

Proposed Ballivor Wind Farm



Introduction

Bord na Móna is an iconic Irish company operating four business units – Powergen Development, Resource Recovery, Energy and New Business. Over 80 years ago, Bord na Móna was established to develop Ireland’s peat resources for the economic benefit of Ireland. Ireland’s urgent need to support positive climate action measures means the company is now managing its land in a very different way.

As part of its Brown to Green Strategy, Bord na Móna is implementing an extensive peatland rehabilitation programme and expanding its low carbon operations as well as its Resource Recovery and recycling business. A key objective of this strategy involves using the land to continue to underpin Ireland’s energy independence by developing green, sustainable energy sources to assist with Ireland’s commitment to achieve 70% renewable electricity by 2030.

The company is rapidly decarbonising and as it does it is building a new, more sustainable business and rural economy. Bord na Móna has a strong record of siting, designing and delivering wind farms within its cutaway peat lands, such as Bellacorick, Bruckana, Mountlucas and Oweninny Wind Farms.

About the Project

The proposed development will be located on bogs within the Ballivor Bog Group in counties Meath and Westmeath, namely Ballivor, Bracklin, Carranstown, Lislogher and Lislogher West bogs. The closest large settlements to the site are Ballivor which is located approximately 2 km to the east, Delvin which is located approximately 2.5 km to the northwest and Raharney which is located 3 km to the west. Following on from public consultation events held in Ballivor, Delvin and Raharney in March 2020, we have progressed the project design and a draft wind turbine layout has now been produced.

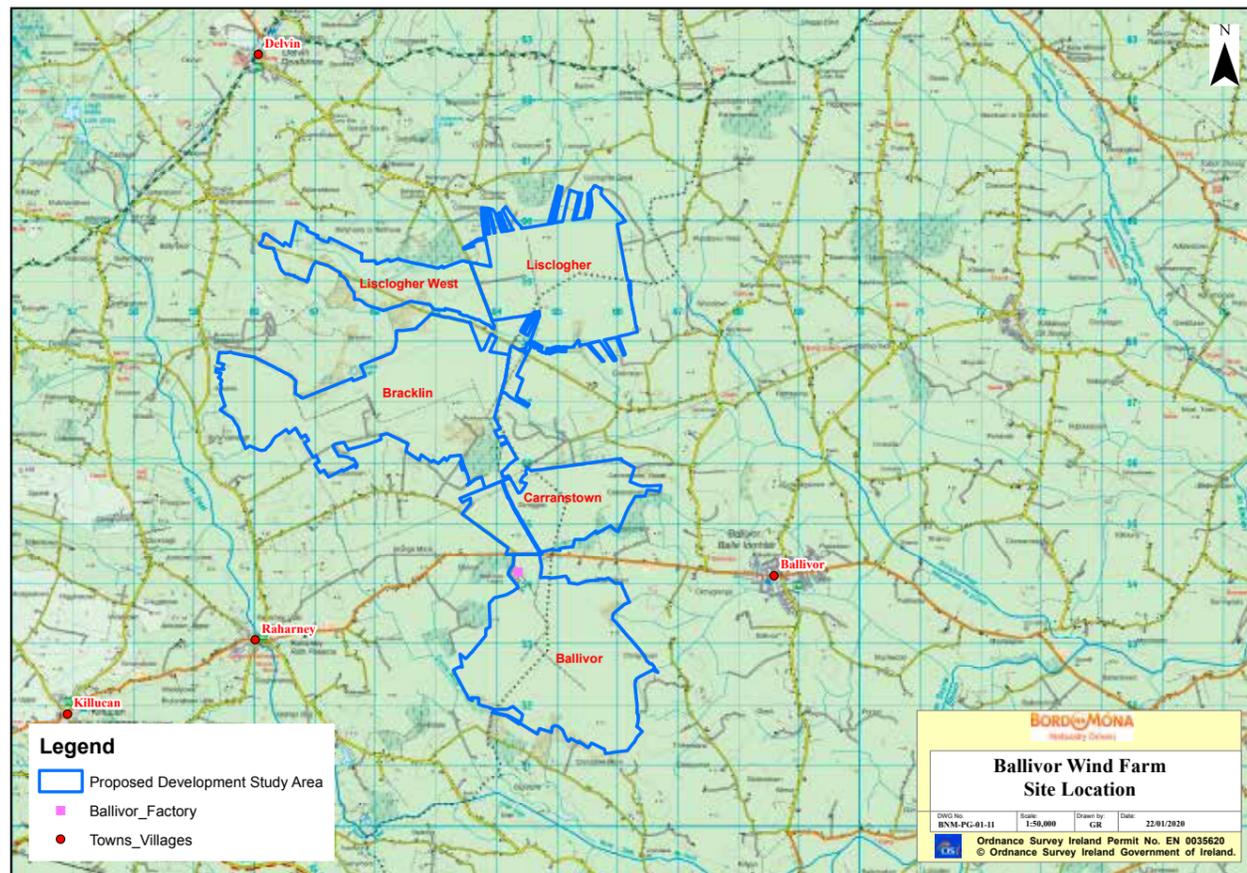


Figure 1 - Site Location Map

Irish Government Policy on Renewable Energy

Successive Governments have been developing policy to chart a course towards ambitious decarbonisation targets for Electricity, Transport, Built Environment, Industry and Agriculture.

