



**GALETECH**  
ENERGY SERVICES

## **Islandmore Wind Farm**

Environmental Impact Assessment  
Report

Non-Technical Summary

Islandmore Wind Farm Limited

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## 1.0 INTRODUCTION

Islandmore Wind Farm Limited ('the Developer') has prepared this Environmental Impact Assessment Report (EIAR) for the construction of a 10 no. turbine wind farm project and associated site development works together with approximately 7 kilometres (km) of underground electricity line which will connect to the existing 110kV Tonroe electricity substation at Ballaghaderreen.

Planning legislation requires that that planning applications for such projects be accompanied by an EIAR. An EIAR is a statement of the effects, if any, which the project, if carried out, would have on the environment. It provides information which a planning authority, in this case An Coimisiún Pleanála ('the Commission'), can use in undertaking a formal Environmental Impact Assessment (EIA) and in informing their decision making process. The EIAR can also be used by third parties to evaluate the project and its likely effects.

Galetech Energy Services (GES) has been appointed by the Developer to manage and coordinate the management and preparation of this EIAR. The content of the EIAR has been prepared by individual specialist and technical consultants who were appointed in order to undertake assessments and prepare chapters on specific environmental topics.

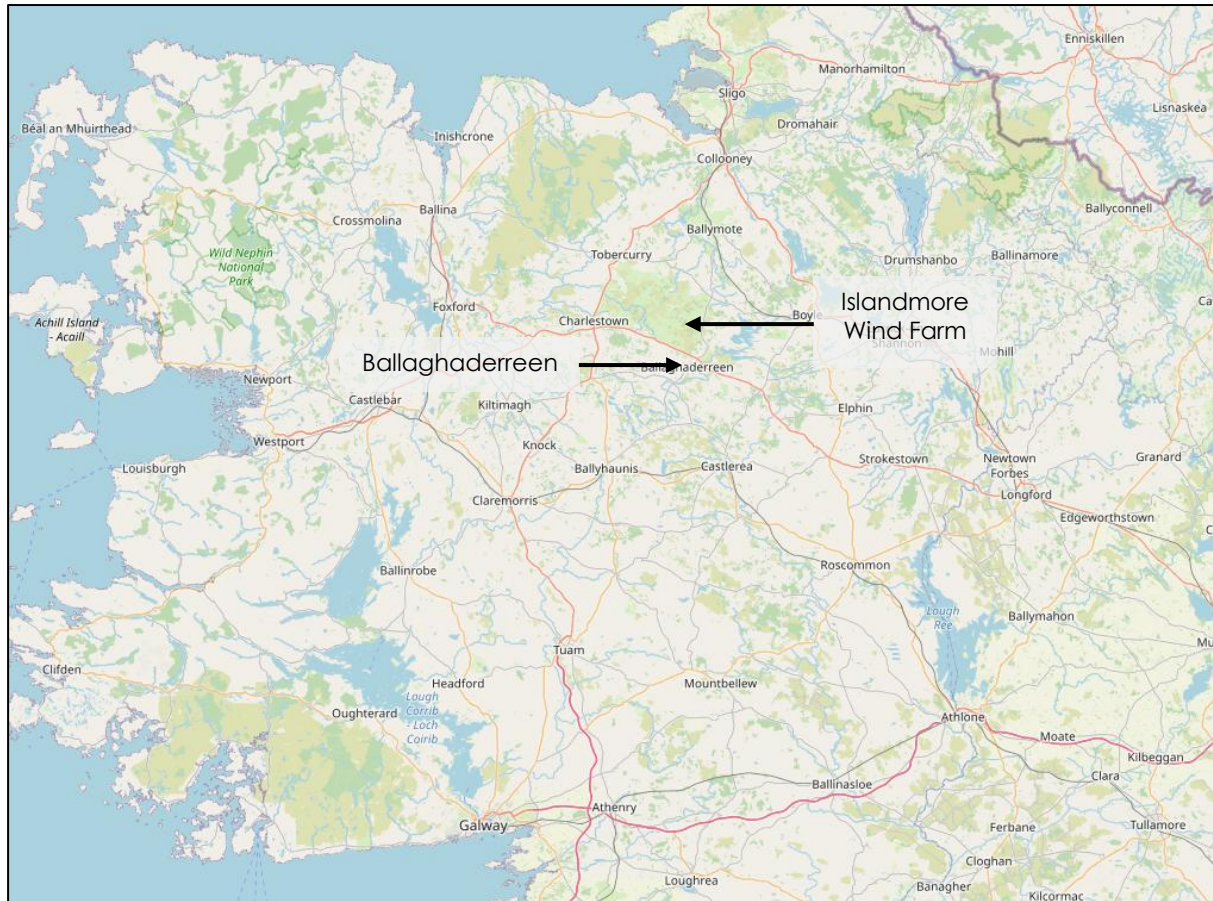
**Volume I** of the EIAR is arranged in 15 no. separate chapters which describe the project and addresses each component of the environment likely to be affected and their likely interactions. **Volume II** includes technical information and annexes associated with the EIAR.

The EIAR may be inspected or purchased at the public offices of the Commission and Roscommon County Council during public opening hours. The EIAR may also be inspected at the dedicated project website [www.islandmorewindfarmsid.ie](http://www.islandmorewindfarmsid.ie).

A submission or observation in respect of the EIAR and the planning application may be made in writing to the Commission; at 64 Marlborough Street, Dublin 1, D01 V902 or via the Commission's website [www.pleanala.ie/en-ie/observations](http://www.pleanala.ie/en-ie/observations); on payment of the €50 prescribed fee within the period of seven weeks and such submissions or observations will be considered by the Commission in making the decision on the planning application.

## 2.0 SITE LOCATION

The project site is located in north County Roscommon, c. 2km north of Ballaghaderreen (see **Figure 1** below), c. 13km east of Charlestown (County Mayo) and c. 6km southwest of Gorteen (County Sligo). The wind farm will be located in the townlands of Largan, Boleysillagh, Cloonmeen, Toobrackan, and Tullaghanrock, County Roscommon.



### Figure 1: Project Site Location

The project site is generally set in an upland area located between the towns of Ballaghaderreen (County Roscommon) to the south and Gorteen (County Sligo) to the north. The project site is generally located on an elevated plateau with ground elevations at the wind turbine locations ranging from approximately 140-metres (m) above sea level to 170m. In general, the terrain slopes to the east or southeast towards Lough Gara which is a notable waterbody located c. 7km to the east of the project site.

According to the Corine 2018 database, land use at the project site is predominately classed as wetlands, forest and semi-natural areas and agricultural areas (pastures). The wider landscape comprises a mosaic of peat bogs, commercial forestry and agricultural scrub; with pockets of improved agricultural pasture generally limited to areas to the southwest of Ballaghaderreen and west and northwest of the town of Frenchpark.

The N5 national primary route is located c. 500m south of the wind farm site; while the N17 national secondary route, along which turbine components will be transported, is located c. 13km to the west. The project site is crossed by a network of local secondary and tertiary classed roads.

Population density at the project site and in its immediate environs is sparse and settlement patterns largely comprise dispersed rural dwellings often accompanied by agricultural holdings and buildings. The town of Ballaghaderreen, located c. 2km south, is the primary settlement in the environs of the project site.



**Figure 2: General View across the Wind Farm Site**

### **3.0 DESCRIPTION OF THE PROJECT**

The project assessed within this EIAR comprises a wind farm, including all associated development works to accommodate its construction, installation, operation, maintenance and the export of electrical power to the national grid. This will include:-

- 3 no. wind turbines (T1-T3) with a hub height of 104m, a rotor diameter of 162m and an overall tip height of 185m;
- 7 no. wind turbines (T4-T10) with a hub height of 82m, a rotor diameter of 136m and an overall tip height of 150m;
- All associated turbine foundations and crane hardstanding areas;
- All associated underground electrical and communications cabling;
- Construction of approximately 4km of wind farm access tracks;
- Construction of 6 no. new site entrances and upgrade of 1 no. existing site entrance;
- 2 no. temporary construction compounds;
- 1 no. borrow pit which, when exhausted, will be utilised to permanently store excess excavated material;
- The storage, as required, of excavated material at dedicated spoil deposition areas;
- Felling of approximately 6.5 hectares (ha) of forestry plantation to facilitate the construction and operation of wind farm infrastructure; and,

- All associated and ancillary site development, excavation, construction, landscaping and reinstatement works, including provision of site drainage infrastructure and environmental mitigation measures.

