LETTER WIND FARM LTD

LETTER WIND FARM

CO. LEITRIM

VOLUME I

NON-TECHNICAL SUMMARY (NTS)

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LETTER WIND FARM, CO. LEITRIM.

NON-TECHNICAL SUMMARY

CONTENTS

1 NTS.1 INTRODUCTION

This Non-Technical Summary (NTS) summarises the Environmental Impact Assessment Report (EIAR) which accompanies the application for planning permission for Letter Wind Farm (the Project) which is situated approximately 2.9km west of Drumkeeran Village, Co. Leitrim and approximately 21km southeast of Sligo Town.

The principals of the company have a proven track record of delivering projects and working closely with local communities and planning authorities in the region to design and deliver appropriate developments that assist in supporting Ireland's Climate goals and initiatives.

Permission is being sought by the applicant for the construction of four (4 No.) wind turbines, a meteorological mast, on site-substation, 2 No. battery arrays, and all ancillary works.

The Environmental Impact Assessment Report (EIAR) presents information on the identification and assessment of the potential significant environmental effects of the Project and reports the findings of the Environmental Impact Assessment (EIA) which has been undertaken in accordance with the Planning and Development Act 2000, as amended, and the Planning and Development Regulations 2001, as amended. The EIAR comprises the following documents:

- This Non-Technical Summary (Volume I)
- The Main EIAR Report (Volume II)
- Supporting Figures (Volume III)
- Supporting Appendices (Volume IV)

These documents inform the readers of the nature of the Project, likely environmental effects and measures proposed to protect the environment during each phase of the development.

The Project will comprise the following phases:

- Construction of the Project
- Operation of the Project
- Decommissioning of the Project

2 NTS.2 ENVIRONMENTAL IMPACT ASSESSMENT

EIA is required where there are likely to be significant effects on the environment due to the nature, size or location of a new development. Wind farms of the scale of the Project typically legally require an EIA to be carried out.

The EIAR has been prepared following a systematic approach to an EIA and project design, with knowledge of the potential effects being used to change the design so as to reduce those effects. The main EIA stages are:

- Scoping consultation (process of asking relevant organisations what they think should be included in the EIA) and how these topics are addressed.
- Technical environmental assessments - baseline studies (understanding what the existing environmental conditions are), asking what potential significant environmental effects might occur, informing the design evolution and identification of measures to reduce undesirable effects.
- Writing up the findings to include in the EIAR.
- Submission of the planning application and EIAR.

Scoping and pre-application consultation is important to the development of a comprehensive and balanced EIAR. Requests for Scoping Opinions were submitted to the prescribed bodies and key consultees from December 2022 to April 2023. The requests were accompanied by a Scoping Letter which described the elements of the Project. Scoping Opinions received are included as **EIAR Appendix 1.1.** This included agreement on excluding from the EIAR, assessment of effects on certain receptors or features, where it was agreed there was no potential for significant effects.

The project Community Liaison Officer's engagement included the distribution of brochures to the local community within 2km of the wind farm site. These brochures described the development proposal, key design considerations, environmental and community benefits, and contact details for the Community Liaison Officer.

Environmental effects have been assessed in chapters of the EIAR, broadly with one chapter per technical discipline, generally representing a type of receptor of potential effects (e.g., birds). The assessments in each chapter follow a similar, systematic approach, to identify any effects that may be significant in the context of the EIA Regulations. The approach includes establishing the "baseline", this being the current state of the environment, to which the Development will be added. This identifies the key receptors, including how sensitive they are to the sort of change that might be caused by the Project. The potential size (or magnitude) of change caused by the Project is then assessed, and the sensitivity and magnitude are considered together to form a conclusion on significance. Effects can be desirable (or "positive", or "beneficial"), or undesirable (or "negative", or "adverse"). Mitigation is proposed where possible to prevent significant undesirable effects. The final, proposed effects are those after mitigation has been applied, and are the "residual effects".

In accordance with the EIA Regulations, the assessment considered 'cumulative effects'. These are effects that result from cumulative changes caused by past, present or reasonably foreseeable actions together with the Project.

3 NTS.3 PROPOSAL FOR LETTER WIND FARM

The layout of the Project is shown on **Figure NTS-1**. The Project will consist of the following:

- Construction of 4 No. wind turbines with an overall ground to blade tip height ranging from 149.85m to 150m inclusive. The wind turbines will have a rotor diameter ranging from 115.7m to 117m inclusive and a hub height ranging from 91.5m to 92m inclusive.
- Construction of permanent turbine hardstands and turbine foundations.
- Construction of a bottomless bridge culvert across a minor stream on site (EPA River Segment Code: 26_4053).
- Construction of one temporary construction compound with associated temporary site offices, parking areas and security fencing.
- Installation of one (40-year life cycle) meteorological mast with a height of 50m and a 4m lightning pole on top.
- Construction of new internal site access tracks and upgrade of a section of existing internal Site track, to include all associated drainage.
- Improvement of existing site entrance with access via the L4282.
- Development of an internal site drainage network and sediment control systems.
- Construction of 1 no. permanent 20kV electrical substation
- All associated underground electrical and communications cabling connecting the wind turbines to the wind farm substation.
- All works associated with the connection of the wind farm to the national electricity grid, which will be via 20kV underground cable connection approximately 6.4km in length to the existing ESB Corderry 110kV Substation in the townlands of Letter, Greaghnadarragh, Stangaun, Corralustia, Turpaun, Gortnasillagh West, Lugmeeltan, Leckaun, Lisgaveen, Treannadullagh, Drumcashlagh and Corderry.
- Ancillary forestry felling to facilitate construction of the development.
- All associated site development works including berms, landscaping, and soil excavation.
- Installation of battery arrays located within container units (2 no. units) and associated electrical plant for grid stabilisation adjacent to the substation building.

- Development of one on-site borrow pit.
- A 10-year planning permission and 40-year operational life from the date of commissioning of the entire wind farm is being sought. This reflects the lifespan of modern-day turbines.

Permission is not being sought for temporary works required to accommodate the delivery of turbine components along the turbine delivery route. However, these works are assessed as part of the Project in the EIAR and are located on the R263, N56, N15, N4, R285, and R280.

