# 4.0 CONSIDERATION OF REASONABLE ALTERNATIVES

## 4.1INTRODUCTION

In 2014, Article 5 of the EIA Directive 2011/92/EU, relating to the preparation of an EIAR by the developer, amended by Directive 2014/52/EU, to state the following should be included regarding alternatives:

"a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment" (Article 5(1)(d)).

This is further reinforced in Annex IV which refers to the information to be included in an EIAR (as per Article 5(1)) and states the following:

"2. 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.

In the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No 296 of 2018) Article 97 which contains the revised Schedule 6 – information to be contained in EIAR outlines in article 2 (b) that:

"a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of environmental effects:"

This chapter will examine the alternatives as required above.

## **4.2METHODOLOGY**

## 4.2.1 Approach

There is limited European and national guidance on what constitutes a 'reasonable alternative'. It is noteworthy that the document Environmental Impact Assessment of Projects - Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017) states that reasonable alternatives:

"must be relevant to the proposed project and its specific characteristics, and resources should only be spent assessing these alternatives".

It also states that "the selection of alternatives is limited in terms of feasibility. On the one hand, an alternative should not be ruled out simply because it would cause inconvenience or cost to the Developer. At the same time, if an alternative is very expensive or technically or legally difficult, it would be unreasonable to consider it to be a feasible alternative".





There is also limited guidance on the level of detail to be provided. However, the current Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022) state that (taken from CJEU case 461/17):

"The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required".

### *4.2.2 Structure of the Chapter*

The EPA guidance suggests alternatives be considered under the following headings:

- Do Nothing Alternative;
- Alternative Locations;
- Alternative Layouts;
- Alternative Design;
- Alternative Processes;
- Alternative Mitigation Measures; and
- Consultation about the consideration of the alternatives.

Each of these is addressed in the following sections.

When considering a wind farm development, given the intrinsic link between layout and design, the two will be considered together in this chapter.



## 4.3 ALTERNATIVES CONSIDERED

## 4.3.1 'Do Nothing' Alternative

The 'Do Nothing' alternative to developing a wind farm at the proposed wind farm site on former peat extraction lands is to leave the site as it is. Peat extraction ceased at the proposed wind farm site in 2019. In this scenario the site would continue to naturally revegetate as is evidenced by those areas which ceased peat production many years prior to 2019. The site would continue to operate in compliance with its IPC licence requirements (ref. no P0504-01). This would involve the continuation of ongoing decommissioning activities associated with the removal of peat stockpiles and all peat extraction machinery, rail infrastructure, structures and materials from the site. Following the successful decommissioning of the site it is intended that the site would be rehabilitated in line with condition 10 of the IPC licence. The ongoing decommissioning and future rehabilitation of the site, in line with the IPC licence requirements, will be carried out whether the proposed development proceeds or not. However, in implementing the 'Do-Nothing' alternative for this site, the opportunity to capture a significant part of County Longford's renewable energy resource would be lost, as would the opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources, the consequent reduction of greenhouse gas emissions and increasing the security of energy supply.

Section 5.8 of the Longford County Development Plan (CDP) 2021-2027 sets out the Council policies that are directly relevant to the proposed development. The proposed wind farm site is located within lands zoned 'preferred locations' for wind farm development according to the CDP 'Areas of Wind Farm Potential' Map. In addition, the CDP Encourages proposals for commercial wind energy developments to be located on cutaway peatlands in those areas identified as having wind potential within the county, subject to environmental, landscape, habitat and wildlife protection requirements being addressed.

The *Climate Action Plan 2024* (CAP24) sets out the government's ongoing and urgent response to the climate crisis. CAP24 builds upon last year's Plan by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings. The Plan provides a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero by no later than 2050, as committed to in the Climate Action and Low Carbon Development (Amendment) Act 2021. It sets out the roadmap to deliver on Ireland's climate ambition and aligns with the legally binding economy-wide carbon budgets and sectoral ceilings that were agreed by Government in July 2022.

The opportunity to generate local employment, a development contribution, annual rates and investment would also be lost. The development of the chosen option of a wind farm development has already been established as a suitable use of the site through the identification of these lands as a *"Preferred Location"* for Wind Energy development under the current Longford County Development Plan (2021-2027) in Appendix 2 (Areas of Wind Farm Potential).

On the basis that the Do Nothing alternative would represent a missed opportunity to contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources coupled with a consequent reduction of greenhouse gas emissions, including those commitments set out in Climate Action Plan 2024, and also a missed opportunity to increase the security of Ireland's energy supply, the Do-Nothing alternative is not favoured.



## 4.3.2 Alternative Locations

Bord na Móna owns approximately 80,000 hectares of land, primarily in the midlands of Ireland. An assessment of potential future uses of this landbank was published by Bord na Móna in 2011 in a document entitled *'Strategic Framework for the Future Use of Peatlands'*, copy available in Appendix 1-3. The strategy sets out the company's commitment to transition to peat-free electricity generation by 2030<sup>1</sup>, establishes a framework for the on-going assessment of the company's total land bank of approximately 80,000 ha, and provides for the formulation of appropriate strategies, policies and actions. This report also clearly identified the potential for the development of renewable energy (in particular Wind Energy) and other developments on Bord na Móna lands.

In 2015 Bord na Móna published *Sustainability 2030*, which sets out the company's ambition for a sustainable future. The development of renewable energy as an after use for cutaway peatlands is a central part of the vision in Sustainability 2030.

The Project Ireland 2040 National Planning Framework identifies a range of key future planning and development, and place-making policy priorities for the Eastern and Midland Region that includes:

'Harnessing the potential of the region in renewable energy terms across the technological spectrum from wind and solar to biomass and, where applicable, wave energy, focusing in particular on the extensive tracts of publicly owned peat extraction areas in order to enable a managed transition of the local economies of such areas in gaining the economic benefits of greener energy.'

In light of the above, when considering suitable locations for the proposed development, the assessment was confined to lands within the Bord na Móna landholding only as these lands have been identified in a regional context as being suitable for this type of development. An examination of sites outside of the landholding was not included as part of the process.

The assessment carried out for the determination of a suitable location for proposed renewable energy development was a two-stage process. The first stage comprised the identification of a number of candidate sites while the second phase comprised a site-specific assessment. Each of these stages are described in the following sections.

### 4.3.2.1 Selection of Candidate Sites

Bord na Móna conducted a technical review of potential candidate sites for wind energy projects nationally across its entire landbank. This exercise reviewed a list of potential project sites, with a typical target capacity of between 50 MW and 150 MW and with the best potential to deliver successful future windfarm projects. Summary of the candidate sites chosen are listed in Table 4.2.

As part of this site selection process, known constraints were applied across the entire land bank to determine areas suitable for potential wind farm development. This involved desk-based studies and on-site surveys of the landbank. Known constraints were then applied across the landbank. The constraints applied were derived from various industry and regulatory guidelines (such as IWEA Best Practice Guidance 2012 and the "*Wind Energy Development Guidelines for Planning Authorities (2006)*" and the latest "*Revised Draft Wind Energy Guidelines*" released in

<sup>&</sup>lt;sup>1</sup> The transition to peat free electricity generation happened at an earlier date of December 2023.





