Appendix 1-3

EIAR SCOPING REPORT

MWP

EIAR Scoping Report

Ballinla Wind Farm

Statkraft

Contents

Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
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1. Introduction

Malachy Walsh and Partners (MWP) has been commissioned by Statkraft to prepare an Environmental Impact Assessment Report (EIAR) to accompany a planning application to An Bord Pleanála for the Ballinla Wind Farm in Co. Offaly.

The Ballinla Wind Farm Scoping Report defines the scope of the wind farm project Environmental Impact Assessment Report (EIAR).

This document has been prepared by Malachy Walsh and Partners (MWP) for Statkraft, to outline the scoping approach and the relevant inclusions in both the Environmental Impact Assessment process and the resultant EIAR.

The document provides information about the Project and sets out the proposed subject matter of the Environment Impact Assessment (EIAR) identified as relevant at this stage of the EIA process.

1.1 Purpose of the Document

The purpose of this document is to set out the scope and inclusions of the EIA and EIAR. This document has been prepared on behalf of Statkraft but may be useful when liaising with the Planning Authority on the proposed development and to consult on the scope and content of the EIAR being prepared for the Project. This is to ensure that the EIAR addresses concerns of the Planning Authority, that the necessary studies will be undertaken and that the EIA is appropriate to particular local circumstances and the scale of the proposed scheme.

This document also allows for the inclusion of relevant information arising through consultations and feedback.

The purpose is to ensure that the EIA and EIAR addresses the necessary studies to be undertaken and that the EIA is appropriate to particular local circumstances and the scale of the proposed scheme.

This document sets out:

- a summary of the project details
- an overview of context for the project
- the potential effect and impacts arising from the wind farm's development and operation
- the proposed approach to the assessment of key potential effects and impacts
- proposed baseline surveys and investigations which will be carried out
- the proposed organisations to be consulted during the environmental studies
- the proposed structure and content of the environmental impact assessment report (EIAR).

2. Developer/ Applicant Details

Statkraft entered the Irish market in 2018 and since then has almost tripled its workforce and tripled its development portfolio. In Ireland, Statkraft develops, owns, and operates renewable energy projects across the technologies of onshore wind, offshore wind, solar, battery storage and grid services. The company's global ambition is to increase its portfolio of wind power assets to 6,000 MW and solar power assets to 2,000 MW by 2025.

The Statkraft Ireland team, which is based in Cork and Tullamore, Co. Offaly, has constructed a portfolio of almost 350MW of wind projects across the country, operates over 500MW, and has an established track record in wind energy in Ireland.

3. Project Overview

3.1 The Development Location

The proposed development is situated in a rural area of east Co. Offaly. The site is approximately 4 km west of the Edenderry town boundary and 24km east of Tullamore.

The proposed wind farm is within the townlands of Ballinla, Ballybrittan and Leitrim in the municipal district of Edenderry, Co. Offaly. The land consists of coniferous forests and agricultural land. The Grand Canal is adjacent to the northern boundary of the proposed development.

The proposed grid connection is a linear development within the townlands of Leitrim, Lumville, Clarkeville, Ballyfore Big, Ballyfore Little, Ballyleakin and Ballykilleen, Edenderry, Co. Offaly. The grid connection route is from the proposed wind farm south along public roads to the existing Philipstown 110kV substation 6km to the south east and opposite the Edenderry Power Station.

3.2 Site Ownership

The lands within the proposed development area are owned by a number of different private landowners and one semi state body. The lands consist of agricultural farmland and forestry.

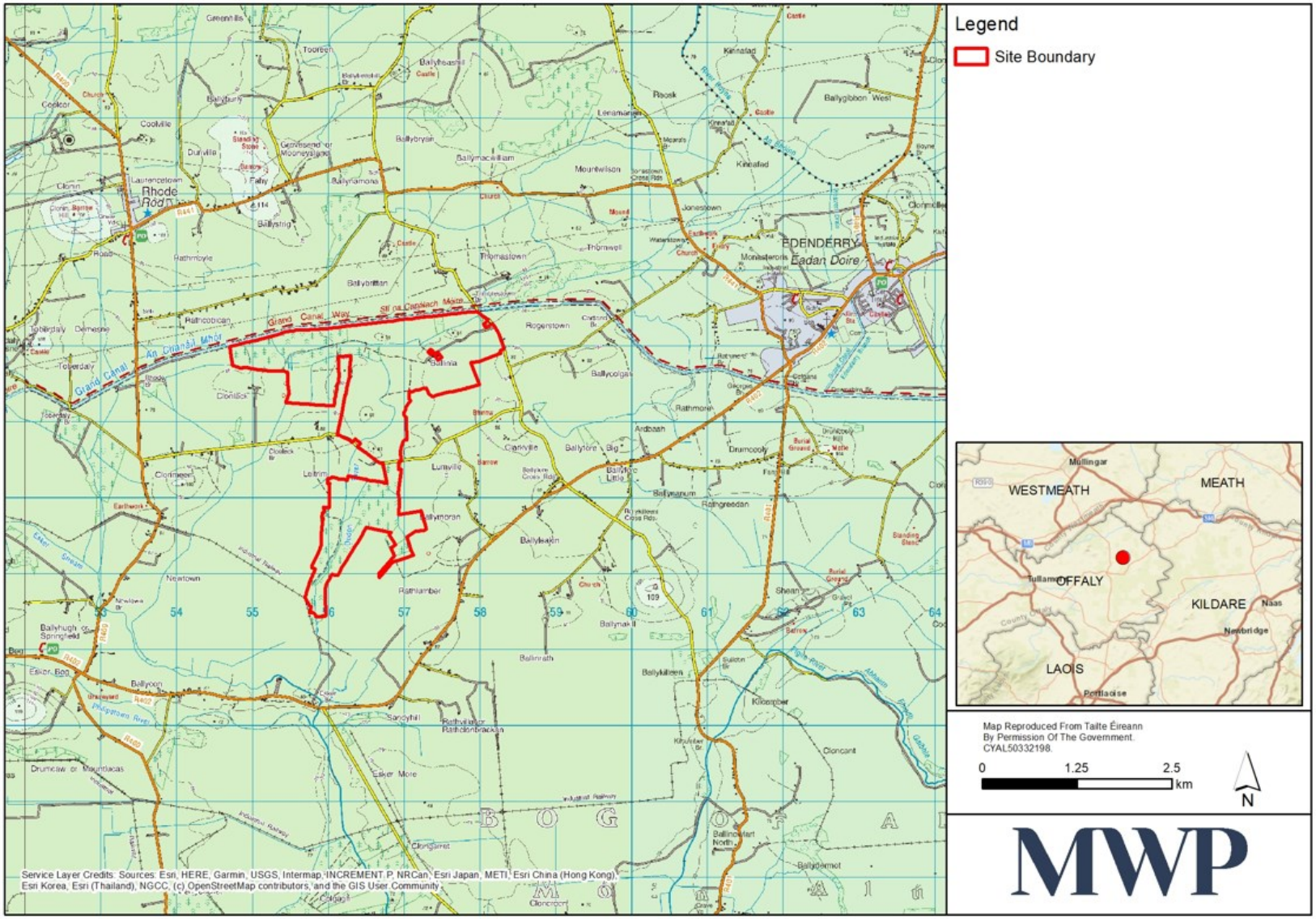

Figure 1 Site Location

3.3 Preliminary Layout

The preliminary layout of the proposed development consists of ten turbines, a 110kV substation on site and a grid connection (see below Figure 2).

3.4 Key Infrastructural Elements

It is anticipated that the project will include the following;

Main project components:

- Ten wind turbines with a blade tip height of 185m
- Hardstand areas and access roads
- 110kV substation on the wind farm site
- A met mast.

Off-site project components:

- Turbine component haulage route
- Grid connection; 110kV underground cable, any requirements to upgrade substation offsite

Project engagement:

- Consultation with planning/consent authorities and other statutory bodies (including survey licence applications)
- Community and stakeholder engagement

3.5 Proposed Site Access Arrangements

A local road transects the middle of the proposed development site. The local road links the L5006 in the east with the R400 to the west. Two access locations off the local road will provide access to the northern and southern sections of the site.

3.6 Grid Connection

The grid connection will consist of an onsite 110kV substation with a 110kV underground cable that will follow a route on public roads south east for 6km to the existing Philipstown 110kV substation opposite the Edenderry Power Station.

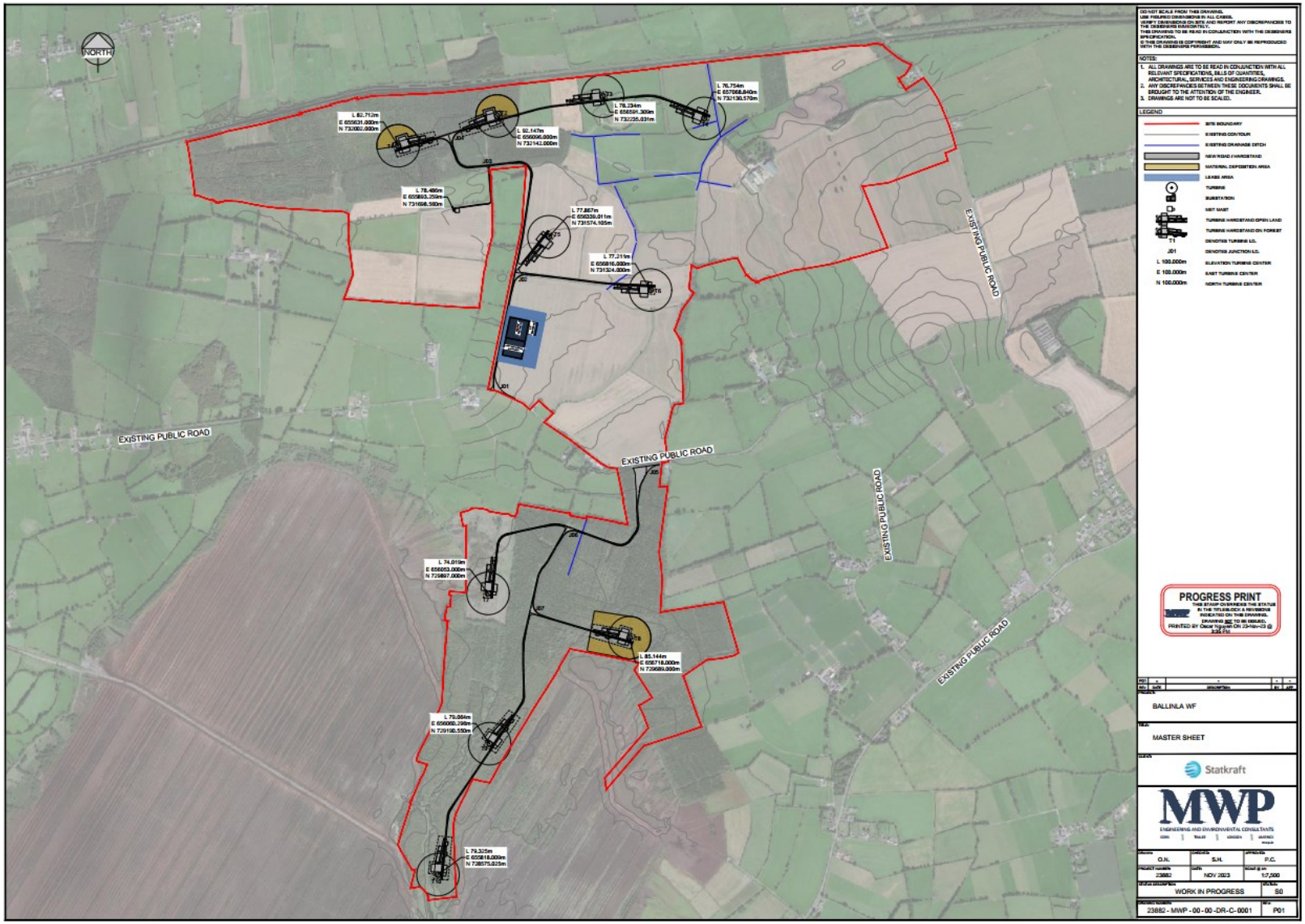

Figure 2 Preliminary layout

3.7 Projected time frame

The construction of the project will be carried out over a period of 18 - 24 months.