Off-site or secondary elements of the project which are included for assessment in this EIAR and are included in the current SID planning application, include:-

- Temporary and permanent works to public roads along the turbine component haul route.

Off-site or secondary elements of the project which are included for assessment in this EIAR but are not included in the current SID planning application and will be subject to a separate licensing and/or consenting process, include:-

- A 110 kilovolt (kV) electricity substation and all associated electrical equipment; and,
- The installation of c. 7km of underground electricity line to facilitate connection of the electricity substation to the existing 110kV electricity substation at Tonroe, Ballaghaderreen, County Roscommon.

The layout of the proposed wind farm is illustrated at **Figure 3** below.

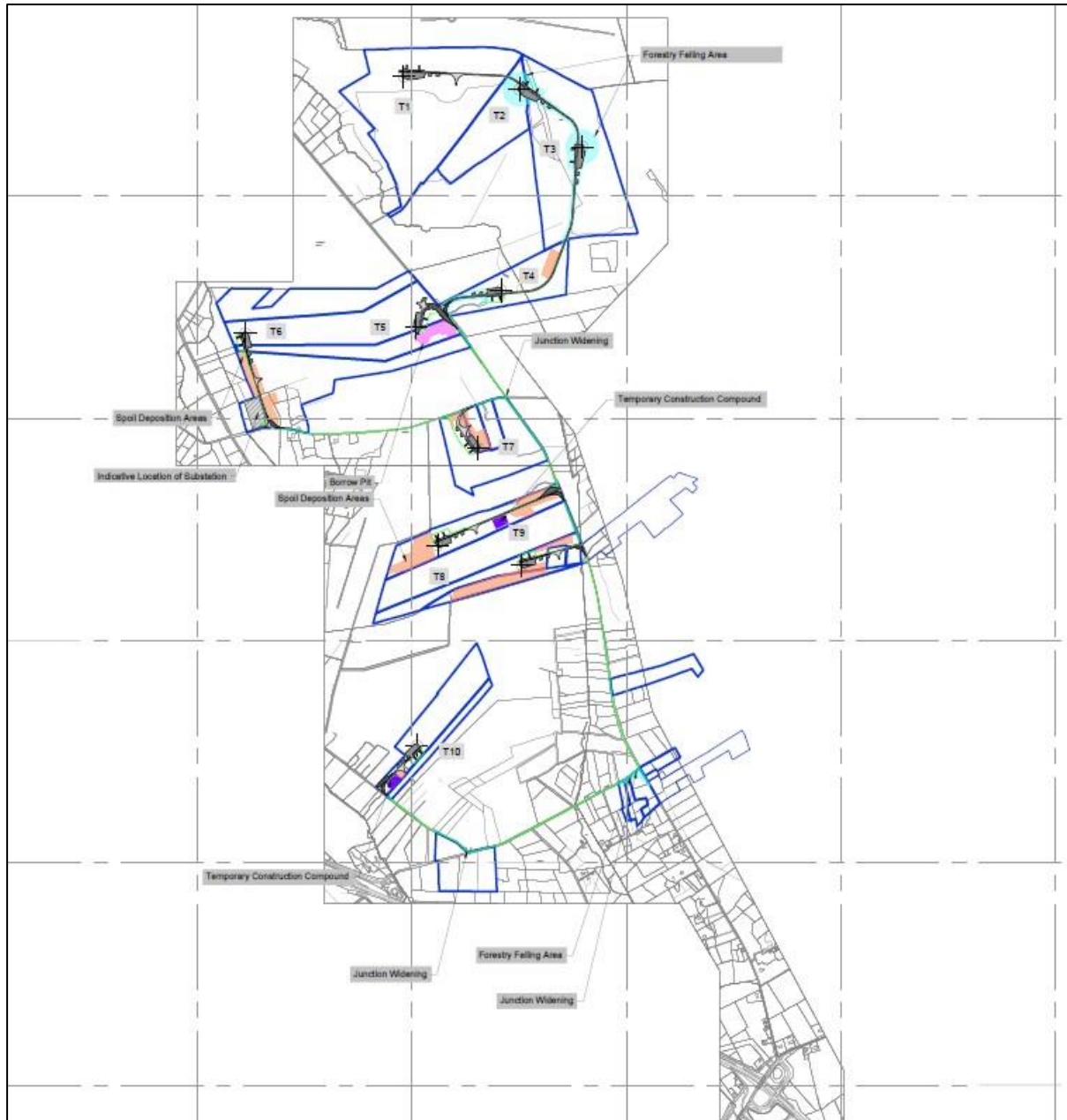


**Figure 4: Layout of Wind Farm**

#### **4.0 ASSESSMENT OF PROJECT ALTERNATIVES**

A description of the reasonable alternatives to this project has been provided, and details the assessment, evaluation and analysis undertaken. A range of alternate development options have been assessed through an iterative and recursive project design and environmental assessment process, including the 'do-nothing' scenario, alternative locations, alternative designs and layouts, alternative grid connections; alternative design technologies; alternative replant lands, and alternative construction phase transport routes. The objective of this process was to arrive at a project which has inherent design characteristics and has the least likely adverse environmental effects.

The final project assessed in this EIAR has been selected as it strikes the best balance between the avoidance of any significant environmental effects and achieving the

objectives of the project.

## **5.0 POPULATION & HUMAN HEALTH**

### **5.1 BACKGROUND**

The chapter presents an assessment of the likelihood of effects on population and human health. Human beings are an important element of the environment and any likely effects on the status of population and human health must be comprehensively addressed.

### **5.2 METHODOLOGY**

The methodology used to inform the assessment generally comprised research of existing documents and information sources to fully understand the population, social and economic characteristics of the local area. Information sources included information from the 2022 Census, local economic and community plans, and tourism information for County Roscommon.

Consultation was also undertaken with a range of bodies including Failte Ireland, Roscommon County Council, the Health and Safety Authority, and the Health Service Executive.

### **5.3 DESCRIPTION OF LIKELY EFFECTS**

The assessment finds that the likelihood of effects during the construction phase are limited to effects on population sustainability, general amenity and well-being, economic and employment effects, effects on tourism, and the possibility of accidents or natural disasters. The assessment concludes that the project will result in both negative and positive effects on the above factors; however, the level of significance is at the lower end of the spectrum.

For example, amenity levels, in terms of local population, are likely to be subject to a minor adverse effect for the temporary duration of the construction phase; however, while these effects may be substantial at a personal level, they are not assessed to be significant in EIA terms, particularly given their short-term temporary duration.

Economic opportunities, through the provision of materials or services, will be available to local companies and direct employment during the construction phase is likely to involve the employment of up to approximately 100 people over a period of 15-18 months. Additionally, plant and materials will be sourced locally. The socio-economic benefits resulting from the construction of the project are likely to make a substantial positive effect on the local economy of the local area, through direct employment and rural diversification.

The operational phase of the project is not likely to result in any significant positive or negative effects in terms of population sustainability and residential amenity, general amenity and well-being, economic and employment effects and effects on tourism. While minor localised effects are likely to arise, both positive and negative; these effects are not assessed as likely to be significant.

The Developer is committed to operating a community benefit fund in accordance with the Wind Energy Ireland (WEI) best practice and it will be available to the community at a rate of €2 euro per megawatt hour (MWh) produced, should the Renewable Energy Support Scheme (RESS) be awarded. An investment of approximately €29,600 per turbine per year for up to 15-years, is committed.

## **5.4 MITIGATION MEASURES**

The land on which the project has been sited is privately owned and there will be no unauthorised public access to the site. This will ensure that there are no impacts on the local population which could affect human health.

During the operation phase, the project will generally be unmanned. Operational monitoring activities will be carried out, remotely, on an ongoing basis. However, regular visits to the site will be undertaken for routine inspections and maintenance.

## **5.5 OVERALL FINDINGS**

The overall conclusion of the chapter is that any adverse effects of the project on population and human health are unlikely to be significant. No specific mitigation measures, other than full adherence to all health and safety and public health guidance, have therefore been identified as being required.

## **6.0 BIODIVERSITY**

### **6.1 BACKGROUND**

This chapter provides an assessment of the likely significant effects on biodiversity as a result of the project. This assessment considers the ecological impact of the entire project through the construction, operational and decommissioning phases.