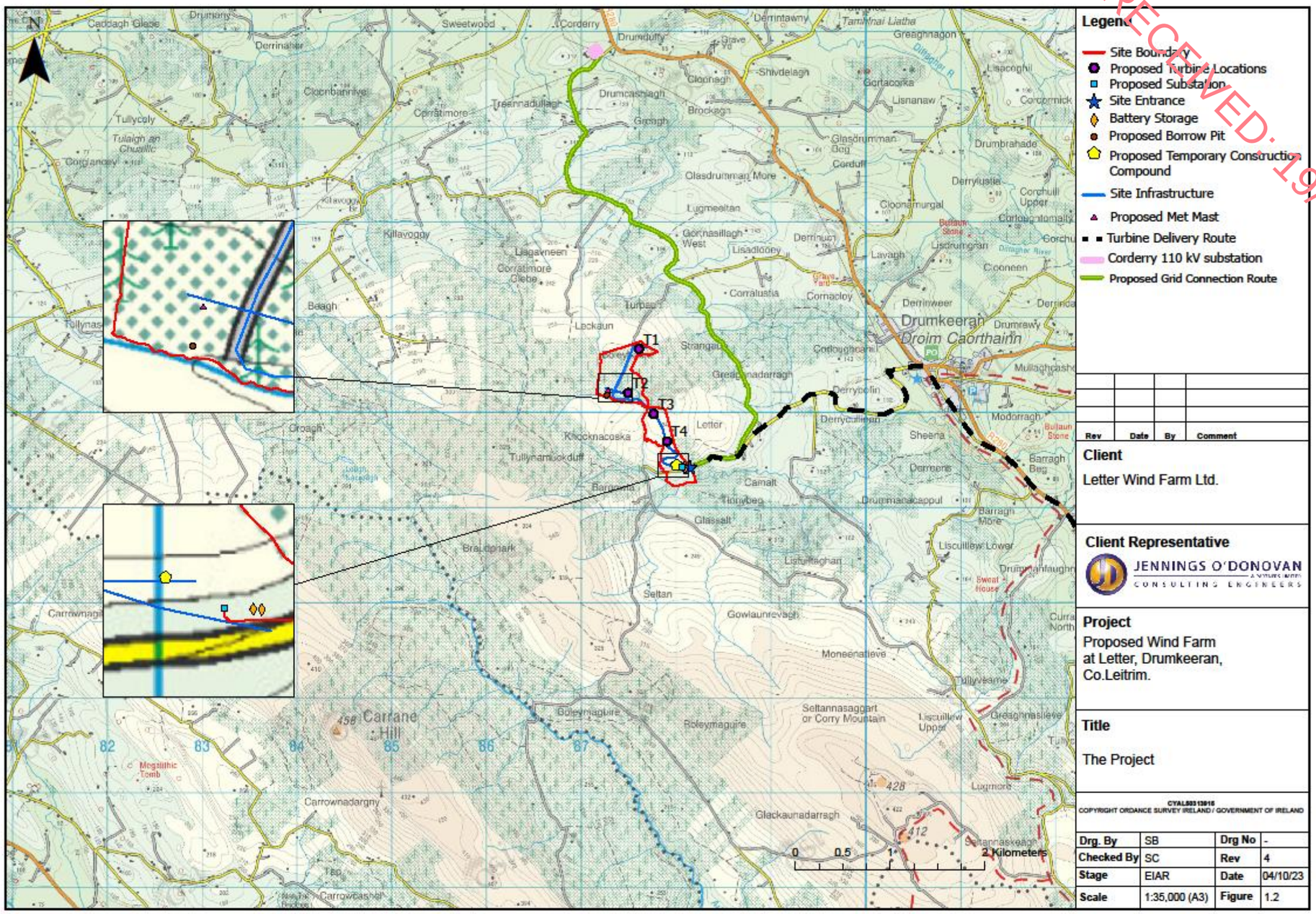

Figure NTS-1: Project Elements

3.1 Wind Turbines

The four (4 No.) turbines will have a height from base to tip ranging from 149.85 m to 150 m inclusive, but the specific make and model is not yet fixed. The turbines will be of a typical modern, three blade, horizontal axis design, white or light grey in colour and the finish of the tower and blades will be semi-gloss and semi-matt respectively.

The final choice of turbines will be guided by an assessment of the wind conditions and will take account of the available technology at the time of construction. It is likely that turbines with 4.2MW capacity may be available at the size proposed. For the purposes of the assessments, a range of turbine parameters has been assessed as can be seen in **Table 1** below.

Table 1: Turbine Parameters Assessed

Turbine Parameter	Assessment Envelope
Turbine Blade Tip Height	149.85m to 150m
Rotor Diameter	115.7m to 117m
Hub Height	91.5m to 92m
Output	4.2 MW

Turbines are typically of a variable speed type, so that turbine rotor speed will vary according to the energy available in the wind. Turbines of the size proposed typically have a rotational speed of between 11.2 and 12.6 times per minute, depending on variations in wind speed, generating power for all wind speeds between c. 4 metres per second (m/s) (approximately 8 miles per hour) and c. 25 m/s (approximately 50 miles per hour). At wind speeds greater than c. 25 m/s, which are very unusual, the turbines will temporarily turn off to prevent any damage occurring.

The turbines are computer controlled to ensure that at all times, the turbine faces directly into the wind to ensure optimum efficiency. The rotors of all turbines will rotate in the same direction relative to the wind direction.

Each wind turbine needs an area of compacted stone adjacent to the turbine base, known as a hardstanding. This is used principally by the crane when erecting the turbine.

3.2 Access to the Development

The proposed site entrance is located to the south of the Site on the L4282. The Turbine Delivery Route and Construction Haul Route will utilise this site entrance. The site entrance is show on **Figure NTS-1**.

It is proposed that the turbine, nacelles, tower hubs, and rotor blades will be landed at Killybegs Harbour, County Donegal. From there they will be transported along the R263, N56, N15, N4, R285, R280, and L4282 to the Site entrance as shown on **Figure NTS-1**.

The existing Site Access Roads in the forestry will be kept, utilised and upgraded as necessary to access turbines 1 and 2. There will be 1.7km upgraded site access roads and 828m of new site access roads required to allow access within the Site. These site access roads will be retained throughout the operational life of the Project to enable maintenance of the turbines and replacement of any turbine components.

3.3 Grid Connection

Underground cabling will link the turbine transformers to the proposed onsite substation. This will provide a connection point between the wind farm and the grid connection point at the existing Corderry Substation. The overall length of the underground grid connection between the onsite substation and the existing Corderry substation is 6.4km, of which 0.098km is within the Site. The grid connection route can be seen in **Figure NTS-1**.

3.4 Construction Phase

The construction phase of the Project will take approximately 14-15 months in total. In general, working hours for construction activity will be from 07:00 to 19:00 throughout the week, with reduced working hours at weekends.

The turbines will be located across a wide area of hillside, however the land taken by the turbines and other infrastructure is a small proportion of this, and substantial efforts have been made to re-use existing infrastructure rather than using new land. During the construction phase, the total land-take required for the Project will be 23ha (hectares) within the larger site area of 45ha.

The Project will appoint a Civil Contractor who will have overall responsibility for management, including environmental management on the construction site. The Civil Contractor will ensure that construction activities are carried out in accordance with the mitigation measures outlined in the EIAR and as required by the planning permission, such as the Construction Environmental Management Plan (CEMP) included in **EIAR Appendix 2.1**. The services of

specialist advisors will be retained as appropriate, such as an archaeologist and ecologist, to be called on as required to advise on specific environmental issues.

3.5 Habitat Restoration

A Habitat Management Plan, included as **EIAR Appendix 5.2**, has been prepared to mitigate for the potential ecological effect of habitat loss as a result of the Project. The Plan is focused on the restoration of approximately 19ha of peatland habitat in an area subject to upland grazing and turbary pressures (see **Figure NTS-2**). To ensure the management actions of the Habitat Management Plan are achieved, a monitoring programme will be employed which covers the construction period in addition to years 1-30 following the completion of the construction period.

