

# Inspector's Report ABP 319480-24

Development	4 no. wind turbines and associated works.
Location	Letter, Boleybaun, Stangaun, Greaghnadarragh, Corralustia, Turpaun, Gortnasillagh West, Lugmeeltan, Leckaun, Lisgavneen, Treannadullagh, Drumcashlagh and Corderry, Drumkeeran, Co. Leitrim
Planning Authority	Leitrim County Council
Planning Authority Reg. Ref.	2460008
Applicant(s)	Letter Wind Farm Ltd.
Type of Application	Permission
Planning Authority Decision	Refuse
Type of Appeal	1st Party v. refusal
Appellant(s)	Letter Wind Farm Ltd.
Observer(s)	<ol> <li>Joan Rogan</li> <li>John Matthews</li> </ol>
Date of Site Inspection	05/09/24 & 06/09/24
Inspector	Pauline Fitzpatrick

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## 1.0 Site Location and Description

- 1.1. The site, which has a stated area of 45 hectares, is c. 3km west of Drumkerran village in Co. Leitrim and c. 21km southeast of Sligo Town. The windfarm site is located in the townlands of Letter, Boleybaun and Stangaun and comprises of a mix of commercial forestry (c. 19.8 ha) in the northern section, with bogland and upland grazing in the southern section. The area of the site is served by a minor local road network. There is an existing access to the south on local road L4282 with the forestry plantation accessed from a track off local road L8280 to the north.
- 1.2. The site levels range between 230 -260m AOD north of Corry Mountain (428m AOD) and northeast of Carrane Hill (458m AOD). The site is intersected by a small stream that flows in a southerly direction through the site. This stream merges with the Owengar River immediately to the west of the site. The lands fall steeply to the west to the said Owengar River. The site is characterised by a network of non-mapped natural and artificial drainage channels which are often found in forestry plantations and peat turbary areas.
- 1.3. The wider landscape is characterised by elevated and rolling terrain encompassing large areas of commercial forestry to the north and south, with agricultural lands interspersed with agricultural buildings and farmsteads and sporadic one-off rural housing. The area is relatively lightly populated.
- 1.4. There are 16 no. windfarms either operational or with consent within a 20km radius of the subject site, the nearest being Garvagh which comprises of 13 turbines less than a 1km to the south-west, with Black Banks (I & II) comprising of 12 no. turbines approx. 1.4km, also to the south-west.
- 1.5. The proposed grid connection will travel east from the on-site substation along the L4282 before veering north-west along the L8280 for 6.4km and connecting to the existing Corderry 110kV substation.

## 2.0 **Proposed Development**

- 2.1. Windfarm consisting of:
  - 4 no. turbines within the following parameters:
    - Overall ground to blade tip height of between 149.85m to 150m inclusive,
    - o Rotor diameter of between 115.7m to 117 m inclusive,
    - Hub height of between 91.5m to 92m inclusive,
    - Turbine foundations of between 22 to 25 m in diameter inclusive and depth to formation of 3.5m,
    - Turbine hardstand areas will be 3,834 m<sup>2</sup> with a depth of between 1.7 and 2.8 m.,
  - Meteorological mast 50 m in height with 4m lightning pole on top,
  - 20kV substation, 2 no. container units with battery arrays and associated electrical plant,
  - Underground electrical and communications cabling connecting the turbines to the substation,
  - 6.4km grid connection to Corderry 110kV substation via 20kV underground and partially overhead cable along the public road corridor,
  - Tree felling to facilitate the development (c. 2ha),
  - Temporary construction compound,
  - Borrow pit,
  - Internal site access tracks including upgrade of section of existing track (828m) and new (1.746km),
  - Bottomless bridge culvert across minor stream on site,
  - Improvement of existing site entrance onto L4282,
  - Site drainage network and sediment control systems,
  - Associated site development works including berms, landscaping and soil excavation.

- 2.2. The overall capacity of the project is stated to be 16.8MW (each turbine to have a max. capacity of 4.2MW).
- 2.3. A 10 year permission is sought with the wind farm having an operational life space of 40 years from the date of its commissioning.
- 2.4. The proposed substation will be located at the lower levels in the area of grassland to the north of local road L4282. The access road will zigzag up slope to Turbines 4 and 3 which are to be located west of a conifer plantation in an area of upland peat covered with heather and tall grass. Turbines 1 and 2 are both located in a conifer plantation in the north of the proposed development.
- 2.5. The application is accompanied by:
  - EIAR
  - Landscape and Visual Impact Photomontage Booklet
  - NIS
  - Planning Statement
  - Construction Environmental Management Plan supported by 7 no. Management Plans as follows:
    - Emergency Response Plan
    - Water Quality Management Plan
    - Surface Water Management Plan
    - Peat and Spoil Management Plan
    - Waste Management Plan
    - Decommissioning Plan
    - Traffic Management Plan
  - Letters of consent from landowners.
- 2.6. Temporary works will be required to allow for the delivery of turbine components located on the R262, N56, N15, R285 and R280. The works are not included as part of the application but are assessed as part of the EIAR.

2.7. A Community Benefit Fund is to be put in place for the Renewal Energy Support Scheme period (i.e. 15 years of the operation).

## 3.0 Planning Authority Decision

#### 3.1. Decision

Refuse permission for the above described development for 3 reasons which can be summarised as follows:

- 1. Due to the elevated risk of a major accident arising from a landslide event the proposal would pose a serious danger to the environment potentially causing extensive pollution of waterbodies within and in the vicinity of the site. The Planning Authority is not satisfied that the applicant has adequately demonstrated through the submission of sufficient robust evidence that the proposed development could not result in a peat landslide. The submitted Peat Stability Hazard Assessment fails to clearly demonstrate, using qualitative assessment or other appropriate means which would be sufficiently robust, that the peat conditions at the subject site are different and more stable than the sites of the nearby peat failures at Garvagh Glebe and Shass Mountain and that the extent of significant environmental impact occurring from a failure has been adequately considered.
- The Planning Authority is not satisfied that the proposed development is not likely to adversely affect the integrity of Lough Gill SAC (Site Code: 001976) and Unshin River SAC (Site Code: 001898), in view of their conservation objectives. In such circumstances it is precluded from granting planning permission.
- 3. Given the extent of existing wind farm activity in the wider area, to which the proposed development would add to, the Planning Authority cannot be satisfied that the cumulative environmental assessment of the likely effects of the proposed development on avifauna can reasonably exclude the possibility of a significant impact.

#### 3.2. Planning Authority Reports

#### 3.2.1. Planning Reports

The planner's report dated 12/03/24 can be summarised as follows:

#### Principle of Development

 Having regard to the policy context and some limited capacity for such development in the general area of the subject site, it is considered that the principle of the proposed development is acceptable.

#### Appropriate Assessment

- In terms of appropriate assessment the NIS did not directly identify the likely significant effects on relevant European sites arising from a potential peat slide/landslide occurring as a result of the proposed development. There are concerns owing to:
  - The classification of the proposed wind farm site as being of 'low to moderately high' landslide susceptibility.
  - The high occurrence of recorded landslide events in proximity to the proposal site, including one such recorded landslide event within the proposed wind farm site itself.
  - The significant depths of peat at some locations within the proposed wind farm site.
  - The extensive network of drainage systems across the proposed wind farm site.
  - The reliance on additional pre-construction phase confirmatory ground investigation work to confirm an absence of change to baseline conditions that have informed the proposed wind farm design.
- The proposed wind farm site is within the foraging range for otter, a qualifying feature of interest for both Lough Gill SAC and Unshin River SAC, which the NIS states is likely to rely upon freshwater habitats downstream of the proposed wind farm site. Given the real concerns of a landslide event occurring as a result of the proposed development or in-combination with other projects, particularly given the high degree of such occurrences within

the wider area, the mitigation measures presented in the NIS and EIAR will not be effective and may, indeed, exacerbate the potential for a landslide on this site at the construction stage by creating instability.

 On the basis of the information provided there is scientific doubt that the proposed development, alone or in-combination with other plans or projects, would not result in adverse effects to the integrity and conservation status of Lough Gill SAC and Unshin River SAC in view of their conservation objectives.

#### Residential Amenity

- With the application of mitigation measures shadow flicker would not be a significant issue.
- Based on the information and predicted noise modelling provided in the EIAR, it is considered unlikely that the proposed development will result in exacerbating the cumulative noise effects currently experienced at H1.

#### Visual Impact

• The proposed four turbine development is not of a scale that would give rise to any significant adverse impacts on the character of the receiving landscape or when viewed in combination with other existing wind farm developments.

#### Avifauna

 Regard is had to An Bord Pleanála inspector's report in relation to the Croagh Wind Farm appeal which raises concerns in relation to the cumulative impact of wind farm development in the local area. Given the range of birds of conservation value observed both on the subject site and the Croagh wind farm site, it can be concluded that there is significant ornithological value associated with the site and its surrounding area. Set within this context, the proposed development has the potential to give rise to a further erosion of habitat loss and an increase in displacement and collision risk by yet more turbines in this area.