A detailed program for the works will be developed prior to construction stage as this can be influenced by the delivery of key elements of heavy equipment.

Construction working hours are typically from 07.00 to 19:00 Monday-Saturday. No activity on Sundays and Public Holidays. The hours worked may vary within the above hours, depending on the main contractor and the programme of works which will also see specialist subcontractors having to work different hours which are directly related to a key element of plant or equipment being installed or commissioned. It is envisaged that the working week, as outlined above will be typical for a project of this scale and complexity.

As part of the construction management plan for the project, all aspects such as working hours, and sequence will be agreed at the outset with the project team which will comprise of the Main Contractor and the Design Consultants involved. A clear strategy will be agreed and consultation with Offaly County Council and relevant stakeholders.

During the construction of the proposed development the number of construction employees on site will be a maximum of between 30 and 35 personnel.

These figures include construction operatives in addition to construction management and administrative personnel. It is intended that many of the construction workers will be based in the local area, travelling from Offaly and surrounds to the construction site each day as required.

3.8 Decommissioning

3.8.1 Wind Farm

The wind farm has been designed to have an operational life of 35 years and any further proposals for wind farm development at the site after this time will be subject to a new planning permission application. If planning permission is not sought after 35 years, the site will be decommissioned and reinstated with all wind turbines and towers removed. Upon decommissioning, all that will remain will be the roads. The substation will likely remain in place as part of the permanent electrical infrastructure.

When the site is to be decommissioned, cranes of similar size to those used for construction will disassemble each turbine. The towers, blades and all components will then be removed. The turbines, cabin and monitoring masts will also be removed from site. It is likely that any turbine component will be reused as they have a life well in excess of the wind farm proposal i.e. greater than 35 years. Wind farm components may also be recycled.

Underground cables will likely be cut back and left underground as removal may do more harm than leaving them in situ.

Hardstand areas will be remediated to match the existing landscape thus requiring peatland restoration or reforestation. Access roads will be left for use by the landowner. The current view is that the disturbance associated with the removal and disposal of the elements (hard core and sediment) would be more deleterious

than leaving them in place. Any structural materials suitable for recycling will be disposed of in an appropriate manner.

Prior to wind turbine removal, due consideration will be given to any potential impacts arising from these operations. Some of the potential issues include:

- Potential disturbance by the presence of crane, heavy goods vehicles and personnel on-site.
- On-site temporary compound would need to be located appropriately.
- Time of year and timescale (to be outside sensitive periods) and;
- Roads (site tracks may remain in use for the benefit of the landowner).

Prior to the decommissioning work, a plan will be drawn up to ensure the safety of the public and workforce and the use of best available techniques at the time.

Prior to the decommissioning work, a comprehensive reinstatement proposal, including the implementation of a program that details the removal of all structures and landscaping, will be submitted to the planning authority for approval.

Wastes generated during the decommissioning phase will be taken off site and disposed of appropriately by a licensed waste operator.

The potential impacts of decommissioning activities will be assessed in the EIAR.

3.8.2 Grid Connection

The grid cable will remain a permanent part of the national grid and therefore decommissioning is not foreseen. In the event of decommissioning, it will involve removing the cable from the ducting but leaving the ducting and associated supporting structure in place. It is also likely the substation will remain in place and will previously have been taken in charge by the system operator, after the wind farm is connected to the national electricity grid.

4. Local Planning and Policy Context for the Project

4.1 National Policy

4.1.1 National Planning Framework

National Planning Framework (NPF) sets the vision and strategy for the development of the country to 2040. It is a high-level strategic plan that sets out a vision for Ireland to 2040, expressed through ten National Strategic Outcomes (NSO). One of the key goals of the NPF (National Strategic Outcome 8) is that of Transition to a Low Carbon and Climate Resilient Society. It acknowledged that Ireland's energy policy is focused on the pillars of sustainability, security of supply and competitiveness. It states: "*In the energy sector, transition to a low carbon economy from renewable sources of energy is an integral part of Ireland's climate change strategy and renewable energies are a means of reducing our reliance on fossil fuels.*" It is an action under NSO 8 to "reinforce the distribution and transmission network to facilitate planned growth and distribution of a more renewables focused source of energy across the major demand centres".

Chapter 9 of the NPF: Realising Our Sustainable Future recognises the need to accelerate action on climate change for a low carbon energy future. In this regard, National Policy Objective 54 seeks to: "*reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions*."

The plan also promotes renewable energy uses and generation in appropriate locations (NPO 55) and emphasises that rural areas have a strong role to play in securing a sustainable renewable energy supply (NPO 23). It seeks to harness the country's renewable energy potential, achieve a transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050, and promote new energy systems and transmission grids.

4.1.2 National Development Plan 2021-2030

As part of Project Ireland 2040 the National Development Plan sets out the Government's over-arching investment strategy and budget for the period 2021-2030. Chapter 13, NSO 8 focuses on the need to transition to a Climate-Neutral and Climate-Resilient Society. The plan highlights the need for 80% of Ireland's electricity to be produced from a combination of onshore and offshore renewable sources by 2030, in order to reduce the counties emissions. In order for this to be achieved, it will require a coordinated programme of investment in

- Grid-scale renewable electricity generation and storage;
- An expanded and strengthened electricity transmission and distribution network;
- Conventional electricity generation capacity to support the operation of the electricity system
- Provide security of supply for when variable generation (wind/solar) is not sufficient to meet demand

4.1.3 Climate Action Plan 2023

The Climate Action Plan 2023 (CAP23) is the second annual update to Ireland's Climate Action 2019. This plan is the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, and following the introduction, in 2022, of economy-wide carbon budgets and sectoral emissions ceilings.

The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve our emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government.

One of the most important measures in the plan is to increase the proportion of renewable electricity to up to 80% by 2030. In order for this to be achieved the plan recognises the need to develop the onshore grid to support renewable energy targets.

Section '12.1.4 Measures to meet the Challenge' notes that measures to accelerate renewable energy generation include delivery of a streamlined electricity generation grid connection policy and process. It is also stated that, '*In line with the emerging EU frameworks, ensure that renewable energy generation projects, and associated infrastructure, will be considered to be in the overriding public interest*.'

4.2 Local Policy

Offaly County Development Plan 2021 - 2027

Chapter 3 of the Offaly County Development Plan address the climate action and energy policy.

Section 3.1.6 States;

"Whilst Offaly has a long history of energy production related predominantly to the commercial exploitation of peatlands, national environmental policies are dictating the wind down of traditional fossil fuel powered stations and a diversification of our energy production towards green energy such as wind, solar and bioenergy. Offaly County Council recognises the potential economic benefit of a transition from fossil fuel based energy production through to investment in renewable energy, the promotion of the green enterprise sector and the creation of green collar jobs; all components of a local 'smart green economy'."

Section 3.2.6 addresses Wind Energy;

"Site suitability is an important factor in determining the suitability of wind farms having regard to possible adverse impacts associated with, for example, residential amenities, landscape, including views or prospects, wildlife, habitats, designated sites, protected structures or bird migration paths and compatibility with adjoining land uses.

The Council is therefore required to achieve a reasonable balance between responding to overall positive Government policy on renewable energy and enabling the wind energy resources of the Planning Authority's area to be harnessed in a manner that is consistent with proper planning and sustainable development."

Section 3.2.7 addresses the wind energy targets set out in the development plan at 466.3MW by the end of 2027. The current installed capacity is approximately 208MW (WEI interactive map Nov 2023). A number of wind farms have been granted permission but are not commissioned yet. Total installed capacity plus granted permissions equate to a total output in Offaly of 385.5MW (Section 4 pg 9 Offaly Wind Energy Strategy 2021 – 2027).

Section 3.8 of the Offaly County Development Plan 2021 – 2027 outlines the Climate Action and Energy Policies (CAEP). Relevant one to this project are as follows;

CAEP-07 It is Council policy to support and facilitate European and national objectives for climate adaptation and mitigation as detailed in the following documents, taking into account other provisions of the Plan (including those relating to land use planning, energy, sustainable mobility, flood risk management and drainage);

• Climate Action Plan (2019 and any subsequent versions);

• National Mitigation Plan 2017 (or subsequent editions);

• National Climate Change Adaptation Framework (2018 and any subsequent versions);

• Relevant provisions of any Sectoral Adaptation Plans prepared to comply with the requirements of the Climate Action and Low Carbon Development Act 2015, including those seeking to contribute towards the National Transition Objective, to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050; and

• Offaly Climate Change Adaptation Strategy.

CAEP-11 It is Council policy to support the transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050, by way of reducing greenhouse gases, increasing renewable energy, and improving energy efficiency.

CAEP-25 It is Council policy to encourage and facilitate the production of energy from renewable sources, such as from bioenergy, waste material, solar, hydro, geothermal and wind energy, subject to proper planning and environmental considerations.

CAEP-26 It is Council policy to encourage developers of proposed large scale renewable energy projects to carry out community consultation in accordance with best practice and to commence the consultation at the commencement of project planning.

CAEP-27 It is Council policy to ensure that whenever possible, community benefits are derived from all renewable energy development in the county such as near-neighbour benefit funds and general community benefit funds, which may take the form of contributions in kind to local projects, assets and facilities such as public amenities on the renewable energy site, measures to promote energy efficiency or a local energy discount scheme.

CAEP-28 It is Council policy to co-operate if required with the Eastern and Midland Regional Assembly in identifying Strategic Energy Zones as areas suitable for larger energy generating projects, community and micro energy production, whilst ensuring environmental constraints and a regional landscape strategy are considered.