2019), available Geographical Information Systems (GIS) datasets and on-site surveys (carried out as part of the peat extraction activity), and included the following:

- Planning Policy Context;
- Proximity to Sensitive Receptors;
- Peat Depths;
- Consistent suitable wind speeds;
- Proximity to the national electricity grid;
- Proximity to Designated sites; and
- On-site Environmental Sensitivities.

This methodology was used to generate a list of potential sites (refer to Table 4.2) for further consideration.

#### 4.3.2.2 Site Specific Assessment

The site-specific assessment of the candidate sites was guided by the 2013 'Methodology for Local Authority Renewable Energy Strategies' report from the Sustainable Energy Authority of Ireland (SEAI). This key element of this methodology is the identification of facilitators and constraints that influence the siting of this type of development. This approach was adopted in the Bord na Móna site selection process.

The site-specific assessment of candidate sites, which was conducted by Bord na Móna wind energy development team with input from in-house experts, for example Bord na Móna Works Management, engineering team, construction teams, ecology team, land and habitats team and the planning team. The aim of this assessment was to determine the sites with the best potential to deliver a successful wind farm project. This also allowed for direct comparison of the candidate sites to each other to determine their relative suitability for wind farm development. The site-specific selection criteria and an outline of the basis for assessment for each criterion and the associated potential environmental effects are listed in Table 4.1.





#### Table 4-1 Site-Specific Selection Criteria

Criterion	Basis for Assessment	Potential Environmental Effect
Grid Access/ Capacity	Grid Access/Capacity means the potential of the National Grid to accommodate future projects on the network. The proximity of the project to suitable grid nodes (i.e., those with spare capacity) should facilitate the selection of a project for a viable grid connection offer.	<b>Direct:</b> Land, Soil and Geology, Hydrology Hydrogeology, Biodiversity and Air Quality and Climate. <b>Indirect:</b> Noise and Vibration, Population and Human Health.
Wind Resource Assessment	The available wind resource (i.e., wind speed) directly translates into how much electrical output is available from the site.	<b>Direct:</b> Air Quality and Climate.
County Development Plans (CDP) and Zoning	County Development Plans typically indicate the areas of a county which are deemed preferred, open to consideration and not suitable for wind farm development.	<b>Direct:</b> Landscape and Visual, Cultural Heritage, Biodiversity and Ornithology, Air Quality and Climate,
		<b>Indirect:</b> Traffic and Transportation, Shadow Flicker, Telecommunications, Aviation and Electromagnetic Frequency.
Proximity to Houses	Proximity to houses refers to how close the wind turbines are to residences.	<b>Direct:</b> Population and Human Health, Noise and Vibration, Shadow Flicker.
Ecological Sensitivity	Ecological sensitivity of the site based on proximity to sensitive areas within or around the site.	Direct: Biodiversity and Ornithology
Environmental Sensitivity	Environmental sensitivity of the site based on proximity to known Environmentally sensitive/protected areas.	<b>Direct:</b> Biodiversity and Ornithology, Hydrology and Hydrogeology, Cultural Heritage, Landscape and Visual., Land, Soils and Geology.





Criterion	Basis for Assessment	Potential Environmental Effect
Landscape Capacity/ Cumulative Impact	This refers to the landscape's capacity to absorb wind farm developments.	<b>Direct:</b> Landscape and Visual. <b>Indirect:</b> Cultural Heritage.
Aviation	Airspace control and use to be considered. For the assessment, the criterion examines proximity of the site to local and regional airports (including Casement Aerodrome), proximity to National Motorway network, parachute zone, Military Operating Areas, etc.	<b>Direct:</b> Telecommunications, Aviation and Electromagnetic Frequency.
Land Use	Internal Bord na Móna consideration relating to the residual peat depth on-site, peat harvesting plans and alternative uses for each bog.	<b>Direct:</b> Cultural Heritage, Land, Soils and Geology, Hydrology and Hydrogeology, Biodiversity.
Communications Infrastructure	Telecoms masts and signals in the vicinity and across the sites to be considered.	<b>Direct:</b> Telecommunications, Aviation and Electromagnetic Frequency.
Flood Plain Analysis	Flood Plain Analysis assesses the wind farm's location in terms of historical flooding data. It also considers if the site is pumped, or gravity drained and hydrological connectivity.	<b>Direct:</b> Hydrology and Hydrogeology. <b>Indirect:</b> Traffic and Transportation.
Supporting Infrastructure	Proximity to national and regional road network sites with better road access requires less modifications or upgrade to the local infrastructure to facilitate construction or delivery of turbine components to site.	<b>Direct:</b> Traffic and Transportation. <b>Indirect:</b> Noise and Vibration, Air Quality and Climate.





These site-specific assessments were conducted by Bord na Móna with input from relevant subject experts where required.

#### Site Specific Assessment Results

A summary of the findings of the site-specific assessment for all potential sites under each criterion is provided in Table 4.2. Following the site-specific assessment process of these sites (carried out in late 2015) the site for the Derryadd Wind Farm emerged as the preferred location. Considering the close proximity of potential grid connection and the assessment of potential environmental effects, it was deemed that the proposed development site should be progressed for detailed assessment and planning consideration.

It is noteworthy that the process described in the preceding paragraphs and summarised below is not a one-off assessment of the entire Bord na Móna landholding in terms of its suitability for renewable energy developments. The site selection process is revisited in its entirety for each individual project and the criteria updated to suit the technology type proposed and to take account of any changes that have occurred (i.e. policy, legislative, environmental etc.) since the previous site selection process was conducted.



#### Derryadd Wind Farm - EIAR

Table 4-2 Summa	ry of the Key Findi	ngs on the Site Ch	osen for the Propo	sed Development			-				
Candidate Sites	Grid Access/ Capacity	Wind Resource Assessment	CDP and Zoning	Proximity to Houses	Environmental Sensitivity	Landscape Capacity/ Cumulative Effect	Aviation	Land Use	Communications Infrastructure	Flood Plain Analysis	Supporting Infrastructure
Proposed wind farm Site (Derryadd)	Scores highly due to location adjacent to the existing 110kV Lanesborough- Richmond Overhead Line (OHL)	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 – 8 m/s. Therefore, this criterion is neutral across all sites.	In an area, designated as a "Preferred Location" with respect to Areas Suitable for Wind Energy (Appendix 2: Longford CDP 2021-2027).	The closest settlement to the site is Derraghan village which is located approximately 200 m west of the proposed wind farm site. Also located in the wider area is Lanesborough, 1.8 km to the west, Keenagh, 1.6 km to the southeast and Longford town, 9 km to the north. A minimum turbine setback distance of 760 m from the nearest receptor has been achieved.	There are no European designated sites within the proposed development Lough Ree SAC is the nearest designated site, located approximately 2.4 km west of the proposed wind farm site boundary. Lough Ree SPA is also located to the west, approximately 2.4 km from the proposed wind farm site. There is a mixture of low, medium and high value habitat within the site.	There are no operational wind farms in County Longford. The nearest wind farm to the proposed development is Sliabh Bawn Wind Farm located approximately 6 km to the Northwest. The site is located within the "Peatlands" character type (Appendix 9: Longford CDP 2021-2027).	The site is at a significant distance from local and regional airports. The site is not located in proximity to the main motorway network.	Peat extraction ceased in 2019 and parts of the site has revegetated. Significant areas (>75%) of the site have low levels of peat. There is a low level of commercial forestry at the site.	There are a number of telecommunicati ons links in the vicinity of and crossing the site. There is a telecommunicati ons mast on site within Derryaroge Bog.	Site contains several small watercourses, some potential for fluvial flood risk but can be mitigated through design.	Proven use of local infrastructure for delivery of turbine components to the area as evidenced by the nearby Sliabh Bawn Wind Farm. The site is also accessible by National and Regional Roads. Also scores well in terms of proximity to grid infrastructure.
Lemanaghan	Site is within reasonable proximity to existing grid infrastructure at Shannonbridge with good available grid capacity.	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 - 8 m/s. Therefore, this criterion is neutral across all sites.	Predominantly within area open for consideration	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback distance of 750 m or greater.	There are no European designated within the site low number of Natura sites in the wider area, Mainly low value habitat on the site	There are four windfarm sites (either constructed or consented) within 20 km of the site.	The site is at a significant distance from local and regional airports as well as the main motorway network.	A significant portion of the site has medium levels of peat. There are no other significant uses at the site.	There is a mast at Cor Hill with potential links through the site.	The site is pumped. It has 1 recognised flood point in the local area.	The site has direct access to the N62