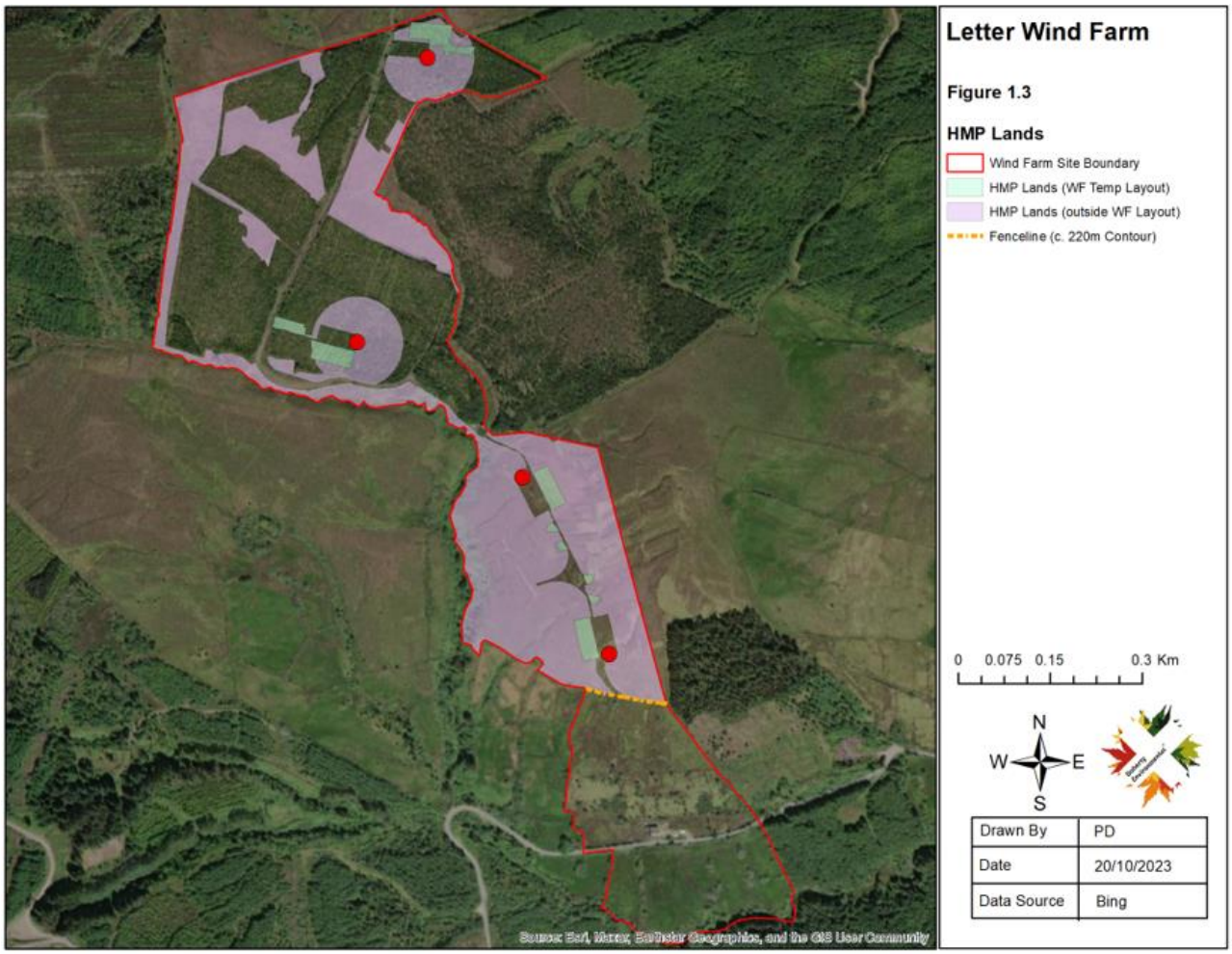

Figure NTS-2: Habitat Enhancement Areas

3.6 Operational Phase

The operational lifespan for the Project is 40-years. During the operational phase, turbine and infrastructure maintenance will be ongoing and regular. This is expected to continue to employ approximately two (2 No.) people on a permanent basis for regular operational and maintenance activities. In addition to this, employment will be created in the areas of finance, ongoing compliance with permissions and permits, safety, security, community relations and benefits and land-owner agreements.

4 NTS.4 SITE SELECTION AND DESIGN

The site layout design has evolved through a series of changes, to avoid or minimise potential effects, including effects on views, hydrology, peat, ecology, fisheries, ornithology, noise and archaeological features. Technical criteria such as wind speed, prevailing wind direction, existing infrastructure, topography and ground conditions were considered during the design process, in addition to relevant guidance documents, survey findings and responses from consultees. Overall, it is considered that the Project represents an optimum fit within the technical and environmental parameters of the Site.

5 NTS.5 LEGAL AND POLICY FRAMEWORK

The Project has had regard to the National Planning Framework, the Regional Spatial and Economic Strategy (RSES) for the Northen and Western Regional Assembly and the Leitrim County Development Plan 2023-2029. These documents are relevant to the determination of the planning application by Leitrim County Council. A detailed assessment of the Planning Policy and Legislative Framework is provided in the **Planning Statement** which accompanies the planning application.

The Climate Action Plan 2023 set outs ambitious and legally binding targets for Ireland. The goal is that Ireland will achieve net-zero greenhouse gas emissions no later than 2050 and a reduction of 51% by 2030. The CAP23 aims to facilitate up to 9 GW of onshore wind energy. The Project will contribute towards meeting those targets.

6 NTS.6 POPULATION AND HUMAN HEALTH

The potential effects of the construction and operation phases of the Project on socioeconomics, tourism and recreation and land use were identified and assessed in **EIAR Chapter 4: Population and Human Health** following desk-based collection of data and consultation with local stakeholders. Two (2 No.) geographical Study Areas were outlined for this assessment, namely:

- Study Area 1: The Site and Environs [District Electoral Divisions (DEDs) – [Arigna/Drumkeeran/Killarga, and Belhavel]

- Study Area 2: Leitrim County

Overall effects of the Project with regards to tourism are considered to be imperceptible during both construction and decommissioning phases. There will be a slight positive impact during the operational phase.

The majority of existing land use is agriculture and/or commercial forestry. This will not be altered significantly by the construction, operation and decommissioning of the Project as these activities can continue alongside the Development.

In advance of the construction phase, the applicant will hold a series of 'Meet the developer / Contractor' events as early as possible, allowing local contractors to learn about opportunities to bid for contracts, time to upskill, and time to prepare prior to bidding. The applicant has significant experience in organising these events.

Effects on the economy during both the construction phase and the operational phase are predicted to be moderate, positive, short-term impact during the construction phase of the Development and moderate, positive and long-term during the operational phase, due to the creation of job opportunities and subsequent spending of income in the local area and within Ireland as a whole. It is estimated that turnover generated by the operation and maintenance of the Project could directly support two (2 No.) jobs in County Leitrim. The overall impact is predicted to be slight positive short-term impact on employment in the area during construction and decommissioning and a long-term positive impact on employment in the area during the operation phase.

Cumulatively, together with other proposed wind farm developments in the region, if these are progressed, the effects would be positive and of minor significance. There is predicted to be a short-term, positive impact in terms of employment from the Project, if construction periods overlap.

6.1 Shadow Flicker

EIAR Chapter 4: Population and Human Health contains a Shadow Flicker analysis. Shadow flicker is the flickering effect caused when rotating wind turbine blades periodically cast shadows through constrained openings such as the windows of neighbouring properties. Industry standard software was used to model the potential for shadow flicker to occur, based on the proposed turbine locations and dimensions and the locations of residential properties. The defined study area was based on the 2006 Wind Energy Development Guidelines which

is for properties within 10 rotor diameters (assumed at 1,170 metres as a worst-case scenario and 1,500 metres for completeness).