### **6.2 METHODOLOGY**

A comprehensive desk study was undertaken to inform this ecological impact assessment, involving a thorough review of available information that is relevant to the ecology of the project site. Field surveys were undertaken by appropriately qualified ecologists over the course of a number of years. These surveys applied best practice guidelines, as required for ecological assessment for proposed wind farm developments.

Surveys undertaken included:-

- Botanical surveys and habitat mapping;
- Invasive species surveys;
- Aquatic and fisheries assessments;
- Bird surveys;
- Mammal survey;
- Bat surveys;
- Amphibian and reptile surveys; and,
- Invertebrate surveys, including Marsh Fritillary.

## **6.3 DESCRIPTION OF LIKELY EFFECTS & MITIGATION MEASURES**

### **6.3.1 Designated Sites**

Potential pathways linking the project with designated sites were assessed in detail. Particular consideration was given to hydrological and water quality connections, habitat loss, disturbance and other indirect effects.

The assessment concludes that there will be no direct impacts on any designated site. Potential indirect impacts associated with sedimentation, pollution or hydrological change could occur during construction if appropriate controls were not implemented.

A range of embedded mitigation measures have therefore been incorporated into the project design. These include drainage controls, water management measures, pollution prevention procedures, ecological supervision and construction best practice measures.

Following the implementation of mitigation, the assessment concluded that significant effects on designated sites are not expected. Furthermore, the project will not adversely affect the integrity or conservation objectives of any European site, either alone or in combination with other plans and projects, and this is discussed further in the Natura Impact Statement.

### **6.3.2 Habitats**

Construction of the project will result in the permanent and temporary loss of a limited area of habitats within the site. The habitats most sensitive to development include blanket bog and other peatland habitats which are recognised as being of ecological importance within the wider landscape.

The project design has sought to minimise habitat loss through careful infrastructure layout and the avoidance of the most sensitive ecological features where practicable. Additional measures include the protection of retained habitats and the implementation of peat and habitat management measures.

A Habitat Management Plan will be implemented as part of the project. This will include habitat restoration and enhancement measures designed to improve the condition of peatland habitats and support the long-term ecological value of the site.

Although some habitat loss will occur, the assessment concludes that the proposed mitigation and restoration measures will substantially reduce the significance of these effects and support habitat recovery over the lifetime of the project, with the potential for beneficial outcomes within the project site.

### **6.3.2 Freshwater Ecology**

Likely effects on freshwater ecology are principally associated with construction activities and could arise through increased sedimentation, accidental pollution, changes to drainage patterns and disturbance of aquatic habitats.

To prevent these effects, the project incorporates a comprehensive suite of water protection measures (see CEMP and SWMP, **Annex 3.4**). These include sediment control measures, appropriate drainage design, watercourse buffers, pollution prevention procedures and ongoing environmental monitoring.

These measures have been designed to ensure that water quality and aquatic habitats are protected throughout construction and operation of the development.

The assessment concludes that significant effects on freshwater habitats, fish populations and downstream ecological receptors are not likely following implementation of mitigation measures.

### **6.3.2 Mammals**

Protected mammals recorded within the study area include otter, badger (resting sites found as well as foraging areas), in addition to foraging areas for pine marten and red squirrel (no breeding sites were located on project site for the latter two species). Likely effects to mammals include temporary disturbance during construction, loss of habitat and accidental injury if appropriate controls were not implemented.

Species-specific mitigation measures have been developed to avoid impacts on protected mammals. These include pre-construction surveys, ecological supervision, exclusion zones around sensitive features and procedures to protect animals during construction activities.

In addition, the implementation of the HMP (**Annex 5.3**) will be of benefit to the local mammal population.

Following implementation of these measures, significant effects on mammal populations are not likely.

### **6.3.2 Bats**

Several bat species were recorded using habitats within and around the project site. Likely effects include habitat loss, disturbance to commuting and foraging activity and collision risk during operation.

The project layout has been informed by the results of bat surveys and includes measures to minimise likely impacts. These include maintaining appropriate separation distances between turbines and important bat habitats and implementing sensitive lighting design where required.

The assessment concludes that the project is not likely to result in significant effects on local bat populations or their conservation status.

### **6.3.2 Birds**

Comprehensive bird surveys were undertaken to identify breeding and wintering bird populations using the site and surrounding area. The assessment considered likely effects associated with habitat loss, disturbance, displacement and collision risk.

A range of notable species were recorded within the environs of the project site, including species of conservation concern associated with peatland and upland habitats.

The project design has incorporated avoidance measures, and additional mitigation has been developed where required. Monitoring measures will also be implemented where appropriate.

Following mitigation, significant adverse effects on bird populations are not likely and the project is not expected to affect the conservation status of any species.

### **6.3.2 Amphibians, Reptiles & Invertebrates**

The assessment also considered common lizard, smooth newt and marsh fritillary butterfly. Suitable habitats for these species occur within parts of the site and broader landscape.

Likely effects are primarily associated with habitat loss and temporary disturbance during construction. However, suitable habitat remains widespread within the surrounding area and mitigation measures will be implemented to avoid and/or

minimise impacts.

Residual effects on these receptors are assessed to be low and not significant.

## **6.4 OVERALL FINDINGS**

The mitigation measures described have been designed to minimise the effect of the project, from the construction of the project through the operational phase and onto decommissioning, on ecological receptors. The constraints-led design approach followed has been effective in identifying and, insofar as possible, avoiding likely effects to the receiving environment.

The ecological impact assessment has fully assessed the likelihood of adverse effects of all aspects of the project on the species and habitats in the receiving environment. Overall, it is assessed that, with the full and effective implementation of the monitoring and mitigation commitments, there are no likely significant residual effects on biodiversity.

Separately, the Natura Impact Statement (NIS) has fully assessed the potential impacts of the project, on its own and in combination with other projects and plans, on designated Natura 2000 sites in the wider receiving environment. The implementation of detailed mitigation commitments will ensure that there are no significant effects on any European-designated nature conservation site.

## **7.0 LAND & SOILS**

### **7.1 BACKGROUND**

This chapter provides an assessment of the likely and significant effects of the project on the land, soil and geological environment.

### **7.2 METHODOLOGY**

A desk study of the project site and receiving environment (described below) was completed in advance of undertaking the walkover survey, visual assessments and site investigations. This involved collecting all relevant land, soil and geological information for the project site and surrounding area.

An initial site walkover, geological mapping and soil probing exercise was undertaken. Further site investigations; including trial pits, boreholes, additional site walkovers, and soil probes; were also completed.

The project site is located in an upland peatland setting where the topography of the local area is generally undulating and sloping. Land cover within the project site is predominately a mixture of cutover bogs, intact bogs and small pockets of agricultural fields. All 10 no. wind turbines are located on cutover peat bogs.

The bedrock across the project site is mapped as the volcanic, sandstone, limestone (impure) and metasediment variations. The limestone mapped at the project site is not prone to karstification due to impurities within the rock such as shale.

Site investigations and geotechnical assessments at the project site were extensive and consisted of 205 no. peat depth probes, 13 no. trial pits, 3 no. soil cores and 2 no. bedrock boreholes. The geological setting of the project site has been thoroughly assessed, and the geological setting is fully understood.

Peat depths recorded during the site walkovers and from the ground investigations

ranged from 0m to in excess of 7.2m with an average peat depth of 1.8m. 73% of peat depth probes recorded peat depths of less than 3m.

Mineral subsoils encountered underneath the peat during trial pit investigations comprised mainly glacial tills (gravelly) along with some silts and clays, which would be typical for such a peatland environment.

Bedrock was recorded in the 2 no. boreholes, with depth to bedrock ranging from 2m and 5m below ground level. The shallowest depth to bedrock (i.e. 2m) was recorded at the proposed borrow pit location. A depth of 5m was recorded close to turbine T9, which is expected to be representative of the maximum (worst-case) depth to bedrock across the project site.

The drilling investigations encountered sandstone bedrock at both locations. The investigation drilling demonstrates that the bedrock proposed for extraction at the borrow pit is strong, competent and fit for the purpose of rock extraction and follow-on permanent storage of peat and spoil.

### **7.3 DESCRIPTION OF LIKELY EFFECTS**

The excavation of peat, subsoil and bedrock will be required for all groundworks; including site levelling, the installation of infrastructure (e.g. turbine foundations, substation foundation, hardstands and electrical cabling) and will, therefore, give rise to direct effects on these receptors. The excavation of soils and subsoils will also be required along the grid connection route; while minor levels of excavation are predicted at haul route works locations. This will result in a permanent removal of peat, subsoil and possibly bedrock at most excavation locations. Excavated peat/spoil will be utilised to re-instate the borrow pit location, placed within dedicated peat/spoil management areas and will also be used for reinstatement and landscaping works around the project site.