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Candidate Sites	Grid Access/ Capacity	Wind Resource Assessment	CDP and Zoning	Proximity to Houses	Environmental Sensitivity	Landscape Capacity/ Cumulative Effect	Aviation	Land Use	Communications Infrastructure	Flood Plain Analysis	Supporting Infrastructure
Littleton	110 kV network runs to the west of the site but there is a lack of available capacity.	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 - 8 m/s. Therefore, this criterion is neutral across all sites.	In an area, open for consideration.	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback distance of 750m or greater.	There are no European designated sites within the site. Low to medium number of Natura sites in the wider area, mixture of low, medium and high value habitat within the site	There are nine windfarm sites (either constructed or consented) within 20 km of the site.	The site is at a significant distance from local and regional airports. It is in proximity to the main motorway network.	Significant areas (>75%) of the site have low levels of peat. There is a low level of commercial forestry at the site.	There are a number of masts on the mountains to the east.	The site is pumped. It has no recognised flood point in the local area.	The site has restricted access to the regional roads but is on close proximity to the M8.
Ballydermot	110kV network runs to the west and south of Ballydermot bog. Potential available capacity.	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 - 8 m/s. Therefore, this criterion is neutral across all sites.	Site falls across Co. Offaly and Co. Kildare. Offaly area is categorised as "Open for Consideration" for wind energy. Kildare area is categorised as a Medium Risk area for wind.	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback distance of 750m or greater.	There are no European designated sites within the site, Low to medium number of Natura sites in the wider area, mixture of low, medium and high value habitat within the site.	There are 7 windfarm sites (either constructed, consented or proposed) within 20 km of the site.	The eastern part of the site is within 5km of Clonbulloge Airfield. Casement Aerodrome is approximately 30km east of the site.	Significant areas (>75%) of the site have low levels of peat. There is a low level of commercial forestry at the site.	There are a maximum of 7 links crossing the site.	The site is pumped. It has no recognised flood point in the local area.	The site has access to the regional and national road network.
Clorhane (Blackwater)	Site is in close proximity to existing grid infrastructure at Shannonbridge with good available grid capacity. A number of 110kV lines run close to the site.	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 - 8 m/s. Therefore, this criterion is neutral across all sites.	Partially in preferred area, partially within buffered area from Clonmacnoise	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback distance of 750m or greater.	There are no European designated sites within the site, high density of Natura sites in the local area, close proximity to the River Shannon, large areas of high value habitat within the site.	There are three windfarm sites (either constructed or consented) within 20 km of the site. This site is also located near Clonmacnoise.	The site is at a significant distance from local and regional airports as well as the main motorway network.	Significant areas (>75%) of the site have low levels of peat. There is a low level of commercial forestry at the site and also some areas of biodiversity.	There are a number of masts located in Shannonbridge.	The site is pumped. It has 7 recognised flood points in the local area.	The site has access to the R357 and R444 regional roads.
Coolnamona	110kV network runs to the north of Coolnamona bog but there is poor available capacity.	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 – 8 m/s. Therefore, this criterion is neutral across all sites.	Completely within preferred area	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback distance of 750m or greater.	There are no European designated sites within the site, medium level of Natura sites in the wider area (reasonable proximity to Slieve Bloom SPA). Mainly low with some medium value	There are two windfarm sites (consented) within 20 km of the site.	The site is at a significant distance from local and regional airports. It is located in close proximity to the M7.	Large areas of the site have medium to high levels of peat. There are no other significant uses at the site.	There are two masts adjacent to the site.	The site is not pumped It has no recognised flood point in the local area	The site has access to the regional road R445 and is adjacent to the M7.





Candidate Sites	Grid Access/ Capacity	Wind Resource Assessment	CDP and Zoning	Proximity to Houses	Environmental Sensitivity	Landscape Capacity/ Cumulative Effect	Aviation	Land Use	Communications Infrastructure	Flood Plain Analysis	Supporting Infrastructure
					habitat within the site.						
Derryarkin	Site is within reasonable proximity to existing 110 kV grid infrastructure with potential available grid capacity.	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 - 8 m/s. Therefore, this criterion is neutral across all sites.	Within High risk for Westmeath, low risk area for Offaly.	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback distance of 750m or greater.	There are no European designated sites in the site, low to medium number of Natura sites in the wider area, Mixture of low, moderate and high value habitat on the site	There are four windfarm sites (either constructed or consented) within 20 km of the site.	The site is at a significant distance from local and regional airports. It is located in close proximity to the M6.	Significant areas (>75%) of the site have low levels of peat. There is a low level of commercial forestry at the site and also some areas of quarrying.	There is a mast in Derrygreenagh works with 5 identified links through the site.	The site is not pumped. It has no recognised flood point in the local area	The site has access to the R400 and is adjacent to the M6.
Garryhinch	Site is within reasonable proximity to existing 110 kV grid infrastructure with potential available grid capacity.	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 - 8 m/s. Therefore, this criterion is neutral across all sites.	Within area open for consideration	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback distance of 750m or greater.	There are no European designated sites in the site, low number of Natura sites in the wider area, Mixture of low to moderate value habitat on the site	There are three wind farm sites (constructed) within 20 km of the site.	The site is at a significant distance from local and regional airports as well as the main motorway network.	Significant areas (>75%) of the site have low levels of peat. There are no other significant uses at the site.	There is a major telecoms hub on the Sliabh Blooms and two masts adjacent to the site with multiple links.	The site is pumped. It has no recognised flood point in the local area.	The site has limited access to the regional and national road network.
Timahoe 2 (Timahoe South)	110kV network runs to the north of Timahoe South bog (i.e., through Timahoe North bog) with potential available capacity	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 - 8 m/s. Therefore, this criterion is neutral across all sites.	In medium risk area	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback distance of 750m or greater.	There are no European designated sites in the site, low number of Natura sites in the wider area, Mixture of low, moderate and high value habitat on the site	There are two windfarm sites (either constructed or consented) within 20 km of the site.	This site is close to Casement Aerodrome. It is located proximate to the M4.	Large areas of the site have low levels of peat. The site is also used for waste processing and as an engineered landfill.	There are some links on the northern boundary.	The site is pumped. It has no recognised flood point in the local area.	The site has direct access to the R415
Ballybeg	110 kV grid infrastructure runs to south of Ballybeg with potential available grid capacity.	The Irish Wind Atlas outlines that wind speeds in midlands bog groups are typically between 7 - 8 m/s. Therefore, this criterion is neutral across all sites.	Partially in preferred, partially with scenic buffer zone (Croghan Hill)	This criterion is neutral with respect to the outlined environmental effects as BnM wind farms are generally designed for turbine setback	There are no European designated sites in the site, low number of Natura sites in the wider area, Mixture of low and high value habitat on the site.	There are four windfarm sites (either constructed or consented) within 20 km of the site.	The site is at a significant distance from local and regional airports. It is located in relative proximity to the M6.	Significant areas (>75%) of the site have low levels of peat. There are no other significant uses at the site.	It has 5 links that cross the site.	The site is pumped. It has no recognised flood point in the local area.	The site has access to the R400.





