

1 INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment Report ('EIAR') has been prepared by McCarthy Keville O'Sullivan Ltd ('MKO'). on behalf of Planree Ltd., which intends to apply to An Bord Pleanála ('the Board') for planning permission, in accordance with Section 37(e) of the Planning and Development Act 2000, (as amended), to construct a wind energy development and all associated infrastructure in Meenbog and adjacent townlands, listed in Table 1.1 below, in County Donegal.

The proposed development site is located approximately eight kilometres south west of the towns of Ballybofey and Stranorlor and approximately seventeen kilometres northwest of the town of Castlederg, Co. Tyrone. This EIAR will accompany the planning application for the proposed development to be submitted to the Board. The planning application will also be accompanied by a Natura Impact Statement ('NIS')

Table 1.1 Townlands containing proposed infrastructure.

Townland	
Current Planning application - Proposed Wind Farm & Amenity Area Development	Meenbog
	Croaghonagh
	Cashelnavean
Grid Connection Route (not part of this planning application)	Tawnawully Mountains
	Keadew Upper
	Friarbush
	Ardinawark
	Keadew Lower
	Cullionbuoy

1.2 The Applicant and Project Background

The applicant for the proposed development is Planree Ltd. Planree Ltd is a company affiliated with Enerco Energy Ltd., which is an Irish-owned, Cork-based company with extensive experience in the design, construction and operation of wind energy developments throughout Ireland, responsible for projects currently operating in Counties Kerry, Cork, Limerick, Clare and Galway.

By late 2017, Enerco and its group of companies had over 230 Megawatts (MW) of wind farms in commercial operation and have a further 500MW of Gate 3 projects in its portfolio that urgently need to be constructed and operational to assist in meeting Ireland's renewable energy targets.

In February 2015, Planree Ltd made an application to the Board under Section 37(e) of the Planning and Development Act 2000, (as amended), for a 49 turbine wind farm and associated works in the townlands of Meenbog, Lissmullyduff and adjacent townlands, known as the Carrickaduff Wind Farm (An Bord Pleanála Ref. 05.PA0040) (the 2015 Application).

In March 2016, the Board refused planning permission for the 2015 Application. . The reason for refusal was that, according to the Board, the ornithology survey data provided in the Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) which accompanied the 2015 Application was inadequate in duration and scope with regard to best international practice and therefore in the view of the Board there was insufficient information on which to base a robust assessment of the potential impacts on bird species, or to consider the potential impacts on birds and the integrity of certain European sites in the vicinity of the proposed development.

However, in its decision on the 2015 Application, the Board in general concurred with the majority of the findings in the EIS and considered that a wind farm development at this location was acceptable in principle.

The underlying reasons for refusal of the 2015 Application are considered to be of a technical nature related to survey methodologies. These matters have been carefully considered and been fully addressed for the purposes of this new application and are described further in Section 1.2.1 below.

The current proposal, the Meenbog Wind Farm, is for a wind energy development on the western portion of the 2015 Application site. The proposed development comprises 19 No. turbines located within an isolated and compact site comprising commercial forestry operations predominantly. The reduction in the scale of the project (when compared to the 2015 Application) is primarily related to the adoption of Variation No. 2 (Wind Energy) to the Donegal County Development Plan 2012-2018 by Donegal County Council in 2017.

That Variation, which is discussed further in Section 2.4 of this EIAR, requires a set back distance of ten times the tip height of the proposed turbines from residential properties and other centres of human habitation. Although this set back distance is considered arbitrary, unscientific and at variance with national policy on climate change the proposed Meenbog Wind Farm achieves this set back distance (1.56 kilometres) for all third party dwellings. There are 6 no. inhabited dwellings within 1.56 kilometres, this community of dwellings form the core element of the Meenbog Community Group who have been liaising with the applicant and MKO ecologists to develop the amenity proposals which form part of this application. Further details on the consultations and the development of the amenity proposals are described in Chapter 2.

1.3 Approach to Rectifying Reason for Refusal

Since the decision of the Board to refuse the 2015 Application for the original Carrickaduff Wind Farm development, MKO, on behalf of the applicant, has taken a number of steps to rectify and address the reasons for the decision to refuse the 2015 Application in the context of this new application for the proposed development. These steps include:

- Carrying out a detailed review of bird survey methodologies;
- Building upon the extensive bird survey effort with continued ornithological surveys in 2015, 2016 and continuing in 2017, incorporating the required methodologies.
- Completing 2 years of bird survey work to SNH (2014). Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage.

The specific methodologies for the bird survey effort and the assessment of effects in relation to birds is provided in Chapter 7.

Further ecology work including bat surveys were also continued throughout 2016. In addition to the increased scope of survey works with regard to birds and bats, the Flora and Fauna and Ornithology chapters of the EIAR have been completed using some of the data that was previously submitted but also includes updated information following continued ecological assessments that have been ongoing.

The Appropriate Assessment information for the proposed development includes all of the data collected since surveys began at this location in 2013 up to the present.

The surveys outlined above and the data collected from same has been presented in this EIAR and the accompanying NIS for the new Meenbog Wind Farm development application and will allow the Board to carry out a robust assessment of the potential impacts on bird and bat species and to consider the potential impacts on the qualifying interests on Natura 2000 sites in the vicinity of the proposed development.