The adopted 2006 DoEHLG guidelines are currently under review. The assessment is based on compliance with the current DoEHLG Guidelines limit (30 hours per year or 30 minutes per day). The revised draft of the Wind Energy Development Guidelines 2019 provides for zero shadow flicker. However, it should also be noted the Development can be brought in line with the requirements of the 2019 draft guidelines, should they be adopted while this application is in the planning system.

A significant minimum separation distance from all occupied dwellings of 710 m has been achieved with the project design. This assessment has identified the potential for shadow flicker to affect between 6 No. and 11 No. out of 17 No. receptors within the shadow flicker study area.

Where significant shadow flicker effects are predicted to affect a sensitive receptor, these can be mitigated by adapting turbine control systems to stop the offending turbine when shadow flicker conditions are present. In this instance, it is proposed that a shadow control system be installed to eliminate the potential for shadow flicker from the Project.

The installation of a blade shadow control system on all wind turbines will eliminate shadow flicker impacts from the Development, therefore, removing cumulative shadow flicker impacts.

The assessment has not identified any likely significant effects from the Project on population and human health.

7 NTS.7 BIODIVERSITY

EIAR Chapters 5, 6 and **7** assesses the potential impact of the Project on terrestrial ecology, aquatic ecology and ornithology; respectively. Surveys were undertaken within and adjacent to areas to the proposed development, in order to ascertain the status of ecological features, including habitats, terrestrial mammals, bats, fish and aquatic invertebrates.

The main potential impacts of the construction, and operational phases of the Project on ecology are considered to be:

- Direct loss of habitat;
- Degradation of aquatic habitat (watercourses) and potential downstream ecological impacts;
- Disturbance of protected species, and

- Bat collision with turbines

Habitat surveys included general mapping and quadrat surveys, aimed at identifying important habitat types, including EU Habitats Directive Annex I habitats, either likely to fall under the footprint of the Project or with potential to be affected by it. The results of the survey highlighted that there are no examples of Annex 1 habitat that have been included in the national database of Article 17 Annex 1 habitat occur within the Site. The nearest examples of areas that has been included in the Article 17 database of Annex 1 habitat is blanket bog habitat occurring approximately 300m to the south of the sites southern boundary and a strip of blanket bog habitat, associated with Coillte plantation, approximately 400m to the west of the Site. The project will result in the loss of areas of blanket bog and wet heath habitat that have links to Annex 1 habitat.

The Site lies entirely within the Upper Shannon Catchment. The footprint of the proposed wind farm site drains to the Owengar River. The Owengar River at the Site is an examples of a small 1st order stream with high gradients. Monitoring was completed at the three field sampling locations, SW1, SW2 and SW3. Each of the three sampling locations are considered to be of poor salmonid habitat. Biological macroinvertebrate surveys at the three sampling locations indicate Q-values of Good to High water quality. White-clawed crayfish (*Austropotamobius pallipes*) is listed on Annex II of the EU Habitats Directive and are protected under national legislation. No white-clawed crayfish were identified during a search for this species along the two 100m sections of the Owengar River downstream of the proposed Site. While the general conditions of the Owengar River draining the Site meet the habitat requirements for white-clawed crayfish (high pH, greater than pH 7, and a calcium concentration of greater than 5mg/l), it is noted that there are no historical records for the presence of white-clawed crayfish along the Owengar River, which has been routinely surveyed by the EPA since 1992. Additionally, the high flow rates of the Owengar limit the occurrence of this species within the stretches of the Owengar River downstream of the Site.

There is one watercourse crossing within the Site of the upper Owengar River which is representative of a small upland eroding stream within the wind farm site and at the crossing point. The crossing of the minor stream tributary of the upper Owengar River will consist of a 4m high clear span bridge and 14m wide infrastructure. An extensive suite of mitigation measures, as described in this chapter and within the Construction Environmental Management Plan and Surface Water Management Plan, is required through all phases of the Project to prevent deterioration of surface waters within and downstream of the Site. Subject to their successful implementation, there is considered to be no significant risk of a deterioration in water quality associated with the proposed Project.

Bat activity surveys were undertaken during the 2020 and 2022 bat activity seasons. Wildlife Acoustics SM4BAT FS and Song Metre Mini (full spectrum) remote bat detectors were used during the 2020 bat survey. All SM4BAT FS and Song Metre Mini detectors were set to record bat activity in full spectrum (at 192 kHz Stereo). SMX U2 microphones were used with the SM4BAT FS and Song Metre Mini recorders. The bat monitoring surveys were completed in accordance with the NIEA Natural Environment Division guidelines "Guidance on Bat Surveys, Assessment & Mitigation for Onshore Wind Turbine Developments – Version 1.1" August 2021 and May 2022. Potential impacts on bats during the operation phase are associated with the risk of fatalities posed by operating wind turbines to high-risk species that comprise pipistrelle species and Leisler's bat. The resulting effect of the Development on local bat populations, with implemented mitigation measures, is considered to be a Slight to Imperceptible Residual Negative Reversible Effect

A survey for field signs indicating the presence of terrestrial mammals and particularly otters was undertaken during the field surveys. This survey was undertaken during the daytime and particular attention was given to habitat features normally associated with otters and other protected terrestrial mammals. No evidence indicating the presence of otters, their holts or couches were observed along the stretch of the Owengar River that bounds the proposed wind farm site or 200m downstream of the proposed wind farm site. Similarly, no evidence indicating the presence of otters, their holts or couches was recorded at or in the immediate vicinity (i.e. 150m upstream and downstream of the 7 no. watercourse crossings along the proposed grid connection route.

No badgers or their setts were observed during field surveys within the proposed wind farm site. All hedgerows occurring within a 50m buffer zone of the proposed wind farm access track were searched for the presence of a badger sett entrance and none were recorded.

A number of mitigation measures are proposed that include minimisation of the works footprint, measures to time specific works to avoid disturbance or potential direct mortality of species, measures to avoid downstream pollution, as well as habitat restoration and enhancement measures. Important documents in the delivery of these are a Construction Environmental Management Plan (which sets out work approaches and requirements during construction to avoid downstream water quality impacts). A Surface Water Management Plan is also required in order to ensure no long-term impacts on water quality.

8 NTS.8 ORNITHOLOGY

Chapter 7 of the EIAR assesses the potential effects of the Project on ornithology. The construction, operational and decommissioning phases of the development have the potential to result in three main effects on birds:

- Habitat loss;
- Collision with turbines, and
- Displacement

Bird surveys commenced in March 2019 and were continued monthly until March 2021, providing 2 years of vantage point surveys. Surveys were completed during both the breeding and non-breeding seasons. The purpose of these surveys was to establish the site baseline, distribution, and abundance of bird populations around the Site, including a review of any surrounding designated sites for the wider hinterland up to 10 km. The Site is not located within a protected area for birds (Special Protection Area (SPA)).

These surveys followed widely recognised best practice guidance on the methods, timings and species that are recorded. This information was used to inform the design of the wind farm layout and the assessment of potential effects. This design is predicted to limit the potential for direct effects for most bird species from habitat loss and collision.

The Development will have the potential to result in the direct loss of potential breeding habitat for some passerine species such as ground-nesting species including skylark and meadow pipit in modified blanket bog and others such as linnet and goldcrest in conifer plantation. However, given the small scale of habitat loss to the footprint of the Development in the context of the surrounding area of suitable breeding habitat for these species this loss is assessed as being imperceptible and will represent an impact of negligible magnitude.