In March 2019, the Joint Oireachtas Committee on Climate Action published its cross-party report entitled, Climate Change: A Cross-Party Consensus for Action, which set out 42 priority recommendations in the area of climate action, including a target for 70 per cent renewable electricity.

The Programme for Government 2020 details how energy will play a central role in the creation of a strong and sustainable economy over the next decade. The reliable supply of safe, secure and clean energy is essential in order to deliver a phase-out of fossil fuels. We need to facilitate the increased electrification of heat and transport. This will create rapid growth in demand for electricity which must be planned and delivered in a cost-effective way.

The Irish Government supports the use of Ireland’s wind resources to meet our renewable energy targets. Outlined below is some of the most recent relevant Irish Government Policy:

- Energy White Paper entitled Ireland’s Transition to a Low Carbon Energy Future 2015-2030.
- Climate Action and Low Carbon Development Act 2015 as a landmark national milestone in the evolution of climate change policy in Ireland. The purpose of the act is pursuing the transition to a low carbon, climate resilient and environmentally sustainable economy.
- The Climate Action Plan 2019: This plan identifies how Ireland will achieve its 2030 targets for carbon emissions, and puts the country on a trajectory to achieve net zero carbon emissions by 2050. The plan outlines that Ireland will move to 70% renewable electricity by 2030. The Government will be bringing forward the Climate Action (Amendment) Bill, this will ensure the Climate Action Plan is made into law.
- Project 2040: National Development Plan 2018 - 2027 which outlines an additional 4,500 MW of renewable energy as an investment priority as part of strategic pillar No. 8 - Transition to a Low Carbon and Climate Resilient Society.
- Renewable Electricity Support Scheme to contribute to Ireland’s 2020 renewable electricity targets and to deliver Ireland’s renewable energy ambitions out to 2030.
- Department of Housing, Planning and Local Government is currently preparing an update to the 2006 Wind Energy Development Guidelines and in December 2019 published revised draft Wind Energy Development Guidelines for consultation.
- Department of Communication, Climate Action and Environment is preparing a Renewable Electricity Policy and Development Framework to guide the development of renewable electricity projects in line with the objectives of Irish energy policy.

Strategic Infrastructure Planning Process Explained

For most large projects, a key issue is whether a development is Strategic Infrastructure Development (SID) or not?

Energy infrastructure which is considered SID* includes:

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

*(as outlined in the Seventh Schedule, Section 1 of the Planning and Development (Strategic Infrastructure) Act 2006).

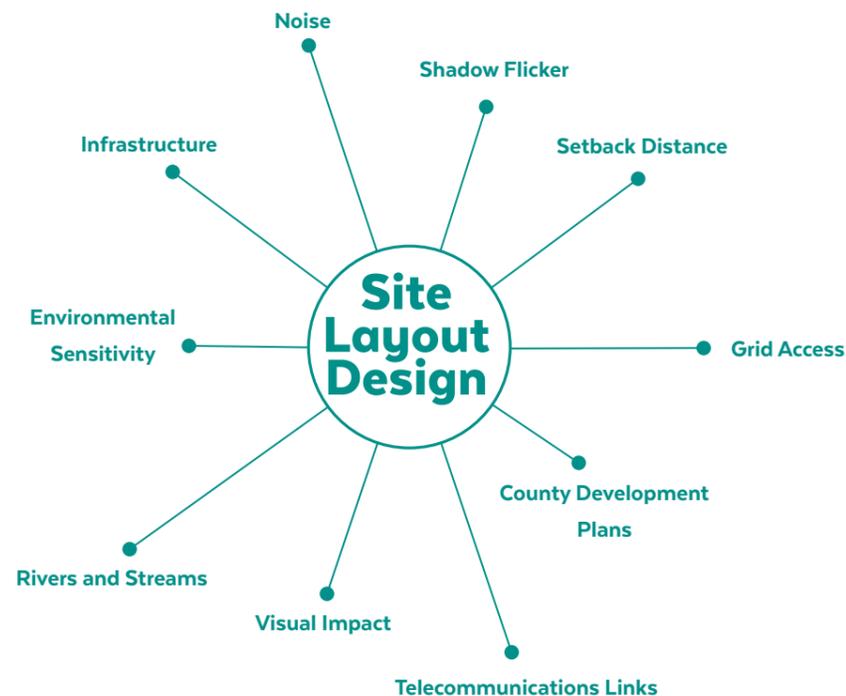
| SID Projects | Non-SID Projects |
|---|---|
| Planning Application to An Bord Pleanála | Planning Application to Local County Council |
| Environmental Impact Assessment Mandatory | Environmental Impact Assessment Mandatory in some cases |