#### Peat Stability

- RPS Group Ltd. was commissioned by Leitrim County Council to undertake a
  geotechnical review of the PSHA documented in Chapter 8 Soils and
  Geology of the EIAR. It is considered that the PSHA presented in the EIAR
  is insufficient to satisfactorily demonstrate that the proposed works would not
  result in a peat failure at the proposal site.
- When examined in the context of the high degree of recorded landslide events in this area, including one recorded event within the proposed wind farm site itself, the classification of the subject site as being of low to moderately high landslide susceptibility by the GSI, the upland and sloping nature of the terrain of the site, the significant depths of peat at some locations and the extensive network of drainage systems within the site, the volumes of peat and other spoil material requiring excavation, handling, storage and management, the proposed manner of spoil disposal (side casting), the identified deficiencies in the submitted PSHA and the scale of environmental damage caused by the adjacent Garvagh Glebe wind farm development as documented by the IFI in its submission on this application, it is considered that a significant level of uncertainty surrounding this issue would remain regardless of further information or clarification being forthcoming on some of the issues raised in the RPS Group Ltd. review. There is a real and inherent risk of peat failure and/or landslide associated with the construction stage of the proposed development.
- Having assessed the potential effects, mitigation measures and cumulative and residual effects of the proposed development in respect of hydrology and hydrogeology it is clear that these environmental factors are intrinsically linked to the assessment of the proposed development in respect of soils and geology. Further assessment of drainage conditions are warranted.
- In terms of major accidents and disasters the assessment that the potential risk of peat instability is 'very unlikely' to occur and will have 'limited' consequences should it do so, representing 'a low risk scenario' during the construction phase is not accepted.

A refusal of permission for 3 reasons recommended.

#### 3.2.2. Other Technical Reports

**North Leitrim District Engineer** in a report dated **26/02/24** has no objection subject to conditions.

**Environment Department** in a report dated **01/03/24** has no objection to the proposal subject to conditions.

#### 3.3. Prescribed Bodies

#### Department of Housing, Local Government and Heritage (2 reports)

- In a report dated 23/02/24 a condition requiring archaeological monitoring is recommended.
- In a report dated 27/02/24 the NPWS concurs with the NIS findings that provided the mitigation measures as outlined therein are strictly adhered to, the project should not have the potential to significantly impact the designated sites outlined.

**HSE Environmental Health** in a letter dated **20/02/24** recommends that the wind farm operators ensure noise during construction, operation and decommissioning be managed to comply with best practice, legislation and guidelines current at that time so that effects are not significant. Also recommends that the operators in cooperation with the operators of any neighbouring developments minimise the occurrence of cumulative impacts, such as noise or shadow flicker. Conditions on monitoring of access roads, disposal of foul wastewater and drinking water sources should permission be granted recommended.

**Transport Infrastructure Ireland** in report dated **15/02/24** details requirements in terms of consultation and compliance with TII publications and standards with respect to operational requirements along the haul route and any proposed works to facilitate turbine component delivery to the site.

Inland Fisheries Ireland in a report dated 29/02/24 notes:

• The cumulative impact of landslides in the area and the recovery of the Diffagher and Owengar Rivers and Lough Allen along with the risk of a further landslide occurring needs to be considered.

- There is evidence of a historical peat slide within the site.
- It has serious concerns about the potential impact of the development primarily during the construction phase, in particular the potential for landslide, geotechnical failure and risk of pollution or run-off to watercourses from construction, the excavation and operation of the borrow pit and the storage of peat excavation. It strongly contests the statement on page 40 of the Water Quality Management Plan that the risk of peat instability is very unlikely to occur and will have limited consequences should it do so, representing a 'lowrisk scenario'
- It has concerns over peat depths at this site up to 6 metres. From its experience there are serious difficulties with developments on peat soils where there is excessive slope and where the peat depth exceeds one metre.
- Detailed site investigation including geotechnical studies and peat depths, and sheer strength tests should have been provided for storage areas and the area around the borrow pit.
- The area and extent of the borrow pit should be clearly defined in the planning application as should the proposed depths to which it would be worked.
- The management of peat storage areas and stability of temporary stockpiles including peat soils at the borrow pit are a serious concern. Specific details regarding the drainage of the borrow pit required.
- The Peat and Spoil Management plan is quite generic and does not give specific mitigation and control measures to reduce risk and prevent run-off and pollution at this site.
- The borrow pit is located adjacent to a watercourse which forms the headwaters of the Owengar River. This forms an unacceptable risk in terms of pollution.
- There does not seem to have been any specific geotechnical study of areas where stockpiling may occur to look at the risks involved.
- It has serious concerns about the construction of roads as these will tend to provide preferential flow paths for surface waters. There is potential for increased run off from the site due to the increased area of road network.

- The use of sedimentary rocks, such as shale, in road construction should be avoided.
- Floating road construction (over 1.7 km of new road) will add loads to peat soils. Upgrading of existing roads (828 metre) adds to loading where stability analysis has shown unfavourable factors of safety. IFI notes that side casting will be carried out on site adjacent to the new access routes up to 2m high and 5 metres wide.
- Environmental exposure should be classified at 5 given the Owengar landslide and previous experience. The hazard rankings applied do not appear to factor in the presence of loads and excavation, e.g. loadings of peat side casting, construction machinery and also changes to preferential flow paths causing the peat to absorb water.
- In relation to roads construction, the principles and standards within the Shannon Regional Fisheries Board guidelines document 'Protection and Conservation of Fishery Habitat with particular reference to Road Construction', 2009) should be utilised and adhered to.
- The surface water management plan should have included details of any dewatering of the borrow pit during excavation, drainage of the peat stored in the borrow pit and storage areas, and mitigation against the potential for runoff off peat particles and suspended solids.
- Specific details of operational and construction drainage required. Streams in the upper reaches of a river system are more sensitive to pollution, with the lack of dilution in times of DWF being a particular problem. Given this a level of 25 mg/l suspended solids as suggested would not be appropriate as a discharge level for this site.
- No design calculations or settlement times are given. These would need to be provided before the drainage details could be fully evaluated in water quality terms.
- Appropriate settlement must be provided for without the use of flocculant blocks or dosing.

- Concerns over the effectiveness of silt fencing, particularly in relation to its maintenance and installation and potential damage to vegetation during installation, which exposes soils and increases risks of erosion/run off.
- At all times any discharges to waters must be less than 10 mg/l in the construction phase (and assimilative capacity must also be available to allow this level of discharge).
- Mitigation measures and dewatering controls along underground cabling route not provided.
- A detailed emergency response plan required in case of a landslide. IFI should be consulted in relation to proposed containment methods.

Requirements with respect to the design of any watercourse crossings, bridges and culverts, settlement ponds, silt fencing, reservoir for fire water storage and controls time when works can be carried out, invasive species survey, monitoring programmes and consultations detailed.

#### 3.4. Third Party Submissions/Observations

Submissions in opposition to the proposed development were received by the planning authority. The issues arising pertain to:

- Risk of landslide
- Legal obligation to protect undesignated blanket bog lands
- Impact on wildlife and protected bird species
- Proliferation of windfarms
- Size of turbines
- Impact on visual amenities
- Noise
- Impact on human health
- Impact on residential amenities and devaluation of property
- Alternatives for producing renewal energy

- Sustainability of turbines
- Access and traffic
- Legal requirements in terms of planning assessment, EIA and AA
- NIS is inadequate
- Requirements of WFD
- Internet and satellite disruption
- Forestry removal
- Shadow flicker
- Embedded carbon

## 4.0 **Planning History**

No relevant cases within the site. The following table provides a summary of the existing and permitted windfarms within the 20 km radius of the appeal site

Windfarm	No. of turbines	Approx. distance from site
Garvagh Glebe	13	920 m. south-west
Black Banks (I & II)	12	1.4km south-west
Moneenatieve (I & II)	5	2.9km south-east
Corrie Mountain	8	3.2km south-east
Carrane Hill	4	4km north-west
Spion Kop	2	4.2km south-east
Altagowlan	9	4.6km south-east
Geevagh	6	5.7km south-west
Tullynahaw	11	5.7km south-east
Derrysallagh (Kilronan II)	10	6.2km south-west
Seltannavenny	2	6.7km south-east

Tullynamoyle V (2 no.	8 (4 no. in each	6.9km north-east
separate permissions)	permission)	
Tullynamoyle I, II & III	15	7.1km north-east
Kilronan	10	9.3km south
Carrickeeny	4	18.9km north-west
Faughary	3	19.1km north

**ABP-310788-21** & **ABP-310789-21** – permission refused October 2023 on appeal for Croagh windfarm. 10 turbines and associated works were proposed. The site is approx. 2.4km to the west of the appeal site. The applications were refused for three reasons which can be summarised as follows:

- Board not satisfied that the proposal would adequately mitigate risk associated with a potential landslide with potential for causing pollution of waterbodies within and in the vicinity of the site. Also not satisfied that the proposed repositories would be effective in providing for the permanent retention of peat and other materials and that the mitigation measures inclusive of the proposed drainage system would be adequate to ensure the protection of the environment.
- The Board cannot be satisfied that the proposal, individually and in combination with other plans or projects, would not adversely affect the integrity of European Sites in view of their conservation objectives and is precluded from granting permission.
- The Board cannot be satisfied that the cumulative environmental assessment of the likely effects of the proposal on avifauna can reasonably exclude the possibility of a significant impact.

This case is subject of judicial review proceedings.

## 5.0 Policy Context

#### 5.1. National Policy

#### 5.1.1. **Project Ireland - National Planning Framework 2040**

Section 1.3 Shared Goals – National Strategic Outcomes Transition to a Low Carbon and Climate Resilient Society

The National Climate Policy Position establishes the national objective to transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. This objective will shape investment choices over the coming decades in line with the National Mitigation Plan and the National Adaptation Framework. New energy systems and transmission grids will be necessary for a more distributed, renewables-focused energy generation system, harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave and solar and connecting the sources of that energy to the major sources of demand.

National Policy Objective (NPO) 55 seeks to promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050.