1.4 Legislative Context

On the 11th September 2017, the Board determined that the proposed development met the requirements for Strategic Infrastructure Development (SID) under Section 37 A(2)(a) and 37b of the Planning and Development Act, 2000 as amended.

European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive'), is currently transposed into Irish planning legislation by the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended). The EIA Directive was amended by Directive 2014/52/EU the provision of which as of the date of preparation of this EIAR have not yet been transposed into Irish law.

Member States had until 16th May 2017 to transpose the amended EIA Directive into national legislation. Although the transposition had not occurred on the specified transposition date the Department of Housing, Planning, Community and Local Government (Department) issued a Circular Letter PL 1/2017 on the 15th May 2017 providing advice on the implementation of the Directive. This included advice to competent authorities on the assessment of applications for planning permission received on or after 16th May 2017. The Circular states the following:

"In respect of applications for planning permission or other development consent received on or after 16 May 2017 falling within the scope of Directive 2011/92/EU, or within the scope of Directive 2014/52/EU, competent authorities are advised to consider applying the requirements of Directive 2014/52/EU by way of administrative provisions in advance of the transposition of Directive 2014/52/EU into Irish law."

In their correspondence of the 12th September 2017 ABP advised the applicant that the application should be accompanied by an EIAR in accordance with the Circular Letter PL1/2017.

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

and Development Regulations 2001 (as amended) insofar as they transpose the EIA Directive.

The Environmental Impact Assessment (EIA) of the proposed development will be undertaken by the Board as the competent authority.

Article 5 of the EIA Directive as amended by Directive 2014/52/EU provides where an EIA is required, the developer shall prepare and submit an environmental impact assessment report (EIAR) previously referred to as an Environmental Impact Statement ('EIS'). 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.

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

The relevant classes/scales of development that normally require Environmental Impact Assessment (EIA) are set out in Schedule 5 (Part 2) of the Planning and Development Regulations 2001, as amended. 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 turbines and 5 Megawatts in scale, and therefore is subject to EIA. This has been confirmed to the Applicant by the Board.

The EIAR provides information on the receiving environment and assesses the likely significant effects of the project, 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 development.

All elements of the proposed project, (including the grid connection, proposed tree felling and replanting, and junction accommodation works) have been assessed as part of this EIAR.

1.4.1 EIAR Guidance

The Environmental Protection Agency (EPA) recently published its *'Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* (EPA, August 2017), which are intended to guide practitioners preparing an EIAR during the transition to new Regulations transposing the revised EIA Directive. This EIAR has with these draft guidelines.

In preparing this EIAR regard has also been taken of the provisions of *'Advice Notes on Current Practice in the Preparation of EIS'* (EPA, 2003) and the *'Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment'*, published by the Department of the Environment, Community and Local Government (DECLG) in March 2013 to the extent these guidelines are relevant having regard to the enactment of the revised EIA Directive.

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.

The *'Wind Energy Development Guidelines for Planning Authorities'* (DoEHLG, 2006) are also 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'* in relation to noise, proximity and shadow flicker (December, 2013). A consultation process in relation to the document is currently being undertaken by the Department of Communications, Climate Action and Environment (DCCAE).

Should the revised Wind Energy Guidelines be finalised in advance of a planning decision being made on the proposed development, with current noise and shadow flicker thresholds being amended, if necessary, the proposed development can comply with any revised noise and shadow flicker requirements by implementing mitigation through use of the turbine control systems.

1.5 Brief Description of the Proposed Development

The proposed development comprises the construction of a wind farm comprising 19 wind turbines and all associated works. The proposed turbines will have a maximum blade tip height of up to 156.5 metres. The application is seeking a ten-year planning permission. The full description of the proposed development, as per the public planning notices, is as follows:

- i. Up to 19 no. wind turbines with a generating capacity in excess of 50MW, maximum overall ground to blade tip height of up to 156.5 metres;
- ii. 1 no. permanent Meteorological Mast up to a maximum height of 110 metres;
- iii. 1 no. 110kV Electrical substation with 2 no. control buildings with welfare facilities, associated electrical plant and equipment, security fencing and waste water holding tank;
- iv. Internal wind farm underground cabling;
- v. 110kV underground grid connection cabling;
- vi. Upgrade of access junctions;
- vii. Upgrade of existing tracks, roads and provision of new site access roads and hardstand areas;
- viii. 3 no. borrow pits;
- ix. 2 no. temporary construction compounds;

- x. Recreation and amenity works, including marked trails (upgrade of existing tracks and provision of new tracks), picnic, amenity and play areas, car parking and vehicular access;
- xi. Site drainage;
- xii. Forestry Felling;
- xiii. Permanent signage;
- xiv. All associated site development and ancillary works

The layout of the proposed development has been constraints-led, thereby avoiding the environmentally sensitive parts of the site. The roads layout for the proposed development makes use of the existing onsite access roads and tracks where possible, with approximately 14.5 kilometres of existing roadway/ tracks requiring upgrading. Approximately 7.7 kilometres of new access road is also proposed to be constructed. The recreational amenity proposals will require the placement of approximately 3.75 Km of a 2.5m wide gravel walking track predominantly along existing forest breaks and one of the temporary construction compounds will be re-purposed, following construction, to an amenity park comprising playground area, ball area, barbeque area including a covered picnic area and a community garden area. A dedicated gated entrance and car parking area will also be provided for recreational use during the operational stage.