At this stage of the project, Bord na Móna estimate that the output of the proposed Ballivor Wind Farm will be approximately 100MW. Consequently, Bord na Móna will need to go through a pre-planning consultation process with An Bord Pleanála to determine with certainty who the consenting authority will be.

Irrespective of the Consenting Authority it is our view that an Environmental Impact Assessment Report will be required as supporting documentation to the planning application.

Site Layout Design

In designing a layout for the proposed Ballivor Wind Farm there were a number of factors to be considered, including:



Proposed Development

It is intended to submit the planning permission application directly to An Bord Pleanála, under the provisions of the Planning and Development (Strategic Infrastructure) Act 2006 (please refer to the next page for more detailed information on this process). An initial approach is therefore being made to An Bord Pleanála seeking a determination in relation to the SID status, or otherwise, of the proposed wind farm development.

Number of Turbines

The draft layout comprises of 26 wind turbines. Apart from the turbines themselves, the other principal components of the wind farm are the foundations to support the turbine towers, access, crane hard standings, underground cables between the turbines, an on-site electricity substation and an electrical connection to the appropriate node on the National Grid. Please see pages 8-9 for Draft Layout Map.

Height of Turbines

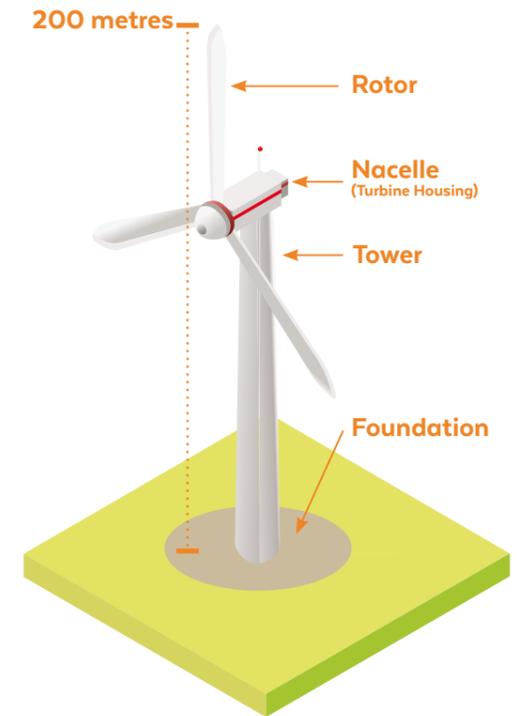
The proposed turbines will have an overall blade tip height of up to 200 metres above ground level. Within this size envelope, various configurations of hub height and rotor diameter may be used. The exact make and model of the turbine will be dictated by a competitive tender process, post planning and it will not exceed the maximum tip height of 200 metres above ground level.

Setback distance

The turbine layout has been designed with a minimum setback distance of 800m to the nearest house from a turbine. This complies with the *Draft Wind Energy Development Guidelines (2019)*, which proposes a setback distance of 4 times the tip height.

Noise:

The layout has been designed with regard to the *Draft Wind Energy Development Guidelines (2019)* 40dB (A) noise limit value.



| Distance | No. of Houses | Cumulative |
|----------|---------------|------------|
| 800m | 0 | 0 |
| 1000m | 72 | 72 |
| 1250m | 114 | 186 |
| 1500m | 116 | 302 |
| 1700m | 75 | 377 |
| 2000m | 91 | 468 |

What is included in an Environmental Impact Assessment Report (EIAR)?

Due to the nature and scale of the proposed development an Environmental Impact Assessment (EIA) of the proposed development will need to be carried out. As part of this process, an environmental baseline for the proposed development site will be established through fieldwork and other baseline surveys.

All this information will be described and documented in an Environmental Impact Assessment Report (EIAR) (formerly known as an Environmental Impact Statement (EIS)) which will accompany the planning application documentation submitted to the appropriate Consenting Authority for consideration.

The EIAR will comprise the following chapters as a minimum:



Landscape and Visual Impact Assessment

A typical tool utilised in the assessment of the visual impact of a wind farm is a Photomontage. Photomontages are visualisations that superimpose an image of a proposed development upon a photograph or series of photographs and are used to illustrate the potential impact of a development on the existing landscape. A number of photomontages have been created as part of the Landscape and Visual Impact Assessment (LVIA) for the proposed Ballivor Wind Farm.