The handling and management of peat and spoil will be undertaken in accordance with the Peat & Spoil Management Plan.

No peat failures/landslides are recorded on the project site which suggests that site conditions do not pre-dispose themselves to failures/landslides. The landslide susceptibility at the project site is classified by the GSI (2022) as Low to Moderately-Low susceptibility, which is expected given the generally flat terrain present.

Furthermore, a Geotechnical and Peat Stability assessment undertaken for the project shows that the project site has an acceptable margin of safety, is suitable for the project and is assessed to be at low risk of peat failure or ground instability.

During the construction phase, sources of contaminants (such as oil-based substances or other hazardous chemicals) will not be stored at the site except where this is done within safely bunded areas that safely contain all spillages and prevent the migration of contaminants. Refueling will be done with a double skinned bowser with spill kits on the ready in case of accidental spillages. The risk is considered to be low once mitigation measures are implemented.

With regard to cumulative effects, the assessment concludes that significant effects are unlikely to arise predominately due to the localised and near surface nature of the construction works. All effects relating to the project are assessed to be contained within the immediate vicinity of the project site and it is assessed that there is no pathway for the development to act in combination with other projects.

The development will not be constructed within or near any designated sites for the protection of geological feature such as geological heritage, NHAs or SACs.

#### **7.4 MITIGATION MEASURES**

The excavation of peat, soil and subsoil will have a direct effect on the geological environment and no specific mitigation measures are proposed. The excavation of materials will be completed in accordance with best practice for the management and treatment of such materials.

The storage and handling of hydrocarbons/chemicals will be carried out using best practice methods.

Measures to prevent peat and subsoil erosion during excavation, reinstatement, and permanent placement in the borrow pit will be undertaken to prevent water quality impacts.

#### **7.5 OVERALL FINDINGS**

No significant impacts on the land, soil or the geological environmental are likely to occur during the construction, operation or decommissioning of the project.

### **8.0 WATER**

#### **8.1 BACKGROUND**

This chapter provides an assessment of the likely and significant effects of the project on water aspects (hydrology and hydrogeology) of the environment.

#### **8.2 METHODOLOGY**

A desk study of the project site and receiving environment was completed in advance of undertaking a walkover survey, field mapping and site investigations. This involved collecting all relevant geological, hydrological, hydrogeological and meteorological information for the project and surrounding area. The desk study included consultation of the following data sources:-

- Environmental Protection Agency database ([www.epa.ie](http://www.epa.ie));
- Geological Survey of Ireland - Groundwater Database ([www.gsi.ie](http://www.gsi.ie));
- Met Eireann Meteorological Databases ([www.met.ie](http://www.met.ie));
- National Parks & Wildlife Services Public Map Viewer ([www.npws.ie](http://www.npws.ie));
- Water Framework Directive/EPA Catchments Map Viewer ([www.catchments.ie](http://www.catchments.ie));
- Geological Survey of Ireland Bedrock Geology 1:100,000 Scale Map Series, Sheet 11 (Geology of South Mayo);
- Geological Survey of Ireland Bedrock Geology 1:100,000 Scale Map Series, Sheet 12 (Geology of Longford- Roscommon);
- Geological Survey of Ireland (2004); Groundwater Body Initial Characterization Reports;
- OPW Past Flood Event Mapping ([www.floodinfo.ie](http://www.floodinfo.ie));
- CFRAM/OPW Flood Risk Assessment mapping ([www.floodinfo.ie](http://www.floodinfo.ie));

- Ordnance Survey Ireland (OSI) – 6 inch and 1:5000 scale basemaps; and,
- Aerial photography ([www.bing.com/maps](http://www.bing.com/maps), [www.geohive.ie](http://www.geohive.ie), [www.google.com/maps](http://www.google.com/maps)).

Subsequently, surface water sampling was completed and tested for a range of hydrochemistry parameters.

A Flood Risk Assessment was also completed, as well as a geotechnical assessment (carried out by Fehily Timoney & Company) used to inform the assessment contained within the Water chapter.

### 8.3 DESCRIPTION OF LIKELY EFFECTS

During each phase of the project (construction, operation, and decommissioning) a number of activities will take place at the project site, some of which will have the potential to significantly affect the hydrological regime or water quality at the project site or downstream of the project site. These potential effects generally arise from sediment input from runoff and other pollutants such as hydrocarbons and cement-based compounds.

Surface water drainage measures, pollution control and other preventative measures have been incorporated into the project design to minimise significant impacts on water quality and downstream designated sites. A Surface Water Management Plan (SWMP) and drainage plan will be the principal means of significantly reducing sediment runoff arising from construction activities and to control runoff rates. The key surface water control measure is that there will be no direct discharge of wind farm runoff into local watercourses or into the existing bog drainage network. This will be achieved by avoidance methods (i.e. stream buffers) and design methods (i.e. surface water drainage plan). Preventative measures also include fuel and concrete management and a waste management plan which will be incorporated into the Construction and Environmental Management Plan.

The bedrock underlying the project site (volcanic, sandstone, limestone (impure) and metasediment variations) is classified as poorly productive bedrock (poor aquifers). The bedrock has little or no open cracks which means groundwater movement within the aquifer is localised. Groundwater at the project site can be classed as sensitive in terms of potential impacts from the project. However, the low potential for pollutant travel within the bedrock groundwater makes surface water bodies such as streams more vulnerable to pollution than groundwater at this site. There will be no likely effects on local private wells due to the setback distance from turbines and the borrow pit (>500m) and the short distance groundwater flow paths (30-300m).

The Geological Survey Ireland and Environmental Protection Agency do not map the presence of any Public Water Schemes (PWS) or Group Water Schemes (GWS) groundwater source protection areas within the project site

Designated sites downstream of the project include River Moy SAC and Lough Gara SPA/pNHA. Drainage mitigation measures for surface water quality protection will ensure no likely effects on downstream designated sites. No hydrological effects on designated bogs (i.e. Tullaghanrock Bog SAC, Callow Bog SAC, etc.) are expected due to large setback distances and the lack of groundwater connectivity with the project site. The project is not likely to affect these groundwater dependant habitats or alter their surface water drainage regime.

The North Roscommon public water supply surface water abstraction is located at the southern end (upper lake) of Lough Gara (WAB0000214/WAB0000208). However, the upper lake of Lough Gara is not downstream of the project and therefore there is no pathway for negative effects.

Due to the nature of wind farm and underground electricity line developments, being near surface construction activities, effects on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risk to groundwater at the site would be from hydrocarbon spillage and leakages at the borrow pit. These are common potential impacts to all construction sites (such as road works and industrial sites). These potential contamination sources are to be carefully managed at the site during the construction and operational phases of the development and measures are proposed to deal with these minor impacts.

There will be a very low risk of increased flooding down-stream as a result of the project due to negligible potential for increased runoff, the proposed drainage measures and also since the project infrastructure does not encroach fluvial flood zones. A site-specific Flood Risk Assessment was carried out for the project.

During the operational phase, drainage control measures will ensure that surface runoff from the developed areas of the site will continue to be of good quality and will therefore not impact on the quality of down-stream rivers and streams. The present drainage regime of the site will not be altered in any way. Impacts on water quality during the operational phase of the wind farm will be negligible-to-none.

A hydrological cumulative impact assessment of the project has been undertaken with regards cumulative effects with other projects and plans, including wind energy and public infrastructure developments, located in the project hydrological cumulative study area. There are no other proposed or permitted wind farms in the cumulative study area. There are existing wind farms within the cumulative study area, but this development is constructed and operational, therefore no risk of construction phase overlap with the project and therefore no significant cumulative effects will occur. Furthermore, implementation of the proposed drainage control, which will release stormwater from the project site at Greenfield rates, will ensure no likelihood of cumulative effects during the operational phase either.

Proposed public infrastructure developments such as the N5 Ballaghaderreen to Scramoge Road Upgrade Scheme and North Connacht 110 kV Project were assessed as not likely to contribute to cumulative effects due to lack of hydrological connectivity or reduced connectivity resulting expected work programmes.

A Water Framework Directive (WFD) Compliance Assessment has been completed for all waterbodies (surface water and groundwater bodies) with the potential to be impacted by the project. With the implementation of the mitigation measures detailed in the EIAR, there will be no change in the WFD status of the underlying groundwater body or downstream surface waterbodies as a result of the project. The project has been found to be fully compliant with the WFD and will not prevent any waterbody from achieving its WFD objectives assuming the recommended mitigation is employed.