The site of the proposed development measures approximately 990 hectares. Where the 'site' is referred to in this EIAR, this means the study area for the EIAR. The proposed permanent footprint of the proposed development measures approximately 28.5 hectares, which represents approximately 2.9% of the primary study area.

The planning application for the proposed wind farm includes for grid connection cabling. It is intended that the proposed wind farm will be connected to the National Grid via an underground connection to the existing 110kV substation in the townland of Cullionbuoy (Clogher DED), Co. Donegal (Pl. Ref. 11/20064), referred to as the 'Clogher' substation in this EIAR, located approximately 6.2km southwest of the site.

The current application seeks permission for underground cabling to link with the underground grid connection cabling from the Drumnahough substation currently proposed under Pl. Ref 17/50543 & ABP Ref. PL05E.248796. This is the preferred method of connection to Clogher substation, however, an independent underground cabling connection from the proposed Meenbog wind farm to the Clogher substation is also assessed in this EIAR.

The underground cabling arrangement is described in detail in Section 43.7 of this EIAR

The Wind Energy Strategy (WES) for County Donegal forms part of the Donegal County Development Plan (CDP) 2012 – 2018. This CDP aims to facilitate the development of appropriately located wind energy proposals in accordance with the WES. The WES includes a classification of areas considered suitable for wind energy developments, "Areas Open to Consideration", and those areas not considered suitable, "Not Favoured". In this regard, the eastern and southeastern region of Donegal in the vicinity of the proposed development site includes a large area which has been identified as "Open to Consideration" for wind development.

The entire site of the proposed development is located in an area designated as "Open to Consideration" in the Donegal County Development Plan (CDP) 2012 – 2018.

1.6 Need for the Proposed Development

1.6.1 Overview

Ireland faces significant challenges through efforts to meet its 2020 targets, EU targets for renewable energy by 2030 and its commitment to transition to a low carbon economy by 2050. It is now clear that Ireland is falling behind meeting its 2020 target for renewable energy as well as the longer-term movement away from fossil fuels. The proposed Meenbog Wind Farm 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;
2. A requirement to increase Ireland's national energy security as set out in the Energy White Paper;
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);
4. Provision of cost-effective power production for Ireland which would deliver local benefits; and
5. Increasing energy price stability in Ireland through reducing an over reliance on imported gas.

These factors are addressed in further detail below. Section 2.4 in Chapter 2 of this EIAR on Background to the Proposed Development, presents a full description of the international and national renewable energy policy context for the proposed project. Section 2.5 addresses climate change, including Ireland's current status with regard to meeting greenhouse gas emission reduction targets.

1.6.2 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 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 degrees¹ and in accordance with the COP 21 agreement to limit global warming to well below 2°C above pre-industrial levels.

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

¹ IPCC Fifth Assessment Synthesis Report, Intergovernmental Panel on Climate Change AR5 Report

The Energy White Paper notes that *“The use of renewables in electricity generation in 2014 reduced CO₂ emissions by 2.6 Mt and avoided €255 million in fossil fuel imports”*. It is estimated that the proposed Meenbog Wind Farm with a potential output of approximately 66.5 MW will result in the net displacement of 2,798,370 tonnes of Carbon Dioxide (CO₂) per annum, including accounting for back-up generation. The carbon offsets resulting from the proposed development are described in detail in Section 10.2.3 of Chapter 10 of this EIAR: Air and Climate.

1.6.3 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. In 2015 (the most recent period for which figures are available), the cost of all energy imports to Ireland was approximately €4.6 billion, with Ireland being one of the most energy import-dependent countries in the European Union, importing 88% of its fuel that year, up from 85% in 2014 (*‘Energy in Ireland 1990 - 2015’*, Sustainable Energy Authority of Ireland, 2016). This makes Ireland particularly vulnerable to future energy crises and price fluctuations given its location on the periphery of Europe.

1.6.4 Competitiveness of Wind Energy

While Ireland has a range of renewable resources, as the White Paper states *“[Onshore Wind] is a proven technology and Ireland’s abundant wind resource means that a wind generator in Ireland generates more electricity than similar installations in other countries. This results in a lower cost of support.”*

In fact, the cost of support is more than offset by the fact that adding large quantities of wind to the wholesale market drives down auction prices in any half hour trading period when the wind is blowing, i.e. for 80% of the hours of the year. Wind has a capacity factor of 35%, 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 Poyry 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.

1.6.5 EU 2020 Renewable Energy Targets

The burning of fossil fuels for energy creates greenhouse gases, which contribute significantly to climate change. These and other emissions also create acid rain and air pollution. Sources of renewable energy that are utilised locally with minimal impact on the environment are necessary to meet the challenges of the future. The EU adopted Directive (2009/28/EC) on the Promotion of the Use of Energy from Renewable Sources in April 2009 which includes a common EU framework for the promotion of energy from renewable sources.