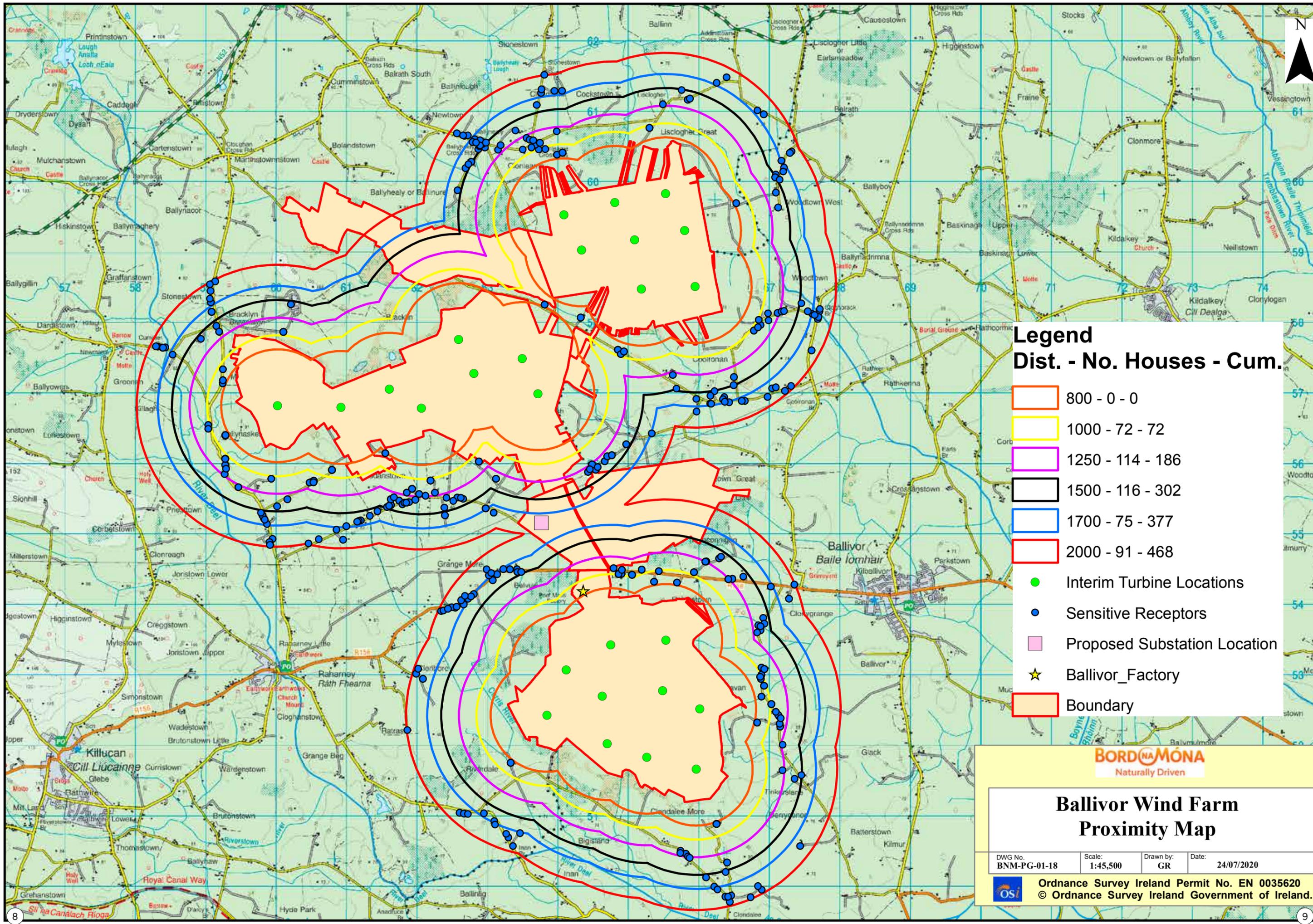
It is worth noting that these photos are indicative only, and that more will be prepared from additional locations as part of the planning application process. Please see Viewpoint Location map on pages 10-11 for the locations of where these photomontages were taken from.



Viewpoint 1:
View from the National Road (N51) southwest of Athboy, approximately 5km northeast of the proposed development. VP1 on Viewpoint Location Map.



Viewpoint 2:
View from the National Road (N52) at the edge of Delvin, approximately 5km northwest of the proposed development. VP2 on Viewpoint Location Map.



Legend
Dist. - No. Houses - Cum.