Wind Energy CAEP

CAEP-37 It is Council policy to recognise the importance of wind energy as a renewable energy source which can play a vital role in achieving national targets in relation to reductions in fossil fuel dependency and therefore greenhouse gas emissions.

CAEP-38 It is Council policy that in assessing planning applications for wind farms, the Council shall:

(a) have regard to the provisions of the Wind Energy Development Guidelines 2006, the Interim Guidelines for Planning Authorities on Statutory Plans, Renewable Energy and Climate Change 2017 and the Draft revised Wind Energy Guidelines 2019 which are expected to be finalised in the near future;

(b) have regard to 'Areas Open for Consideration for Wind Energy Developments' in the Wind Energy Strategy Designations Map from the County Wind Energy Strategy;

(c) the impact of the proposed wind farm development on proposed Wilderness Corridors as detailed in Objective BLO-28 of Chapter 4;

(d) have regard to Development Management Standard 109 on wind farms contained in Chapter 13 of this Plan; and

(e) have regard to existing and future international, European, national and regional policy, directives and legislation.

Chapter 4 of the Offaly County Development Plan addresses Biodiversity and Landscape.

Section 4.13 of the Offaly CDP describes "areas of high amenity", which includes the Grand Canal in section 4.13.1: "*The Grand Canal is a focus for a wide range of uses, especially for recreation and tourism purposes. The visual quality of the surrounding areas is intrinsic to maintain the attractiveness of the Grand Canal corridor. Hence, the corridor is especially sensitive to large development structures, insensitively designed or sited housing and large-scale land uses such as extractive industries. The Heritage Council published Waterway Corridor Studies pertaining to Offaly in 2002 and in 2004. The Council will consider these studies in relation to funding and planning applications (See Policy BLP-23 in this chapter)*

The recreational value of the Grand Canal is recognised and it is intended to preserve its attractiveness by carefully controlling development in order to protect its amenity and tourism potential. Developments, which require vehicular access from public roads that were formerly towpaths or from existing towpaths along the Grand Canal, are required to be strictly controlled (refer to Policy BHP-27 in Chapter 10)."

Policy BLP-35 provides: "*It is Council policy to protect and preserve the county's Areas of High Amenity namely the Slieve Bloom Mountains, Clonmacnoise Heritage Zone, Durrow High Cross, Abbey and surrounding area, the River Shannon, Lough Boora Discovery Park, Grand Canal, Croghan Hill, Raheenmore Bog, Pallas Lake, Clara Bog, Clara eskers, Eiscir Riada and other eskers. Notwithstanding the location of certain settlements, or parts of, for which there are settlement plans (Towns, Villages, Sráids), within the Areas of High Amenity, it is not the intention of this policy to hinder appropriate sustainable levels of development (as set out in the plans and subject to proper planning). Further, it is policy to facilitate the sustainable extension and expansion of existing visitor, tourist related or other rural enterprises within the Areas of High Amenity, where such development is appropriate and where it can be demonstrated that it gives 'added value' to the extending activity and to the immediate area which is the subject of the 'Area of High Amenity' designation*".

4.3 Offaly County Development Plan and Waterway Protection Zones

Policy BLP-23 states: "*It is Council policy to consider the Waterways Corridor Study 2002 and protect the recreational, educational and amenity potential of navigational and non-navigational waterways within the county, such as the Grand Canal Corridor, towpaths and adjacent wetland landscapes, taking into account more recent heritage and environmental legislation (including the SEA Directive) and environmental policy commitments*."

The Waterways Corridor Study 2002 was prepared by the Heritage Council. It includes proposed policy 3.3.2, with an action for Offaly County Council to implement: "*Establish a Waterway Protection Zone as set out in section 3.4. below to ensure only "considered" development is permissible within the waterway corridor*".

Section 3.4 states as follows for the Grand Canal from Ballycommon to Shannon Harbour: "*Due to the expansive nature of views from the canal, which often lies above the surrounding landscape, it is not proposed to define a line on a map for the zone as in Figure 1 Section 2.5. The zone is a conceptual area that will change and is:*

a) A function of the location of a proposed development in relation to the canal, and

b) A function of the nature and scale of a proposed development

An appropriate and workable policy could be:

• To define an Assessment zone within say 0.5 km of the canal. (See fig 4 below)

• Within this zone the canal's Area of Immediate Influence must be defined in relation to a particular development. The following question should be posed: Is the proposed development of such a nature or scale and in such a location that it would exert an immediate influence on the canal and therefore merits inclusion in the Waterway Protection Zone?

• If the proposed development lies within this zone an Impact Assessment will be required specific to the impact of the development on the waterway corridor.

• There will be a presumption against development unless it can be shown that a proposal actually enhances or adds to the character of the waterway.

It would be envisaged that criteria or a methodology would be set out indicating the different information required to make the above analysis and this could be carried out by the planning authority or required of the developer similar to an EIS.

Additionally, design guidelines should be put in place to define development that enhances the corridor and would be viewed favourably. Assessment criteria and guidelines would include location, siting, form and scale, design style / language and appropriateness / relevance to area character, including the type of use. An assessment would interpret the landscape character of the immediate environs of the development and specifically the waterway. If the development adds to or enhances that character (including its physical qualities (ecology / culture) as established by the above criteria, then it may be permissible." (emphasis added in underline)

4.4 Zoning

Offaly County Wind Energy Strategy 2021-2027

The Offaly Wind Energy Strategy (WES) is a part of the County Development Plan. A key priority was to identify sites of strategic regional and national importance which have the potential to accommodate wind energy development. The WES identifies the optimum locations for wind energy developments in the County having regard to environmental and geographical constraints and the protection of the amenities of local residents.

The WES designates areas as follows:

- *Open for Consideration for Wind Energy Developments; or*
- *Unsuitable for Wind Energy Developments*

The site of the proposed development is located within an area *Open for Consideration for Wind Energy Developments*, see **Figure 4-1**. The site is adjacent to the Grand Canal Corridor. The grand canal corridor itself is deemed as unsuitable for wind energy developments.

The Offaly WES states the following regarding wind farm development in areas Open for Consideration for Wind Energy Developments:

"These areas are open for consideration for wind energy development as these areas are characterised by low housing densities, do not conflict with European or National designated sites and have the ability by virtue of their landscape characteristics to absorb wind farm developments. Notwithstanding this designation, wind farm developments in these areas will be evaluated on a case by case basis subject to criteria listed in Development Management Standard 109 contained in Chapter 13 of Volume 1 of this County Development Plan and the Section 28 Wind Energy Development Guidelines".

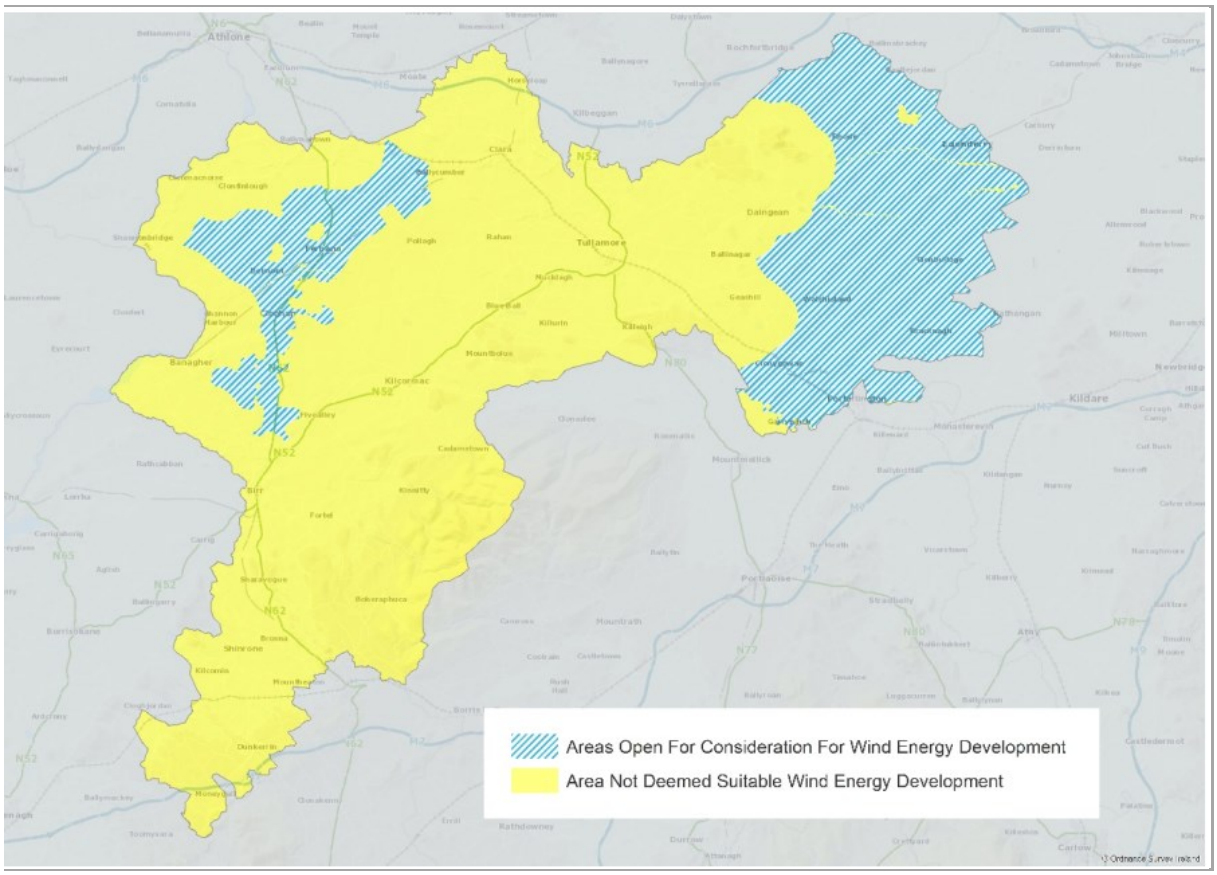

Figure 4-1: Excerpt from Offaly Wind Energy Strategy 2021 – 2027 Map no. 10

Landscape Capacity and Suitability of the Development Site

The WES states that the site is in are 1 (Area generally north of Rhode). The area is described as follows:

"This area is characterised by significant tracts of peatlands and improved agricultural land to the north of the village and large landholdings. In addition, there exists a precedent of windfarm and renewable energy projects being deemed suitable while there exists both good wind speeds and electricity infrastructure in the area. There is sensitivity in relation to views of Croghan Hill to the north and west which can be mitigated by suitable layout minimising visual conflict or compromising this focal feature in the area by considering the clustering of turbines and adequate separation of turbines from the vista of Croghan Hill from Rhode village".

5. EIA Scoping

The EIA Regulations require that the EIAR identifies likely significant environmental effects arising from a proposed plan or project. It is recognised in the EIA Regulations that not all environmental effects are significant. For environmental effects to be assessed, the key issues must be identified and included in the EIA.