#### 5.1.2. Project Ireland 2040 – National Development Plan 2021-2030

The NDP sets out the investment priorities that will underpin the implementation of the NPF.

National Strategic Outcome (NSO) 8 - Transition to a Low Carbon and Climate Resilient Economy.

The National Climate Policy Position on Climate Action and Low-Carbon Development identifies the achievement of a climate-resilient economy and society by 2050 as a central objective. This objective will shape investment choices over the coming decades in line with the National Mitigation Plan and the National Adaptation Framework.

Strategic Investment Priorities - Renewable Energy

Regular Renewable Electricity Support Scheme (RESS) auctions will deliver competitive levels of onshore wind and solar electricity generation which indicatively could be up to 2.5 GW of grid-scale solar and up to 8 GW of onshore wind by 2030 The RESS will also support the delivery of up to 5 GW of additional offshore renewable electricity generation by 2030.

#### 5.1.3. Ireland's Transition to a Low Carbon Energy Future 2015-2030

This is a framework to guide policy up to 2030. It sets out a vision for transforming Ireland's fossil fuel-based energy sector into a clean, low carbon system. It notes that onshore wind will continue to make a significant contribution but that the next phase of Ireland's energy transition will see the deployment of additional technologies as solar, offshore wind and ocean technologies mature and become more cost-effective.

#### 5.1.4. Climate Action Plan 2024

The plan seeks to identify how Ireland will achieve its 2030 targets for carbon emissions by sector and through a series of actions. The plan seeks to reduce the State's greenhouse gas emissions by 51% by 2030.

One of the plan's measures seeks to increase the proportion of renewable electricity to up to 80% by 2030, including a target of 9 GW from onshore wind, 8 GW from solar and at least 5 Gigawatts of offshore wind energy.

#### 5.1.5. Wind Energy Development Guidelines 2006

The following sections of the Guidelines are considered to be of particular relevance:

Section 5.6 - noise impacts should be assessed by reference to the nature and character of noise sensitive locations. In general noise is unlikely to be a significant problem where the distance from the nearest noise sensitive property is more than 500m.

Section 5.12 - careful site selection, design and planning and good use of relevant software can help to reduce the possibility of shadow flicker in the first instance. Shadow flicker at neighbouring dwellings within 500m should not exceed 30 hours

per year or 30 minutes per day. The potential for shadow flicker is very low at distances greater than 10 rotor diameters from a turbine.

Chapter 6 - aesthetic considerations in siting and design. Regard should be had to profile, numbers, spacing, visual impact and the landscape character. Account should be taken of inter-visibility of sites and the cumulative impact of developments.

#### 5.1.6. Draft Wind Energy Development Guidelines 2019

Of note:

Section 5.7.4 – Noise. The preferred draft approach proposes noise restriction limits consistent with World Health Organisation Guidelines, proposing a relative rated noise limit of 5dB(A) above existing background noise within the range of 35 to 43dB(A), with 43dB(A) being the maximum noise limit permitted, day or night. The noise limits will apply to outdoor locations at any residential or noise sensitive properties.

Section 5.8.1 – Shadow Flicker. Provision of evidence as part of the planning application that shadow flicker control mechanisms will be in place for the duration of the wind energy development project.

Section 5.10 - Community Investment.

Section 6.4- Visual Impact. Siting of wind energy projects.

Section 6.18.1 – Set back. The potential for visual disturbance can be considered as dependent on the scale of the proposed turbine and the associated distance. The size of the turbine should be key to setting the appropriate setback. A setback distance for visual amenity purposes of 4 times the tip height should apply between a wind turbine and the nearest point of the curtilage of any residential property in the vicinity of the proposed development, subject to a mandatory minimum setback of 500 metres. An exception may be provided for a lower setback requirement from existing or permitted dwellings or other sensitive properties to new turbines where the owner(s) and occupier(s) of the relevant property or properties are agreeable to same, but the noise requirements of these Guidelines must be capable of being complied with in all cases.

#### 5.2. Regional Policy Context

#### 5.2.1. Northern and Western Regional Spatial and Economic Strategy (2020)

RPO 4.16: The NWRA shall co-ordinate the identification of potential renewable energy sites of scale in collaboration with Local Authorities and other stakeholders within 3 years of the adoption of the RSES. The identification of such sites (which may extend to include energy storage solutions) will be based on numerous site selection criteria including environmental matters, and potential grid connections.

RPO 4.17: To position the region to avail of the emerging global market in renewable energy by:

- Stimulating the development and deployment of the most advantageous renewable energy systems.
- Supporting research and innovation.
- Encouraging skills development and transferability.
- Raising awareness and public understanding of renewable energy/ encourage market opportunities for the renewable energy industry to promote the development and growth of renewable energy businesses.
- Encourage the development of the transmission and distribution grids to facilitate the development of renewable energy projects and the effective utilization of the energy generated from renewable sources having regard to the future potential of the region over the lifetime of the strategy and beyond.

RPO 4.18: Support the development of secure, reliable and safe supplies of renewable energy, to maximise their value, maintain the inward investment, support indigenous industry and create jobs.

#### 5.3. Local Policy

## 5.3.1. Leitrim County Development Plan 2023-2029

The plan notes that the County's existing connected wind energy (2021) is 92MW.

Policies CA POL 2, RE POL 1, RE POL 2 and RE POL 3 entail high level support for renewable energy.

*RE OBJ 1* - seek to achieve a minimum of 200 MW of renewable electricity in the county by 2030, by facilitating renewable energy developments, including micro-generation renewable technologies incorporating solar, wind, hydro-electric and bioenergy.

Section 12.6.2 refers to the Landscape and Visual Capacity Study for Wind Farms and Wind Turbines, provided in Appendix X of the Plan. The site is within LCA 11 – Corry Mountain. The rolling topography and simple landcover of blanket bog and heath are characteristics which indicate that some potential to accommodate wind turbines may exist subject to detailed design and assessment. Views across and from Lough Allen are an important consideration together with the setting of the town of Drumkeeran and recreational walking routes such as the Miner's Way. Some limited areas to the north west of Corry Mountain where commercial forestry is present may be considered subject to detailed design, having regard for landscape and visual constraints. In these areas, there is potential for adverse cumulative effects with the nearby wind farms and that associated with Carrane Hill in Sligo.

WE POL 1 - acknowledge the importance of wind energy in Co. Leitrim as a renewable energy source which can play a vital role in achieving national targets in relation to reductions in fossil fuel dependency and therefore greenhouse gas emissions.

WE POL 2 - encourage the development of wind energy in suitable locations and in an environmentally sustainable manner to ensure the security of energy supply, in accordance with Government policy and the Leitrim County Renewable Energy Strategy (2021).

WE POL 3 - ensure that the assessment of wind energy development proposals will have regard to the following:

- sensitivities of the county's landscapes,
- visual impact on protected views, prospects, designated landscapes, as well as local visual impacts,
- impacts on nature conservation designations, archaeological areas, county geological sites, historic structures, public rights of way and walking routes,

- local environmental impacts, including those on residential properties, such as noise and shadow flicker,
- visual and environmental impacts of associated development, such as access roads, plant and grid connections from the proposed wind farm to the electricity transmission network,
- scale, size and layout of the project and any cumulative effects due to other projects,
- the impact of the proposed development on protected bird and mammal species.

*WE OBJ 1* - secure the maximum potential from the wind energy resources of Co. Leitrim commensurate with supporting development that is consistent with the proper planning and sustainable development of the area.

Section 13 of the Plan sets out Development Management Standards. Section 13.20 addresses wind energy development. The standards reiterate that when assessing planning applications for wind energy development, the Planning Authority shall have regard to national guidance and the policy framework provided in Section 12 of Volume I - Written Statement and Appendix X of the Plan.

Section 13.20.4 of the Plan outlines the Development Management Standards relating to the undergrounding of cables.

Renewal Energy Strategy (Appendix IX)

As can be extrapolated from Figure 2.1 the site is within an area designated as being available for wind energy development.

## 5.4. Natural Heritage Designations

Boleybrack Mountain SAC (site code 002032) is c. 7.4km to the north-east of the wind farm site and c. 4.7km to the north-east of the grid connection component at its nearest point.

## 6.0 The Appeal

#### 6.1. 1<sup>st</sup> Party Appeal

The 1<sup>st</sup> Party appeal against the planning authority's notification of decision to refuse permission can be summarised as follows:

#### 6.1.1. Reason for Refusal No.1 – Peat Instability

- The mitigation measures set out in chapter 8 for excavations and spoil disposal are consistent with a best practice approach for their control and management.
- The association of the project with past peat landslides in the vicinity is rejected.
- The purpose of the PLHRA is to ascertain the likelihood that a peat landslide will occur during the period of the development, in particular during construction stage and the period after until conditions stabilise. The objective is to recognise this risk and assess, in a detailed manner, all pertinent components that regulate this risk in such a way that the final infrastructure as presented occupies a footprint that carries the lowest possible probability of a peat landslide occurring.
- What is present in the PLHRA procedure but cannot be seen in Chapter 8: Soils and Geology are the iterations of design evolution in respect to avoidance of peat landslide hazard including the initial informing desk study, the various site walkovers to assess ground characteristics and re-visits to site to collect additional peat data to supplement site knowledge, all with the purpose of reducing the final hazard rankings/likelihood of a peat landslide occurring.
- The PLHRA was based on the factor-based approach as detailed within the accepted guidance 'Peat Landslide Hazard and Risk Assessments. Best Practice Guide for Proposed Electricity Generation Developments', 2017.