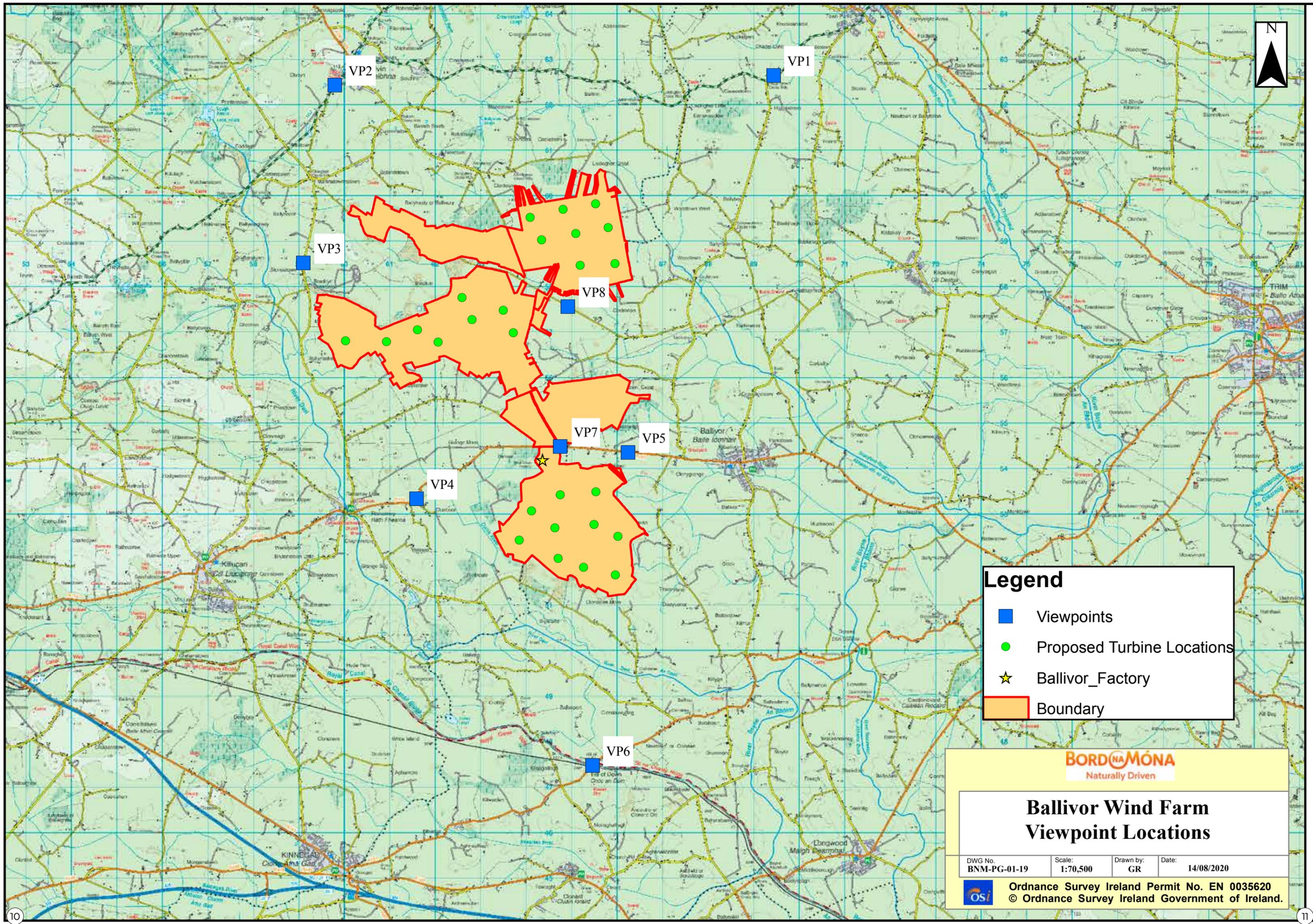
- 800 - 0 - 0
- 1000 - 72 - 72
- 1250 - 114 - 186
- 1500 - 116 - 302
- 1700 - 75 - 377
- 2000 - 91 - 468
- Interim Turbine Locations
- Sensitive Receptors
- Proposed Substation Location
- ★ Ballivor_Factory
- Boundary

BORD NA MÓNA
Naturally Driven

Ballivor Wind Farm Proximity Map

| | | | |
|-------------------------|--------------------|-----------------|---------------------|
| DWG No. BNM-PG-01-18 | Scale: 1:45,500 | Drawn by: GR | Date: 24/07/2020 |
|-------------------------|--------------------|-----------------|---------------------|