The Directive sets a legally binding mandatory national target for the overall share of energy from renewable sources for each Member State. This package is designed to achieve the EU’s overall 20:20:20 environmental target, which consists of a 20% reduction in greenhouse gases, a 20% share of renewable energy in the EU’s total energy consumption and a 20% increase in energy efficiency by 2020. To ensure that the mandatory national targets are achieved, Member States must follow an indicative

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

Ireland’s mandatory national target is to supply 16% of its overall energy needs from renewable sources by 2020. This target covers energy in the form of electricity (RES-E), heat (RES-H) and transport fuels (RES-T). For RES-E alone, Ireland has set a national target of 40% by 2020 as outlined in NREAP. Government policies identify the development of renewable energy, including wind energy, as a primary strategy in implementing national energy policy.

1.6.6 Reduction of Carbon Emissions and Other Greenhouse Gases

This production of renewable energy will assist in achieving the Government’s and EU’s stated goals of ensuring safe and secure energy supplies, promoting an energy future that is sustainable and competitively priced to consumers whilst combating energy price volatility and the effects of climate change. The Energy White Paper in 2015 outlines an ambitious Greenhouse gas reduction target of between 80% to 95% compared to 1990 levels out to 2050. Furthermore, if national carbon emissions targets are divided out amongst each county, each Local Authority may be responsible for meeting its own targets.

In addition to a reduced dependence on oil and other imported fuels, the generation of electricity from wind power by the proposed development will displace approximately 93,279 tonnes of carbon emissions per annum from the largely carbon-based traditional energy mix, the detail of which is presented in Section 10.2.3 of this EIAR.

Recent EU and World Health Organisation reports estimate that poor air quality accounted for premature deaths of almost 600,000 people in Europe in 2012². In Ireland, the premature deaths attributable to air pollution are estimated at 1,200 people (*Ireland’s Environment – An Assessment*, Environmental Protection Agency, 2016.) The EPA 2016 report *Ireland’s Environment – An Assessment* 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 O₃ (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 (CO₂), oxides of nitrogen

²www.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

(NO_x), and sulphur dioxide SO₂, thereby resulting in cleaner air and associated positive health effects.

1.6.7 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 2015 the cost of all energy imports to Ireland was approximately €4.6 million with imported fossil fuels accounting for 88% of all energy consumed (*Energy in Ireland 1990 - 2015*, Sustainable Energy Authority of Ireland, 2016).

The SEAI report *Renewable Energy in Ireland 2013* indicated that renewable electricity (mostly wind energy) in the previous 5 years:

- Displaced €220 million in fossil fuel imports;
- Reduced CO₂ emissions by 12 million tonnes; and
- Did not add to consumer bills.

The 2014 report *The Value of Wind Energy to Ireland*, published by Póyry, 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 project will be capable of providing power to 48,545 households every year, as presented in the calculations in Section 4.3.1.6 of this EIAR.

At a Regional Level, the proposed development will help to supply the rising demand for electricity, resulting from renewed economic growth. The EirGrid report *All-island Generation Capacity Statement 2017 – 2026* (SONI & Eirgrid, 2017) notes that electricity demand on the island of Ireland is expected to grow by 17% over the next ten years. Much of this growth is expected to come from new data centres in Ireland.

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

The commercial rate payments from the proposed wind farm will provide in the region of €5.3 million to the Local Authority per annum, which will be redirected to the provision of public services within Co. Donegal. These services include provisions such as road upkeep, fire services, environmental protection, street lighting, footpath maintenance etc. along with other community and cultural support initiatives.

It is estimated that the proposed project will create up to 80 jobs during the construction, operational and maintenance phases of the proposed wind farm. During construction, additional employment will be created in the region through the supply of services and materials to the wind farm. In addition to this, there will also be income generated by local employment from the purchase of local services i.e. travel and lodgings. Further details on employment associated with the proposed wind farm are presented in Section 5.9.2.2 of this EIAR.

There are substantial opportunities available for areas where wind farms are located, in the form of Community Gain Funds. Based on the current proposal, a Community

Gain Fund in the region of up to €2.9 million will be made available over the lifetime of the project. The value of this fund will be directly proportional to the level of installed MWs at the wind farm and will facilitate projects such as the recreational & amenity proposals which form part of this application. Further details on this are provided in Section 4.5 of this EIAR.

As detailed in Chapter 2: Section 2.6 Scoping and Consultation, public consultation and engagement with the local community began in 2013, prior to the lodgement of the Carrickaduff Wind Farm Application. When Planree Ltd decided to start preparations for the new application for the proposed development, it was definitively decided that a new approach would be adopted to interact and listen to the community neighbouring the proposed wind farm. Therefore, it started working with John Aston of Astoneco, with experience in this area to consult with the local community to understand their concerns for the new Wind Project in 2016. This process ultimately led to the formation of the Meenbog Community Group and the current recreational & amenity proposals and with whom consultation is ongoing for further projects which can bring economic benefits to the local community.

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

1.6.8 Gate 3 Grid Connection Offer

The mechanism for delivering the additional installed wind farm capacity in Ireland up to 2020 is the 'Gate' process of grid connection offers, the most recent of which is 'Gate 3' which includes 3,931 MW of wind generation capacity. The acceptance of a grid connection offer allows wind farms to connect to the national electricity grid and begin to export electricity from the wind farm site and into the Irish National Grid.