With the full implementation of all mitigation measures set out in this Chapter, and particularly construction phase mitigation for breeding birds of peatland habitats, as well as measures for Kestrel (as required) during operation phase, it is considered that the significance of the predicted effects on birds as a result of the proposed Development will range from Imperceptible to Moderate. Whilst loss of peatland habitat will reduce the area of suitable breeding habitat available for species such as meadow pipit (species of high conservation concern) and skylark, it is not expected that this will have an adverse residual effect as the loss is a relatively small amount of the available peatland habitat on site. Also, the Habitat Enhancement Plan will mitigate the loss of peatland habitat. Similarly, the relatively small amount of habitat loss as a result of the development is not expected to have any residual impact on species which use the site for feeding and/or roosting, including Kestrel. The

construction phase of the Project may result in disturbance to breeding birds within a distance of up to 500 m of the works boundary. With mitigation in place, comprising the use of work restrictive zones around identified nests areas, the development is not expected to have any residual impact on these species.

9 NTS.9 GEOLOGY, HYDROGEOLOGY, AND THE WATER ENVIRONMENT

Chapters 8 and **9** of the EIAR evaluates the effects of the Project arising from the construction, operational and decommissioning phases on the geology, hydrology, and hydrogeology resource within and surrounding the Site. The hydrological, hydrogeological and geological assessment for the Project was based on desk studies and site surveys.

The desk study assessment included consultation with the following organisations via online map viewers and databases:

- Environmental Protection Agency (EPA) (Republic of Ireland);
- Geological Survey of Ireland (GSI);
- Met Éireann (MET);
- National Parks & Wildlife Services (NPWS);
- Office of Public Works (OPW);
- The National Biodiversity Data Centre (NBDC), and
- Water Framework Directive (WFD).

The Site, Grid Connection Route, and Turbine Delivery Route are not positioned within or directly adjacent to or immediately upstream of any designated or protected area (Special Protection Area (SPA), Special Area of Conservation (SAC), Natural Heritage Area (NHA)). The nearest downstream designated area is the Ownegar Wood (pNHA) (Site Code: 001419) which is 5km south-east of the Site.

All receptors associated with the Project i.e., groundwater, streams and rivers, are considered highly sensitive receptors when considering:

- Water Framework Directive (WFD) status (2016-2021) "Good". The principal objective of the WFD is to achieve good status or higher in all waters and to ensure that status does not deteriorate in any waters.
- The down-stream designations (sensitive protected areas e.g., SAC, SPA) associated with the catchment and the sensitive habitats and species associated with same.
- The designation of all waterbodies within the boundary of the Site. The designations of downstream surface water bodies and all groundwater bodies as sources of drinking water.

A Site Flood Risk Assessment (SFRA) Stages 1 & 2 for the Wind Farm Site is presented in **Appendix 9.1 – Letter Wind Farm Site Specific Flood Risk Assessment**. The Site is not within a probable flood zone, nor has it experienced any historical flooding.

The Project will lead to a net increase in runoff equating to 0.102 m^3/s or 2.61% relative to the Site area. This is considered an adverse but imperceptible impact of the Project. The associated drainage will be attenuated for greenfield run-off and the Project will not increase the risk of flooding elsewhere in the catchment.

There are no mapped wells, springs or boreholes within the site boundary. The groundwater aquifer underlying the Letter Wind Farm Site is classified as a Poor Aquifer (Pu), that is ‘*’bedrock which is bedrock which is generally unproductive”.*

Peat depth was measured at all locations of major site infrastructure which indicated that the peat within the study area is moderately shallow. Isolated areas of deep peat were observed at some locations, particularly in the north-western portion of the Site, however the proposed Development avoids such areas. The risk ranking at the major infrastructure locations is negligible to low.

A Peat Stability Risk Assessment was carried out and indicates that the risk of significant mass movement of soils or landslides occurring is ‘*Low Risk’* within the footprint of the Development. One mapped area of soil detachment is recorded within the landholding of Letter Wind Farm. The location of this mapped landslide is approximately 75m north-west of T4. No actual event marker is included for this mapped feature, neither is a year of occurrence recorded and it is assumed that this event is a ‘*natural occurrence’*.

Standard, good-practice measures will be implemented to minimise the potential for effects such as pollution, erosion or changes to groundwater and surface water flows at the Development to occur. In addition, during construction works the water course in the vicinity of the historic landslide will be culverted, in order to protect the river environment from further contamination by peat and mineral soils. These established and effective measures will be included in detail in the Construction Environmental Management Plan (**Appendix 2.1**) which the applicant will be committed to undertake through conditions of the planning consent.

Other potential effects have the potential to be significantly adverse, for example, a significant fuel spill, however applying the precautionary principal, mitigation measures, and proper planning, the likelihood and significance of such potential effects can be dramatically reduced.

None of the proposed Turbines or Turbine Hardstand areas fall within a buffer zone associated with a mapped stream / river. Given the extensive drainage network existing at the Site the construction activities associated with the Development will invariably be in close proximity to surface water / drainage features, including within the buffer zones such that there will be a requirement for further mitigation measures. Special attention and planning are required for construction activities within surface water buffer zones. Procedures in relation to mitigating against adverse impacts in areas in close proximity to surface water / drainage or within buffer zones are detailed in a Surface Water Management Plan (**Appendix 2.1**).

During the construction, operational and decommissioning phases of the Project, a number of established good practice measures will be put in place to minimise peat disturbance, peat stability, and loss and compaction of soils. With effective and well managed mitigation measures in place, no significant residual effects on geology and hydrology are predicted as a result of the Project.

10 NTS.10 AIR AND CLIMATE

This section assessed the effect of the Project on air quality, given the potential for dust emissions, and the likely carbon dioxide reduction effects of the Development in operation. Mitigation measures for the reduction of dust are outlined in the **EIAR Chapter 10: Air and Climate Section 10.2.8.** All turbines are situated greater than 710m away from inhabited dwelling houses.

The use of plant and machinery during the construction/decommissioning phases is not likely to have a significant impact on air quality in the area, both in terms of dust generation and exhaust emissions. Overall, with mitigation in place this impact is assessed as slight, negative, and temporary/short term in nature.

During the operational phase of the Project exhaust emissions will arise from occasional machinery use and Light-Good Vehicles (LGV) that will be required for occasional onsite maintenance works. The impact will be imperceptible and negative. However, the wind energy created by the Project will avoid the production of electricity from coal, oil or gas-fired power stations resulting in emission savings of carbon dioxide (CO_2), nitrogen oxides (NO_x), and sulphur dioxide (SO_2). This will lead to a Long-term Significant Positive Impact on air quality.

After mitigation, the residual effects were assessed as having the potential to result in slight/imperceptible, negative, direct impact that will be temporary/short-term in nature during

on climate during the construction. There will be long-term moderate, positive impact on climate as a result of reduced greenhouse gas emission during the operational phase.

The layout of the Project has been designed to minimise the potential environmental effects of the wind farm while utilising the maximum energy yield from the site's wind resource. The selection of breaking new ground and impacting on natural habitat has been kept to a minimum.

The Project does not contain any element, which will produce GHG emissions or odorous emissions in operation and will contribute to a net national reduction in the emissions of greenhouse and other gases resulting from the combustion of fossil fuels.