- Eurocode 7 was not employed. Appendix D provides a repeat of the analysis under Eurocode 7 and records an acceptable Factor of Safety at the location of the main structures.
- The reference to BS6031:1981 was in error. Standard BS 6031:2009 is the relevant document.
- There is sufficient information to model the peat mass for analysis of peat stability. Minor variations in their understanding of the subsurface could exist but their significance to the findings will be minimal. Further confirmatory investigations will be undertaken at design stage, but these will be for the refinement of design and to inform the CEMP, as opposed to any design change.
- GSI mapping is relatively coarse and predominantly slope influenced. It is considered to be a valuable information resource and is employed at the initial stage for preliminary design. Following the site walkover and collection of Stage 1 PLHRA site investigation data, the coarseness of this information becomes apparent and plays no further part in the analysis.
- It is always advantageous to have more information. However skill and experience allow the accomplished practitioner to determine when a valid calculation can be undertaken. The report recognises that there will always be a need for further investigation, and this is the reason why such further supplementary investigations are scheduled to be undertaken prior to construction.
- The Garvagh Glebe wind farm was not reported in detail in chapter 8 soils and geology of the EIAR. It was included as one of the recorded landslide events in the vicinity.
- Detailed mapping including site inspection walkover, gouge core sampling, in situ testing for peat shear strength, von post analysis for peat decomposition was undertaken at T4, when the peat landslide event was observed and then cross referenced with GSI data. The resulting scar was indicative of a natural event, where high rainfall had caused the detachment of relatively thin peat soils on a small steeply sloping gulley.

- Tension cracks are recorded as being present within the site boundary. The closest recorded to infrastructure is approx. 127 northeast of turbine T2 on lands sloping at 0 to 1.5 degrees. The impact of these tension cracks on the stability of the peat on such shallow slopes was determined to be negligible. At T4 the proximity of the peat detachment, relative to an existing landslide event, is included in assessment of those structures, where the relic landforms are recognised to be sensitive.
- Whilst it is accepted that the most significant landslides are caused by factors other than ground slope gradient, the majority of peat landslides do occur on steeper slopes where the peat mass detached from the underlying mineral soils.
- A review of the event at Shass Mountain in 2020 was undertaken. These values have been used to calculate peat landslide hazard ranking. Analysis contained in Appendix B.
- Should such an event occur then run out could be similar to Garvagh Glebe and Shass Mountain failures. The hazard of such an event has been determined to be low within the framework of the guidance deployed.
- Impact on receptors at significant distances from the site are considered for the PLHRA. The channelling event of nearby watercourses to cause entrained wide-reaching impact is incorporated into the exposure hierarchy. Potential run out to the Owengar River is considered.
- From current data peat shears of 10-12kPa are appropriate, recognising the significance of these values being at the lower end of the 22nr recorded values. The significance of peat shear strength should not be relied on too strongly as experience shows there is a high degree of spatial, depth related and temporal variation.
- Triangular peat bunds of max. height 2 metres averaging 1m along its footprint are proposed along approx. 700m of the access track network. This form of side casting is only appropriate where peat thickness is <0.50m on slopes of less than 10 degrees. Where these conditions are not present this procedure will not be deployed.

- The construction works required for the grid route are relatively minor and will be within the existing public road where development has already occurred and has been stable over many years.
- The existing drainage at the site is not considered to be any more extensive to other similarly constructed wind energy developments.
- Following review of the capacity of the proposed on-site borrow pit, there is sufficient storage available so as to remove the need for 'side casting' completely. Instead, the peat spoil will be used for its restoration and landscaping.
- The issues raised are similar to those cited in the Tullynamoyle Wind Farm Extension (PL12.312895). The issues were satisfactorily addressed.

#### 6.1.2. Reason for Refusal No.2 – Adverse effect on European Sites

- The key point relates to the potential for a landslide event to be triggered by the proposed development and for subsequent runoff associated with such an event to undermine conditions for otters.
- The detailed assessment of the proposal's potential to trigger a landslide was relied upon in the NIS.
- It is acknowledged that even though the risk of a landslide event is assessed to be negligible to low the possibility of a slide at a wind farm site can be increased as a result of poorly managed construction activities.
- The NIS in section 5.3.3 sets out the implications of pollution from such an event on otters. Mitigation measures are identified as being required for the conservation objectives - otter distribution, extent of their freshwater habitat and the availability of fish biomass.
- A suite of mitigation measures are set out that aim to ensure that proper management practices are implemented during all phases. They have been successfully implemented for a wide range of developments, and in view of their success in protecting water quality of downstream waterbodies, are representative of best practice.

• The Department of Housing, Local Government and Heritage concur with the NIS findings.

#### 6.1.3. Reason for Refusal No.3 – Cumulative Impacts on Avifauna

- The reason for refusal references a 20km radius. For the purpose of addressing cumulative assessment a 10km buffer area comprising 12 (*sic*)<sup>1</sup> wind farms has been used to inform this response. This is representative of a worst case scenario.
- The footprint of each of the windfarms has been calculated giving a total of 166.9ha. The proposed development would have a footprint of 5.4ha.
- In calculating the extent of baseline habitats for key ornithological receptors, save for hen harrier, Corine Land Cover mapping was used to estimate the area of suitable habitat. For hen harrier baseline data in the National Hen Harrier Survey Reports are relied on in addition to the results of primary baseline surveys completed for the proposed windfarm as well as Croagh wind farm.
- The hectads within which the 12 no. wind farms (*sic*) surrounding the proposal were used as the cumulative assessment study area. The Corine Land Cover peat bog and moor and heath cover types and Article 17 Habitat Mapping for 7140 blanket bog and 4010, 4030 and 4060 heath habitats data sets were used to identify the existing of suitable hen harrier habitat within the hectads.
- The total area of suitable land cover for ground nesting and conifer plantation nesting species within the surrounding 10km area is c. 30,553ha. The total area of 172ha associated with the proposed development and the surrounding wind farms amounts to 0.6% of this area.
- In terms of hen harrier an area of 9,169ha of suitable peatland and heathland habitat occurs in the 5 hectads in which the 12 no wind farms (*sic*) surrounding the proposal are located. The total loss of heather moorland habitats within the site will be c.0.5ha of permanent habitat loss and 0.4ha of temporary habitat loss during construction.

<sup>&</sup>lt;sup>1</sup> 15 no. windfarms are detailed in Table 4.1 of the appeal submission (pg.32-33)

- The combined area of open habitat type (ie. heather moorland comprised of degraded and cutover blanket bog and wet grassland) suitable for supporting ground nesting birds within the site is c. 16.2 ha. The permanent loss will amount to 0.9 ha equating to c. 5.5%. This percentage habitat loss is representative of a medium magnitude impact. In terms of the cumulative impact a loss of 172 ha from a 21,433 ha area of suitable habitat will represent a loss of 0.7%, assuming a worst case scenario. Wider areas of unenclosed open habitat suitable for supporting ground nesting species in the wider area have not been used in the calculation of percentage habitat loss.
- In relation to species such as goldcrest and linnet that breed in woodland habitat including conifer plantation and scrub, the combined loss of woodland habitats will amount to c.15% of the woodland habitat occurring within the site. Again, this is considered to be a worst case scenario magnitude of impact given that it does not take into account other areas of woodland adjoining that provide suitable breeding habitat for local populations. With respect to the cumulative loss of habitat within the 10km radius, a worst case scenario loss of 172 ha will be representative of a negligible magnitude impact to species such as goldcrest and linnet.
- In terms of species of conservation value including hen harrier, kestrel, buzzard, snipe, mallard in addition to passerines the cumulative habitat loss, displacement and collision mortality to result in significant negative effects to conservation status of these species will not arise. The examination provided in the appeal response (Tables 4.3 and 4.4) has identified the potential for very low to low cumulative impacts which are representative of imperceptible effects over the lifetime of the proposed wind farm.

#### 6.1.4. Other Issues

- There is no peer reviewed scientific research in support of negative health effects.
- While there are no Irish studies undertaken to assess the impact of wind farms on property prices the EIAR examined studies which have been

undertaken in the UK. Based on the available published studies the operation of the wind farm will have an imperceptible impact on property values.

- The turbine rotor blades will be fitted with a serrated extension of the trailing edge which will mitigate noise emissions by design by effectively breaking up turbulence.
- A mitigation strategy to incorporate a reduction in sound power level outputs with respect to directionality can be put in place to comply with any specific variation in noise limit levels if new guidelines are adopted. All turbines have software controls incorporated so that the sound power levels can be reduced by direction and energy output.
- The expected shadow flicker results show there are no exceedances of the Wind Energy Development Guidelines of 30hrs/year threshold at any receptor. The 30mins/day threshold is exceeded at 6 no. receptors. A shadow control system will be installed to ensure shadow flicker levels do not exceed the guidelines thresholds and can be adjusted to eliminate shadow flicker ensuring compliance with the 2019 draft guidelines if they come into effect.
- The local road network near the site will be monitored during construction so that any damage caused by construction traffic associated with the proposal can be identified and addressed. A Traffic Management Plan has been developed.
- The landscape assessment found that the proposal would not be out of place in terms of its scale or function in the transitional upland landscape context. It will be viewed in combination with other existing wind farms and represents the intensification of an existing land use.
- Potential telecommunications disruptions can be mitigated.
- Public consultation was undertaken.
- A comprehensive decommissioning plan has been prepared.
- The requirements of the prescribed bodies can be complied with should permission be granted.