Under the 2014 EIA Directive, and the new EIA Regulations 2018, a Scoping Opinion can be sought from the planning authority if required. As this project will be a Strategic Infrastructure Development, the project team will be engaging with An Bord Pleanála and Offaly County Council during the pre-planning phase. It is envisaged that a formal scoping opinion will not be sought as the EIA Team are experienced in the assessment of wind farm developments and there will be engagement with the planning authorities throughout the process. However, this Scoping Report can be provided when liaising with the Planning Authority on the proposed development.

The EIAR will be prepared on the basis of a study of the possible environmental impacts should works and activities as proposed in the application for the wind farm development be realised. The areas identified for assessment and inclusion in the EIAR were determined mainly from:

- Preliminary environmental appraisal and project feasibility involving Desk-top studies, review of available data for the general area of the site, site visits and field surveys,
- Preliminary consultations between Offaly County Council and the landowners,
- The Offaly County Development Plan and Offaly Wind Energy Strategy,
- EPA publication 'Guidelines on Information to be contained in environmental impact statements', 2002 and Revised Draft Guideline 2017,
- EC Environmental Impact Assessment of Projects. Guidance on Scoping (EU 2017).
- Project Type 33 (Installations for the harnessing of wind power for energy production (wind farms)) of EPA publication 'Advice Notes on Current Practice (in the preparation of Environmental Impact Statement), 2003 and Revised Notes 2015,
- EIA Regulations 2018,
- Forestry Guidelines,
- The Irish Wind Energy Association, Best Practice Guidelines for The Irish Wind Energy Industry, 2012,
- The Department of Environment, Heritage and Local Government, Wind Farm Planning Guidelines 2006, and
- The experience of the project team.

Statutory and Non-Statutory Consultations will also be carried out during the EIA and responses and input will inform the scope of the studies. Consultation will be conducted through letter and email for information sharing and phone calls and meetings as relevant.

6. EIAR Preparation and Format

6.1 Environmental Impact Assessment

The EIA Regulations require that the EIAR identifies and assesses the likely significant environmental effects arising from a proposed plan or project. The EIA work will therefore comprise a series of specialist environmental studies which will be targeted to assess the potential significant effects which the Proposed Development is likely to have on the environment.

6.2 Likely Significant Environmental Effects

The key environmental issues relating to wind farm projects are generally well defined. MWP has prepared numerous wind farm planning applications inclusive of Environmental Impact Assessment Reports and Appropriate Assessment Screening Reports, Stage 1 and Stage 2. The renewables engineering and environmental project team within MWP has accumulated many years of experience related to the design, engineering, and environmental impact of wind farm developments. This experience is invaluable when it comes to scoping such projects and later in mitigating by avoidance and design.

The main aspects and potentially significant environmental impacts currently identified regarding the wind farm construction and operational activities are highlighted in **Table 1**.

Table 1 Potential for Significant environmental Impacts (unmitigated) during construction and operational wind farm phase

Phase	Aspect/Activities	Impact
CONSTRUCTION	Transport of equipment and materials to site	Traffic disruption, Congestion, air pollution, noise
		Damage to road infrastructure
	Daily movement of a work force to the site	Congestion, air pollution, noise
	Vehicles used on site for daily constructions	Increased traffic and road safety hazard
		Air pollution, noise
		Destruction of soil structure by heavy machinery
	Land clearing and earthworks for access tracks, turbine foundation, underground cables, substation, site compound	Potential for soil erosion and silt laden water runoff,
		Peat slip risk
		Contamination of surface water
		Alteration of natural drainage regime
		Destruction of soil structure by heavy machinery
		Fugitive dust emissions and vehicular emissions
		Loss of vegetation, Habitat change and loss, disruption of ecosystems
		Displacement of birds and fauna from project area
		Forestry loss
	Sanitary and potable water usage	Fresh water consumption
	Sanitary facilities	Potential for groundwater pollution
	Use of plant /equipment such as cranes, HGVs, concrete lorry mixers	Noise and dust generation
	Use of equipment such as cranes, HGVs concrete lorry mixers	Soil contamination due to maintenance activities (oil spills/leaks)

Phase	Aspect/Activities	Impact
	Construction waste	Solid waste generation requiring disposal /recovery
OPERATIONAL	Turbine structures	Visibility of turbines resulting in landscape intrusion and visual impacts
		Potential to present a risk to aircraft
		disruption in avifauna flight patterns and collision risk
	Turbines and windfarm infrastructure	Loss of land to energy industry
	Movement of rotor blades	Potential for Impact to Birds, Collision Risk
		Potential for Effects on radio and communication waves and aviation navigation systems
		Potential for Noise Impact at nearby sensitive receptors
		Potential for Shadow cast impact at nearby sensitive receptors
	Generation of electricity	Potential for Positive Climate change Impact associated with displacement of GHG emissions
	Maintenance of turbines	Risk of oil and lubricant spills causing potential for localised ground / groundwater pollution

6.2.1 Assessment of Effects

The "Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, August 2017) presents the terminology used to standardise the description of likely significant effects of a project. The proposed Ballinla wind farm development will use this terminology. The assessment of likely significant effects is a statutory requirement of the EIAR process. Likely significant effects will be described with reference to their magnitude, spatial extent, nature, complexity, probability, duration, frequency, reversibility, cumulative effect, and transboundary nature (if applicable).

Table 2 Descriptions of Effects (Table 3.3 EPA Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports)

Quality of Effects It is important to inform the non-specialist reader whether an effect is positive, negative or neutral	**Positive Effects** A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative/adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Describing the Significance of Effects "Significance' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see *Determining Significance* below.).	**Imperceptible** An effect capable of measurement but without significant consequences.
	Not significant An effect which causes noticeable[2] changes in the character of the environment but without significant consequences.
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects 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 Effects An effect which obliterates sensitive characteristics
Describing the Extent and Context of Effects Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.	**Extent** Describe the size of the area, the 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 (is it the biggest, longest effect ever?)

6.2.2 Mitigation and Monitoring

Throughout the EIAR where relevant measures to avoid, prevent, reduce, or offset any significant adverse effects on the environment will be described. These will be applicable to the construction and operational phases. Monitoring measures will also be proposed for both phases where appropriate.

It has been the experience of MWP that when it comes to wind farms, integrating mitigation into the fundamental design is key to minimising adverse environmental effects. Examples include set back distances to dwellings, site specific surface water management systems to protect water quality, maintaining buffers to ecologically sensitive habitats, electronic turbine control systems to manage shadow flicker and noise emissions and timing of construction phase works to avoid unnecessary disturbance to fauna.

Throughout the project mitigation by avoidance has been the top priority. Where this has not been possible effects have been minimised, reduced, or offset. A detailed description of all mitigation measures is provided throughout the EIAR.

6.3 Proposed Assessment Topics

The EIA regulations provide that the receiving environment and the effects of the project are explained by reference to its possible effects on the following series of environmental factors:

- Population and Human Health
- Biodiversity
- Land & Soils
- Water
- Air
- Climate
- Material Assets
- Cultural Heritage
- Landscape

On the basis of the likely possible environmental implications associated with both the Wind Farm Construction and Operational Activities, Table 3 outlines the specific study areas that have been currently identified for assessment and inclusion in the EIAR for each of the environmental factors stipulated by the Regulations.

6.3.1 Reasonable Alternatives

The EIA directive requires that a description of reasonable alternatives is provided. Reasonable alternatives are defined as

"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

As the location of the site has already been secured through landowner lease agreements (including Coillte), it is proposed that the EIAR will address alternatives in terms of design of the wind farm infrastructure, such as wind turbine and roads layout, the number of wind turbines, construction methodologies and mitigation measures. The 'do nothing' scenario will also be assessed.

This is typically documented by MWP as an iterative process which each change logged and the rational documented. The final design is therefore the end of an iterative process which has been thoroughly informed predominantly by engineering and environmental studies. The process will be summarised in Chapter 2 of the Main EIAR.

Table 3 Regulated Environmental Factors and Proposed Topics for Assessment

Regulated Environmental Factor	Proposed Assessments and Studies to be included in the EIAR
Population and Human Health	Residential Amenity (noise, shadow flicker, traffic, visual intrusion)
	Health and Safety
	Tourism
Biodiversity	Terrestrial ecology and habitat disruption and loss
	Protected flora and fauna
	Bat populations
	Aquatic ecology
	Avian populations
Land and Soil	Loss of land use
	Management of construction phase excavated materials
	Peat slippage risk
Water	Water quality and Water Framework Protected Areas
	Hydrogeology
	Site drainage regime / surface water run-off management and Sediment and Erosion Control
	Flooding and Flood risk
Air and Climate	Emissions to atmosphere
	GHG emissions savings
	Noise and Vibration
Landscape	Landscape character effects
	Visual impact of turbine structures
Cultural Heritage	Impact to known archaeological and cultural heritage resources
Material Assets	infrastructure (roads), Traffic & Transportation
	utilities,
	Telecommunications, Television, Aviation,
	Waste management

6.4 EIAR Structure

The EIAR will be prepared in accordance with the requirements outlined in Schedule 6 of S.I. No. 296 of 2018, Environmental Impact Assessment Regulations 2018, and guidelines provided by the Environmental Protection Agency (EPA) - *'Guidelines on information to be contained in environmental impact Assessment Reports, 2022'*.

The EIAR is presented in 4 No. Volumes as follows;

- Volume 1: Non-Technical Summary
- Volume 2: Main Environmental Report
- Volume 3: Appendices
- Volume 4: Photomontages

Volume 1 - NON-TECHNICAL SUMMARY

The Non-Technical Summary provides a short overview of the project and the EIAR in non-technical terms. The summary is presented similar to the grouped format structure which discusses each environmental topic separately and includes the information under the required sections (Existing Environment, Impacts of the Proposed Development, Mitigation Measures, Residual Impacts, and Conclusion).

Volume 2 - MAIN EIAR

This document provides a detailed description of the proposed project and contains specialist reports on each of the selected study areas. This document is prepared in the 'Grouped Format Structure' which examines each environmental topic area as a separate Chapter. This structure was selected for the Main EIAR as it facilitates straightforward investigation of individual topics. This document may be divided as follows:

- Chapter 1 - Introduction
- Chapter 2 - Description of the Proposed Development
- Chapter 3 – Civil Engineering and Design
- Chapter 4 – Reasonable Alternatives
- Chapter 5 – Population and Human Health
- Chapter 6 – Biodiversity
- Chapter 7 - Ornithology
- Chapter 8 – Water
- Chapter 9 – Land Soils and Geology
- Chapter 10 – Noise & Vibration
- Chapter 11 – Shadow Flicker
- Chapter 12 – Landscape & Visual
- Chapter 13 - Cultural Heritage
- Chapter 14 – Air and Climate
- Chapter 15 – Material Assets
- Chapter 16 – Interaction of the Foregoing
- Chapter 17 – Schedule of Environmental Mitigation Measures

Volume 2 of the EIAR sets out the competencies of the EIA participants and identifies which section of the EIAR was completed by them. The team and this information are included in Chapter 1.