Savings of carbon dioxide arise principally from the generation of electricity from the Project such that generation from other sources (which emit carbon dioxide) are offset. The estimated savings depend on the assumption of which source of electricity is displaced and the savings range are approximately 17,925 tonnes of carbon dioxide per annum.

Ireland has set a target to achieve a 51% reduction in overall greenhouse gas emissions by 2030, setting a path to reach net-zero emissions by no later than 2050. The target for 2030 is to generate 80% of the country's electricity from renewable sources. The Project will contribute 16.8MW of installed capacity. The cumulative effect with other Irish renewable generation is considered to be a fundamental change in the climate effects of Ireland's energy supply, which is a major, positive effect, that is significant under the EIA Regulations and will contribute to Ireland's binding emission reduction targets. The Project has been assessed as having a long-term, positive impact in terms of helping Ireland meet its international obligations to reduce GHG emissions.

11 NTS.10 NOISE

Chapter 11 of the EIAR presents an assessment of the noise effects of the Project.

Noise will be emitted temporarily by equipment and vehicles used during the construction phase. The main noise sources will be associated with the construction of the turbine foundations, turbine hardstands, grid connection, processing in the borrow pit location, with lesser sources being site access roads, and construction of a 20kV substation. Decommissioning noise levels are assumed to be in the same order as construction levels and will be of temporary duration. Construction and decommissioning works within the Site will typically be more than 710m from the nearest property (noise receptor), making the potential for noise and vibration impacts considered to be not significant. For dwellings that are within

20m from the grid connection route, an acoustic barrier will be installed to provide a minimum 10dBA attenuation.

The main sound heard from wind turbines is the 'swish' from the movement of the blades through the air. Modern turbines are designed to minimise noise and planning conditions are used to ensure compliance with specified noise limits. The assessment of operational noise has been undertaken in accordance with best practice and following the latest guidelines. It has been shown that noise due to the Project, including cumulative effects with operational and consented wind farms will meet all current guidelines at all local properties.

12 NTS.11 LANDSCAPE AND VISUAL

Chapter 12 of the EIAR presents a Landscape and Visual Impact Assessment for the Project. This has been carried out by a qualified and experienced landscape architect to identify significant effects predicted to arise as a result of the Project. It considers separately the effects on landscape and visual receptors, as well as cumulative effects in combination with other wind farm developments.

The Site is located on elevated rolling transitional lands north of Corry Mountain (428m AOD) and northeast of Carrane Hill (458m AOD). The Development is situated along sloping lands situated at between c. 230-260m AOD and is intersected by a small stream that flows in a southerly direction through the Site. This stream merges with the Owengar River, which meanders through a small valley immediately south of the site and empties into Lough Allen, the largest waterbody within the study area, situated some c. 5km southeast of the site.

The Study Area for the Development covers a radius of 20km in accordance with the Wind Energy Development Guidelines (2006). The landscape assessment considers potential effects on the receiving and surrounding landscape with reference to a range of landscape character areas (LCAs) and criteria published in various technical documents. The visual assessment considers effects upon visual receptors including scenic amenity designations, centres of population, transport routes and local community views using 21 viewpoints from representative / sensitive visual receptor locations. Photomontages have been prepared for the viewpoints and the figures also include a wireline of the Project on its own and a wireline with all other cumulative developments.

The Development is wholly located in LCA11 – Corry Mountain. In respect of landscape sensitivity designations, the Site is located within LCT 6 – Moorland Hills, although the landscape a short distance to the west of the site transitions to LCT 5 – Moorland Plateau,

whilst a short distance east of the site, the lower terrain transition to LCT 8 – Valley Farmland. The landscape sensitivity of the central study area is deemed medium-low due to its robust working character, which is heavily influenced by existing wind energy development. Regarding the wider study area, it is considered the landscape of this study area is highly complex and richly diverse in terms of sensitivities and landscape values. An overall landscape sensitivity judgement of Medium is deemed appropriate for the landscape of the wider study area.

In terms of landscape effects, there will be physical impacts on the land cover of this already modified (by commercial forestry plantations) Site during the construction stage, but many of these will be reversible upon decommissioning of the site. The main landscape impacts relate to changes in landscape character during the operational stage principally from the presence of the proposed turbines. In terms of scale and function, the proposed wind farm is considered a relatively modest four-turbine development that does not appear out of place in terms of its scale or function in this transitional upland landscape context. It will almost always be viewed in combination with other existing wind farm developments and therefore represents the intensification of an established land use instead of a new and unfamiliar one. Furthermore, it is considered an appropriately sited development and is not at odds with the working upland character of the surrounding landscape.

For the visual impact assessment, the 21 viewpoints are grouped and summarised in **Chapter 12** in terms of receptor type. The representative viewpoints are seen in **Table 2** below and in **Figure NTS-3**.

Table 2: Representative viewpoints

VP No.	Location
VP1	N16 at Cornastauk, west of the River Bonet
VP2	Local road at Carrigeencor, north of Carrigeencor Lough
VP3	R268 at Corwillick north of Lough Gill
VP4	Residential Housing Estate at Dromahair
VP5	R289 at Drumkeel
VP6	Residential Housing Estate at Ballintogher
VP7	Local road at Drumcashlagh
VP8	R207 at Dowra

VP No.	Location
VP9	R280 at Lavagh
VP10	L8281 local road at Turpaun
VP11	Local road at Beagh
VP12	Residential Housing Estate south of Collooney
VP13	R280 at Drumkeeran
VP14	L4282 at Corloughcahill
VP15	Local road at Greaghnadarragh
VP16	Local road (L4284) at Letter
VP17	Local road at Ballinagleragh
VP18	Local road (L4284) at Bargowla
VP19	Local road at Liscuillew Lower
VP20	R207 at Cleighran More
VP21	Local road at Ballynashee