#### 6.1.5. **Response to Inland Fisheries Ireland's submission**

- As identified in Chapter 8 Soils and Geology of the EIAR there is evidence of disused borrow pits (possibly used for the construction of the existing forest roads) south-west of T2. Borrow pit 01 is described as being of moderate quality while borrow pit 02 is low quality. Only borrow pit 01 will be used. The results of the construction phase ground investigations will determine the ultimate extent of the borrow pit.
- There will be four spoil storage areas with a total volume storage of 32,019m<sup>3</sup>.
   In the case where there is potential to expand the borrow pit, the volume of material deposited in the four spoil storage areas can be reduced.
- Temporary stockpile locations will be situated outside of surface water buffer zones. Soil stockpiles shall have side slopes battered back to a safe angle of repose e.g.1:1. Silt fencing is to be erected around the base of the temporary mound. Soil will be reinstated on completion of drilling and jointing operations. Temporary storage areas will require bunding and management of runoff. The management of temporary stockpiles is detailed in Chapter 9 Hydrology and Hydrogeology, the CEMP and Management Plan 4: Peat and Spoil Management Plan.
- The locations chosen for temporary storage are based on gradient, geotechnical data and ground stability assessment, habitat type and the adequacy of the ground to support the surcharge material.
- All mitigation measures re. watercourse crossings and instream works are in line with IFI guidelines. IFI to be consulted.
- Instream works will be carried out between 1st May and 30<sup>th</sup> September.
- Preliminary water balance calculations indicate that the development will lead to a net increase of surface water runoff of less than 2%. With appropriate environmental engineering controls and mitigation measures i.e. attenuation features, the increase in surface water runoff can be significantly reduced. Mitigation measures have the potential to have a positive impact whereby the development can reduce discharge rates below estimated greenfield, or baseline runoff rates thereby reducing the site's hydrological response to

rainfall and mitigating against potential flood events downstream. Additionally, these measures promote the recovery and development of blanket peat habitats.

- The new access roads will be floated roads.
- Considering that pre-existing natural and artificially established drainage networks are present at the site, the diversion, enhancement or introduction of additional drainage features is considered a likely, adverse, moderate, localised impact of the development which conforms to baseline conditions.
- A threshold of 25mg/I TTS will be applied at treatment train outfalls/discharge points in line with legislative reference limits for surface water quality.
- The quality of water discharged will be in line with licence discharge limits assigned by the Council.
- A programme of water quality monitoring will be agreed with IFI and Leitrim County Council. The applicant will comply with any additional monitoring requested by IFI and the local authority.
- The drainage system includes a number of measures as described in the Surface Water Quality Management Plan.
- Flocculant will be used to promote the settlement of finer solids prior to redistributing to the treatment train and discharging to surface water networks. These are passive systems that are self-dosing, self-limiting and are environmentally friendly.
- An emergency response plan has been prepared. It is a live document and will be developed further by the contractors with site specific method statements and plans as required prior to each phase of work.
- Biosecurity measures that aim to eliminate the potential for the introduction and spread of IAS are set out in Chapter 5 and Appendix 2.1: CEMP. The scope of these surveys will be expanded upon to include IFI's comments.

#### 6.2. Planning Authority Response

The submission can be summarised as follows:

- It remains of the opinion that there is a real and inherent risk of peat failure and/or landslide associated with the construction stage of the proposal.
- It is of the opinion that the mitigation measures present in the NIS and EIAR will not be effective and may, indeed, exacerbate the potential for a landslide by creating instability.
- Pathways for otter populations exist between the wind farm site and Unshin River SAC and Lough Gill SAC.
- Given the extent of this definitive scientific doubt it remains of the view that it was precluded from granting permission.
- Given the survey findings and those associated with previous wind farm developments in the vicinity there is significant ornithological value associated with the site and surrounding area. The proposal would result in a further erosion of habitat loss and an increase in displacement and collision risk by further turbines in the area. It is difficult to conclude that the cumulative impact would not be significant.

#### 6.3. Observations

Submissions have been received from:

- 1. Joan Rogan (accompanied by disk with video and photos)
- 2. John Matthews

The submissions can be summarised as follows:

- Public consultation was lacking.
- Validity of the application queried as one of the landowners has passed away. Issue of signatures on letter of consent.
- No permissions should be granted until the wind energy guidelines are updated.

- Risk analysis and mitigation measures do not alleviate stress and fear of living in close proximity and the risk of landslides in the area. Adverse impacts on residential amenity.
- Noise and low frequency vibration impacts on human health.
- Negative visual impacts.
- In calculating carbon balance no reference is made to the carbon emissions from the drying out of the blanket bog peat along the kilometres of new roadside, at hard stands and at clearances for the turbine bases.
- The open countryside uplands is very important to hen harrier. 9 no. breeding pairs were recorded nesting around the Cuilcagh-Anierin Uplands SAC across Lough Allen from the application lands. A pair have been seen and recorded in the breeding season in the Drumkerran to Killavoggy area for the last 2 decades. They also occur breeding on the opposite side of the valley between the site and the side of Boleybrack Mountain SAC. The proposal will cause further loss of prime habitat for foraging and breeding.
- The Government's Hen Harrier Threat Response Plan consultation document confirms that afforestation and windfarms to be the greatest threats to the species. The industries need to be cognisant of the implications of further declines in terms of future liabilities under the Environmental Liabilities Directive.
- Other avifauna species occur or are locally dependent on the upland and bog habitats. Many are Red listed or declining in numbers. Merlin and Golden Plover are afforded EU priority species protection.
- Skylark utilise and nest/breed in several different habitats and not just wet grassland as stated in the appeal document.
- The proposal, coupled with existing and proposed windfarms, constitutes significant blockage to the connectivity of the upland habitats from Kilronan Co. Roscommon across Leitrim and into Cavan and Fermanagh uplands. There has been the continual, combined and incremental 'minimal' loss of prime suitable habitats.

- Turbine noise and shadow flicker negatively impact bird behaviour and increase risks.
- The bog has revegetated. Blanket Bog is an Annex 1 Habitat. It has the potential of hosting nesting hen harrier.
- What happens on the site has implications and impacts on the adjoining blanket bog.
- Whilst the site is not designated Article 27 of the European Communities (Birds and Natural Habitats) Regulations and Article 10 of the Habitats Directive apply.
- Bat and otter have not received adequate attention.
- Significant risk of water pollution.
- One of the main feeder streams to the Owengar River flows through the site. It suffered catastrophic damage from a bog burst with a wind farm development in 2008. The proposal poses a risk for further ecological damage.
- Bunding and side casting methods of storage pose unacceptable risks to the Owengar River and Lough Allen.
- The use of weather data/conditions from Ballyhaise Co. Cavan and Finner Camp Co. Donegal do not provide accurate data for county Leitrim. Record amounts of rainfall are being recorded in all seasons. This raises further concerns for side cast or bunded blanket bog peat deposits proposed in the development.
- If limestone aggregate is used in road and hard stands it would have negative impacts on the remaining blanket bog.
- Rodent bait stations and waste.
- Negative impacts of the proposed road network serving the site.
- The minimal benefit of the project does not outweigh the negative impacts to the environment, landscape, biodiversity and human health.

 There is no mention of Leitrim County Development Plan policies and objectives relating to protection of the environment, biodiversity, conservation etc.

## 7.0 Assessment

- 7.1. This is a 1<sup>st</sup> Party appeal against Leitrim County Council's notification of decision to refuse permission for the Letter windfarm comprising of 4 no. turbines. 2 no. observations have been received.
- 7.2. This assessment is structured into three sections; planning assessment, environmental impact assessment and appropriate assessment. I advise the Board that many of the issues raised naturally fall within the headings of the Environmental Impact Assessment and Appropriate Assessment. In the interest of conciseness and to avoid undue repetition, I will examine the issues within these sections of the assessment and will not repeat them under the general planning assessment.

## 8.0 Planning Assessment

- 8.1. Having regard to the file, the grounds of appeal, the responses thereto and to the said observations I consider that the main issues arising can be assessed under the following headings:
  - Principle of development and policy context
  - Residential amenity, health and property values
  - Peat stability and risk of landslide
  - Impact on avifauna
  - Appropriate assessment

#### 8.2. Principle of Development and Policy Context

8.2.1. The importance of renewable energy is clearly acknowledged at a national, regional and local level and there is a suite of policy documents that support and promote the transition to a low carbon and climate resilient society. Under the National Planning Framework, National Policy Objective 55 seeks to "promote renewable"

energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050." The White Paper - Ireland's Transition to a Low Carbon Energy Future, 2015-2030 acknowledges the significant role and contribution of onshore wind in this transition. This is further endorsed in the Climate Action Plan 2024 which stresses the importance of decarbonising electricity consumed by harnessing the significant renewable energy resources. In order to meet the required level of emissions reduction, by 2030 it is required to increase electricity generated from renewable sources to 80% comprising of up to 9 GW of increased onshore wind capacity.