The grid connection capacity is non-transferable, and cannot be reallocated to other parts of the country should it not be possible to deliver in this locality. If the full capacity of allocated Gate 3 wind farm grid capacity is not delivered in Donegal, the Government's target of generating 40% of total electricity consumption from renewable sources by 2020 is in jeopardy.

The applicant has secured a Gate 3 grid connection offer that must be connected to the national grid via Clogher substation (Pl. Ref. 11/20064) which is intended to facilitate the Meenbog Wind Farm site.

1.7 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 by An Bord Pleanála, from the and the accompanying the planning application. The EIA is the assessment carried out by the competent authority, which includes an examination that identifies, describes and assesses in an appropriate manner, in the light of each individual case and in accordance with Articles 4 to 11 of the

Environmental Impact Assessment Directive, the direct and indirect effects of the proposed development on the following:

- a) human beings, flora and fauna,
- b) soil, water, air, climate and landscape,
- c) material assets and the cultural heritage, and
- d) the interaction between the factors mentioned in paragraphs (a), (b) and (c).

The EIA submitted by the applicant provides the relevant environmental information to enable the EIA to be carried out by the competent authority. The information to be contained in the EIA is prescribed Article 5 of the revised EIA Directives described in Section 1.1.1 above.

1.8 Structure and Content of the EIA

1.8.1 General Structure

This EIA 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 human beings, flora and fauna, 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 EIA are as follows:

- Introduction
- Background to the Proposed Development
- Description of the Proposed Development
- Human Beings. Population & Human Health
- Flora and Fauna. Biodiversity
- Birds
- Land, Soils and Geology
- Hydrology and Hydrogeology
- Air and Climate
- Noise and Vibration
- Landscape and Visual
- Cultural Heritage
- Material Assets (including Traffic and Transport, Telecommunications and Aviation)
- Interactions of the Foregoing

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

1.8.2 Description of Likely Significant Effects and Impacts

As stated in the *'Guidelines on the Information to be contained in Environmental Impact Statements'* (EPA, 2002), 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 EIS follows the definitions provided in the Glossary of Impacts contained in the following guidance documents produced by the Environmental Protection Agency (EPA):

- *Guidelines on the Information to be contained in Environmental Impact Assessment Reports – Draft August 2017 (EPA 2017).*
- *'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)*
- *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).*

Table 1.2 presents the glossary of impacts as published in the EPA guidance documents. Standard definitions are provided in this glossary, which permit the evaluation and classification of the quality, significance, duration and type of impacts associated with a proposed development on the receiving environment. The use of pre-existing standardised terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across all disciplines covered in the EIAR. The consistent application of terminology throughout the EIAR facilitates the assessment of the proposed development on the receiving environment.

Table 1.2 Impact Classification Terminology (EPA, 2017)

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

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

Each impact is described in terms of its quality, significance, extent, duration & 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.

1.9 Project Team

1.9.1 Project Team Responsibilities

The companies and staff listed in Table 1.3 were responsible for completion of the EIAR of the proposed development. Further details regarding project team members are provided below.

The EIAR project team comprises a multidisciplinary team of experts with extensive experience in the assessment of wind energy developments and in their relevant area of expertise. The qualifications and experience of the principal staff from each company involved in the preparation of this EIAR are summarised in Section 1.7.2 below. Each chapter of this EIAR has been prepared by a competent expert in the subject matter. Further details on project team expertise are provided in the Statement of Authority at the beginning of each impact assessment chapter.

Table 1.3 Project Team

Consultants	Principal Staff Involved in Project	EIA Input
<p>McCarthy Keville O’ Sullivan Ltd.</p> <p>Block 1 GFSC Moneenageisha Road Galway</p>	<p>Brian Keville Michael Watson Jimmy Green Eoin McCarthy Lorraine Meehan Pat Roberts Dervla O’ Dowd Alex Ash John Hynes Erin Johnston Dr. Úna Nealon Evelyn Sikora Dr. John Staunton Carmel Daly Owen Cahill James Newell</p>	<p>Project Managers, Scoping and Consultation, Preparation of Natura Impact Statement, Report Sections:</p> <ul style="list-style-type: none"> ▪ 1. Introduction ▪ 2. Background to the Proposed Development ▪ 3. Description of the Proposed Development ▪ 4. Human Beings. Population & Human Health ▪ 5. Flora & Fauna. Biodiversity ▪ 6. Birds ▪ 9. Air & Climate ▪ 13. Material Assets (non-Traffic) ▪ 14. Interaction of the Foregoing
<p>Hydro Environmental Services</p> <p>22 Lower Main Street Dungarvan Co. Waterford</p>	<p>Michael Gill David Broderick</p>	<p>Flood Risk Assessment, Drainage Design, Preparation of Report Sections:</p> <ul style="list-style-type: none"> ▪ 7. Land, Soils & Geology ▪ 8. Hydrology & Hydrogeology
<p>Applied Ground Engineering Consultants (AGEC)</p> <p>The Grainstore Singletons Lane Bagnelstown Co. Carlow</p>	<p>Gerry Kane Paul Jennings</p>	<p>Preparation of Peat Stability Assessment & Peat Management Plan</p>
<p>AWN Consulting</p> <p>The Tecpro Building Clonsgaugh Business & Technology Park Dublin 17</p>	<p>Damian Kelly Dermot Blunnie</p>	<p>Baseline Noise Survey, Preparation of Report Section 10: Noise and Vibration</p>
<p>Tobar Archaeological Services</p> <p>Saleen Midleton Co. Cork</p>	<p>Annette Quinn Miriam Carroll</p>	<p>Preparation of Report Section 12: Cultural Heritage</p>