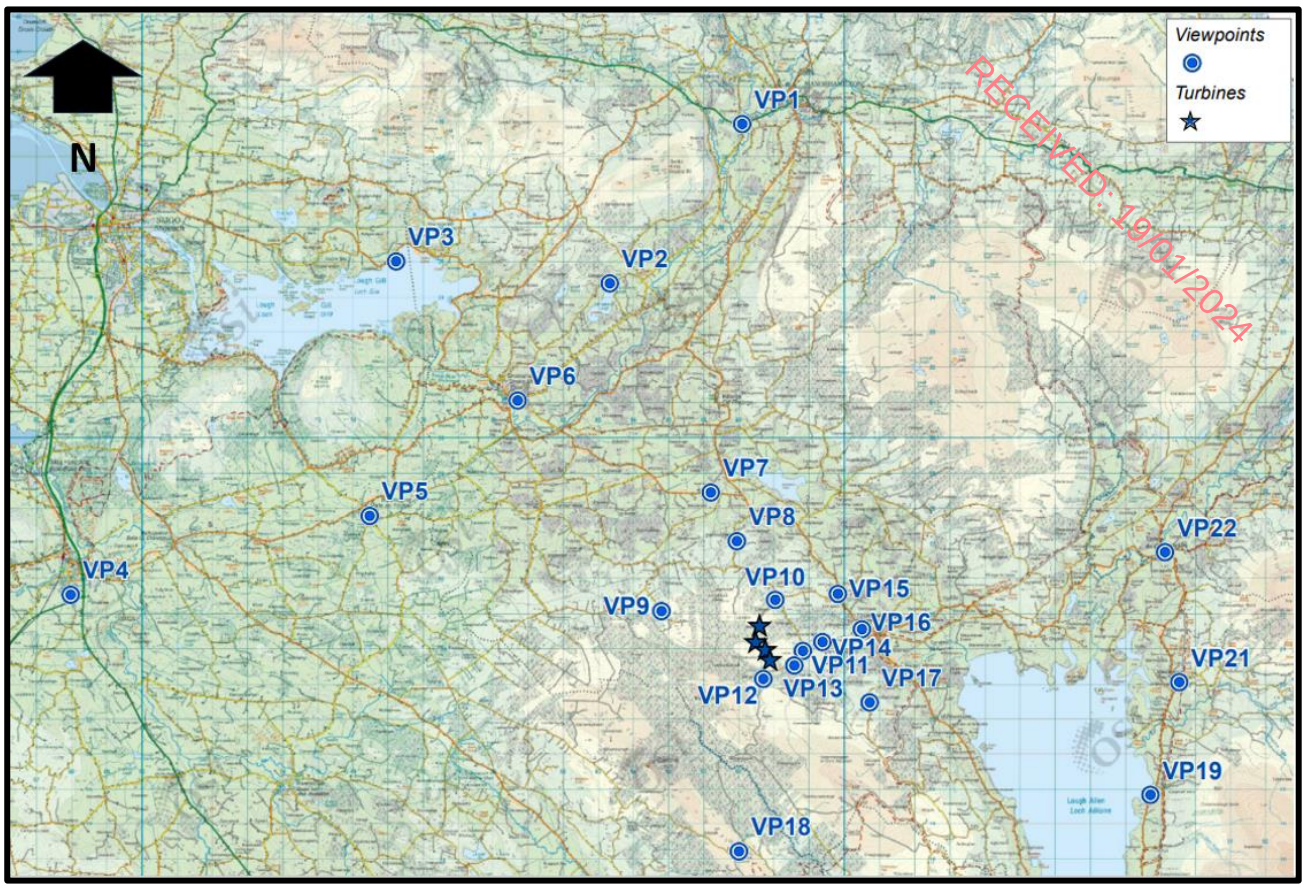

Figure NTS-3: Viewpoint Map

The proposed wind farm will give rise to a range of effects when considered in relation to different receptor types. The nearest and most notable centre of population in relation to the Development is the settlement of Drumkeeran. Aside from Drumkeeran, the central study area is relatively sparsely populated and comprises no other notable settlements. The settlement pattern within the central study area principally composes of isolated rural dwellings and farmsteads, small linear clusters of development and small cross-road settlements. Compared to many other wind energy developments, the effects on local community views, one of the more susceptible receptor types and closest to the Development, are generally in the mid-range (Moderate and Moderate-slight or lower) rather than at the higher end of the spectrum. Overall, the proposed turbines generally present in a clear and legible manner within the central study area, albeit they are often partially and heavily screened by a combination of the rolling terrain and intervening vegetation. Nonetheless, some clear and highly prominent views will be afforded from some localised remote areas to the south of the site. However, the turbines will never appear over-scaled or out of place in this working landscape context, which is heavily influenced by existing wind farm development and other working upland land uses.

Based on the landscape, visual and cumulative assessment detailed within chapter, it is considered that there will not be any significant effects arising from the proposed Letter Wind Farm.

13 NTS.13 MATERIAL ASSETS AND OTHER ISSUES

Chapter 13 of the EIAR considers a number of other issues associated with the wind farm development, including potential effects on land use, forestry, telecommunications, electricity networks, aviation and utilities.

13.1 Land Use

The Site has a mixed use as both commercial forestry and upland grazing. There will be two turbines located within forestry lands, with the remaining two turbines located within agricultural lands. This will result in the change of land use from agricultural pastureland to wind farm use. This will have a slight, negative impact on agricultural land use due to the removal of grazing lands for the duration of the Development.

Two (2 No.) turbines (and associated infrastructure i.e., roads, Turbine Hardstands, etc.) are located within forestry. This will result in the change of use from forestry to wind farm use. This will have a permanent slight, negative impact on forestry due to the removal of lands for the duration of the Project.

However, no significant impacts are predicted on agricultural or forestry land use.

13.2 Telecommunications

Operators of microwave communication links were contacted during the EIA. Disruption to television reception is considered unlikely following the switchover to digital broadcasting, as the signals are less susceptible to interference from turbines.

The implementation of mitigation measures will ensure no interference with communication links. Therefore, no significant effects are predicted on telecommunications or radio reception as a result of the Project.

13.3 Electricity Networks

This section describes the transmission network and the anticipated connection option. It is not proposed to utilise any elements of the distribution network.

The nationwide electricity transmission system allows for the transport of large volumes of electricity from generation stations, including wind farms, to bulk supply points near the main population centres where it interconnects with the distribution system.

The Grid Connection will be 6.4km in length and will be within the public road network.

Connection will be sought from the grid system operator by application to ESB. The substation will connect via underground 20kV cables. At the existing Corderry 110kV substation, the cable will connect into existing infrastructure within the confines of the substation and compound. The grid connection will be constructed to the requirements and specifications (SPEC-231213-AXV) of ESB.

The Project will contribute directly and in the long term to the electricity network by strengthening it through additional renewable energy generation.

13.4 Air Navigation

Operating wind farms have the potential to cause a variety of effects on aviation. Rotating wind turbine blades may impact on radar operations, although it is not likely at Letter. The physical height of turbines can cause obstruction to aviation and the overall performance of communications, navigation and surveillance equipment. All structures over 150m in height are required to have lighting to warn aviation traffic.

Consultation with aviation operators was undertaken, with Sligo Airport requesting an Instrument Flight Procedure (IFP) assessment be undertaken upon the grant of planning permission.

Although no significant impacts are predicted, it is standard policy of the IAA Safety Regulation Division to request an Obstruction Survey for wind farms. This Survey is designed to collate data on the height, latitude, longitude, elevation and dimensions of any structures or feature that the IAA deems necessary. An Obstruction Survey will be undertaken at the pre-construction phase in agreement with the IAA.

An aeronautical lighting scheme for the Development will be agreed with the Irish Aviation Authority (IAA) prior to turbine erection. The IAA will be notified of intention to commence crane operations with at least 30 days prior notification of their erection.

14 NTS.14 CULTURAL HERITAGE

Chapter 14 of the EIAR presents a baseline study of and impact assessment on, the cultural heritage of the Site and surrounding region. Site visits and desk studies were undertaken to identify and record any archaeological, architectural and other cultural heritage assets which may be affected by the Project. The significance of effect on cultural heritage assets is considered by establishing the asset's value/sensitivity, and how that may be impacted based on the proposed design of the Project.

There are no recorded archaeological sites located within the Site. Three recorded monuments are located within 2km of the Site, and these comprise a burnt mound (LE017-012----) in Corralustia townland and a ringfort (LE017-004001-) and associated house (LE017-004001-) in Lugmeeltan townland. There are no records of artefacts within the Site and surrounding lands. A ringfort (LEO17-004001) with an associated house (LEO17-004002) in Lugmeeltan townland is located 80m east of the grid connection route. These archaeological features will not be impacted by the Development.

The Site has the potential for the presence of unknown sub-surface archaeological remains. All ground disturbance associated with the construction of the Development will be monitored by a suitably qualified archaeologist working under licence as issued by the minister (DCHG) under section 26 of the National Monuments Acts (1994-2014). In the event of archaeological features, finds and/or deposits been encountered during the monitoring, all relevant authorities should be notified immediately. Preservation in-situ or preservation by record (excavation) may be required.