Candidate Sites	Grid Access/ Capacity	Wind Resource Assessment	CDP and Zoning	Proximity to Houses	Environmental Sensitivity	Landscape Capacity/ Cumulative Effect	Aviation	Land Use	Communications Infrastructure	Flood Plain Analysis	Supporting Infrastructure
				distance of 750m or greater.							







The proposed wind farm site was considered to be suitable for the development of a wind farm in terms of potential environmental sensitivities and with no obvious commercial barrier to its development. Furthermore, the site has already been identified as suitable for wind energy development with planning permission granted by ABP for Derryadd Wind Farm in June 2020 (Planning Ref No. 303592)

## 4.3.3 Alternative Layouts / Design

During the development of the EIAR, environmental surveys of the proposed wind farm site and surrounds were surveyed in detail to establish the baseline environment. All site constraints were identified and updated as further detailed assessments were undertaken. The locations of county roads, streams, residential dwellings, landowner boundaries, telecommunication links, ecologically sensitive areas, areas of deep peat, archaeological sites and visually sensitive areas were noted. Separation distances from identified constraints were determined using best practice guidance and with input from subject matter specialist and mapped on a Geographical Information System (GIS) and a buildable area was defined (refer to Chapter 3 (Description of the Proposed Development).

Furthermore, the wind farm site boundary went through a number of iterations throughout the design process. Initially the 2019 application boundary was considered (see figure 4-1) with the boundary being extended to the north of Derryaroge bog as seen in figure 4-2. The final layout of the proposed wind farm site is shown on Figure 4.5 below.

The site layout design stage considered the size, number and positioning of turbines and layout of associated site infrastructure i.e., internal site access roads, temporary construction compounds, met masts, substation, borrow pits etc. Alternatives considered for each of these elements are documented in the following sections. It was an iterative process comprising input from the design team, environmental specialists, internal and external stakeholders. The aim of the iterative process was to reduce environmental effects or remove through changes to the design, where possible. The final layout of the proposed development is shown on Figure 4.5 below.

#### 4.3.3.1 Turbine Layouts

In 2019 a planning application was submitted for 24 no. turbine wind farm at the proposed development site (ABP Planning Ref. No. 303592). Planning permission was originally granted by An Bord Pleanála in June 2020 and subsequent judicial review process which overturned this grant of permission. The previous wind farm application incorporated 24 no. turbines with an overall tip height of up to 180 m. Refer to Figure 4.1







The previous 24 no. turbine wind farm layout was initially examined in terms of suitability for a new wind farm application however, it was decided to redesign the proposed wind farm due to updated environmental constraints, updated best practice guidance and grid connection options.

Essentially the site, used all previous data and subsequently updated and refining the constraints mapping. The constraints mapping process involves the placing of buffers around different types of constraints to identify the areas within which development infrastructure will be limited. The size of the buffer zone for each constraint has been assigned using a combination of desktop assessments, baseline information and guidance presented in the Wind Energy Development Guidelines (2006 and Draft 2019).

The constraints map for the site, as shown in Figure 4-2 below, encompasses the following constraints and associated buffers:

- Sensitive Receptors plus a 760 m buffer to the nearest turbine (meeting the proposed requirement for a 4 times tip height separation distance from properties in line with the 2019 draft guidelines);
- Longford County Geological Sites;
- Natura 2000 (SPAs and SACs) plus 200m buffer;
- Natural Heritage Areas / proposed Natural Heritage Areas (100 m buffer)
- Habitats of ecological importance e.g. bog remnants (50-m buffer), bog woodland (50-m buffer), Fen habitat (25-m buffer) Bat foraging buffer (104m) (see Chapter 7: Biodiversity for more detail);
- Telecommunication Links plus operator specific buffer;
- Overhead transmission lines plus 3.5 times proposed rotor diameter buffer (as required by Eirgrid);
- Record of Monuments and Places, 20m buffer, and Zones of notification buffer range from 40-60m; and,
- Watercourses plus 80m buffer.







Following an examination of all the site constraints a draft 25 no. turbine layout was produced and presented as part of the public consultation process held in late June to early July of 2022 (see Figure 4-3 below). The layout is based on the results of all site investigations and baseline assessments that have been carried out since 2014 and during the development of this EIAR.









As additional information was gathered during stakeholder and public consultation and further on-site surveys, the information and data were compiled and assessed, resulting in the number of turbines, the size of turbines and the proposed layout being revised and amended to take account of the physical constraints of the site and the requirement for buffer and other areas which were not favourable for turbine locations and other infrastructure.

The selection of turbine number, size and layout has also had regard to wind-take, noise and shadow flicker effects and the separation distance to be maintained between turbines. The EIAR and wind farm design process was an iterative process, where findings at each stage of the assessment were used to further refine the design, always with the intention of minimising the potential for environmental effects. The development of the final proposed wind farm layout has resulted from feedback from the assessments carried out during preparation of this EIAR, statutory consultation and information supplied from an extensive Public Consultation process with local communities (2022 – 2023) in the vicinity of the proposed development. A full description of the Public Consultation undertaken for the proposed development is outlined in the *'Community Report for the Derryadd Windfarm*' in Appendix 1-6.

The various considerations that were taken into account include:

- Turbine proximity to dwellings;
- Turbine size;
- Noise and shadow flicker guidelines;
- Archaeological sites and records;
- Habitats of ecological importance;
- Water bodies and flood risk areas;
- Peat Depths;
- Turbine spacing;
- Avoidance of any interference with telecommunications systems;
- Visibility of the proposed development in the landscape; and
- Proximity of met masts to dwellings.

Consideration was also given to relevant guidance, namely the Wind Energy Development Guidelines (DoEHLG, 2006), the "Revised Draft Wind Energy Guidelines" released in 2019, Best Practice Guidelines for the Irish Wind Energy Industry (IWEA, 2012); Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022) and guidelines and recommendations from the relevant local authority's county development plans and wind energy strategies.