The reasonable alternatives considered are assessed and presented in Chapter 4. This information includes the constraints analysis and project evolution.

The chapters which present the impact assessments (Chapters 5 – 14) will include relevant information as outlined under Schedule 6 of the 2018 Regulations;

> *should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term medium-term and long-term, permanent and temporary, positive and negative effects of the proposed development.*

The chapters will be structured as follows:

- Introduction
- Methodology
- Existing environment
- Likely Significant Effects
- Mitigation
- Residual Impacts
- Summary of Effects

Volume 3 – APPENDICES

This Volume contains documentation and information in support of the main report such as details on the consultation process, maps, drawings, any additional specialist reports or other information gathered during the impact assessment process which may render the Main Environmental Impact Assessment Report too cumbersome.

Volume 4 – PHOTOMONTAGES

This Volume contains the photomontages and Zones of Theoretical Visibility maps on high quality A2 paper in support of Chapter 12, Landscape and Visual Impact Assessment. This Volume should therefore be read in conjunction with Chapter 12.

7. EIAR Study Team

This Environmental Impact Assessment Report (EIAR) has been compiled by MWP, The Elm Suite, Loughmore Centre, Raheen Business Park, Limerick. The study team involved in the environmental assessment includes MWP in-house specialists with the following sub-consultants:

- Maurice F Hurley – Archaeology
- Cunnane, Stratton Reynolds – Landscape and Visual Impact Assessment
- iNNOVISION - Photomontages
- AWN – Noise and Vibration Impact Assessment

The full EIA team and their competencies will be outlined in the EIAR (Chapter 1).

8. EIAR Topics

The following are the main environmental aspects which are included in the EIA and the EIAR. These aspects are scoped with regard to the 2014 EIA Directive and nomenclature.

8.1 Population and Human Health

The proposed development is situated in a rural area of east Co. Offaly. The site is approximately 4 km west of the Edenderry town boundary and 24km east of Tullamore.

The proposed wind farm is within the townlands of Ballinla, Ballybrittan and Leitrim in the municipal district of Edenderry, Co. Offaly. The land consists of coniferous forests and agricultural land. The Grand Canal is adjacent to the northern boundary of the proposed development.

The proposed grid connection is a linear development within the townlands of Leitrim, Lumville, Clarkeville, Ballyfore Big, Ballyfore Little, Ballyleakin and Ballykilleen, Edenderry, Co. Offaly. The grid connection route is from the proposed wind farm south along public roads to the existing Philipstown 110kV substation 6km to the south east and opposite the Edenderry Power Station.

The chapter, including social and economic data, will involve identifying the existing human environment in the proximity of the proposed development site and determining the scale of impacts arising from the development of the proposed wind farm. Mitigation measures will be recommended to eliminate or reduce the impact where necessary.

Legislative and Policy Framework

The assessment will have regard to the following legislation and guidance:

- EIA Directive 2014/52/EU as transposed into Irish law
- EPA EIA Guidance (2002, 2003)
- EPA draft EIA Guidance (2017)
- EIA Directive 85/337/EEC as amended by 97/11/EC and 2003/35/EC;
- Planning and Development Act 2000 and Amendment Act 2010; and
- Planning and Development Regulations 2001 – 2010.
- EIA Regulations 2018.

Study Methodology

Consultation:

Public interest or community groups relevant to the area will be identified and included in consultation as relevant. A Public Information Day may be organized to provide information to the community on the project and its effects.

Community consultation has commenced with the public, residents and businesses in the local community and vicinity of the proposed wind farm.

Desk-based Study and Preliminary Constraint Analysis:

A desktop study will be undertaken to collate and interpret baseline data such as population and settlement, land use, employment, tourism and amenities, landscape and roads and traffic. A review of relevant Local Authority plans, strategies and zoning objectives will also be carried out. The data sets of the Central Statistic Office (CSO) will be reviewed to gather baseline information and demographic data for the area. The initial baseline data gathering will afford a high-level preliminary constraint analysis to eliminate any potential areas with sensitive receptors.

Field Survey:

The assessment will involve a site visit and will comprise the following tasks:

- House survey and mapping of house locations using GIS (ArcView 9.2) – confirmation of geodirectory data;
- General character of the area and confirmation of land-use and amenity features;
- Mapping of any nearby or local businesses or commercial enterprise; and
- Consultation has commenced with the public, residents and businesses in the local community and vicinity of the proposed wind farm.

Final Constraints Analysis:

- The nearest sensitive receptors will be identified from the desk top study and preliminary analysis along with the site visit.
- Land-use requirements of the project for all phases will be identified.
- All data gathered will be collated on a map (GIS) and the location of all sensitive receptors will be identified.
- Sensitive receptors will be constrained appropriately from the proposed infrastructure during the design phase.

Interaction with related Environmental Aspects:

- The relevant EIAR Chapters, including Noise, Air, Water, Shadow Flicker and Traffic, will be reviewed to ensure there will be no direct or indirect impacts on the local population or on human health.
- The Population and Human Health Assessment will include concluding statements and data, as applicable, from the aforementioned relevant Chapters of the EIAR.

8.2 Biodiversity

8.2.1 Introduction

This biodiversity assessment will describe the baseline ecology of the proposed wind farm site, with an emphasis on designated sites, habitats, flora and fauna. The objectives of this assessment are to:

- Evaluate the conservation importance of the ecological resources associated with the site;
- Assess the direct, indirect and cumulative ecological impacts of the proposed wind farm;
- Minimise adverse impacts arising from the proposed wind farm through proposed mitigation at the design, construction and operation stages.

The value/sensitivity of ecological receptors will be determined using the ecological evaluation guidance given in the National Roads Authority (NRA – now TII) Ecological Assessment Guidelines published in 2009. This evaluation scheme seeks to provide value ratings for ecological receptors, with values ranging from locally important to internationally important in an Irish context.

In the preparation of the assessment, regard will be had for the Environmental Impact Assessment Directive 2011/92/EU as amended by Directive 2014/52/EU and the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018). Further, this assessment will be carried out with regard to the following published guidelines and best practice :

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for Ecological Impact Assessment in the UK And Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2019).
- DEHLG (2006) Wind Energy Development Guidelines and Draft Revised Wind Energy Development Guidelines (December 2019)
- WEA (2012) Best Practice Guidelines for the Irish Wind Energy Industry
- Accepted specific best guidance for assessing wind farm impacts on birds, bats and other sensitive ecological receptors

8.2.2 Study Area

The study area for the proposed wind farm is primarily in agricultural use in the northern section, with a conifer plantation in the southern section. Areas of ecologically important habitats were identified within the study area and outlined in Section 8.2.3 below. The extent of the study area has been increased to include sensitive receptors that are potentially within the zone of influence of the proposed wind farm, where required. The zone of influence has been determined based on the particular sensitivities of the receiving environment within which the proposed wind farm is located and the ecological pathways along which impacts may be transmitted.

8.2.3 Sensitive Receptors

Several sensitive ecological receptors within the project site or linked to the project site via ecological pathways have been identified. These include designated sites, sites of national importance, habitats and species.

8.2.3.1 Designated Natura 2000 sites

Natura 2000 sites are sites of international importance, protected under European legislation. Two types of sites are incorporated within the Natura 2000 network; Special Areas of Conservation (SACs) and Special Protection

Areas (SPAs). The proposed wind farm site does not lie within the boundary of any designated site. There are several designated sites within the Zone of Influence (15km) listed in **Tables 4 and 5** below.

Table 4 Natura 2000 sites within 15km of the proposed wind farm site.

Designated Site	Site Code	Qualifying Features of Conservation Interest	Proximity and connection to study area
The Long Derries, Edenderry cSAC	000925	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	The SAC is located 7.6km to the west of the study area. There is no hydrological link connecting the study area to the cSAC.
Raheenmore Bog SAC	000582	• Active raised bogs [7110] • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The SAC is located 9.8km to the west of the study area. There is no hydrological link connecting the study area to the SAC.
River Boyne and River Blackwater SAC	002299	• Alkaline fens [7230] • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • Lampetra fluviatilis (River Lamprey) [1099] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355]	The SAC is located approximately 17km northwest of the site. The water course systems between the Boyne_SC_010 and the Figile_SC_020 are linked by continuous watercourses and land drains. A stagnant water volume exists on the Rogerstown 07 (EPA code 07R55). The direction of flow from the site is south to the Figile River. There is no flow of water from the site into the Boyne_SC_020. Therefore, it is considered there is no hydrological link from the study area to the SAC.

Table 5 Natura 2000 sites within 15km of the Proposed Development site (including Grid Route)

Designated Site	Site Code	Qualifying Features of Conservation Interest	Proximity and connection to study area
River Barrow and River Nore SAC	002162	• Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Reefs [1170] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • European dry heaths [4030]	The SPA is located 11.2km to the west-northwest of the study area. There is a hydrological connection linking the study area to this SPA via the watercourses that drain the study area and the watercourses crossed by the proposed grid connection route as these watercourses ultimately flow into the River Barrow which is associated with the SAC.

Designated Site	Site Code	Qualifying Features of Conservation Interest	Proximity and connection to study area
		• Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] • Petrifying springs with tufa formation (Cratoneurion) [7220] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016] • Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] • Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Lampetra fluviatilis (River Lamprey) [1099] • Alosa fallax fallax (Twaite Shad) [1103] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355] • Trichomanes speciosum (Killarney Fern) [1421] • Margaritifera durrovensis (Nore Pearl Mussel) [1990]	

8.2.3.2 Sites of National Importance

In Ireland, the basic designation for wildlife is the Natural Heritage Area (NHA) and proposed Natural Heritage Area (pNHA) which are national designations under the Wildlife Act 1976, as amended. The proposed wind farm site does not lie within the boundary of any NHA or pNHA site. There are several NHAs and pNHAs within the Zone of Influence (15km) listed in Tables 6 and 7 below.

Table 6 National Heritage Areas within 15km of the proposed wind farm site.

Designated Site	Site Code	Features of Interest[1]	Proximity and connection to study area
Black Castle Bog NHA	000570	Black Castle Bog NHA is of considerable conservation importance as it comprises a raised bog, a habitat that is becoming increasingly rare and under threat in Ireland and in the EU.	The NHA is located *c.* 0.7km to the west of the study area. There is no hydrological link connecting the study area to the NHA.
Daingean Bog NHA	002033	Daingean Bog NHA is of considerable conservation importance as it comprises a raised bog, a habitat that is becoming increasingly rare and under threat in Ireland and in the EU. There is a population of Irish Hare *Lepus timidus hibernicus,* a species listed on the Red Data Book.	The NHA is located *c.* 9.6km to the west of the study area. There is no hydrological link connecting the study area to the NHA.
Carbury Bog NHA	001388	Carbury Bog NHA is of considerable conservation importance as it comprises a raised bog, a habitat that is becoming increasingly rare and under threat in Ireland and in the EU. The site comprises several raised bog	The NHA is located *c.* 10.9km to the east-northeast of the study area.