Consultants	Principal Staff Involved in Project	EIAR Input
Alan Lipscombe Traffic and Transport Consultants Claran, Headford, Co. Galway	Alan Lipscombe	Swept Path Analysis, Preparation of Report Section 13: Material Assets - Traffic and Transport
Stephenson Halliday	Ken Halliday Tom Charrier	Landscape & Visual Impact Assessment

1.9.2 Project Team Members

1.9.2.1 McCarthy Keville O’Sullivan Ltd.

Brian Keville B.Sc. (Env.)

Brian Keville has over 16 years’ professional experience as an environmental consultant having graduated from the National University of Ireland, Galway with a first class honours degree in Environmental Science. Brian was one of the founding directors of environmental consultancy, Keville & O’Sullivan Associates Ltd., prior to the company merging in 2008 to form McCarthy Keville O’Sullivan Ltd. Brian’s professional experience has focused on project and environmental management, and environmental impact assessments. Brian has acted as project manager and lead-consultant on numerous environmental impact assessments, across various Irish counties and planning authority areas. These projects have included large infrastructural projects such as roads, ports and municipal services projects, through to commercial, mixed-use, industrial and renewable energy projects. The majority of this work has required liaison and co-ordination with government agencies and bodies, technical project teams, sub-consultants and clients.

Michael Watson, MA; Miema CEnv PGeo

Michael Watson has over 15 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 Cork based private environmental & hydrogeological consultancy. Michael’s professional experience includes managing Environmental Impact Assessments on behalf of clients in the windfarm, waste management, commercial and industrial sectors nationally. These projects have required liaising with the relevant local authorities, Environmental Protection Agency (EPA) and statutory consultees as well as coordinating the project teams and sub-contractors. Michael has significant experience in the EPA Industrial Emissions, IPPC and Waste licensing regimes managing licence applications and subsequent regulatory compliance on behalf of clients in the waste and industrial sectors. Michael also has a Bachelor of Arts Degree in Geography and Economics from NUI Maynooth, is a Member of IEMA, a Chartered Environmentalist and Professional Geologist.

Jimmy Green BA, MRUP; MIPI

Jimmy Green holds the position of Senior Planner in McCarthy Keville O’Sullivan and has a wide range of experience in project management and coordination, planning research, analysis, and retail planning. Jimmy has extensive planning experience in both the public and private sectors having worked as an Assistant Planner in Donegal County Council and subsequently as both an Executive and Senior Executive Planner in Galway County Council prior to joining private practice in October 2004. Since moving

into the private sector he has provided consulting services to a wide range of private and public sector clients, and his experience includes planning application project management, environmental impact assessment preparation, retail impact assessment, development potential reporting, preparation of linguistic impact statements and submissions to Development Plans/Local Area Plans. Jimmy has a Bachelor of Arts Degree in Human and Physical Geography from National University Ireland Galway and a Masters in Regional and Urban Planning from University College Dublin. Jimmy is also a corporate member of the Irish Planning Institute.

Lorraine Meehan B.Sc. (Env.)

Lorraine Meehan graduated from NUI Galway in May 2006 with a first class honours degree in Environmental Science. Lorraine has gained extensive experience with McCarthy Keville O’Sullivan since joining the company shortly after graduating, working primarily on Environmental Impact Assessments and Strategic Environmental Assessments. Lorraine has acted as Project Manager on numerous Environmental Impact Statements, Constraints & Feasibility Reports and Site Selection Reports for a wide range of projects, including renewable energy projects, roads, power lines and municipal services projects, and large-scale commercial, mixed-use and residential developments. Lorraine has also completed the Introduction, Background to the Proposed Development, Description of the Proposed Development, Human Beings, Air and Climate, Landscape, and Telecommunications sections of these EISs, in addition to numerous site constraints and layout maps, and has coordinated the scoping and consultation exercises with the relevant statutory and non-statutory bodies.

Eoin McCarthy B.Sc. (Env.)

Eoin is a Project Environmental Scientist with McCarthy O’Sullivan Ltd. with over 6 years of experience in both private practice. 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 and waste permit management. 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 in addition to project managing circa 200MW of wind energy projects, with more projects in the pipeline. 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 EIS Reports.

Pat Roberts B.Sc. (Env.)

Pat Roberts joined MKO (then Keville & O’Sullivan Associates) in 2005 following completion of a B.Sc. in Environmental Science. Prior to joining the company, Pat worked extensively in Ireland, the USA and UK as a tree surveyor, having previously worked with The National Trust in Cornwall for three years. He also has over five years’ practical conservation experience working both as a volunteer and employee in National Parks in Texas, Utah and at Exmoor National Park in the UK. Patrick has worked as project manager and ecologist on over 150 ecological assessments completed by the company to date, including a wide range of work within sensitive ecological areas. He has extensive experience of on-site supervision of construction and civil engineering works and has worked closely with construction personnel at the set-up stage of construction sites in the design systems to prevent environmental damage.