- 8.2.2. The Northern and Western Regional Spatial and Economic Strategy (RSES), in setting out the strategy to implement the NPF, recognises and supports the many opportunities for wind as a major source of renewable energy noting that wind energy technology has an important role in delivering value and clean electricity for Ireland. Due regard is had to RPO 4.17 which seeks to position the region to avail of the emerging global market in renewable energy and RPO 4.18 which seeks to support the development of secure, reliable and safe supplies of renewable energy, and to maximise their value.
- 8.2.3. The Leitrim County Development Plan endorses the national and regional policies in terms of renewable energy with policies ENI POL 2, CA POL 2, RE POL 1, RE POL 2, RE POL 3 WE POL 2, WE POL3 and WE OBJ 1 of note. Specifically RE OBJ 1 seeks to achieve a minimum of 200 MW of renewable electricity in the county by 2030, by facilitating renewable energy developments including micro-generation renewable technologies incorporating solar, wind, hydro-electric and bioenergy. In terms of the Landscape and Visual Capacity Study undertaken (Appendix X of the Plan) the site is within LCA 11 – Corry Mountain in which the rolling topography and simple landcover of blanket bog and heath are characteristics which indicate that some potential to accommodate wind turbines may exist subject to detailed design and assessment. Some limited areas to the north west of Corry Mountain where commercial forestry is present may be considered subject to detailed design, having regard to landscape and visual constraints. The study notes that in these areas there is potential for adverse cumulative effects with the nearby wind farms and that associated with Carrane Hill in Sligo In terms of the Renewal Energy Strategy set
out in Appendix IX and as can be extrapolated from Figure 2.1 the site is within an area designated as being available for wind energy development.

- 8.2.4. On the basis of the above I consider that the proposed development is acceptable in principle at this location. However, as noted, the suitability is predicated on other planning and environmental considerations being satisfied.
- 8.2.5. Observers to the appeal are of the view that the **2006 Wind Energy Guidelines** are not fit for purpose and that adjudication on the case should await the updated guidelines. At the time of writing the 2019 Wind Energy Guidelines remain in draft form with no indication available as to when they are anticipated to come into force. On this basis the applicant has appropriately assessed the proposed development against the requirements of the 2006 Guidelines which remain in force and are the relevant section 28 guidelines that the Board must have regard to in coming to its decision.

### 8.3. Residential amenity, health and property values

- 8.3.1. Residential amenity is influenced by a combination of factors including setting and local character, land use activities in the area and the relative degree of peace and quiet experienced. The observers to the appeal express serious concerns as to the potential impact of the proposal on such residential amenities with specific reference made to noise, shadow flicker, health effects and devaluation of property. Visual impacts as they relate to residential amenity are also raised. These matters are considered in detail in the EIA section of this report.
- 8.3.2. There are 17 dwellings within a 1.5km radius of the proposed turbines, comprising one off houses and farm holdings. In terms of minimum separation distances from dwellings I note that the applicable 2006 guidelines require a setback of 500 metres. The applicant states that the design approach adopted was to increase this to over 700 metres with a number of drawings/figures in the EIAR delineating the location of dwellings in the vicinity. This exceeds a setback of 4 times the turbine tip height as proposed in the 2019 draft guidelines.
- 8.3.3. It is clear from the photomontages provided and the landscape assessment that the proposal will alter the visual amenities of the area. The environmental effects of this are addressed in section 9.11 of the EIA below.

- 8.3.4. The area of the site whilst having an innate rural quality, is not of a distinct visual quality as to warrant specific designation in the Leitrim county development plan. I submit that the general area is relatively lightly populated dominated by commercial forestry interspersed with agricultural and related enterprises with wind farm development prevalent in the vicinity. It presents itself as a moderated, managed working landscape. As noted above the site is within an area designated as being available for wind energy development as per Figure 2.1 of the Renewal Energy Strategy set out in Appendix IX of the plan
- 8.3.5. In terms of impacts on **visual amenities from dwellings** certainly the views will be altered. This impact must be balanced against the imperative to address the climate change crisis in terms of the need to harness alternative energy resources and the fact that such type.
- 8.3.6. Submissions on the planning application raise concerns regarding the effect of the development on property values. In the EIA section of this report under Population and Human Health (section 9.4), I conclude for the reasons stated that the development will not give rise to any significant effects on population and human health. I am satisfied, for the same reasons, that the development will have no significant effect on property values (e.g. distance and orientation of dwellings relative to wind turbines, absence of effects by way of noise, flicker or telecommunications, potential for local economic benefits).

### 8.4. Peat Stability and Risk of Landslide

8.4.1. I refer the Board to section 9.6 of the EIA in which I address this matter. In summary I acknowledge that there is always the risk of peat landslide on upland sites where peat is present. I note that the purpose of the PLHRA is to determine the likelihood that such an event will take place during the period of the development particularly during the construction stage and the period immediately after and to assess all pertinent components that regulate this risk in such a way that the final infrastructure as presented occupies the footprint that carries the lowest possible probability of peat landslide occurring. I also acknowledge the expertise of the applicant's consultants in this field and their rejection of the association of the project with past peat slides associated with projects in the vicinity. Notwithstanding, I consider that the details provided in the EIAR and PLHRA lack clarity and I do not consider that

the appeal submission adequately addresses what are considered to be lacunae in the information available. In my opinion the detail before the Board is not sufficient to allow for an informed decision to be made. In view of the recognised sensitivities of the area which are reflected in the reported landslides events in the vicinity and having regard to proximity of the Owengar River and its tributary which traverses the site, I consider a precautionary approach is required wherein more detailed information is appropriate. I therefore recommend refusal on these grounds.

### 8.5. Impacts on Avifauna

8.5.1. The planning authority's 3<sup>rd</sup> reason for refusal pertains to its concerns that, given the extent of existing wind farm development in the wider area, it is not satisfied that the cumulative environmental assessment of the likely effects of the proposed development on avifauna can reasonably exclude the possibility of a significant impact. I note the applicant's appeal on this matter and the observations received as they pertain to avifauna. I have assessed this matter in section 9.5 below in which I conclude for the reasons stated that the development will not give rise to any significant effects on avifauna.

### 8.6. Appropriate Assessment

- 8.6.1. This matter is addressed in the Appropriate Assessment in section 10 of this report. Following a detailed examination and evaluation of the NIS, all associated material submitted with the application as relevant to the appropriate assessment process and taking into account observations received I am satisfied that based on the design of the proposed development, combined with the proposed mitigation measures, adverse effects on the integrity of Lough Gill SAC and Unshin River SAC can be excluded in view of the conservation objectives of those sites.
- 8.6.2. My conclusion is based on the following:
  - A detailed assessment of all aspects of the proposed development that could result in adverse effects on European Sites within a zone of influence of the development site,
  - Consideration of the conservation objectives and conservation status of qualifying interest species and habitats,

- A full assessment of risks to qualifying interest habitats and species, and
- Application of mitigation measures designed to avoid adverse effects on site integrity and likely effectiveness of same.
- 8.6.3. The proposed development would not undermine the favourable conservation condition of any qualifying interest or delay the attainment of favourable conservation condition for any qualifying interest of these European sites.

# 9.0 Environmental Impact Assessment

## 9.1. Introduction

## Statutory Provisions

- 9.1.1. This section sets out an environmental impact assessment (EIA) of the proposed development.
- 9.1.2. The 2014 amending EIA Directive (Directive 2014/52/EU) is applicable.

## Content and Structure of EIAR

- 9.1.3. The EIAR consists of 4 volumes, grouped as follows:
  - Volume 1 Non-Technical Summary
  - Volume 2 Main Report
  - ➢ Volume 3 − EIAR Figures
  - ➢ Volume 4 − Appendices
- 9.1.4. The EIAR provides a description of the project comprising information on the site, design, size and other relevant features. It identifies, describes and assesses in an appropriate manner, the direct and indirect significant effects of the project on the following environmental factors: (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape and it considers the interaction between the factors referred to in points (a) to (d). It provides an adequate description of forecasting methods and evidence used to identify and assess the significant effects on the environment. It also provides a description of measures envisaged to avoid,

prevent or reduce and, if possible, offset likely significant adverse effects. The mitigation measures are presented in each chapter and are summarised in Chapter 17 of the EIAR. Where proposed, monitoring arrangements are also outlined. Any difficulties which were encountered in compiling the required information are set out under the respective environmental topics.

- 9.1.5. I am satisfied that the information provided in the EIAR and supplementary information provided by the developer in the appeal submission is up to date and complies with article 94 of the Planning and Development Regulations 2001, as amended. I note the details of the project team members provided in section 1.9.2 and in the Statement of Authority in each individual technical assessment chapter. I am satisfied that the EIAR has been prepared by **competent experts** to ensure its completeness and quality,
- 9.1.6. I am satisfied that the information provided is reasonable and sufficient to allow the Board to reach a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment. I am also satisfied that the information contained in the EIAR complies with the provisions of Articles 3, 5 and Annex (IV) of EU Directive 2014/52/EU amending Directive 2011/92/EU and Article 94 of the Planning and Development Regulations 2001, as amended.

# **Consultations**

9.1.7. The applicant undertook a leaflet drop in the area a couple of weeks prior to the lodgement of the application. Details of consultations with prescribed bodies and organisations are detailed in Appendix 1.1 and summarised in Table 1.7. As required, the application was advertised with notices erected on the site on foot of which submissions to the planning authority could be made within a specified period. Observations on the 1<sup>st</sup> party appeal have also been possible. I consider that the public have been provided with adequate notification of the proposed development and that 3<sup>rd</sup> parties were not disenfranchised.

# Vulnerability to Risk of Major Accidents and/or Disaster

9.1.8. The requirements of Article 3(2) of the Directive include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned. This is addressed in chapter 16

of the EIAR with consideration given to the construction, operational and decommissioning phases. Potential natural disasters that may occur are flooding, fire and peat slide. In terms of flooding a Flood Risk Assessment is provided in Appendix 9.1 with the site identified as not within a probable flood zone. As the associated drainage, some of which is permanent for the lifetime of the project, will be attenuated for greenfield run-off, it is concluded that the proposed development will not increase the risk of flooding elsewhere in the catchment.