[1] Description of sites taken from NHA Site Synopsises [https://www.npws.ie/protected-sites/nha]

Designated Site	Site Code	Features of Interest[1]	Proximity and connection to study area
		microhabitats, including scrub, deciduous woodland and hummock/ hollow complexes.	There is no hydrological link connecting the study area to the NHA.
Milltownpass Bog NHA	002323	Milltownpass Bog NHA is of considerable conservation importance as it comprises a raised bog, a habitat that is becoming increasingly rare and under threat in Ireland and in the EU. The site comprises several raised bog microhabitats, including pools and hummock/ hollow complexes.	The NHA is located *c.* 13km to the north-northwest of the study area. There is no hydrological link connecting the study area to the NHA.
Cloncrow Bog (New Forest) NHA	000677	Cloncrow Bog (New Forest) NHA is of considerable conservation importance as it comprises a raised bog, a habitat that is becoming increasingly rare and under threat in Ireland and in the EU. The site comprises several raised bog microhabitats, including quaking areas, pools,hummock/ hollow complexes, a small flush and a swallow hole.	The NHA is located *c.* 14.9km to the north of the study area. There is no hydrological link connecting the study area to the NHA.

Table 7 pNHA sites within 15km of the proposed study area

Designated Site	Site Code	Features of Interest[2]	Proximity and connection to study area
Grand Canal pNHA	002104	The Grand Canal pNHA is of ecological significance due to the diversity of species it supports. Opposite-leaved Pondweed *Groenlandia densa,* (Flora Protection Order 1987) is present in the Eastern section of the Main Line and European Otter *Lutra lutra* (EU Habitats Directive >> Annex II) have been recorded using the site.	The pNHA broders the study area to the north of the study area. Site surveys indicate there is no hydrological link with the grand canal. All land drains at the site flow south to the Leitrim 14 (EPA_name) watercourse.
Ballina Bog pNHA	001012	Ballina Bog pNHA is one of the most easterly raised bogs which remains intact. It is of scientific importance due to the condition of the vegetation and surface.	The pNHA is located *c.* 5.3km to the west of the study area. There is no hydrological link connecting the study area to the NHA.
The Long Derries, Edenderry pNHA	00925	The Long Derries, Edenderry pNHA is of significant conservation importance for the priority habitat: Orchid-rich Calcareous Grassland*[6210]. Several rare species occur including 'IUCN Red Listed' Basil Thyme *Acinos arvensis,* and Red Data Book species Green-winged Orchid *Orchis morio* and Blue Fleabane *Erigeron acer.*	The pNHA is located *c.* 7.6km to the east-southeast of the study area. There is no hydrological link connecting the study area to the NHA.
Raheenmore Bog pNHA	000582	Raheenmore Bog pNHA is of considerable conservation importance as it comprises a Raised Bog (Active)* [7110], Degraded Raised Bog[7120], Rhynchosporion Vegetation[7150]. Raised bogs are becoming increasingly rare and under threat in Ireland and in the EU.	The pNHA is located c. 9.8km to the west of the study area. There is no hydrological link connecting the study area to the NHA.
Raheen Lough pNHA	000917	Raheen Lough pNHA is of significant conservation interest due to the variety and numbers of wildfowl and waders that it attracts. Reords from the site include Whooper Swan, Goldeneye, Purple Sandpiper, Jack Snipe and Kingfisher.	The pNHA is located *c.* 13.4km to the southwest of the study area. There is no hydrological link connecting the study area to the NHA.

[2] Description of sites taken from pNHA Site Synopsises [https://www.npws.ie/sites/default/files/general/pNHA_Site_Synopsis_Portfolio.pdf]

Designated Site	Site Code	Features of Interest[2]	Proximity and connection to study area
Rahugh Ridge (Kiltober Esker)	000918	Rahugh Ridge pNHA is a particularly fine esker ridge covered for almost its entire length in woodland. The woodland is dominated by Ash (Fraxinus excelsior) and Hazel (Corylus avellana). Species of particular conservation interest include Dogwood (Cornus sanguinea), Columbine (Aquilegia vulgaris), Buckthorn (Rhamnus catharticus), Stone Bramble (Rubus saxatilis), Whitebeam (Sorbus hibernica) and Wood Melic (Melica uniflora).	The pNHA is located *c.* 14.1km to the west of the study area. There is no hydrological link connecting the study area to the NHA.

Overview of Site

The site is mainly dominated by Agricultural lands and coniferous forestry and is thus considered a modified site in ecological terms.

Assessment Scope

The aim of the biodiversity assessment is to evaluate the importance of the ecological resources associated with the site and minimise any anticipated adverse affects of the project.

The assessment will have regard to the following legislation:

- EIA Directive 2014/52/EU as transposed into Irish law
- Birds and Natural Habitats Regulations 2011 as amended
- Wildlife Act 1976 as amended
- Irish Wind Energy Association (2008) Best Practice Guidelines for the Irish Wind Energy Industry
- Guidance for Assessment and Treatment of Ecology for National Road Schemes (NRA, 2009)
- Guidelines for Ecological Impact Assessment in the United Kingdom published by the Institute of Ecology and Environmental Management (IEEM, 2006)

Written consultation will be conducted as part of the EIA process to all relevant participants. Meetings will also be arranged with NPWS, IFI, BCI and other participants, as appropriate.

A desk study reviewing relevant nature conservation designations, literature, data and databases will be conducted. This will fine tune the precise scope of the EcIA and in particular the required field surveys.

The following ecological field surveys, with full coverage of the project site including wind farm site, selected external grid route, access route and substations, will be undertaken to current EIA standards and with regard to appropriate published guidance:

- Habitat survey and mapping of wind farm site: this is carried out with regard to Smith et al, *Best practice guidance for habitat survey and mapping*.
- Non-volant Mammal surveys including:
    - Otter survey
    - Badger survey
    - Other mammals e.g. pine marten, fox

- Bat activity and roost surveys over a spring, summer, autumn and winter period:

- Roost Survey early spring/summer and winter
- Bridges/Other structures/Trees, etc.
- Emergence/re-entry surveys if required possibly some along cable route/stream crossings/Bridges/Haul Route.
- Transects activity survey
- Automated bat surveys (from the ground).
- Automated bat surveys from height. BCI strongly recommend that bat survey from height should be carried out at all wind farm development sites, even if site not optimum/considered optimum for bats using met masts and/or telescopic poles. Recommended by Eurobats 6 for windfarm developments recommend this, along with Bat Conservation Trust in the UK, Bat survey guidelines (Hundt et al 2012/16).

- Invertebrate surveys:
  - General invertebrate survey for species such as damselfly, dragonfly, moths, butterfly

- Aquatic ecology surveys:
  - Biological sampling of benthic macroinvertebrates on all suitable watercourses within and downstream of site (Q values)
  - Electrofishing surveys on suitable rivers
  - Fisheries appraisal of all watercourses
  - White clawed crayfish survey on suitable rivers
  - Freshwater pearl mussel survey on suitable rivers

The output from these surveys will determine the ecological value of the site and feed into an Environmental and Engineering Constraint Analysis (EECA) of the site, which in turn will influence the wind farm design thereby minimising potential ecological effects of the project. Following the completion of the Ballinla Wind Farm Design Stage (WFDS) an Ecological Impact Assessment will be completed followed by the development of a Mitigation Strategy.

8.2.4 Ornithology (Avian Ecology)

Assessment Scope

The aim of the ornithological impact assessment is to evaluate the importance of the ornithological resources associated with the site and minimise any anticipated adverse affects of the project. One of the issues that arise with wind farm developments at planning stage is non adherence to SNH (2014) *Recommended bird survey methods to inform impact assessment of onshore wind farms*. All bird survey methods will be carried out in accordance with SNH (2014). The reliability of the assessment is dependent on the observers used to collect the underlying information. Using appropriately skilled and experienced observers is therefore essential and all proposed bird survey personnel will be suitably skilled and experienced.

Fehily Timony Company (FTC) have conducted these surveys (2 years per SNH) and their report and data will inform the assessment.

The assessment will have regard to the following legislative and guidance context:

- EIA Directive 2014/52/EU as transposed into Irish law
- Birds and Natural Habitats Regulations 2011 as amended

- Wildlife Act 1976 as amended
- SNH (2014) *Recommended bird survey methods to inform impact assessment of onshore wind farms*
- Crowe, O. (2005) Ireland's Wetlands and their Waterbirds: Status and Distibution. BirdWatch Ireland
- Percival S.M. (2003). *Birds and* Windfarms in Ireland: A Review of Potential Issues and Impact Assessment. Sustainable Energy Ireland.
- Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H., 2000. Bird Census Techniques, Second Edition. Academic Press.
- Gilbert G., Gibbons DW and Evans J., (1998). Bird Monitoring Methods – A manual for key UK species. RSPB.

Written consultation will be conducted as part of the EIA process to all relevant participants. Meetings will also be arranged with NPWS, BWI and other participants, as appropriate.

A desk study reviewing relevant nature conservation designations, literature, data and databases will be conducted. This will identify the target bird species. A ZTV analysis with a complementary on the ground *recce* given the forestry cover in the area will be undertaken to confirm that VP locations cover all areas of the site and 500m beyond. MWP may conduct further bird surveys and will review the VPs used by FTC.

The following bird surveys, which will cover the project site, are undertaken with regard to appropriate published guidance:

• Vantage Point (VP) surveys
• Hinterland surveys
• Breeding Bird Transect surveys
• Winter Bird Transect surveys
• Breeding Wader surveys

The output from these surveys will determine the ornithological value of the site and feed into an Environmental and Engineering Constraint Analysis Stage (EECAS) of the site, which in turn will influence the wind farm design thereby minimising potential effects of the project on bird species. Following the completion of the Ballinla Wind Farm Design Stage (WFDS), an Ornithological Impact Assessment will be completed followed by the development of a Mitigation Strategy.

8.3 Land and Soils

Overview of Site

The geology of the site generally comprises cutover peat or Limestone till.

Bedrock in the area is classified as Locally Important.

Assessment Scope

The aim of the Land, Soils and Geology Impact Assessment is to evaluate the importance of these resources associated with the site and minimise any anticipated adverse affects of the project on receiving environment.

The assessment will have regard to the following legislation and guidance:

- EIA Directive 2014/52/EU as transposed into Irish law
- EPA EIA Guidance (2022))
- EPA draft EIA Guidance (2015)
- Irish Wind Energy Association (2008) Best Practice Guidelines for the Irish Wind Energy Industry
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2005)
- Institute of Geologists Ireland (2013) Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements
- Scottish Natural Heritage (2010); Good Practice During Wind farm Construction; and Relevant UK Pollution Prevention Guidelines (PPG's)
- EIA Regulations 2018

Written consultation will be conducted as part of the EIA process to all relevant participants, including the Geological Survey of Ireland and other participants, as appropriate.