#### **8.4 MITIGATION MEASURES**

Two methods will be employed to control drainage water within the site during construction, thereby protecting downstream surface water quality and aquatic

habitats. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations and construction areas. The second method involves collecting any drainage waters from works areas within the site that might carry silt, to allow settlement and cleaning prior to its release.

During the construction and decommissioning phases, all runoff will be treated to a high quality prior to being released. There will be no risk of increased flooding down-gradient of the site as a result of the project due to these drainage measures. Effects on water quality during the construction phase of the wind farm will be imperceptible to none. A surface water monitoring programme will be put in place during the construction phase.

During the operational phase, drainage control measures will ensure that surface runoff from the developed areas of the project site will continue to be of good quality and will therefore not affect the quality of downstream rivers and streams. The present drainage regime of the site will not be altered in any way. No effects on surface water quality are anticipated during the operational phase.

## **8.5 OVERALL FINDINGS**

Overall, no significant effects on the water environment, including WFD status, will occur during the construction, operation or decommissioning of the project.

## **9.0 AIR QUALITY**

### **9.1 BACKGROUND**

This chapter comprises an assessment of the likely impact on air quality associated with the project during its construction, operation and decommissioning phases.

### **9.2 METHODOLOGY**

The methodology employed as part of this assessment comprised a desktop appraisal and evaluation of existing environmental conditions; the likely effects which may arise during the construction, operational and decommissioning phases; and identification of measures to off-set or reduce likely adverse effects.

### **9.3 DESCRIPTION OF LIKELY EFFECTS**

An assessment of the likely impacts as a result of the construction phase was carried out based on the UK Institute for Air Quality Management 2024 guidance document *Guidance on the Assessment of Dust from Demolition and Construction*. This established the sensitivity of the area to impacts from construction dust in terms of dust soiling of property, human health and ecological effects. The surrounding area was assessed as being of, at most, high sensitivity to dust soiling and of low sensitivity to dust-related human health effects.

The sensitivity of the area was combined with the dust emission magnitude for the site under three distinct categories: earthworks, construction and trackout (movement of vehicles) in order to determine the mitigation measures necessary to avoid significant dust impacts. It is assessed that there is, at most, a high risk of dust soiling effects and a low risk of dust-related human health associated with the project. In the absence of mitigation, there is the potential for direct, short-term, negative and moderate effects

on air quality.

The generation of electricity due to the installation of the wind farm will lead to indirect net savings in terms of NO<sub>x</sub> emissions. The supply of 163GWh of renewable electricity to the national grid will lead to a net saving in terms of NO<sub>x</sub> emissions which may have been emitted from fossil fuels to produce electricity and will therefore have a positive impact on Ireland's obligations under the National Emissions Reduction Directive. This is considered an indirect, long-term, slight, positive effect on air quality.

Dust impacts during the construction phase have a high risk of dust soiling impacts and a low risk of dust-related human health. As the decommissioning phase activities will have a lesser impact than construction phase activities, the risk of impacts can be assumed (assessed), as a worst case, to be medium. Where applicable, the same mitigation measures implemented during the construction phase will be applied during the decommissioning works and are also considered appropriate for the decommissioning works. It can therefore be determined that the decommissioning phase will have a direct, short-term, negative and not significant effect.

#### **9.4 MITIGATION MEASURES**

Detailed dust mitigation measures are committed to ensure that no significant nuisance as a result of construction dust emissions occurs at nearby sensitive receptors.

#### **9.5 OVERALL FINDINGS**

Once these best practice mitigation measures are implemented, the impacts to air quality will pose no significant impacts at nearby sensitive receptors (such as local residences or sensitive ecology).

There will be beneficial impacts to air quality from the generation of renewable electricity from the proposed project. There will be NO<sub>x</sub> emission savings which may otherwise have been generated from fossil fuels. The impact to air quality has been assessed as beneficial, long-term, slight and not significant.

### **10.0 CLIMATE**

#### **10.1 BACKGROUND**

This chapter comprises an assessment of the likely impact on air quality and climate associated with the project during its construction, operation and decommissioning phases.

#### **10.2 METHODOLOGY**

The methodology employed as part of this assessment comprised a desktop appraisal and evaluation of existing environmental conditions; the likely effects which may arise during the construction, operational and decommissioning phases; and identification of measures to off-set or reduce likely adverse effects.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA):-

- Greenhouse Gas Emissions Assessment (GHGA) – quantifies the GHG emissions from a project over its lifetime; and,
- Climate Change Risk Assessment (CCRA) – identifies the impact of a

changing climate on a project and receiving environment.

### **10.3 DESCRIPTION OF LIKELY EFFECTS**

With regard to greenhouse gases; during the construction phase, it is assessed that the project will result in the emission of 10,923 tonnes of CO<sub>2</sub> equivalent. During the operation phase, there will be no emissions from the operation of the wind. The renewable energy produced will displace electricity which otherwise would have been produced from fossil fuels and therefore will be a net benefit in terms of greenhouse gas emissions. As per the assessment methodology, the total annual GHG emission savings of the project will amount to approximately 36,243 tonnes of CO<sub>2</sub> equivalent.

The estimated total GHG emissions savings, when annualised, are equivalent to 0.1% of Ireland's total GHG emissions in 2024, 1.2% of the total carbon budget for the electricity sector in 2030 and 0.3% of Ireland's 2030 emissions target (i.e. the proposed project has the potential to reduce Ireland's CO<sub>2</sub>e emissions by these percentages).

In terms of climate change; in the absence of design mitigation, there is a medium risk to the project as a result of climate change. The significance of the impacts to the project as a result of climate change are direct as climate extremes have a direct physical effect on buildings and infrastructure, long-term due to the response times of the climate in relation to changes in anthropogenic emissions, negative as climate extremes have been shown to damage or adversely affect infrastructure, and moderate due to the medium vulnerability of the project to the effects of climate change, which is significant.

### **10.4 MITIGATION MEASURES**

A range of measures have been proposed to minimise the emission of greenhouse gases during the construction phase; including sourcing low carbon materials, re-using materials, and the use of electrical equipment as opposed to diesel/petrol machinery.

Regarding climate change, the construction of the project will be undertaken so as to mitigate against the effects of extreme weather; while infrastructure will be designed to withstand extreme weather events of the course of the project lifetime.

### **10.5 OVERALL FINDINGS**

Overall there are significant effects on climate as a result of the construction phase of the proposed project, and no significant effects on climate as a result of the operation of the proposed project.

## **11.0 LANDSCAPE**

### **11.1 BACKGROUND**

This chapter describes the landscape context of the project and assesses the likely landscape and visual impacts of the scheme on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately.

Landscape Impact Assessment (LIA) relates to assessing effects on the landscape as a resource in its own right and is concerned with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. Visual Impact Assessment (VIA) relates to assessing effects on specific views and on the general visual amenity experienced by

people. Cumulative landscape and visual impact assessment is concerned with additional changes to the landscape or visual amenity caused by the project in conjunction with other developments, or actions that occurred in the past, present or are likely to occur in the foreseeable future.

## **11.2 METHODOLOGY**

The production of this assessment involved baseline work in the form of desktop studies and fieldwork comprising professional evaluation by qualified and experienced Landscape Architects. This entailed a desktop study, fieldwork to inform the assessment and an appraisal which estimated the significance of landscape and visual impacts base on a balance of receptor sensitivity weighed against the magnitude of effects. Cumulative landscape and visual effects were also assessed in respect of other surrounding developments that are either existing, permitted or proposed.

## **11.3 DESCRIPTION OF LIKELY EFFECTS**

During construction, machinery and temporary works will be noticeable close to the site but will not cause any notable long lasting landscape or visual effects, in a landscape that is extensively shaped by humans. Construction works will be short term and largely hidden from most locations by woodland and landform, with any influence reducing considerably with distance. Overall, construction effects on both landscape and views are not considered significant.

When operating, the turbines will be a noticeable and prominent feature in the landscape near the site, as would be expected for any wind energy development at such close proximity. The most notable effects will be to the landscape character of the central study area (i.e. within 5km) and the immediate environment (within 1km), and to visual receptors in this geographic area which includes those on walking routes through the site and in the nearby landscape, as well as road users and residential receptors. These receptors will experience the clearest and most noteworthy change.