The initial constraints study identified a significant buildable area within the proposed wind farm site, in which a potential turbine layout was developed. This turbine layout was then refined a number of times following feedback from the project team during detailed site investigations and from consultees, including public consultation. These iterations resulted in the number of turbines reducing from 25 in the initial design down to the final 22 no. turbine layout (as shown in Figure 4.4). The adjustments through each layout iteration resulted in a reduction in the number of turbines, and also placement changes to turbines to ensure sufficient distances were maintained from sensitive receptors and constraints, and to maintain the required separation distances between turbines (as shown in Figure 4.4). The positive environmental effects of the reduction of the number of turbines include the following:

• Decrease in the number of materials used in the construction of the wind farm (stone, concrete, steel) and associated traffic movements;





- A reduction in the length of the internal road network and the disturbance and movement of peat within the site;
- Reduction in the potential disturbance and collision risk for those species using the site;
- Decrease in the overall effect on the habitats within the site; and,
- Reduction in the level of potential visual impact.

On this basis, the final 22 no. turbine layout was the chosen option (see Figure 4.5 below).







### 4.3.3.2 Alternative Turbine Configurations

The proposed development will have an estimated power output of approximately 132 Megawatts (MW). Having regard to the available wind resource and the selected power output for the proposed development, it is proposed to install 22 no. turbines at the site using wind turbines with an estimated capacity of approximately 6 MW. A wind farm with a similar installed capacity could also be achieved at the site by using smaller turbines, for example 4 MW machines as proposed in the previous 2019 wind farm application. However, this would necessitate the installation of 33 no. turbines to achieve the same MW output. The 2019 wind farm application proposed a configuration of 24 turbines (4 MW) with a combined output of 96 MW, while the proposed development will have a greater power output with fewer turbined proposed.

Furthermore, the use of smaller turbines would be a less efficient use of the wind resource available having regard to the nature of the site. A larger number of smaller turbines would result in the wind farm occupying a greater footprint within the site, with a larger amount of supporting infrastructure being required (i.e., roads, internal collector cables etc.) and increasing the potential for negative environmental effects to occur. The proposed number of turbines takes account of all site constraints and the distances to be maintained between turbines and features such as roads and houses, while maximising the wind energy potential of the site. The 22-turbine layout selected for the proposed wind farm site has the smallest development footprint of the other alternatives considered, while still achieving the greatest possible output.

The exact make and model of the turbine will be dictated by a competitive procurement process but will adhere to the specifications and parameters previously set out. Modern wind turbines from the main turbine manufacturers have evolved to share a common appearance and other major characteristics with only minor cosmetic differences differentiating one from another. The turbines will have a tip height of 190 m above the top of foundation level. Rotor diameter will be 165 m with a corresponding blade length of 81 m and a turbine hub height of 107.5 m. Further detail on the turbine specifications and selection process can be found in Chapter 3 (Description of the Proposed Development) Section 3.3.

#### 4.3.3.3 <u>Site Entrances</u>

There will be a total of four proposed wind farm site entrances used to transport materials and equipment to the site during the construction phase.

The four proposed site accesses are as follows:

- New proposed main site access (Site Access A) to the southern part of Derryadd Bog, off the R392, will facilitate large component delivery;
- New proposed site crossing (Site Access B) from the South of Derryadd Bog to the northern part of Lough Bannow Bog, off the R398;
- Proposed new temporary site crossing (Site Access C) from the northern part of Derryadd Bog (machine pass from Mountdillon Works yard), off the N63 will also be required for large component transport across the N63 into Derryaroge); and
- Existing Mountdillon Access will be utilised by Light Vehicles (LVs) and Heavy Vehicles (HVs).

During the operation phase, Site Access A will remain. Site Access B will be gated and used as necessary. Site access C will form a staggered junction in line with TII guidelines between the





Existing Mountdillon Access and Site Access C during the operation phase (see planning drawings 11399-2056).

There will be a total of 6 amenity access points within the proposed wind farm site. The existing entrances that have been identified for the wind farm amenity access are used presently for the machinery involved in ongoing decommissioning and rehabilitation activities. The amenity access points will be available/accessible following completion of the wind farm construction and commissioning. A detailed description of the new and existing site accesses are provided Chapter 15 (Traffic and Transportation).

In the 2019 application of wind farm there were six wind farm entrances proposed for the transport of materials and equipment to the site. All were existing entrances with the exception of 2no. new site entrances; 1no. proposed main entrance on the Lanesborough to Ballymahon road (R392) to the west of the proposed substation and another entrance into the Derryshannoge Bog proposed to be located along a local road (L11554) that accesses the R392 north of Derraghan Village. The following were the existing 4no. entrances that were identified for the wind farm in the 2019 application:

- Existing entrance to the Southern part of Derryaroge Bog, off the N63;
- Existing entrance to the Northern part of Derryadd Bog, off the N63;
- Existing entrance to the Southern part of Derryadd Bog, off the R398; and,
- Existing entrance to the Northern part of Lough Bannow Bog, off the R398.

The proposed wind farm has four proposed wind farm site entrances used to transport materials and equipment to the site during the construction phase. The positive environmental effects of the reduction of the number of access point include the following:

- Decrease in greenhouse emissions;
- Decrease in the overall effect on the habitats within the site; and,
- Decrease in the volume of hedgerow removal;

Alternatives that were considered for the large component entrance included existing entrances to the site along the N63 between Derryaroge and Derryadd and an existing entrance to Lough Bannow along the R392 to the south of Derraghan cross. The entrances along the N63 were not chosen for large turbine component delivery due to the potential effect on buildings within Lanesborough to facilitate access onto the N63. The alternative site entrance at Lough Bannow would lead to a longer turbine delivery route and potential disturbances and interactions within Derraghan Village. These alternative options for turbine delivery to the site are therefore not considered viable.

#### 4.3.3.4 Internal Site Access Roads

The development of the wind farm requires the construction of internal access roads on-site. Access roads are required to allow plant and machinery access to the turbine locations, transport of turbines and construction materials to each of the turbine locations and also to allow service vehicles traverse the site during the operational phase. Such internal site access roads must be of a gradient and width sufficient to allow safe movement of equipment and vehicles.

Internal site access road layout and design are also an iterative process. The layout was designed to minimise construction of new roads by following the existing access tracks where possible and linking turbine locations via the most direct route, avoiding environmental (habitats of ecological importance) and archaeological constraints.





The initial design was further developed by applying the required vehicle turning radii. The internal site access road layout was modified with each revision of the turbine layout. Passing bays were designed for selected locations along the internal site access roads. These bays were located in specific areas to ensure minimum environmental effect by locating the passing bays away from habitats identified as being of ecological importance and also in a configuration that facilitates the design of the amenity access tracks/cycleways.

The proposed wind farm site will be accessed primarily via the R392 Regional Road which will allow for delivery of turbine components and main access point for the wind farm construction, with other access points for HGVs and LGVs provided on the N63 National Road and R398 Regional Road. Internal site access roads will be constructed as part of the initial phase of the construction of the proposed development. Material will either be imported into the site or won from the proposed borrow pits within the site to provide the required base of the internal roads. The internal roads will be a mixture of permanent (construction/operational and amenity) roads and permanent amenity access tracks/cycleways. Further information on road construction methodologies is provided in Chapter 3 (Description of the Proposed Development) of this EIAR.