A desk study review of available information and existing reports, including geological and ecological assessments, geological maps/field sheets data. This will fine tune the precise scope of the assessment relevant to the land required for the project. Land requirements for all phases of the project will be included and all mineral and rock resources.

The following surveys will be undertaken to current EIA standards and with regard to appropriate published guidance:

- Undertake Intrusive site investigation by means of peat probes and shear vane testing, to determine the composition, thickness and geometry of peat at the site. This is especially important at infrastructure locations. All site investigations and geological mapping will be done to British Standard BS5930 (1999). All site investigation has been scoped and agreed with MWP (geotechnical consultants);

Peat Stability Risk Assessment

The peat stability assessment will be necessary to complete the soils/geology and hydrogeological and hydrological impact assessment chapters for the proposed wind farm development area. The output from these surveys will determine the ecological value of the site and feed into an Environmental and Engineering Constraint Analysis (EECA) of the site, which in turn will influence the wind farm design thereby minimising potential ecological effects of the project.

MWP in-house developed peat stability risk assessment software will allow the compilation of all the separate datasets from each of the peat probing and site investigation studies and produce a composite constraints study. The ability to assimilate and process the diverse datasets enables MWP to complete a site wide risk assessment using infinite slope stability to calculate a Factor of Safety (FoS) for every point in the dataset. The software package can also complete a quantitative risk assessment of the constructability for any area within the dataset using parameters derived from MWP's extensive experience in construction in peat. The availability of this capability in-house is a fundamental benefit to this project.

8.4 Water

Overview of Site

In order to scope of assessments for soils and geology and water and hydrology chapters, MWP have compiled the following local geological and hydrological information.

The site drains to the south and is largely located within a river catchments that drains into the Figile River south of the site.

The geology of the site generally comprises cutover peat, or limestone till.

Bedrock in the area is classified as Locally Important and in general recharge rates within the proposed site would be moderate. However, this is a surface water dominated environment and most of the environmental risk associated with the wind farm assessment will be geared towards surface water protection.

Assessment Scope

A desk study reviewing and review of available information and existing reports, including hydrology and hydrogeological assessments, maps/field sheets data etc. This will fine tune the precise scope of the assessment.

The assessment will have regard to the following legislation and guidance:

- EIA Directive 2014/52/EU as transposed into Irish law
- EPA EIA Guidance (2022)
- Irish Wind Energy Association (2008) Best Practice Guidelines for the Irish Wind Energy Industry
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2005)
- Institute of Geologists Ireland (2013) Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements
- Scottish Natural Heritage (2010); Good Practice During Wind farm Construction; and Relevant UK Pollution Prevention Guidelines (PPG's)

Written consultation will be conducted as part of the EIA process to all relevant participants. Meetings will also be arranged with GSI and other participants, as appropriate.

The following surveys will be undertaken to current EIA standards and with regard to appropriate published guidance:

- Inspection and mapping of all relevant hydrological features, such as existing drainage ditches, streams and springs etc (where present).
- Measurement of slope inclination and mapping of significant hydrological features, confirmation of site catchments and drainage regime, and any hydrological buffers to be implemented.
- Undertake site specific flood risk assessments – assessment of flood history, hydrometric data (water levels and flows) for adjacent water body, surveyed site levels and rainfall data for extreme events. Assessment will take cognisance of climate change and the 1 in 100 year to 1 in 200 year flood events. Include recommendations to prevent future flooding downstream of the site. This is particularly relevant considering flooding is indicated on floodmaps.ie.
- A groundwater risk assessment will be undertaken to look at sources and pathways from within the proposed wind farm development to these downstream water supplies. For the risk assessment it will be assumed that every house down-gradient of the development has a private well. An assessment on the two location group water scheme sources will also be completed.

- Identification of potential downstream receptors such as water supplies and designated conservation sites.
- Make proposals relating to sediment control and SUDs in terms of mitigation measures to reduce or eliminate potential impacts on water quality. Produce set of preliminary drainage drawings for the proposed wind farm development.
- Compile the collected data, and relevant previous data, into technical chapters, outlining the current understanding of the site and the mechanisms that drive its hydrology / hydrogeology.

The output from these surveys will determine the hydrological and hydrogeological character of the site and feed into an Environmental and Engineering Constraint Analysis (EECA) of the site, which in turn will influence the wind farm design thereby minimising potential ecological effects of the project on the receiving water environment. Following the completion of the Ballinla Wind Farm Design Stage (WFDS) an Hydrological and Hydrogeological Impact Assessment will be completed followed by the development of a Mitigation Strategy.

8.5 Air and Climate

A desk study will be undertaken to identify activities that could generate emissions to atmosphere, and the key pollutants associated with these emissions. The desktop assessment will involve a review of:

- Existing EPA air monitoring data to categorise existing baseline air quality
- Review of the thirty year average meteorological data at the nearest synoptic weather station Met Eireann Annual Average rainfall data
- Irelands National Greenhouse Gas Inventory 2007
- Irelands National Climate Change Strategy
- Identification of sensitive receptors within and in close proximity to the study area
- Relevant assessment criteria, guidelines and best practice to assess the potential impact of the proposed development on air quality (at sensitive receptors) and climate
- The construction methodology and its potential for dust generation
- *Calculating Carbon Savings from Wind Farms on Scottish Peatlands – A new approach,* The Scottish Government 2008

Typically for wind farm projects, air and climate does not contribute constraining features. Following the completion of the Ballinla Wind Farm Design Stage (WFDS) an Air and Climate Impact Assessment will be completed followed by the development of a Mitigation Strategy, as appropriate.

8.6 Noise and Vibration

8.6.1 Assessment Scope

The potential noise and vibration impact of the construction and operational phases of the proposed development will be assessed. The potential noise impact of the construction of the associated infrastructure including wind farm roads, cable route and a new substation required to connect the turbines to the national electricity grid will also be considered.

A cumulative impact assessment taking into account other sources of noise in the surrounding area such as the Cloncreen Wind Farm will also be undertaken.

The construction noise and vibration impact assessment will be undertaken with cognisance to *British Standard 5228 Parts 1 & 2, Code of Practice for Noise and Vibration Control on Construction and Open Sites + A1, 2014 and* the National Roads Authority (NRA) Guidance *Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, March 2014.*

The operational noise impact assessment will be undertaken in accordance with the Institute of Acoustics (IOA), *Good Practice Guide (GPG) to the application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, 2013* and with reference to the current Department of Environment, Heritage and Local Government (DoEHLG) *Planning Guidelines on Wind Energy Development, 2006.*

8.6.2 Assessment Methodology

The methodology includes establishing existing noise levels, the derivation of appropriate noise limit criteria based on the existing noise levels and then a comparison of the predicted noise levels against these limit criteria. If required, mitigation measures are proposed to ensure the development can operates within the allowable noise limit thresholds.

The noise assessment methodology will follow recommendations set out in (but not limited to) the following documents:

- BS5228: 2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites (Part 1 and 2);
- ETSU-R-97 The Assessment and Rating of Wind Turbine Noise;
- IOA Acoustics Bulletin March/April 2009 – Prediction and Assessment of Wind Turbine Noise;
- IOA (2013) The Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise;
- IEMA Guidelines for Environmental Noise Assessment 2014.

A Preliminary Noise Study has been completed. This comprised a preliminary assessment and modelling of noise that may be associated with the operation of the proposed wind turbines in their proposed locations. The following methodology was employed:

- Identification and review of all receptor sites that could be impacted by the development, verified by site visit;
- Identification and listing of all inhabited, abandoned and derelict dwellings as well as dwellings with planning permission;
- Identification of other wind farms or single turbines in operation, with planning permission or in the planning process, and details to each (e.g. Grid coordinates, candidate/ actual; turbine, etc.) within 10km of the development which could contribute to the background noise environment;
- Identification of all sensitive receptors where noise impacts could occur and take these into consideration in the development of the background assessment.

The next step is to complete a Baseline Noise Assessment comprising the following methodology:

- Identification of suitable receptor sites that will be used as monitoring locations;

- Undertaking site visit to confirm suitable locations for sound level meters (SLMs) at the receptor sites defined as requiring noise measurements;
- Deployment and management of SLM's at receptor sites. Appropriate instrumentation will be used and the required calibrations carried out, in accordance with the IOA document '*A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*' (IOA, 2013);
- Calibration during the survey and removal of all SLM equipment from site upon completion.
- The background noise limits shall be derived for quiet daytime and night time as defined in the ETSU-R-97 guidelines, at all receptor locations.

Following completion of the Baseline Survey, the Noise Impact Assessment of the proposed wind farm will be completed. This will comprise noise modelling for both the construction and operational phases and will also include a cumulative impact assessment.

The noise modelling software (Predictor, Version 7.1) is based on ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation. This software will be used to predict wind farm noise at the nearest dwellings. The data input into the model will be defined by ETSU-R-97 (IOA, 2013) and clearly set out in the report.

An assessment of noise impact of the construction works associated with the development will also be completed. A noise prediction model will also be created using the Bruel & Kjaer Predictor 7810, software package, to assess the potential noise impact associated with the construction phase of the proposed wind farm development. The noise prediction model will also be constructed and assessed in accordance with the methodology outlined within BS5228. Noise levels will be predicted for the construction phase at the nearest noise sensitive receptors, in the vicinity of the site, and suitable mitigation measures will be outlined if necessary.

8.7 Shadow Flicker

A desktop Shadow Flicker Assessment will be undertaken using *WindFarm* software package. The results will be compared against the appropriate assessment criteria to determine compliance.

Shadow flicker will be calculated using industry-standard simulation software *WindFarm*, a tool which has been successfully applied to a number of similar studies around the world. The model uses digital height data as its only topographical reference. Simulations are run on a 'bare earth scenario' without allowing for the obscuring effect of vegetation between the location of the residence and the position of the sun in the sky. Nor does the model consider any obscuring features around residences itself, which would minimise views of the site and hence reduce the potential for shadow flicker, thus the *WindFarm* model uses a worst case scenario when reporting shadow flicker results for the existing environment.

The model assumes that:

1. The sun will always be shining during daylight hours, with no cloud cover or fog.
2. The wind will blow continuously throughout the day and always above cut-in speed, i.e. the turbine will always be rotating.
3. The wind will always be blowing from a direction such that the turbine rotor is aligned with the sun-receptor line. In other words, the rotor will yaw in parallel with the sun such that the rotor blades are always perpendicular to the sun-receptor view line.
4. There will be no screening by vegetation or trees, i.e. a bare earth scenario.

International regulations, studies, and guidelines from Europe and Australia have suggested 30 hours of shadow flicker per year as the threshold of significant impact, or the point at which shadow flicker is commonly perceived as an annoyance. However the most appropriate assessment criteria will be adopted, as per the Irish Wind Energy Planning Guidelines.