With distance, the turbines become increasingly less prominent and, beyond 5km, the project becomes only one small part of a much wider scene. From towns, main roads and scenic viewpoints; whilst the turbines may be visible, they will not dominate views and will appear together with the existing Largan Hill Wind Farm turbines forming a single cluster rather than spreading across the landscape.

At the major heritage sites of Carrowkeel and Knocknashee (over 17km away), the turbines will appear as small background elements. At Rathcroghan (nearly 23km away), only blade tips will be visible on the horizon and only in clear weather. Despite the sensitivity of visual receptors at these locations, the effects are not assessed as likely to be significant.

In terms of cumulative effects, consideration was given to other wind energy developments existing in the landscape, or planned for in the wider study area. The project turbines will almost always be seen together with the nearby Largan Hill Wind Farm turbines. Where visible together, the turbines will generally be perceived as a wider cluster, contributing to a sense of perspective that relates well to the large, open nature of the landscape. Whilst there will be instances when travelling through the landscape where turbines will be seen behind each other (known as 'stacking'), and the turbines will create visual confusion, this will only occur as occasional instances, rather than with frequent intensity, typical of almost any wind energy project.

Regarding other wind developments in the wider landscape, there is no sense that the area will become overwhelmed by turbines given the distances involved.

#### **11.4 MITIGATION MEASURES**

The project design has considered siting and design criteria presented within the *Wind Energy Development Guidelines for Planning Authorities 2006*, relative to the landscape context. Consideration has been given to the scale, spacing, layout, and arrangement of the turbines so as to be appropriate to its landscape and visual environment, with careful consideration given to existing ridges and forestry. The turbines have been arranged with good spacing and an irregular layout, which helps them fit better into this open, upland setting.

During construction, good site management and reinstatement of any disturbed land/vegetation will help limit short-term impacts generated by intrusive groundworks. Because no significant landscape or visual effects were identified, no specific long term mitigation or monitoring measures were identified as being required.

#### **11.5 OVERALL FINDINGS**

Based on the landscape, visual, and cumulative assessment, it is assessed that there will not be any significant landscape or visual effects arising from the project. While the turbines will be noticeable and prominent close to the site and along walking routes that pass through the area, these changes do not reach the level considered significant.

### **12.0 CULTURAL HERITAGE**

#### **12.1 BACKGROUND**

This chapter has been prepared to assess and define any likely significant impacts or effects which the construction, operation and decommissioning of the project may have on the archaeological, architectural and cultural heritage resource. The chapter includes an identification of likely significant impacts or effects which may arise and outlines mitigation measures, based on current information, which may be used to avoid, reduce or offset any likely adverse effects.

Construction phase effects may arise as a result of the development of turbine foundations and hardstand areas, access tracks, underground cabling, electricity substation and electricity line works, road upgrade works and associated activities; each of which will involve the mechanical excavation of overburden down to and through geologically deposited strata at their identified locations. Operational phase effects may arise as a result of the visual effects resulting from the presence of the proposed wind turbines in the landscape. Decommissioning phase effects are assessed as likely to be similar to the construction phase but of a reduced magnitude and significance.

As a result of carrying out this assessment, the following likely archaeological, architectural and cultural heritage direct, indirect, construction, operational, cumulative and residual effects have been assessed.

#### **12.2 METHODOLOGY**

There is no professional standard for defining the extent of a study area when assessing the likelihood of effects on archaeological, architectural or cultural heritage remains.

Accordingly, various study areas have been defined based on the sensitivity of the corresponding receptor type.

Research has been undertaken in two phases. The first phase comprised a desk review, namely a paper and digital survey of archaeological, historical and cartographic sources. The second phase involved field inspections of the project site.

### **12.3 DESCRIPTION OF LIKELY EFFECTS**

Construction phase effects on cultural heritage arise primarily through ground disturbance associated with excavation, earthworks and infrastructure installation within the project site. The principal pathway for impact relates to direct physical effects on previously unrecorded archaeological remains, together with temporary indirect effects arising from construction activity and associated landscape change.

No recorded monuments are located within the permanent footprint of the project. Consequently, likely construction phase effects relate primarily to the disturbance of unknown sub-surface archaeological remains and to temporary changes in the setting of heritage receptors during construction activities.

Construction phase effects are temporary and short-term in duration, occurring only during the active construction period. Overall, construction phase effects on cultural heritage are generally assessed as slight, adverse and short-term. However, where excavations occur within areas of identified archaeological sensitivity, including in the vicinity of the N5/R293 junction, greater effects may arise where previously unknown archaeological remains are encountered. In the absence of mitigation, such effects could be significant, depending on the nature, extent and significance of any archaeological remains affected.

The operation phase of the project introduces permanent wind turbine structures and associated infrastructure into the landscape. Unlike the construction phase, operational effects do not involve ground disturbance and relate primarily to indirect and visual effects. No operational activities involve excavation, peat removal or ground disturbance. Accordingly, no operational direct physical impacts on recorded archaeological monuments or architectural heritage fabric are predicted.

With regards to recorded monuments, following the implementation of design and mitigation measures, operation phase effects on archaeological assets within the study area are assessed as slight and not significant.

Regarding the Rathcroghan complex, operational (visual) effects on the are assessed to be slight and not significant. With regards to the Carrowkeel Passage Tomb Landscape, effects are assessed to be slight and not significant.

Cumulative operation phase effects are therefore assessed as slight adverse and not significant.

Decommissioning phase effects are assessed as likely to be similar to construction phase effects; and have been assessed to be temporary, short-term, reversible and not significant.

### **12.4 MITIGATION MEASURES**

Prior to construction, targeted geophysical surveying shall be carried out at locations to be agreed with National Monuments Service. Archaeological testing shall also be carried out in the vicinity of the junction of the N5 and R293 where temporary junction upgrade works occur in proximity to recorded monuments. The extent and location

of testing shall be targeted to areas of ground disturbance and informed by the final construction design, existing ground conditions and the results of any geophysical survey, where undertaken.

During construction, all ground disturbance (i.e. excavations) associated with the project shall be subject to archaeological monitoring by a suitably qualified archaeologist under licence issued by the National Monuments Service. This includes works within both previously undisturbed areas and existing road corridors.

No mitigation measures are required during the operation phase.

During decommissioning, archaeological monitoring of any ground disturbance shall be carried out.

## **12.5 OVERALL FINDINGS**

Following the implementation of mitigation measures outlined, no likely significant negative effects on archaeological, architectural or cultural heritage features are predicted as a result of the project, either alone or in combination with other developments.

## **13.0 NOISE & VIBRATION**

### **13.1 BACKGROUND**

This assessment comprises an assessment into the likely environmental noise and vibration impacts of the project.

### **13.2 METHODOLOGY**

The methodology adopted for assessing the noise impact of the wind energy development is based on the guidance in the document *Wind Energy Development Guidelines for Planning Authorities 2006* published by the Department of Environment, Community and Local Government, which are based on the UK document *ETSU-R-97 The Assessment and Rating of Noise from Wind Farms* which describes a detailed method for deriving maximum values of wind turbine noise, when measured at an external location in the vicinity of a house. Maximum values, or limits, are primarily based on the background noise levels and how it varies with wind speed, in the absence of wind farm.

The background noise environment has been established through noise monitoring surveys undertaken at 5 no. locations surrounding the project. Typical background noise levels for day and night periods at various wind speeds have been measured in accordance with best practice guidance contained in the Institute of Acoustics document *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* (IOA GPG). Prevailing noise levels are primarily attributable to wind noise in foliage, local road traffic noise and other agricultural and anthropogenic sources in the area.

When considering a development of this nature, the likely noise and vibration effects on the surroundings must be considered for the short-term construction and decommissioning phases and the long-term operational phase.

### **13.3 DESCRIPTION OF LIKELY EFFECTS**

The assessment of construction and decommissioning phase noise and vibration has

been conducted in accordance best practice guidance contained in *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise* and *BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration*. Given the methodologies to be implemented, the characteristics of activities during the construction and decommissioning phases, and the short-term duration of the activities, noise associated with the construction and decommissioning phases is not expected to result in significant effects. Similarly, significant effects from vibration during the construction phase are not likely to occur.

Operational turbines emit noise from the rotating blades as they pass through the air. This noise can sometimes be described as having a regular 'swish'. The amount of noise emitted tends to vary depending on the wind speed. When there is little wind the turbine rotors will turn slowly and produce lower noise levels than during high winds when the turbine reaches its maximum output and maximum rotational speed. Background noise levels at nearby noise sensitive receptors will also change with wind speed, increasing in level as wind speeds rise due to wind in trees and around buildings, etc.