- 9.1.9. A substantive concern in the planning authority's decision to refuse permission pertains to the peat landslide risk and does not concur with the applicant's conclusion that the risk of peat instability is very unlikely to occur and will have limited consequences should it do so, would represent a low-risk scenario during the construction phase. I have addressed this matter in detail in the section 9.6 below under the heading soils and geology.
- 9.1.10. The risk of significant fire affecting the wind farm and causing the wind farm to have significant environmental effects is limited. Modern turbine design incorporates mechanisms that come into play under extreme weather conditions including automatic shut down in periods of excessively high wind-speeds. I am satisfied the wind turbines themselves pose no threat to the health and safety of the general public. In accordance with Chapter 19 of the Safety, Health and Welfare at Work Act 2005 (the 2005 Act), the development shall be subject to a fire safety risk assessment which would assist in the identification of any major risks of fire on site including the battery storage units and substation.
- 9.1.11. The wind farm site is not regulated or connected to or close to any site regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations i.e. SEVESO and so there is no potential effects from this source.
- 9.1.12. The EIAR concludes that having regard the nature and scale of the development there are unlikely to be any effects deriving from major accidents or disasters.

### Cumulative Impacts

9.1.13. I address cumulative impacts under each environmental heading below. At this juncture I would note that the projects considered in the EIAR for the purposes of cumulative assessment are outlined in in Appendices 2.2 and 2.3 including existing and permitted windfarms within 20km of the site. I consider that the applicant has

provided a comprehensive list of projects for consideration in respect of cumulative impacts both for the site, the grid connection route and the turbine delivery route.

### 9.2. **Reasonable Alternatives**

## 9.2.1. Article 5 (1) (d) of the 2014 EIA Directive requires:

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

9.2.2. **Annex (IV) (Information for the EIAR)** provides more detail on 'reasonable alternatives':

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

- 9.2.3. The matter of alternatives is addressed in **Chapter 3** of the EIAR. The range of alternatives considered span from do nothing, alternative locations, turbine numbers, dimensions and alternative configurations. Alternative arrangements for the internal road layout and arrangement of construction compounds and alternatives to the borrow pit and the electricity substation were also considered. Alternatives were also considered for the grid connection, transport routes and site access, in addition to alternative mitigation measures.
- 9.2.4. In terms of **alternative technologies** for the site section 3.7 addresses solar energy in which it is noted that the capacity factor of solar energy is significantly lower than that of onshore wind energy, requiring approximately 3 times the capacity of the development (c.50MW) to produce the same amount of energy. As solar farms require 1.6-2 hectares per MW., the land area required would be in the region of 27 to 34 hectares for a 16.8MW solar farm.
- 9.2.5. I consider that the process of site selection, consideration of alternative layouts and configurations and grid connection followed a comprehensive process. It indicates

how the proposed development evolved and how it was adjusted to take into consideration environmental effects. On balance, therefore, I consider that the requirements in terms of reasonable alternatives have been satisfactorily discharged and the requirements of the EIA Directive in this regard have been met.

# 9.3. Likely Significant Direct and Indirect Effects

- 9.3.1. This section of the EIA identifies, describes and assesses the potential direct, indirect and cumulative effects of the project under each of the environmental factors referred to in Article 3 (1) of the Directive. I will address the environmental factors in the following chronology in line with that set out in the Directive :
  - Population and Human Health (to include assessment of noise and shadow flicker)
  - Biodiversity
  - Land and Soil
  - Water
  - Air and Climate
  - Material Assets
  - Cultural Heritage
  - Landscape
  - Interrelationship of the above

# 9.4. Population and Human Health

# Environmental Impact Assessment Report

- 9.4.1. I consider that this environmental topic appropriately encompasses the subject issues as raised in the EIAR chapter titled 'Population and Human Health' in addition to shadow flicker and noise.
- 9.4.2. **Chapter 4** addresses population and human health under the sub headings population and settlement patterns, economic activity and tourism, employment,

topography and land use, health impacts and property value. **Chapter 11** addresses noise. The relevant supporting appendices are:

- Appendix 4.1 Shadow Flicker Assessment
- Appendix 11.1 Wind Speed Calculations for Hub Height
- Appendix 11.2 Calibration Certificates of Noise Instruments
- Appendix 11.3 Candidate Turbine Manufacturer's Noise Emission Data
- 9.4.3. Other matters which would have a direct bearing on population and human health such as water, air and climate, landscape and material assets will be addressed under the corresponding headings below. Invariably there is an overlap and I recommend that they be read in tandem.

# **Receiving Environment**

# Population and Land Use

- 9.4.4. The surrounding area is rural in character with a mixture of blanket bog peatland, commercial forestry plantations and agricultural grassland with wind farm developments prevalent. Isolated residences and farmsteads are scattered throughout the area. Nearby settlements include the villages of Drumkeeran c.3km to the east, Dromahair c.9km to the north-west, and Ballintogher c.11km to the north-west. The 2022 Census notes a total population of 915 in the two electoral division areas of Arigna/Drumkeeran/Killarga and Belhavel
- 9.4.5. There are 17 properties within 1.5km of the turbines. All are located at a distance of over 700m from any of the proposed turbines (see Figure 1.3).

### <u>Tourism</u>

9.4.6. The Miners Way and Historical Trail is in the general vicinity of the site and is part of the Beara to Breifne Way, Ireland's longest national waymarked walking/cycling trail.

### Noise Environment

9.4.7. In terms of methodology 'The Assessment and rating of Noise from Wind Farms' (1996) published by the Department of Trade and Industry (UK) Energy Technology Support Units (ETSU) and Institute of Acoustics 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and rating of Wind Turbine Noise',

(May 2013)( IOA GPG) have been used to supplement the guidance contained in the Wind Energy Development Guidelines publication as necessary

- 9.4.8. 3 no. locations were selected for noise monitoring and are considered representative of the local noise environment. The locations are shown on Figure 11.1. The prevailing noise environment is typical of such a rural area. The derived daytime and nighttime background noise levels are set out in Table 11.12. The data presented indicates that background day time noise levels range from 32.1 LA90,10 min at low wind speeds to 40.8 dB LA90, 10 min at higher wind speeds. Night-time levels ranged from 27.8 to 41.2 dB L A90,10 min.
- 9.4.9. The calculations provided in the EIAR are based on a turbine hub height of 91.5 metres with a hypothetical candidate turbine, Vestas V117-4.2 megawatts (MW). It was selected as it reflects a worst-case scenario for the technical assessment in that it generates the highest sound power levels of all turbines within the proposed range.

### 9.4.10. Likely Significant Effects

### **Do Nothing**

• The site would continue to function as it does at present, with no changes made to the current land use, commercial forestry and agriculture and no changes to the noise environment.

### Construction Phase

### Employment and Investment

 Approx. 25 additional jobs will be created during the construction period which is envisaged to last approx. 14-15 months. It is anticipated that the majority of workers will be from the local area. There will be positive, knock-on secondary effects to the local economy in terms of provision of services and supply chains.

#### <u>Noise</u>

 The main noise sources during construction include heavy machinery and support equipment used to construct the various elements of the wind farm and associated infrastructure.

## **Operational Phase**

### Employment and Investment

- The development will create approx. 2 jobs in maintenance and control of the wind farm.
- Proposed community benefit scheme will provide additional investment into community projects that will benefit local residents and businesses.

### Property Values

 There have been no empirical studies carried out in Ireland on the impacts of wind farms on property prices. It is considered a reasonable assumption based on the available literature and evidence, that the wind farm would not impact on property prices. Table 4.5 refers to and summarises the findings of a number of studies from Great Britain.

# <u>Tourism</u>

 Based on the findings of the collective assessments, it was considered that the development will not give rise to any significant effects on tourism during the construction or operational phases.

# Shadow Flicker

- Specialist computer software package WindPRO from EMD International Version 3.6 was used. There are 17 properties within the shadow flicker study area radius (1,500 m of proposed turbines) with the majority located to the east of the development, the nearest being H1 which is 728 metres from Turbine 4. The coordinates of each dwelling and its distance to the closest proposed turbine are listed in Table 4.9 and are shown in Figure 1.3.
- The two following scenarios were modelled.
  - Scenario 1 91.5m hub (lowest hub), 117 m rotor diameter (longest rotor), 150m tip height
  - Scenario 2 92m hub (tallest hub), 115m rotor diameter (shortest rotor), 149.85m tip height

- A detailed assessment of each of the above cited scenarios are included in Appendices 4.1a and 4.1b with a summary of potential cumulative shadow flicker provide in Table 4.10.
- In both scenarios 11 no. dwellings would experience annual shadow flicker exceedances in the worst case scenario. When weather data is applied in terms of annual average sunshine hours there are no annual shadow flicker exceedances. In both scenarios 6 no. dwellings will be exceed with Wind Energy Guidelines 2006 30 mins per day shadow flicker threshold.

# <u>Noise</u>

- The proposed operational limits for the development are:
  - 43dB(A) L90,10min for day and night at wind speeds of 5m/s or greater, and
  - 40 dB(A) L90,10min at all other wind speeds

where wind speeds are measured at 10 metres above ground level. Where properties are financially involved, a 45dB(A) L90,10min limit can be applied.

 All predicted noise levels at varying wind speeds are below the noise limits. See Table 11.6

# <u>Health</u>

 While there are anecdotal reports on negative health effects on persons living and working in close proximity, peer reviewed research has generally not supported these statements. The main publications supporting the view that there is no evidence of any direct link between wind turbines and health are summarised in section 4.3.6.8.

