

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

1.10 Viewing and Purchasing the EIAR

Copies of this EIAR will be available online, 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).

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

This EIAR and all associated documentation will also be available for viewing at the offices of both An Bord Pleanála and Donegal 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

- Donegal County Council,
County House,
The Diamond,
Lifford,
Co. Donegal

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)

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