#### 4.3.3.5 Substation Locations and Grid Connection

The previously proposed substation locations (Option A and Option B) and associated grid connections identified as part of the previous planning application (ABP Ref. no. 303592-19) were considered as part of the initial design process (see figures 4-6 and 4-7 below). However, following an assessment of the local grid network infrastructure and updated environmental constraints, neither of these locations were deemed suitable. A single onsite substation location was identified from an early stage in the design process which has the benefit of being directly adjacent to an existing 110kV overhead line while also being cognisant of all constraints and facilitators.

The proposed 110 kV substation will be connected to the national electricity grid via a loop-in connection to the nearby Lanesborough-Richmond 110kV Overhead Line (OHL) Network, located approximately 250 m south of the proposed substation. The loop-in connection will comprise of high voltage underground cables (UGC) connecting the substation to the Lanesborough-Richmond 110 kV OHL. See figure 4-8 below showing the proposed substation location and grid connection.

All new build transmission infrastructure required for the proposed development is contained within the proposed wind farm site, while the proposed underground cables will cross under the N63 National Road which is located between the substation and Lanesborough-Richmond OHL. The proposed development requires approximately 460 m of 110 kV underground cable (UGC) installation from the proposed 110 kV onsite substation to the existing OHL to the south. The entire UGC has been assessed throughout this EIAR, where relevant.











#### 4.3.3.6 Borrow Pit Locations

The borrow pits selection were based on the following factors:

- Avoidance of potential ecological receptors;
- Avoidance of deeper peat where possible; and,
- Location near areas of known sand and gravel deposits or gravelly till.

The use of onsite borrow pits represents an efficient use of existing onsite resources and would also significantly reduce the need to transport large volumes of construction materials along the surrounding public road network to the proposed wind farm site. Following a review of the previous 2019 wind farm planning application, the same borrow pits were largely identified as suitable. Nine initial potential borrow pit locations were identified during the development of the 2019 application (see figure 4–9 below). An assessment of each location was carried out having regard to existing site constraints (habitat value, on site drainage, proximity to the proposed internal road network), and proximity to sensitive receptors was also considered (local residents, ISPCA). Site investigation work provided further information on potential borrow pit locations, and a specific borrow pit assessment was subsequently carried out to determine the optimum locations. The Derryadd Bog (i.e., centre of proposed wind farm) was the chosen location due to its advantageous location with regards to the hauling of materials within the site and identification of suitable material. Five borrow pits were identified for the 2019 application.

A review of potential borrow pit locations was carried out in consultation with internal Bord na Móna personnel with input from field studies and external geotechnical experts who were familiar with the site for the proposed development. Existing GIS data was also considered, namely aerial photography and peat depths etc. Following the review, the five borrow pit locations identified in the 2019 application (see figure 4-9 showing five borrow pit locations) were also proposed for this final design. Two of the five borrow pits were combined to form one borrow pit resulting in a final four borrow pits being proposed for the current proposed development (see figure 4-5 above showing four borrow pit locations).





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### 4.3.3.7 Amenity and Carpark Locations

The amenity access points to the site are illustrated in the Amenity Plan in Appendix 3-1 and are described in Chapter 3 (Description of the Proposed Development) Figure 3-2 - Construction/Operational and Amenity Access Location Map. The amenity access points will not be utilised by wind farm construction traffic.

During the distribution of the final layout to the public between 26th of June and 14th of July 2023, 4 no. amenity car parks were initially proposed as part of the development. However, one car park, located to the north of the proposed development within Derryaroge Bog, has been removed from this application. This car park has been excluded as a new car park will be built, in parallel with the proposed wind farm site and serves as part of the Midland Trail Networks (Planning Reference No: 24/60132). The Midland Trail Networks is a project aimed at developing a network of walking and cycling trails on Bord Na Móna lands, which includes the repurposing of a 5.2 km section of former rail bed, 3.1 km along existing bog headlands/former high fields, and 185 m along pre-existing machine passes. Amenity visitors can utilise the Midland Trail Networks car park to the north of the site to access the amenity track within the proposed wind farm site.

There will be a total of 6 amenity access points and there will be 18 km of wind farm site roads dedicated for amenity access (including pedestrian and bike access) once the wind farm construction phase is completed. In addition to the amenity track, three new permanent amenity car parks will be provided. Two of these car parks are located within the temporary construction compounds (Compound No. 1 and Compound No. 3 as described in Chapter 3) which will be converted into permanent amenity carparks following completion of the construction phase. The remaining carpark is located along a local access road on the Western boundary of Derryaroge bog. In addition, the existing amenity carpark area at Corlea Bog (L1136 Local Road) adjacent to the proposed amenity track in Lough Bannow Bog will accommodate amenity car parking access to the proposed wind farm site. Drawing 11399-2050 illustrates the configuration of the proposed car parks, including an overall total capacity for 15 no. car parking spaces, 3 no. disabled parking spaces, 1 no. bus parking area and suitable signage at each location. An additional 7.5 km of dedicated amenity track is also envisaged to connect the wind farm site roads to nearby roads and offer local access to wind farm amenity. These additional dedicated amenity tracks will be approximately 3 m wide and feature a gravel/crushed stone finish surface.

Alternatives to this design were considered in the previous application (ABP Planning Ref. No. 303592), where approximately 30 km of wind farm site roads were planned to offer amenity access and connectivity to local road.

The positive environmental effects of the reduction of the internal site roads include the following:

- Decrease in the number of materials used in the construction of the wind farm (stone, concrete, steel) and associated traffic movements;
- A reduction in the length of the internal site road network and the disturbance and movement of peat within the site;
- Reduction in the potential disturbance and collision risk for those species using the site;
- Decrease in greenhouse emissions; and,
- Decrease in the overall effect on the habitats within the site.



### 4.3.4 Alternative Processes

#### 4.3.4.1 Alternative Land-Uses

As peat extraction has ceased, Bord na Móna is presented with the opportunity to allow or facilitate new landscapes to develop. Research work, mainly in the form of demonstration projects, has been ongoing since the 1970's. The research and demonstration projects informed the understanding of the nature of industrial peatlands and facilitated the development of a knowledge base that has been built up over decades. The alternative uses that have been examined over that timeframe include renewable energy (in particular, wind energy), biomass, coniferous forestry, horticulture, grassland, cereal growing, growth of cranberries and blueberries, biodiversity/ecosystem services and amenity/tourism related after uses.

Wind farm development on Bord na Móna lands commenced in 1992 with the construction and operation of the Bellacorick Wind Farm, Co. Mayo. Since then, additional wind farms were constructed and became fully operational such as Oweninny Wind Farm (Phase 1 and Phase 2) in County Mayo, Mountlucas Wind Farm in County Offaly, Sliabh Bawn in County Roscommon and Bruckana Wind Farm, situated on the borders of counties Tipperary, Kilkenny and Laois, Derrinlough Wind Farm in County Offaly and Cloncreen Wind Farm, in County Offaly .This alternative use of cutaway peatlands has been clearly demonstrated to be successful and have a low level of environmental effects.