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Legend

- Viewpoints
- Proposed Turbine Locations
- ★ Ballivor_Factory
- Boundary



Ballivor Wind Farm Viewpoint Locations

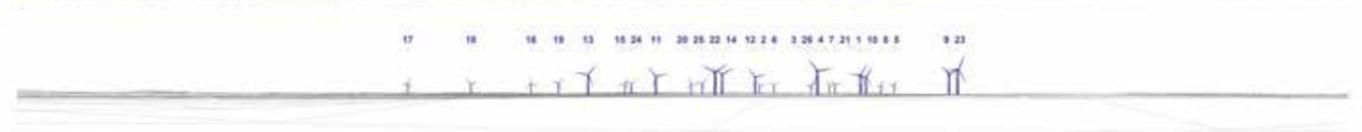
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Landscape and Visual Impact Assessment (Continued)



Viewpoint 3:
View from local road (Ballynacor Bracklin road) near Bracklyn Estate, approximately 800m west of the proposed development.
VP3 on Viewpoint Location Map.



Viewpoint 6:
View from the Regional Road (R161) near the Royal Canal at Hill of Down, approximately 4.5km south of the proposed development.
VP6 on Viewpoint Location Map.



Viewpoint 4:
View from the Regional Road (R156) near Roharney, approximately 2km west of the proposed development.
VP4 on Viewpoint Location Map.



Viewpoint 7:
View from the Regional Road (R156) at Robinstown near the Bord na Móna railway crossing just north of the proposed development.
VP7 on Viewpoint Location Map.



Viewpoint 5:
View from the Regional Road (R156) near Ballivor village, approximately 1km east of the proposed development.
VP5 on Viewpoint Location Map.



Viewpoint 8:
View from local road (beside Coolronan), approximately 400m east of the proposed development.
VP8 on Viewpoint Location Map.

How Wind Turbines Operate

Generating electricity from wind is a well-established technology. A wind turbine captures the energy inherent in the wind through the propeller-like blades that are attached to the rotor. Almost all wind turbines producing electricity consist of vertical blades which rotate around a horizontal axis. Most modern wind turbines have three blades which face into the wind when extracting the energy needed to generate electricity. The blades are attached to a hub (sometimes through a gearbox) which drives a generator located inside a protective container known as a nacelle, where the electricity is made. As the blades are turning, they spin the generator to create electricity. A generator is a machine that produces electrical energy from mechanical energy, whereas an electric motor does the reverse.

An image of a typical wind turbine is included on the page opposite which shows the main elements that comprise a modern wind turbine. Many of the key working parts of a wind turbine are located in the nacelle at the top of the tower. A typical schematic of a wind turbine nacelle is shown in the figure opposite, with the key components labelled for easy reference.

Tubular towers, which support the nacelle and rotor are usually made of steel and taper from their base to the top. The entire nacelle and rotor are designed to swing around, or 'yaw', in order to face the prevailing wind and extract the maximum amount of energy. A modern wind turbine is designed to produce high quality electricity whenever enough wind is available. Wind turbines can operate continuously, unattended, and with low maintenance, with a design life of over 20 years.



Parts of turbine explained

Blade: The wind pushes on the blades, causing them to spin. The spinning motion is carried onwards to the generator (sometimes through a gearbox) via a shaft.

Gearbox: Gears transform the slow rotation of the shaft into a fast rotation suitable for the generator. Note not all turbines have a gearbox. Some designs are direct drive turbines.