The assessment is broadly separated into two stages. Stage 1 uses assumptions on the number and orientation of windows at each dwelling i.e. 1 NWES facing window at each dwelling. This assessment highlights locations where shadow flicker has the potential to exceed limits. Stage two typically involves a site visit to confirm the orientation and presence of windows and the presence or absence of natural screening by either buildings or vegetation.

The prediction model will generate results which are a worst case scenario. No site specific or environmental factors are accounted for in the results. This is often the case when presenting the results for Shadow Flicker Assessments. However, several guidance documents suggest local mitigating factors should be taken into account.

Best Practice Guidelines for the Irish Wind Energy Industry (2012) also advocates that is reasonable to include ambient environmental conditions such as wind direction and general climatic data in shadow flicker assessments.

For the purpose of this proposed assessment it is proposed to undertake both a worst case and realistic scenario assessment (based on site specific information).

Wind turbine technology will be installed as standard practice to automatically shut-down individual turbines during periods of confirmed shadow flicker to prevent its occurrence at receptors adjacent to the wind farm. The technology will be installed and commissioned for all turbines and typically comprises a pre-programmed function to stop the turbine blades from rotating during a given time period based on the modelled and verified shadow

flicker predictions. The technology is typically fitted with a photosensitive sensor to verify that there is sufficient light for shadow flicker to occur. A Turbine Shutdown Scheme will be the primary mitigation measure for shadow flicker impact and will be implemented for the proposed wind farm development based on the predicted shadow flicker at each shadow flicker receptor. The Turbine Shutdown Scheme will be employed to ensure that shadow flicker does not occur at the affected property(s). A process will be established by the wind farm operator whereby local residents can highlight any concerns or complaints about the operation of the scheme. All concerns raised will be investigated by the wind farm operator and the turbine shutdown software adjusted accordingly, as required.

During the commissioning phase, there is potential for some shadow flicker to be experienced as the shadow flicker management software is installed and refined. However, the commissioning team will ensure that the maximum daily limit of 30 minutes per day is not exceeded during this temporary commissioning period.

8.8 Cultural Heritage

The proposed planning application will need to be supported by archaeological assessment which comprises a comprehensive and thorough examination of all existing archaeological and historical information relating to the proposed development area.

This would include rigorous interrogation of all existing information on the archaeological and cultural heritage of the area including the Record of Monuments and Places, Sites and Monuments Record, the Topographical Files of the NMI, cartographic sources, an assessment of previous archaeological fieldwork and studies in the area, aerial photographs, local histories, local area plans, architectural archives, etc. All relevant bodies both public and private would be consulted with a view to maximising knowledge of the scheme and its archaeological and cultural heritage background. It is of critical importance that a thorough and comprehensive baseline is established at an early stage to allow for the identification of any possible gaps and inconsistencies within the information and allow for their resolution.

Once all relevant data has been examined, MWP will proceed to inspect all areas of the proposed development in order to assess the nature of any existing archaeology and architectural resource and to attempt to identify any additional sites, which may not be recorded in the historic and cartographic sources.

Following the gathering of the baseline information and the information derived from the field inspection, MWP will assess the results in detail in conjunction with all the design and construction information. Following this assessment, MWP will produce a thorough, concise and well laid out report, which will clearly set out the impact assessment and proposed mitigation strategies designed to avoid, reduce or offset each individual impact on the archaeological resource.

8.9 Landscape and Visual Impact

The LVIA must above all be of excellent quality in its methodology, presentation of information, reasoning and conclusions so that it can withstand the high level of scrutiny to which it will be subjected by the Board and third parties. It must also be understandable for both assessors and lay people.

The LVIA will be prepared with reference to the following documents:

- *Guidelines for Landscape and Visual Impact Assessment* (3rd edition, 2013) produced by the Landscape Institute and Institute of Environmental Management and Assessment;
- *Guidelines in the Information to be Contained in Environmental Impact Statements* (2022), published by the Environmental Protection Agency;
- *Wind Energy Development Guidelines* (2006) published by the Department of Environment, Heritage and Local Government.

The development visualisation work will take account of the following guidance documents produced by Scottish Natural Heritage:

- *Visual Representation of Windfarms Good Practice Guidelines – SNH* (2017);
- *Visual Assessment of Windfarms: Best Practice* (2002, updated and re-issued 2013);
- *Assessing the Cumulative Impact of Onshore Wind Energy Developments* (2013)

Preparation of Landscape and Visual Baseline/Constraints Report

To inform the preparation of the windfarm layout and stakeholder engagement, and to initiate the assessment of landscape and visual effects, a landscape and visual baseline report will be prepared. The following tasks will be completed:

- Review of Client Project Objectives
- Review of Offaly and other relevant County Development Plans with particular attention to:
    - Landscape policy including Landscape Character Assessment and related
    - Visual amenity protection policy including protected views and scenic routes, etc.
    - Renewable energy policy including wind energy strategies
    - Rural land use policy including for forestry, biodiversity conservation, rural diversification, settlement and economy, etc.
    - Tourism, recreation and green infrastructure policy;
- Review of other sources of information on landscape character and values in the receiving environment, e.g. tourism literature, research and data, etc.;
- Review all available mapping of the receiving environment (provisionally a radius of 35km around the site boundary) including OSI, historic mapping, orthophoto, Development Plan, CORINE, NPWS, cultural heritage, tourism resources, etc.
- Preliminary site and receiving environment familiarisation survey;
- Provide baseline information for, and attend or review proceedings of pre-planning meetings with ABP.;
- Prepare baseline LVIA report including:
    - Methodology for LVIA;
    - Review of relevant policy;
    - Landscape character assessment of receiving environment;
    - Identification of potential visual receptors;
    - Identification and discussion of potential effects on (a) the landscape, and (b) visual amenity;
    - Landscape and visual constraints summary.

- Following receipt of first stage layout, preparation of Zone of Theoretical Visibility (ZTV) map including reverse ZTVs, and selection of Visual Reference Points for (later) detailed assessment of visual effects.

The preparation of the Landscape and Visual Baseline Report will feed into the EECAS.

Preparation of Draft Photomontages

To inform further development of the windfarm layout and stakeholder engagement, and to inform the assessment of landscape and visual effects, the VRP photography will be captured, for the wind farm and grid connection. Spherical photography will be employed (if required for virtual reality presentation).

- Photography capture and fieldwork;
- Preparation (and initial assessment) of draft photomontages;
- Participation in 'live design workshop' at team workshop/s.

Preparation of Draft Landscape and Visual Impact Assessment

A complete draft LVIA chapter will be prepared, with reference to the relevant guidelines, and presented for discussion with the team/client at a project workshop if required.

- Preparation of draft LVIA chapter containing the following sections:
    - Methodology for LVIA;
    - Review of relevant policy;
    - Landscape character assessment of receiving environment;
    - Landscape Effects Assessment;
    - Visual Effects Assessment. This will include detailed assessments of all VRPs informed by draft photomontages. This may also include assessment of a Route Visibility Study if deemed necessary.
    - Mitigation Measures. This will include description of the assessment undertaken and the mitigation measures adopted/built into the proposed development;
    - Residual effects assessment (landscape and visual).
- Presentation and participation in team workshop.

Preparation of Final Landscape and Visual Impact Assessment

Following team/client feedback and feedback from stakeholder engagement, the LVIA chapter will be finalised.

8.10 Material Assets

Material assets are defined in the EPA 'Advice notes on Current practice (in the preparation of Environmental Impact Statements)' (2003) as '*resources that are valued and that are intrinsic to specific places, they may be either human or natural origin and the value may arise for either economic or cultural reasons'*. The purpose of this assessment is thus to identify these assets, determine the impact, if any, on these resource, and propose mitigation where necessary to ensure that they are used in a sustainable manner.

The assessment will have regard to the following legislation and guidance:

- EIA Directive 2014/52/EU as transposed into Irish law
- EPA EIA Guidance (2002, 2003)

- EPA draft EIA Guidance (2015)

Written consultation will be conducted as part of the EIA process to all relevant participants. Meetings will also be arranged with Offaly County Council and other participants, as appropriate.

The following material assets will be examined:

- Economic Asset - Natural Origin - Assimilative capacity (air & water)
    - Non renewable resources
    - Renewable resources
- Economic Asset- Human Origin - Settlements
    - Transport infrastructure and Aviation
    - Major utilities e.g. Telecoms and telecommunications
    - Ownership and access
- Cultural Asset – Social Type - Language and dialects
    - Folklore and tradition
    - Religion and belief
    - Literary and artistic association

Typically for wind farm project material assets are not often constraining features. However, the output from the assessment will determine any existing material assets, which may need to be avoided and feed into an Environmental and Engineering Constraint Analysis (EECA) of the site, which in turn will influence the wind farm design thereby minimising potential ecological effects of the project. Following the completion of the Ballinla Wind Farm Design Stage (WFDS) a Material Assets Impact Assessment will be completed followed by the development of a Mitigation Strategy.

8.11 Interactions Between the Above Factors

There is potential for interactions between one aspect of the environment and another which can result in direct or indirect impacts, and which may be positive or negative. Where relevant, interactions between specific environmental aspects and effects will have been addressed within each of the individual assessment topic areas of the Ballinla Wind Farm EIS. The purpose of this chapter is to draw attention to significant interaction and interdependencies between one topic and another.

8.12 Schedule of Mitigation Measures

For ease of reference all mitigation measures will be included in a compendium of mitigation and monitoring commitments. This will be included as a standalone section of the EIAR, titled Schedule of Mitigation Measures.

9. Consultation

9.1 Proposed Consultees

Consultation through a combination of meetings, letters, email and telephone calls, with various statutory and non-statutory consultees will be maintained throughout the EIA process. The proposed consultees are outlined in Table 8 below.

9.2 Public Consultation

Prior to making the planning application a Public Information Day will be held locally in order to inform local residents and other interested parties about the Proposed Development.

The information day will provide information regarding the Proposed Development and will provide an opportunity for members of the public to ask questions and provide their views on the Proposed Development. Representatives on behalf of the design and environmental assessment team will be present to answer any questions.

Table 8 List of Proposed Consultees

An Taisce
Department of Agriculture, Food and the Marine
Department of Business, Enterprise and Innovation
Department of Communications, Climate Action and Environment
Department of Culture, Heritage and the Gaeltacht
Department of Housing, Planning and Local Government
Health Service Executive
Inland Fisheries Ireland
CRU
Department of Transport, Tourism & Sport
Irish Water
An Chomhairle Ealaíon, (Arts Council)
Offaly County Council
TII
Failte Ireland
Heritage council
IAA
Waterways Ireland
Bat Conservation Ireland
Birdwatch Ireland
Failite Ireland
Friends of the Earth
Friends of the Irish Environment
Irish Peatland Conservation Council
Irish Wildlife Trust