Short rotation forestry trials carried out in the 1970s directly on cutaway bog, without intrusive conversion of the growing medium, did not survive and died out within a few years. Further trials in 2005 on well-prepared cutaway failed to provide the necessary yield to make the growing of willow biomass viable. The yield was less than 20% of the yield attainable on good arable land.

Afforestation was initially envisaged as the most favourable commercial option for the after-use of post-production peatlands. Trials on this particular use date back to 1955. The initial trials were favourable; however, the growing performance was poor. In 1996, the BOGFOR research programme was set up by a group of organisations that included Bord na Móna, Coillte, the COFORD Council for Forest Research and Development and University College Dublin. Arising from this research, a further 10 trial sites have been developed in the last 15 years. None of the sites have demonstrated 100% the required commercial success. A further trial using a bedding plough was established in 2010. Trials of this type of after use are ongoing. The trials have not progressed sufficiently to provide conclusive results.

Horticultural trials were carried out at Lullymore during the 1960's up to the 1970's. A range of field vegetables were successfully grown during the trials. However, it was not possible to replicate the success of the trial at other locations. The specific peat type at Lullymore had particular characteristics and the research did not transfer to other demonstration sites.

The techniques for the conversion of cutaway bogland to grassland was developed during the 1970s and 1980s. A total of 1,500 hectares of cutaway was successfully converted and subsequently sold to the private sector. The ability to convert cutaway to grassland requires specific conditions and it is estimated that a small percentage of cutaway (10%) would be suitable for this use. Furthermore, due to the level of cost associated with this type of conversion, the economic circumstances are presently not favourable.

Cereal growing was also examined. However due to the specific mixture of macro and micro nutrients required at certain stages of its growth, this option did not prove successful.





Cranberries and blueberries both require acidic media for their growth and were therefore trialled on deep acidic peat. Despite the successful establishment of cranberries, the necessary weather conditions to promote the development of fruit did not prevail and are not typical of the midland region. Neither plant is considered to be a viable option.

The potential Biodiversity and Ecosystem Services that may arise from the careful management of rehabilitated cutaway peatlands has been recognised in the development of the 2010-2015 Bord na Móna Biodiversity Action Plan and the more recent Biodiversity Action Plan 2016-2021. Bord na Móna has rehabilitated close to 12,000 hectares of the company's boglands which amounts to over fifteen percent of its total landholding to date. As part of that work, the company has actively restored over 7,000 hectares of raised bog since 2009 and aims to increase this figure in the next six years.

The flagship project that demonstrates the amenity and tourism potential of cutaway peat lands is Lough Boora Parklands in Co. Offaly (<u>http://www.loughboora.com/</u>). The parklands include a range of tourism and amenity activities, including walking and cycling trails, fishing and angling amenities and opportunities for bird watching. The amenity use of the Mount Lucas Wind Farm (over 50,000 visits in 2022) in conjunction with the production of renewable electricity illustrates that the after use of cutaway peatlands may comprise more than one use and may also facilitate additional developments.

In addition to the alternative land uses listed above, Bord na Móna is also exploring the potential to site solar farms within those areas that are post peat production. In April 2017, Bord na Móna and ESB publicly announced a joint venture to develop 500 MW of solar energy on cutaway peatlands. The selection of a solar farm site requires a solar development specific set of constraints/facilitators to be examined. The first location selected for potential development is the Timahoe North Bog located in Co. Kildare. This project was fully consented in 2020 and is currently in operation. However, notwithstanding the range of uses considered and explored by Bord na Móna over its lands, the proposal to develop the Derryadd Wind Farm has been identified as the most appropriate and sustainable use of the cutaway bog at the proposed site. The use of this area as an optimum location for a wind farm development has been demonstrated through the identification of these lands as a "Preferred Location" for Wind Energy development under the current Longford County Development Plan (2021-2027).

As Bord na Móna continues to pursue its 'Brown to Green' strategy the former peat production lands will be developed for alternative land uses. Bord na Móna's *'Strategic Framework for the Future Use of Peatlands'* (2011) sets out a strategic framework for the future potential uses of cutaway peatlands. The document is available to view at <u>www.bordnamona.ie</u> and is currently being updated to take account of policy change since its publication.

#### 4.3.4.2 Alternative Sources of Energy

Currently, most of Ireland's energy is produced using fossil fuels such as gas, oil, coal and peat. The large-scale use of carbon intensive fossil fuel releases large quantities of carbon dioxide (CO2) and other pollutants into the atmosphere, which contribute to the process of climate change and other detrimental health and environmental effects.

Renewable energy resources include wind, solar, water (hydropower, wave and tidal), heat (geothermal) and biomass (wood, waste) energy. These sources are constantly replenished through the cycles of nature, unlike fossil fuels, which are finite resources that are becoming increasingly scarce and expensive to extract. Renewable energy resources offer sustainable alternatives to our dependency on fossil fuels as well as a means of reducing greenhouse gas emissions and opportunities to reduce our reliance on imported fuels. These resources are





abundantly available in Ireland, yet only a fraction has been tapped so far (Sustainable Energy Authority of Ireland (SEAI) website, www.seai.ie).

A gradual shift towards increasing our use of renewable energy resources would result in:

- Reduced carbon dioxide emissions;
- Secure and stable energy for the long-term;
- Reduced reliance on fuel imports; and,
- Investment and employment in our indigenous renewable energy projects; often in rural and underdeveloped areas.

When weighed against all of the alternatives and constraints/facilitators outlined in this chapter, the proposed development site has been found to be a highly suitable location for a wind farm site with regard to a number of criteria including wind speed, environmental effects, distance from dwellings and landscape character. The location is particularly appropriate with regard to the foregoing and with regard to ease of access, proximity to the grid connection and strategic renewable energy zoning.

When considering wind energy as an energy source, it is important to place its development in an international, national and local policy context from the perspectives of environment, energy and planning. Numerous legislative mechanisms and requirements from a global to local level have been formulated to support the generation of energy from renewable sources and reduce the dependency on fossil fuels and these are discussed in further detail within Chapter 5 Policy, Planning and Development Context.

At a national level, in December 2015 the Government published an Energy White Paper, entitled 'Ireland's Transition to a Low Carbon Energy Future 2015 – 2030'. It is set firmly in the Global and European context, which has put energy security and climate change among the most urgent international challenges. This paper sets out the Government's Energy Policy from now until 2030. The three core objectives (the 'three energy pillars') are sustainability, security of supply and competitiveness. The target is that GHG emissions will be reduced by 80% to 95% below 1990 levels by 2050 and to zero or below by 2100. This will be achieved by a range of measures including changes of behaviour, greater efficiency, use of renewable indigenous resources etc.

A key target of the Climate Action Plan 2024, retained as one of the most important measures of the previous action plan (CAP23), is to increase the share of electricity demand generated from renewable sources to 80% where achievable and cost effective, without compromising security of electricity supply. A key element of this ambition is a target of 9 GW of installed onshore wind energy by 2030. Large scale wind energy projects continue to be seen as providing a significant contribution to achieving this target. The proposed wind farm will help in the delivery of growth in the renewable energy sector, by delivering approximately 132 MW of capacity.