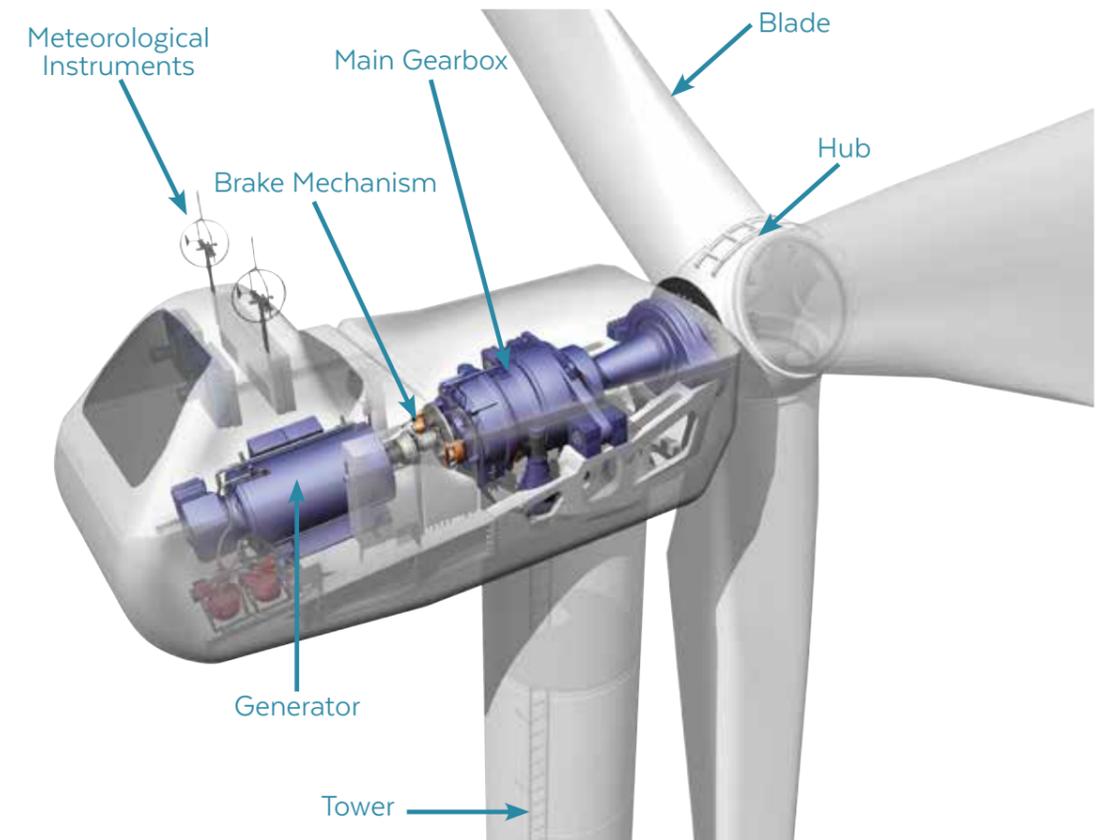
Pitch control: To spin at the optimal speed, the blades swivel to capture more or less of the wind energy depending on the wind speed.

Blade Shape: The twisting shape of each blade is designed to capture energy from the wind wherever it hits the blade, from root to tip.

Generator: The arrangement of coils and magnets in a generator convert the spinning motion from the gearbox into electrical energy.

Meteorological Instruments: These send signals to motors in the tower to ensure the wind turbine always faces into the wind, whatever its direction and to the pitch controllers to angle the blades.

Tower: The tower holds the blade high above the ground where the wind is stronger.



Potential Wind Farm Recreational Facilities

A wind farm consists primarily of access roads, turbines, hardstand areas and a substation and occupies a comparatively small footprint. This means that the rest of the land area can be utilised for other purposes.

Since the development of Bord na Móna's Mountlucas Wind Farm, amenity proposals have been incorporated into all Bord na Móna wind farm development projects. Similarly, it is intended that the planning application for the proposed Ballivor Wind Farm development will include proposals for the inclusion of amenity facilities. Examples of such facilities include:

1. Creation of a network of public walkway/cycleways through the wind farm site that could be used as a basis for promoting local tourism.
2. Exploring potential for connection of these internal walkway/cycleways with external amenities in the local area.
3. Enhancing habitats that add to the local and regional biodiversity, or provide refuge for rare species.
4. Assisting in the development of peat-forming communities that will actively capture and sequester carbon.
5. Providing a range of ecosystem services, such as wildlife and wilderness areas, bird watching and nature studies; water storage and flood abatement.

As part of the amenity design process we are seeking ideas from near neighbours, local communities and local community groups on what the design could entail. If you have a suggestion for an amenity idea please contact the project Community Liaison Officer, Niall Donlon on 087-9951174 or email: ballivorwindfarm@bnm.ie.

Local Benefits of the Development

Benefits arising from the construction and operation of the proposed wind farm will be:



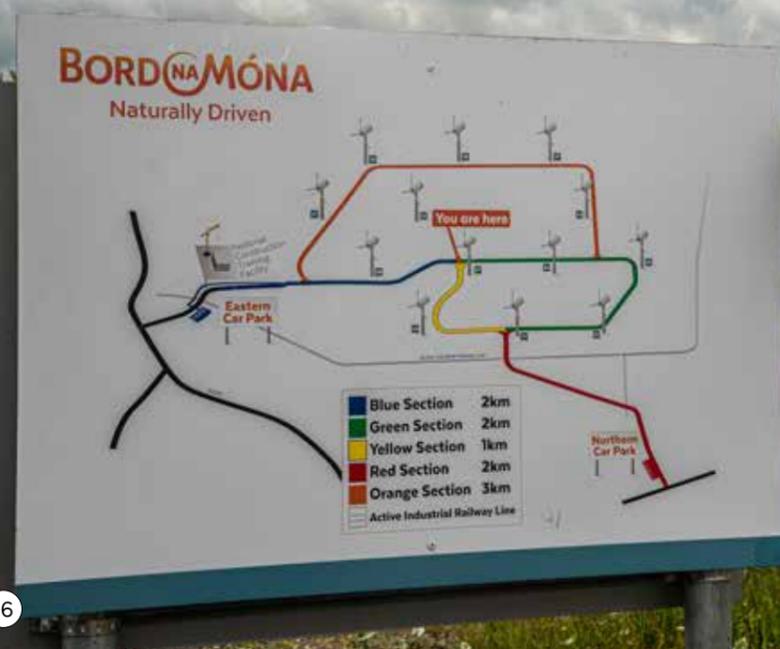
Further Information (contact details)