Noise levels from the operation of the wind turbines have been predicted at noise sensitive receptors around the area most likely to be affected by noise. Noise limits have been derived from data about the existing noise environment following the method stipulated in the relevant guidance documentation. The assessment considers the noise likely to be generated by the project itself and the potential cumulation of noise effects with the adjacent and existing Largan Hill Wind Farm. Other, more distant, wind turbines do not add to the cumulative noise level.

Predicted wind turbine operational noise levels have been compared to the limit values to demonstrate that the wind turbines can operate within the identified noise limits. Wind turbines can operate in a number of noise reduced modes, as required to meet limits. Noise reduced modes have been specified for the project turbines to ensure there are no significant cumulative noise effects. It is assessed that operational noise levels from the project will be within levels recommended in national guidance for wind energy developments and will have no significant effect.

The effect of noise from the operation of the electricity substation has been assessed to be in accordance with relevant standards and no significant effect is likely.

No significant vibration effects are associated with the operation of the project.

### **13.4 MITIGATION MEASURES**

The various contractors involved in the construction and decommissioning phases will be obliged, under contract, to take specific noise abatement measures and comply with the recommendations of *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise* and *BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration*.

An assessment of the operational phase noise levels, both specific to the project and in combination with the existing Largan Hill Wind Farm has been undertaken in accordance with best practice guidelines and procedures. The findings of the assessment confirm that predicted operational phase noise levels will generally be within the relevant best practice noise criteria curves for wind farms. Therefore, noise mitigation measures, additional to the designed-in noise reduced operation modes,

are not required for the operation phase of this project.

### **13.5 OVERALL FINDINGS**

In summary, the noise and vibration effect of the project is not likely to be significant in the context of current national guidance.

## **14.0 SHADOW FLICKER**

### **14.1 BACKGROUND**

Shadow flicker from wind turbines can occur when a particular combination of weather conditions coincide at specific locations at particular times of the day and year. It usually occurs when the sun is low in the sky and shines on a building or location from behind a rotating wind turbine. This can cause the shadow of the turbine blades to flicker on and off as the turbine blades rotate. The project has been carefully designed to reduce the potential impact of shadow flicker as far as is reasonably possible and the location of each wind turbine has been carefully chosen to reduce the potential impact in relation to shadow flicker.

An assessment of the potential number of hours per year likely to be experienced under exceptional 'worst case' shadow flicker on properties within 10-times overall tip height from the proposed wind turbines has been undertaken.

### **14.2 METHODOLOGY**

This assessment has been carried out in accordance with all statutory guidelines and uses techniques which are recognised as best practice by the relevant environmental health organisations.

WindPro software, a detailed computer software model which can estimate the likely occurrence of shadow flicker, was used to predict the likely effect of the project. The prediction model assesses the likelihood of shadow flicker occurring at receptor locations relative to the wind turbine locations and with long term average sunshine hours.

### **14.3 DESCRIPTION OF LIKELY EFFECTS**

As the proposed wind turbines will not be operational during the construction phase, shadow flicker will not occur.

Under a 'worst case' scenario, 84 no. receptors are predicted to experience shadow flicker with maximum effects ranging between of 6-minutes and 1-hour 9-minutes on any given day. However, this calculation is a highly conservative scenario and is not representative of likely shadow flicker. The 'worst case' scenario can only occur under a rare and specific combination of circumstances occurring simultaneously i.e. when the sun is at a certain position in the sky, the sun is shining, the turbines rotor is rotating and rotating parallel (directly or indirectly) to the shadow receptor.

The 'expected' results over the course of a year; which, while also being likely to significantly overestimate the actual shadow flicker impact and are a more realistic prediction of likely shadow flicker levels; are also presented. In this scenario, 84 no. receptors are, again, predicted to experience shadow flicker with effects ranging between 7-minutes and 19-hours 27-minutes.

Shadow flicker levels are marginally increased at a number of receptors as a result of the inclusion, in the assessment, of the Largan Hill Wind Farm; however, it is noted that there is no increase in the maximum level of shadow flicker likely to be experienced. Under 'worst-case' conditions, the maximum level of shadow flicker on any day remains 1-hour 9-minutes; while the greatest level under 'expected' conditions remains at 19-hours 27-minutes per annum.

#### **14.4 MITIGATION MEASURES**

As there is no likelihood of effects during the construction or decommissioning phases, no mitigation measures or monitoring proposals are required, or proposed.

The likelihood of shadow flicker effects have been minimised, and avoided where possible, through the design process and assessment of project alternatives. However; shadow flicker effects remain, as discussed above.

The wind turbines will each be fitted with shadow flicker curtailment software, inherent to their design, to facilitate their shut down as required. Shut down software effectively limits (curtails) the operation of turbines during the infrequent and rare periods when shadow flicker occurs. If the sun is shining, the software will turn off the turbine at the predetermined times when shadow flicker is predicted to occur based on the prediction model. This approach will be implemented, as necessary, to ensure that shadow flicker does not occur at receptor locations.

Following the shut-down of the turbine(s), it will take a number of minutes for the rotation of the turbine blades to cease and, accordingly, it is possible that, on extremely rare occasions, a dwelling, place of work or school could experience momentary occurrences of shadow flicker. However, as the rate of rotation of the turbine blades will be reducing, it is likely that any flicker occurring will go largely unnoticed.

The level of turbine curtailment required to ensure that shadow flicker limit values are not exceeded will have an imperceptible effect on the overall renewable energy output of the project.

Within 12-months of the commencement of commercial operations, a shadow flicker survey will be undertaken by a suitably qualified person to verify the results of the prediction model and to ensure the effective operation of the curtailment software. Monitoring will be undertaken when and where the model predicts shadow flicker is expected to occur.

#### **14.5 OVERALL FINDINGS**

This chapter has assessed the likelihood of shadow flicker effects at all properties located within 10-times the overall tip height of the proposed wind turbines using a shadow flicker model.

During the operational phase, technological measures will be implemented to shut down the wind turbines at predetermined times when shadow flicker exposure could occur such that no property/receptor will experience shadow. Therefore, it is assessed that the project will not result in any likely significant shadow flicker effects, either individually or in combination with other existing, permitted or proposed developments.

## **15.0 MATERIAL ASSETS**

### **15.1 TRANSPORT & ACCESS**

#### **15.1.1 Background**

The assessment provides a detailed description of the haul route to be followed from the chosen port facility to the subject site, including the traffic management and improvement works required along the road network and at junctions and roundabouts. It also details the breakdown and schedule of the number and size of vehicles associated with the construction, operation and decommissioning phases of the development. The effect of increased construction traffic on the local road network has also been assessed.

#### **15.1.2 Methodology**

This assessment used the following method, further details of which are provided in the following sections:-

- Legislation and guidance review;
- Desk study, including review of available maps and published information;
- Site walkover, including review of road network to be used;
- Evaluation of likely effects;
- Evaluation of the significance of these effects; and
- Identification of measures to avoid and mitigate any likely effects.

#### **15.1.3 Description of Likely Effects**

The excavation of trenches and installation of the wind farm cabling and underground electricity line ducting within the road network will cause some disruption to traffic movements, although this will be temporary in duration. Due to the narrow profile of the local roads; it is highly likely that rolling full-road closures will be implemented during construction which will necessitate the implementation of diversions and other traffic management measures to maintain traffic flows. However, it should be noted that only short sections of road will be closed at any one time and, given the extensive local road network in the environs of the project site, diversionary routes are readily available. Additionally, local access for residents, landowners, and business operators will be maintained while pedestrians will, where necessary, be escorted through the works area.

Along the turbine component haul route, upgrade works to the public road network will be required at a number of locations. The most notable works will be carried out between the N5 and the site entrances. The works will generally involve the temporary widening of junctions to allow vehicles navigate the junction; while permanent carriageway widening works will also be undertaken as required.

It is assessed that, during the construction phase, there will be a temporary increase in traffic flows on the local road network due to vehicles carrying turbine components, heavy-goods vehicles delivering construction materials and staff vehicles travelling to and from the project site.

Once these components are delivered and installed, traffic entering the project site will be substantially reduced, with maintenance vehicles visiting the site only

intermittently.