There are no likely direct effects of significance during the operational phase of the Project. Indirect effects during the operational phase are the visual impacts on the cultural heritage environment. The upstanding proposed development infrastructure will be visible from the surrounding cultural heritage features. Given the nature of the wind farm turbines there are no mitigation measures that can address these visual impacts, but it is noted that they will be reversed following the decommissioning phase.

The assessment predicts long-term, negative, indirect cumulative effects on the archaeological landscape in combination with surrounding developments. The increase in cumulative impact does not result in any direct effects to archaeology or cultural heritage that are significant in terms of the EIA Regulations.

15 NTS.15 TRAFFIC AND TRANSPORT

Chapter 15 of the EIAR sets out the effect that construction traffic would have on the road network, and the consequent effects that that could have on people and communities nearby.

Potential effects associated with the Project are presented in two key forms: those from the transport of wind turbine components, and those as a result of the import of construction material, equipment and personnel.

A computer model of the turbine delivery vehicles is used to identify locations along the turbine component delivery route where road improvements will be required to facilitate delivery for abnormal loads between Killybegs Harbour and the wind farm site (refer to **EIAR Appendix 15.1**). These components would be transported with an escort vehicle as standard practice, to help ensure safe passage.

The haul route is proposed as:

- Exit Killybegs Port taking the 2nd exit at the roundabout to the Shore Road
- Continue on Shore Road and turn right onto the R263
- Continue on R263 until the road joins to the N56
- At the 1st roundabout near Donegal town, continue on the N56
- At the 2nd roundabout near Donegal town, take the 2nd exit onto the N15
- At the roundabout outside Laghey, continue on the N15
- At the roundabout outside Ballyshannon, continue on the N15
- At the 1st roundabout outside Bundoran, continue on the N15
- At the 2nd roundabout outside Bundoran, continue on the N15
- Continue on N15, then join onto the N4
- Continue on N4 through 4 roundabouts
- Turn left onto R285
- Turn right onto R285
- Turn left onto R280
- Veer left off the R280 and join the L4251, then re-join R280
- Continue on the R280 and turn left onto the L-4282
- Continue on L-4282 until left turn to the Wind Farm Site entrance

For the delivery of construction materials from locally identified quarries to the north, trucks will use the N16 or R280 followed by the L-4282, into the site entrance. Deliveries from the south will use the N4 onto the R280 and then turn into the L-4282, then continuing to the site entrance.

The amount of traffic that will be generated by the construction phase of the Project and potential effects on people and nearby communities were assessed as negligible, except for the following:

- Driver delay during the short periods of time when the abnormal loads are moving, at points highly localised to the turbine components delivery route.
- Pedestrian intimidation can occur where there are large changes to traffic flow and composition. No local roads will be used and there is no significant pedestrian traffic in the area.
- Mud and debris on the local road network from HGVs entering and egressing from the construction site.
- Vibration caused by large vehicles, either airborne or ground based as a result of a rough road surface. There is likely to be some noise and vibration from HGV movements along the Haul Route particularly on the L-4282 and L-8280 which can cause disturbance to residents living along these roads. Due to the relatively low number of trips generated per day, (apart from the fourteen days when concrete pours are taking place) the restrictions on working hours and the short-term nature of the construction phase, the effects of noise and vibration are not predicted to be significant.

A number of mitigation measures are proposed to minimise effects, including:

- The applicant will confirm the intended timescale for deliveries and every effort will be made to avoid peak times such as school drop off times, church services, sporting events, peak traffic times where it is considered this may lead to unnecessary disruption.
- Drivers of all delivery vehicles will be made aware of the presence of schools and other sensitive receptors and that formal pedestrian crossing facilities are not present.
- Wheel cleaning facilities will be provided at the proposed entrance to the site.
- To reduce dust emissions, vehicle containers/loads of crushed stone will be covered during both entrance and egress to the site.
- The local road network will be monitored, and maintenance will be carried out as required with any repairs undertaken at the cessation of the construction phase.

A detailed Traffic Management Plan will be agreed with the relevant authorities and the community and will detail the measures to be implemented during the temporary construction/decommissioning phases.

No significant effects related to operational phase traffic will occur due to the minimal traffic that would be generated during that phase of the Project.

16 NTS.16 VULNERABILITY OF THE PROJECT TO MAJOR ACCIDENTS AND NATURAL DISASTERS

Major accidents or natural disasters are hazards which have the potential to affect the Project and consequently have potential impacts on the environment. These include accidents during construction and operation caused by operational failure and/or natural hazards. The assessment of the risk of major accidents and/or disaster considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., population and human health, biodiversity, land, soil (peat stability), water, air and climate and material assets, cultural heritage and the landscape.

A desk-study has been completed to establish the baseline environment for which the proposed risk assessment is being carried out. This will influence both the likelihood and the impact of a major accident or natural disaster. Local and regional context has been established prior to undertaking the risk assessment to develop an understanding of the vulnerability and resilience of the area to emergency situations.

The scenario with the highest risk score in terms of the occurrence of major accident and/or disaster was identified as 'Contamination' of the Project and risk of 'Industrial Accident Fire/Gas Explosion' during the construction, operation and decommissioning phases. The Project has been designed and built in accordance with the best practice measures set out in this EIAR and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design.

The risk of a major accident and/or disaster during the construction of the Project is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010).

17 NTS.17 INTERACTIONS AND INTERRELATIONSHIPS

Any potential impact on one element of the environment as a result of the Project may also impact on another. **Chapter 17** of the EIAR provides a summary of the interactions and interrelationships between environmental aspects of the Project. This includes significant effects from each EIAR chapter and also summarises the mitigation measures proposed to reduce either the likelihood or magnitude of these effects to an acceptable level.

Table 3 below outlines the different environmental aspects which have potential to interact because of the Project. Interactions have been clearly identified in the early stages of the Project and where the potential exists for interaction between environmental impacts, the EIAR specialists have taken the interactions into account when making their assessment. Potential

interactions (both positive and negative) have been considered for the construction, operational and decommissioning phases of each of the different environmental aspects of the Project.

All environmental factors are interrelated to some extent. Having studied the interaction of potential impacts during the construction, operational and decommissioning phases of the Project, it has been determined that no amplification effect is anticipated. The Project will have some positive impacts on an international, national, regional and local level. It is important to note that the landscape and visual impacts are almost entirely reversible upon decommissioning of the Development.

Table 3: Summary matrix of Interactions of Impacts during Construction, Operational and Decommissioning Phases (Source: Adapted from EIAR Guidelines, 2022)

	Population & Human Health		Biodiversity		Ornithology		Soils & Geology		Hydrology and Hydrogeology		Noise		Landscape & Visual		Material Assets		Cultural Heritage		Traffic & Transportation		Major Accidents and Natural Disasters	
	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper
Population & Human Health																						
Biodiversity																						
Ornithology																						
Soils & Geology																						
Hydrology and Hydrogeology																						
Noise																						
Landscape & Visual																						
Material Assets																						
Archaeology and Cultural Heritage																						
Traffic & Transportation																						
Major Accidents & Natural Disasters																						

Note: Const. = Construction phase; Oper = Operational phase Decom. = Decommissioning

Interaction or inter-relationship

No interaction or inter-relationship