The Ballivor Wind Farm project will benefit from participation by residents and communities during each stage of the development. If you wish to be updated or require further information about the proposed development please contact our Community Liaison Officer:

Address: Ballivor Wind Farm Project Team,
Bord na Móna Powergen,
Main Street, Newbridge,
Co. Kildare.

Website: www.ballivorwindfarm.ie
E-mail: ballivorwindfarm@bnm.ie
Phone: 087-9951174

Please note: All photos used in this document are of Mountlucas Wind Farm



Overview of Bord na Móna Powergen Projects*

*correct as of time of print, August 13th 2020.



Overview of Bord na Móna Powergen Projects*

*correct as of time of print, August 13th 2020.

- Project Name: Oweninny Wind Farm Phase 1 (Joint Venture with ESB)**
 Location: County Mayo
 Project Stage: Operational (2019)
 Installed Capacity: 93 MW
 No. Turbines: 29
 Overall Blade Tip Height: 176 metres
 website: www.oweninnywindfarm.ie
- Project Name: Oweninny Wind Farm Phase 2 (Joint Venture with ESB)**
 Location: County Mayo
 Project Stage: Pre-Construction
 Proposed Maximum Export Capacity: 83MW
 Proposed No. Turbines: 31
 Proposed Overall Blade Tip Height: 176 metres
 website: www.oweninnywindfarm.ie
- Project Name: Cloncreen Wind Farm**
 Location: County Offaly
 Project Stage: Construction
 Proposed Maximum Export Capacity: 100MW
 Proposed No. Turbines: 21
 Proposed Overall Blade Tip Height: 170 metres
 website: www.cloncreenwindfarm.ie
- Project Name: Derryadd Wind Farm**
 Location: County Longford
 Project Stage: Consented
 Proposed Maximum Export Capacity: 96 MW
 Proposed No. Turbines: 24
 Proposed Overall Blade Tip Height: 185 metres
 website: www.derryaddwindfarm.ie
- Project Name: Derrinlough Wind Farm**
 Location: County Offaly
 Project Stage: Planning
 Proposed Maximum Export Capacity: 85 MW
 Proposed No. Turbines: 21
 Proposed Overall Blade Tip Height: 185 metres
 website: www.derrinloughwindfarm.ie
- Project Name: Ballivor Wind Farm**
 Location: Counties Meath and Westmeath
 Project Stage: Pre-Planning
 Proposed Maximum Export Capacity: 100MW
 Proposed No. Turbines (draft layout): 26
 Proposed Overall Blade Tip Height (draft layout): 200 metres
 website: www.ballivorwindfarm.ie
- Project Name: Timahoe North Solar Farm (Co-Development Agreement with ESB)**
 Location: County Kildare
 Project Stage: Consented
 Proposed Installed Generating Capacity: 70 MW
- Project Name: Cuil na Móna Renewable Gas Facility**
 Location: County Laois
 Project Stage: Planning
- Project Name: Bruckana Wind Farm**
 Location: Counties Tipperary/Laois/Kilkenny
 Project Stage: Operational (2014)
 Installed Capacity: 42 MW
 No. Turbines: 14
 Overall Blade Tip Height: 150 metres
 website: www.bruckanawindfarm.ie
- Project Name: Mountlucas Wind Farm**
 Location: County Offaly
 Project Stage: Operational (2014)
 Installed Capacity: 84 MW
 No. Turbines: 28
 Overall Blade Tip Height: 150 metres
 website: www.mountlucaswindfarm.ie
- Project Name: Sliabh Bawn Wind Farm (Joint Venture with Coillte and Greencoat Renewables)**
 Location: County Roscommon
 Project Stage: Operational (2017)
 Installed Capacity: 64 MW
 No. Turbines: 20
 Overall Blade Tip Height: 130 metres
 website: www.sliabhawnwindfarm.ie
- Project Name: Bellacorick Wind Farm**
 Location: County Mayo
 Project Stage: Operational (1992)
 Installed Capacity: 6.45 MW
 No. Turbines: 21
- Project Name: Oweninny Wind Farm Phase 3**
 Location: County Mayo
 Project Stage: Pre-Planning
 website: www.oweninnywindfarmphasethree.ie
**At this stage, the scale of the proposed development has not been determined*