Dervla O’Dowd B.Sc. (Env.)

Dervla graduated with a first class honours B.Sc. in Environmental Science from NUI, Galway in 2005 and joined Keville O’Sullivan Associates in the same year. Dervla has gained extensive experience in the project management and ecological assessment of the impacts of various infrastructural projects including wind energy projects, water supply schemes, road schemes and housing developments nationwide and has also been involved in the compilation of Environmental Impact Statements, with emphasis on sections such as Flora & Fauna, and acted as EIS coordinator on many of these projects. Dervla has also provided site supervision for infrastructural works within designated conservations areas and has also been involved in the development of environmental/ecological educational resource materials. Currently, Dervla is responsible for coordinating ecological work required on major infrastructural projects, with emphasis on wind energy projects.

Alex Ash B.Sc.

Since completing his Environmental Science BSc in 2002, Alex has worked extensively in the UK and further afield as an ornithologist for consultancies and conservation organisations and has a wide range of ornithological experience. In recent years, Alex has been heavily involved with ornithological assessments of onshore wind farm schemes in Scotland following SNH guidance and has taken this experience to Ireland. Alex leads the in-house ornithology (Birds) team at McCarthy Keville O’ Sullivan, and projects he has worked on since joining the company include multiple wind farm projects and a study of the wintering birds of Lough Derg.

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

John Hynes is a qualified ecologist with a B.Sc. in Environmental Science from National University of Ireland, Galway (2010) and a Master’s in Applied Ecology, University College Cork (2011). John is also an approved Environmentalist in relation to agri-environment schemes with the Department of Agriculture. Prior to consultancy, John worked for Galway County Council in the Western River Basin District Office as GIS and Assistant Coordinator where he developed significant GIS and mapping skills. John has provided flora and fauna surveys, bat surveys, mammal surveys, fisheries potential surveys, Marsh Fritillary surveys and assisted with Stage 1 and Stage 2 Freshwater Pearl Mussel Surveys. John has a particular interest in Hen Harrier and manages part of his farm in the Slieve Aughty SPA for the conservation of the species. John has experience as a project manager and senior ecologist on large-scale projects.

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 specialises in the preparation of EIAs, EclAs 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).

Erin Johnston M.Sc. (Ecology), B.Sc.

Erin gained her B.Sc. (Hons) in Ecology at UCC where she was awarded the Thomas Crawford Hayes prize for best final year ecology student in 2012. She then went on to complete her M.Sc. in Ecological Assessment in 2013, also at UCC. Following this Erin completed her PhD in NUI Galway which dealt with the Kerry Slug (*Geomalacus maculosus*) and looked specifically at survey technique, feeding behaviour and the impacts of commercial forestry on the species. Erin also has experience in habitat mapping, plant and invertebrate identification and report writing.

Una Nealon PhD, B.Sc.

Una Nealon is an Assistant Ecologist at McCarthy Keville O’Sullivan. Una’s primary expertise lies in bat ecology, particularly in relation to wind farms, having obtained her PhD in ‘*Systems to predict and assess bat presence at wind turbines in Ireland*’ from UCD in 2016. Una’s research experience is strengthened by her previous consultancy experience, leaving her ideally suited to undertake scope development for bat surveys, including the practical application of bat survey guidelines at Irish wind energy sites. She is also well practiced in bat survey methods at potential development sites using multiple techniques. Furthermore, she is skilled in bat impact assessment and the design of mitigation measures where she applies scientific and technical knowledge to produce practical solutions.

Evelyn Sikora BA, MPLAN, MIPI

Evelyn Sikora graduated from Edinburgh College of Art with a degree in Landscape Architect and also holds a Masters in Planning and Sustainable Development from University College Cork (2010). She has worked as a Landscape Architect on a range of projects including commercial, residential and recreational projects and has also experience in planning projects relating to employment, recreation and natural heritage. Evelyn has completed the Landscape and Visual Impact Assessment for numerous wind farm projects, ranging from single-turbine developments to large-scale projects of up to 50 turbines.

John Staunton PhD, B.Sc. (Env.)

John Staunton joined McCarthy Keville O’Sullivan Ltd. in October 2014 following completion of a PhD and B.Sc. in Environmental Science. His main duties include input into EISs and other reports, ecological surveys, planning and literature searches, landscape impact assessment and site visits. John has proven report writing, presentation and interpersonal skills and can work well with large interdisciplinary teams. Prior to joining the team at MKO, John developed many project design, field, laboratory, data analysis and writing skills during his PhD research and research assistant positions.

Carmel Daly BA (Geo.)

Carmel Daly is a Project Planner with McCarthy Keville O’Sullivan with over 6 years of experience in both private practice and local authorities. Carmel holds BA (Hons) in Geography & English, Masters in Regional & Urban Planning and a Postgraduate Diploma in Environmental Sustainability. Prior to taking up her position with McCarthy Keville O’Sullivan, Carmel worked as an Assistant Planner with Tipperary County Council and held previous posts with Gaelectric, Clare County Council and North Tipperary County Council. Carmel has a specialist knowledge in project management, renewable energy, development management and community engagement and holds membership with the Irish Planning Institute and Licentiate Membership with the Royal Town Planning Institute.