#### **15.1.4 Mitigation Measures**

A series of mitigation measures have been proposed to reduce the level of potential impact associated with the project on Transport and Access. The mitigation measures will include strict construction working hours, consultation with the Planning Authority regarding traffic management proposals, the preparation of a Traffic Management Plan, and pre- and post-construction road condition surveys.

#### **15.1.5 Overall Findings**

Overall, it has been identified that there is no likelihood of significant effects on transport and access which could arise as a result of the construction, operation or decommissioning of the project either individually or in combination with other existing, permitted or proposed developments.

### **15.2 AVIATION**

#### **15.2.1 Background**

This section assesses the likelihood of effects on aviation arising from the construction, operation or decommissioning of the project.

#### **15.2.2 Methodology**

The assessment involved consultation with various stakeholders including the Irish Aviation Authority (IAA) and Department of Defence. In addition, publications issued by the IAA and the Department were reviewed to determine if the project site was assessed as being of significance or if significant effects were likely. A desktop study was also undertaken to determine the presence of aerodromes or airstrips within 20km of the wind farm site.

Following consultation with the IAA and Ireland West Airport (Knock), a number of technical assessments were undertaken to assess the likelihood of significant on the operation of the airport.

This assessment has also had regard to the *Draft Air Corps Wind Farm/Tall Structures Position Paper* (August 2014) which sets out the Air Corps position on the appropriate siting and management of wind farms and tall structures. This assessment includes a detailed review of this position paper, a comparison of the project site with identified 'Danger Areas', 'Restricted Areas' and 'Low Level Flying Areas'.

#### **15.2.3 Description of Likely Effects**

Due to the general 'low level' of activity during the construction phase, it is assessed that there will be no likely impact on aviation. During the installation of wind turbines, cranes will be fitted with appropriate aviation warning lighting to alert pilots to the presence of tall structures.

As described above, during consultation with the IAA and Ireland West Airport, it was recommended that various technical assessments should be undertaken to assess whether, or not, the project was likely to have a significant effect on the operation of the airport.

The Technical Safeguarding Assessment, carried out to determine whether the project would affect the performance of the Airport Air Navigation Equipment (AANE,

concluded that the project does not infringe any of the AANE safeguarded areas at the airport.

The Special Aeronautical Study evaluates whether structures will interfere with protected airspace. The assessment found that the project does not pose a risk to aviation or aviation safety at Ireland West Airport.

The project site is not located within any low flying areas, restricted areas, danger areas, military operating areas or low level routes identified within the *Draft Air Corps Wind Farm/Tall Structures Position Paper*.

#### **15.2.4 Mitigation Measures**

The wind turbines will, as requested by the IAA in its consultation response, be fitted with aviation warning lighting in accordance with the specification to be agreed with the IAA and the Planning Authority.

#### **15.2.5 Overall Findings**

This assessment concludes that the project is unlikely to result in any significant effect on aviation. The project site is not located within an area identified as being of particular sensitivity or importance in the *Draft Air Corps Wind Farm/Tall Structures Position Paper* on military aviation or located close to any civilian aerodrome, airfield or airport. Accordingly, with the installation of appropriate aviation warning lighting, no significant effects are assessed as likely to occur. Therefore, it is assessed that significant effects on aviation are unlikely to arise as a result of the project, either individually or in combination with other existing, permitted or proposed developments.

### **15.3 TELECOMMUNICATIONS**

#### **15.3.1 Background**

This section assesses the likely effects of the project upon a range of communications infrastructure, including telecommunication networks, broadcast radio and television and fixed infrastructure such as telecommunication masts.

#### **15.3.2 Methodology**

The methodology followed to assess the likelihood of significant effects on telecommunication networks consisted of desk based research and consultation with various telecommunication companies and relevant authorities.

#### **15.3.3 Description of Likely Effects**

No significant effects are assessed as likely to occur during the construction phase.

The operation of wind turbines can affect electromagnetic transmissions in two ways: by blocking or deflecting line of sight radio or microwave links or by 'scattering' transmission signals. However, given the findings of the desk based survey and consultation process, significant levels of blocking, deflecting or scattering are not assessed as likely to arise.

2rn (RTE Transmission Network) advised that there is potential for localised interference to the terrestrial television network. 2rn have requested that the Developer enter into a protocol arrangement to ensure the appropriate remediation of any adverse effects which may be experienced.

The early-stage consultation with telecommunication operators in the vicinity of the project site has confirmed that services are unlikely to be affected.

Consequently, in the absence of mitigation, it is assessed that the project is unlikely to result in any significant effect on telecommunications in the area.

#### **15.3.4 Mitigation Measures**

As significant effects are not assessed as likely to occur during the construction phase, no specific mitigation measures are proposed.

In its consultation response, 2rn recommended that a protocol agreement be entered into to ensure that any complaints received from members of the public are appropriately managed, addressed, and remediated. This is a standard protocol for wind energy developments and has been agreed between the parties.

While assessed to be unlikely, if significant signal interference in any form is identified and is directly attributed to the project, appropriate remedial measures will immediately be undertaken. A range of technical measures are available to mitigate any instances of interference including signal amplifiers, active deflectors and relay transmitters, repeater stations, booster units, realignment of domestic aerials, installation of higher quality aerials and the installation of suppression equipment. Remedial works will be promptly undertaken, at the Developer's expense, to ensure uninterrupted telecommunication, broadcasting and mobile phone service provision.

#### **15.3.5 Overall Findings**

It can be concluded that, on the basis of this desktop assessment and the extensive consultation with stakeholders, the project will not result in any likely significant effects on the telecommunications network. The implementation of mitigation measures will ensure that possible identified effects on telecommunication signals or links are appropriately managed and mitigated.

### **15.4 RESOURCES & UTILITY INFRASTRUCTURE**

#### **15.4.1 Background**

This section provides details of the likelihood of significant effects or interactions with existing renewable and non-renewable resources and existing utility infrastructure; including existing or permitted wind farms, quarries, mining operations and utility infrastructure (electricity lines and phone lines).

#### **15.4.2 Methodology**

The methodology followed in this assessment involved a desk based study to identify resources and utility infrastructure which could be affected by the project followed by an evaluation, based on experience, as to whether these resources were likely to be affected.

#### **15.4.3 Description of Likely Effects**

The construction phase of the project is not likely to have any significant effects on existing resources or utility infrastructure. The construction phase will not restrict the export of energy generated from other sources nor will it impact upon existing utility services. While there is a possibility interaction with utility services (e.g. accidental

collision with overhead wires during the construction phase), this can be mitigated through good construction practices.

The construction phase will result in the extraction of non-renewable resources in the form of stone and gravel for the construction of access tracks and concrete for turbine foundations, building foundations and electrical equipment plinths.

The operation phase of the project will not result in any effect on existing utility infrastructure or renewable or non-renewable resources. The connection of the project to the national grid will strengthen the electricity network infrastructure in the wider region.

#### **15.4.4 Mitigation Measures**

No specific mitigation measures are proposed or required during the construction or operational phases.

#### **15.4.5 Overall Findings**

This assessment concludes that the project is unlikely to result in any significant adverse effect on renewable and non-renewable resources or on utilities infrastructure. The operation of the project will bring about a benefit in terms of electricity generated from renewable sources and a strengthening of national electricity grid infrastructure in the wider region of the project site. This assessment similarly concludes that the project is unlikely to result in any significant adverse cumulative effects in combination with existing, permitted or proposed developments.

### **16.0 INTERACTIONS OF THE FOREGOING**

All environmental factors are interrelated to some degree. The assessment of these interactions is an important requirement of the environmental impact assessment process. Having assessed the interaction of likely effects during the construction and operational phases, the likely interactions are not assessed as likely to result in any effects that could magnify effects through the interaction or accumulation of effects.

### **17.0 SUMMARY OF EFFECTS**

This Non-Technical Summary has outlined, in summary format, the findings of the EIAR for the project. Full details are set out in the EIAR and its accompanying technical appendices.

The EIAR has assessed that any likely adverse effects of the project, and their interactions, can be managed and mitigated and that there are lasting social and environmental benefits as a result of the project. Whilst the project will have some minor adverse residual effects on the local environment, these will be addressed through mitigation measures, good management and proposed construction techniques and are not assessed as likely to be significant.

The project will make a positive contribution to sustainable energy generation in Ireland and will also help diversify and sustain the rural economy through construction, as well as operation and maintenance activities. Overall, the combined effects which have been assessed within this EIAR demonstrate that the project will not result in a likely significant adverse effect on the environment.



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