The primary alternative is to continue to generate electricity using finite, fossil fuel resources beyond 2030. This will further contribute to greenhouse gas and other emissions and hinder Ireland in its commitment to meet its target to increase electricity production from renewable sources and to reduce greenhouse gas emissions.

Bord na Móna is continuing to diversify its portfolio of renewable energy assets as it transitions from its former activity of the extraction and combustion of peat. This transition is evident across the land bank and will progress with the potential development of additional wind farms, solar farms, the use of Biomass in Edenderry Power, landfill gas, Biogas, battery storage and





hydrogen production. A key input to ensuring a successful and sustainable transition is the selection of the correct technology for the correct site.

With respect to the listed technologies for production of renewable energy, the reasons why the use of wind energy technology on this particular site produces the lowest level of environmental effects are as follows:

- Large scale solar farms require a larger footprint than wind farms to produce the equivalent level of electricity. This technology can therefore have a greater potential environmental effect on Hydrology and Hydrogeology (larger areas requiring a higher level of drainage infrastructure), Traffic and Transport (construction phase) and Biodiversity (habitat loss). In the context of the proposed wind farm site, the use of wind energy technology reduces the potential environmental effects with respect to this particular aspect.
- Co-firing of peat and biomass is an activity that is proposed to utilise the existing peat fired power stations and is dependent on the continuation of peat extraction. As the Lough Ree power station is no longer in operation, the alternative for proposed development would be the construction of a new peat/biomass power station and recommence peat extraction. This would result in additional environmental effects above the activity of the existing power stations. In addition, peat harvesting has ceased and therefore there is no potential for peat stocks to be generated for this activity.
- Landfill gas production is only possible through colocation with an existing municipal landfill. Therefore, this is not an option for proposed development.

Bord na Móna lands by their relatively remote nature can facilitate large scale developments such as wind farms. As previously outlined, a detailed constraints/facilitators analysis has been carried out that demonstrates that the proposed wind farm site is a highly suitable location for the deployment of wind energy.

### 4.3.5 Alternative Mitigation by Avoidance Measures

Mitigation by avoidance (buffer /separation distances as per section 4.3.3.1 above) has been a key aspect of the wind farm design process. Avoidance of the most ecologically sensitive areas of the site reduces the potential for environmental effects. Where loss of habitat occurs on the site, this has been mitigated with the proposal of enhancement measures, please see Chapter 7 Biodiversity for details.

The mitigation measures proposed in relation to the elements of the proposed development are detailed in the chapters to follow and are also summarised in Chapter 21 (Schedule of Mitigation and Monitoring Measures). The mitigation measures proposed are considered to be proven and best practice. The level of mitigation proposed is determined to be proportionate to the potential effect. On this basis, the chosen mitigation measures are those that are considered to have the least environmental effects. No alternative mitigation measures are therefore considered.

## *4.3.6 Consultation about the Consideration of Alternatives*

Details of the consultations held in respect of the proposed development are listed in Chapter 1 (Introduction) and in Appendix 1-6. All meetings, public consultations and submissions received to date have been reviewed and incorporated into the design and layout process, as appropriate.



## 4.4SUMMARY

Table 4-3 below summarises the alternatives considered and compares these alternatives on the basis of key considerations.

Alternative	Summary
'Do-Nothing' Alternative	The Do-Nothing alternative would represent a missed opportunity in terms of Ireland meeting its commitments under the Climate Action Plan 2024, and also in terms of energy security.
Alternative Locations	All suitable sites within the Bord na Móna landholding were assessed for their potential for renewable energy developments. The proposed development site was one of a number of sites to make the final shortlist. Of these sites, the proposed development site was selected as a site with low potential for environmental effects
Alternative Layouts	A number of turbine layouts were assessed as part of an iterative process that took into consideration the size, number and positioning of turbines and the layout of associated site infrastructure. The final layout chosen represents the optimum layout in terms of the impact on receptors, constructability and delivery of the required output from the wind farm.
Alternative Design	Turbine ConfigurationsThe optimum design envisages 22 No. turbines at 6MW. Smallerturbines (for example 33 No. 4 MW machines) could also achievethe same site output, but the use of smaller turbines would be aless efficient use of the wind resource available having regard tothe nature of the site and would use a larger footprint.Site EntrancesThere will be a total of four proposed wind farm site entrancesused to transport materials and equipment to the site during theconstruction phase. The main entrance for the proposeddevelopment is located along the R392 Ballymahon toLanesborough Road. The proposed entrances make use ofexisting junctions where possible and in the case of the turbinedelivery route and main entrance for abnormal loads this optionprovides access to the site with the least impact on 3 <sup>rd</sup> partyInternal Site Access RoadsA number of internal site access road layouts were examined as

Table 4-3 Summary of Alternatives Considered





	configuration. The final layout was chosen to minimise construction of new roads by following the existing access tracks where possible and linking turbine locations via the most direct route.
	Substation Locations
	The substation locations identified in the previous planning application were initially considered. However, from an early stage of the design process one substation location and grid route were identified as suitable due to updated environmental constraints, survey results and desk studies. The proposed 110 kV substation will be connected to the national electricity grid via a loop-in connection to the nearby Lanesborough-Richmond 110kV Overhead Line (OHL) Network.
	Borrow Pit Locations
	Five potential borrow pit locations were identified and four were chosen as detailed in section 4.3.3.6. The central positioning and ground investigations results highlighted Derryadd Bog as the most suitable locations for borrow pits, capable of supplying useable material at the required volumes.
	Amenity and Carpark Locations
	Alternatives to this design were considered in the first iteration of the proposed development, where approximately 30 km of wind farm site roads were planned to offer amenity access and connectivity to local roads. A total of approximately 18 km of the wind farm site roads will provide permanent amenity access, while an additional 7.5 km of dedicated amenity track will also be constructed.
	The positive environmental effects of the reduction of the internal tracks are detailed in section 4.3.3.7.
Alternative Processes	<ul> <li><u>Land uses</u></li> <li>A number of alternative uses for cutaway peatlands, have been examined by Bord na Mona over the years. These include: <ul> <li><i>Horticulture</i>. Early successes in some trials were difficult to replicate on other sites.</li> <li><i>Grassland/cereals/berries</i>. None of these alternative uses were found not to be economical.</li> <li><i>Forestry</i>. Trials have proven to be poor performance in terms of growth potential.</li> </ul></li></ul>
	Sources of Energy
	A number of alternative sources of energy for the proposed development site have been examined by Bord na Mona, as follows:





		<ul> <li>Solar. Large scale solar farms require a larger footprint than wind farms to produce the equivalent level of electricity and this technology can therefore have a greater impact on sensitive habitats.</li> <li>Co-firing of peat and biomass. This utilises existing peat fired power stations and is dependent on the continuation of peat extraction. As the Lough Ree power station is no longer operational this option is not feasible.</li> <li>Landfill gas production. This is only possible through colocation with an existing municipal landfill and is not an option for proposed development.</li> </ul>
Alternative	Mitigation	The chosen mitigation measures are those that are considered to
Measures		have the least environmental effects.

All reasonable alternatives were assessed as part of this consideration, including alternatives in respect of the project as a whole, and alternatives relating to specific aspects of the design of the proposed development.