Owen Cahill B.Sc., M.Sc.

Owen Cahill joined MKO as an Environmental Engineer in October 2013. Owen completed a Master's Degree in Environmental Engineering at Queens University Belfast, following his primary degree in Construction Management. Owen brings considerable experience to his role having previously worked for a Belfast-based environmental consultancy and large-scale building and civil engineering contractors in the West of Ireland. Owen has gained considerable experience in Hydrogeology, Renewable Technologies, Water & Wastewater Engineering, Contaminated Land, Waste Management & Engineering Hydrology. Owen work with MKO includes oversight of the MKO Environmental Clerk of Works projects including the development of Construction & Environmental Management Plans and their implementation including delivery of 'tool Box Talks' and implementation of monitoring programmes.

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.

1.9.2.2 Hydro Environmental Services Ltd.

Michael Gill

Michael Gill is an Environmental Engineer with over ten 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 seven 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.

1.9.2.3 AGECLtd.

The geotechnical aspects of the report, which will be incorporated into the Geology & Soils and Hydrology & Hydrogeology sections of the [EIA RS](#), will be completed by AGECLtd. AGECLtd has extensive experience in the production of Peat Stability Assessments for wind energy developments. AGECLtd provides 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.

Gerry Kane

Gerry Kane joined AGECE as a Geotechnical Engineer in 2008. Gerry graduated from IT Carlow in 2008 with a BEng (Hons) degree in Civil Engineering. Gerry is a Geotechnical Engineer with over seven years' experience in geotechnical design and analysis, supervision and interpretation of ground investigations, foundation & earthwork design, supervision of construction of bulk earthworks and structure foundations, slope stability analysis, desk studies and walkover surveys. Previous and current experience in the wind energy field has included work for wind farm developments in Ireland, Northern Ireland, Scotland, Wales and England. This work has covered Peat Stability Assessment Reports, Soils and Geology Chapters of EIAR's, site assessments for wind farm developments and the investigation of peat failures at wind farm sites.

Paul Jennings

Paul Jennings is a Senior Geotechnical Engineer and Director of AGECE with over 25 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.

1.9.2.4 AWN Consulting Ltd.

Damian Kelly

Damian Kelly (Principal Acoustic Consultant) holds a B.Sc. from DCU and a M.Sc. from QUB. He has over 15 years' experience as an acoustic consultant and is a member of the Institute of Acoustics. He has extensive knowledge in the field of noise modelling and prediction, having developed many of the largest and most complex examples of proprietary noise models prepared in Ireland to date. He has extensive modelling experience in relation to wind farm, industrial and road infrastructure projects. He is a sitting member of the committee of the Irish Branch of the Institute of Acoustics.

Dermot Blunnie

Dermot Blunnie (Acoustic Consultant) holds a BEng(Hons) in Sound Engineering and MSc in Applied Acoustics. Dermot has been working in the field of acoustics since 2008. He is a corporate member of the Institute of Acoustics (IOA) and has completed the IOA Diploma in Acoustics and Noise Control. He is experienced in building, environmental and architectural acoustics. Dermot has extensive knowledge of all aspects of environmental surveying, noise modelling and impact assessment for a range of sectors including energy, industrial, commercial and residential.

1.9.2.5 Tobar Archaeological Services

Tobar Archaeological Services is a Cork-based company entering its ninth 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 stage through to construction stage when archaeological monitoring is frequently required.

1.9.2.6 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.

1.9.2.7 Stephenson Halliday Ltd

Ken Halliday BSc., MPHIL, CMLI

Ken is a founding partner of Stephenson Halliday Ltd. He graduated from St Andrews University and obtained a Masters degree in landscape architecture from University of Edinburgh in 1987.

He has over 25 years professional experience and has been responsible for leading and co-ordinating the environmental assessment of many large scale development projects, including minerals, waste disposal, transportation and renewable energy. This work frequently involves the application of advanced computer modelling to assist in 3D visualisation and visibility analysis.

He has particular expertise in the landscape and visual assessment of energy and mineral developments, having advised on the landscape and visual assessment for over 140 wind farm proposals throughout the UK. He is highly regarded as an expert witness on landscape and visual issues and has appeared at many Public Inquiries and Appeal Hearings.

Tom Charrier BA (Hons), DIP LA CMLI

Tom is an Associate Director with Stephenson Halliday. He has worked with a number of leading multidisciplinary practices including Taylor Young and Mouchel. Tom also has international experience in New York and Sydney, where prior to joining Stephenson Halliday he was Senior Landscape Architect with Clouston Associates. Tom is a graduate of Leeds Metropolitan University and achieved CMLI in 2008.

Tom has extensive experience across a broad range of sectors including energy and infrastructure, residential, urban regeneration, healthcare and education. EIA development has been a mainstay of Tom's career where he has worked on a range of schemes from energy and waste to complex urban redevelopment schemes, both managing EIAs and providing special landscape inputs.

1.10 Difficulties Encountered

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

1.11 Viewing and Purchasing the EIAR

Copies of this EIAR will be available online, including the Non-Technical Summary (NTS), on the following website address www.meenbogwindfarm.ie

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