The low frequency (ELF) electric and magnetic fields (EMF) associated with the operation of the proposed underground electric cable comply with international guidelines for ELF-EMF set by the International Commission on Non-Ionising Radiation Protection (ICNIRP).

## **Decommissioning Phase**

### Employment and Investment

• Impacts arising would be similar to that which occurs during the construction phase, save to a lesser extent. The substation will remain in place.

#### <u>Noise</u>

 Noise impacts would be similar to the construction phase but of reduced magnitude as there would be less heavy earth moving machinery and excavation works. Traffic levels would also be lower.

### Cumulative Impacts

- The nearest operational wind farm is that at Garvagh Glebe comprising of 13 turbines located less than 1km to the south-west of the site boundary. Black Bank I&II Wind Farm which comprises of 12 no. turbines is 1.4km to the southwest
- The same receptor locations used for the development are also used in the cumulative assessment with map 2 providing a noise map of same. Save at one location all predicted noise levels are within the noise limits. The 43dBA limit is exceeded at H1 at wind speeds of 10+m/s. When directivity is accounted for the noise level is below 43dB in all but two wind directions. In both of these wind directions the contribution of the proposed development is more than 10dB below the overall predicted noise levels.

#### 9.4.11. Mitigation Measures

#### **Construction Phase**

#### Health and Safety

 Standard health and safety and best practice measures are proposed to protect both workers on the site and amenities of the local population including in terms of construction noise and dust. A traffic management plan will be put in place in order to minimise the effects of the additional traffic.

### <u>Noise</u>

 Best practice measures for the reduction of construction noise at source as outlined in BS5228-1:2009 A1:2014 'Code of practice for noise and vibration control on construction and open sites – Noise', with due regard had to NRA guidelines which give guideline limit values.

#### **Operational Phase**

### Health and Safety

• A Health and Safety Plan will be developed to address identified health and safety issues associated with the operation of the site.

### Employment and Investment

• A Community Benefit Scheme will have a positive impact in terms of investment into community projects.

### Shadow Flicker

- Each turbine is to be fitted with a shadow control system programmed to cease operation where shadow flicker exceeds the relevant thresholds. This action would be taken when particular weather conditions relating to a potential shadow flicker exceedance limits event occurs etc. particular wind speed, direction and direct sunlight present.
- Should exceedances be experienced an investigation will be undertaken to determine the level of occurrence and duration. If the effects are confirmed in the modelling, a shadow flicker survey involving the collection of light data will also be carried out at the property in which the complaint was made. Further

refinement of the blade shadow control system will be conducted to eliminate the shadow flicker occurrence. This could result in the shutting off turbines at specific times of day.

## <u>Noise</u>

- Predicted noise levels associated with the proposed development would be within the best practice noise criteria recommended in the Wind Energy Development Guidelines for Planning Authorities (2006). See tables 11.16 and 11.17. No mitigation measures are required.
- The preferred turbine model will be fitted with a serrated extension of the trailing edge (STE) to the rotor blades. Typically, STE reduces the noise levels by 2 to 3dBA without reducing the energy output.
- In the unlikely event that an issue with low frequency noise is associated with the development an appropriate detailed investigation should be undertaken.

## **Decommissioning Phase**

#### <u>Noise</u>

Decommissioning noise levels are expected to be similar to construction levels, but for a shorter period.

# **Residual Impact**

9.4.13. No significant residual impacts are predicted for any phase of the development.

### **EIAR Conclusion**

9.4.14. Subject to mitigation the proposed development will not result in any significant direct, indirect or cumulative effects on population and human health.

#### Assessment

9.4.15. As noted at the outset I consider that this environmental topic appropriately encompasses the subject issues as raised in the EIAR chapter titled 'Population and Human Health' in addition to noise.

## **Property Valuation**

9.4.16. Observers to the application and the appeal raise concerns about impact on property values arising from the wind farm. The applicant in the EIAR makes reference to a number of studies of wind farms on property values all of which conclude that there is no evidence of consistent negative effect on house prices. As noted previously the area is lightly populated whilst a minimum setback of over 720 metres is to be maintained to dwellings.

### Noise

9.4.17. Observers to the application and appeal raise matters relating to noise. The predicted noise levels for the proposed development have been calculated for all noise sensitive locations identified within a 1.5km radius of the proposed turbines with due consideration given to cumulative impacts with existing windfarms in the vicinity. The results indicate that the predicted noise levels associated with the proposed development would be within the best practice noise criteria recommended in the Wind Energy Guidelines for Planning Authorities (2006) and no mitigation measures would be required. The said guidelines state that the application of 5dB(A) above background noise in very quiet areas is not necessary to offer a reasonable degree of protection and may unduly restrict windfarm development. On this basis the guidelines recommend that the daytime level be limited to within the range of 35-40 dB(A). I note that the Board in recent decisions on windfarms has applied the following condition:

The operation of the proposed development, by itself or in combination with any other permitted wind energy development, shall not result in noise levels, when measured externally at nearby noise sensitive locations, which exceed: (a) Between the hours of 0700 and 2300:

- (i) the greater of 5 dB(A) L90,10min above background noise levels, or 45 dB(A) L90,10min, at wind speeds of 7 metres per second or greater
- (ii) 40 dB(A) L90,10min at all other wind speeds,

(b) 43 dB(A) L90, 10min at all other times.

9.4.18. While the 2019 guidelines remain in draft form I note the Balz Anor -v- An Bord Pleanala Supreme Court judgement [2016] [IESC 124] which states that the Board, in deliberating on an application, should have some regard to the guidance set out therein. The preferred approach as set out in the Section 5.7.4 of the 2019 draft guidelines is for noise limit restriction limits consistent with World Health Organisation guidelines of 5 dB(A) above existing background noise within a range of 35 to 43 dB(A) with 43 dB(A) being the maximum noise limit permitted day or night. This criteria is below that permitted under the 2006 guidelines. As noted the predicted noise levels comply with same.

- 9.4.19. If updated wind energy guidelines are issued prior to a decision being made on this application then the applicable noise parameters would be appropriately referenced by way of condition. Should any exceedances arise then curtailment measures would be required such as operating turbines in noise reduced mode. This would also be addressed by an appropriately worded condition.
  - 9.4.20. I consider that due consideration has been given to cumulative noise impacts having regard to the existing windfarms in the vicinity. I note that predicted noise level at H1 exceeds the 43dB limit. This is the worst case scenario where the receiver is downwind of all the cumulative turbine predicted noise levels. A wind directionality assessment at H1 as set out in Table 11.20 shows that in all but two wind directions the noise level is below 43dB. In both of these wind directions the contribution of the proposed development is more than 10dB below the overall predicted noise levels. Having regard to the Institute of Acoustics Good Practice Guide to the application of ETSU-R-97 which states that noise limits set at any future neighbouring wind farm would have to be at least 10 dB lower than the limits set for the existing wind farm to ensure there is no potential for cumulative noise impacts, it can be concluded that the proposed development does not contribute to the combined noise levels in these wind directions.
- 9.4.21. **Amplitude modulation (AM)** is considered in the EIAR. In ETSU-R097 a distinction is made between the AM which is expected at most windfarms and referred to as 'Normal' AM and 'Other' AM, the latter being AM observed at large distances from a turbine and is generally heard as a periodic 'thumping' or 'whoomphing' at relatively low frequencies. It is noted that on sites where it has been reported, occurrences appear to be occasional and dependent on atmospheric factors, including wind speed and direction. However the likelihood of occurrence at a particular windfarm cannot be reliably predicted at planning stage and only

becomes evident once the turbines are operational. The EIAR notes that in the very unlikely event that Other AM arises then appropriate mitigation measures will be put in place,

- 9.4.22. In relation to **low frequency noise and infrasound** it is noted that wind farms do produce low frequency sounds but that the threshold of hearing is relatively high with low frequency noise usually going unnoticed.
- 9.4.23. I note that the issues of infrasound and AM are not referenced in the current Wind Energy Guidelines. The draft Guidelines in section 3.3 state that there is no evidence that wind turbines generate perceptible infrasound and that downward designs which had a propensity to generate low frequency noise components along with significant AM. Downwind designs are no longer used for large onshore wind farms.
- 9.4.24. There will be an increase in noise levels in the vicinity of the proposed development site during the construction phase but this will be temporary in duration. The noisiest construction activities are associated with excavation, piling and pouring of the turbine bases. The type of activity and equipment that would generate the noise at this stage of development are much the same as those that would be used during other infrastructural works in the countryside. Similarly, the flow of traffic transporting material to and from the site is also likely to be a potential source of increased noise. Best practice measures are to be adhered to during the construction phase. The mitigation of the potential negative effects from construction noise by the imposition of a condition requiring the regulation of such activity is an established measure whose efficacy is established.
- 9.4.25. I accept that the proposed development will introduce a new noise source. However it is my opinion, based upon the analysis undertaken, that this will not have a significant adverse impact on residential properties. Notwithstanding this conclusion, there will be an onus on the applicant to comply with best practice as per the guidelines in relation to noise generation. I note that the 2006 wind energy guidelines acknowledge that noise is unlikely to be a significant problem where the distance from the nearest turbine to any noise sensitive property is more than 500 metres. In this case the nearest property has a separation distance of over 720 metres from the nearest turbine.

### **Shadow Flicker**

- 9.4.26. The EIAR had regard and utilised the parameters set out in the 2006 Guidelines and, in line with best practice, the scope of the assessment extends to a distance of 10 times the maximum rotor diameter. The said guidelines state that at distances greater than ten rotor diameters from a turbine the potential for shadow flicker is very low.
- 9.4.27. The results are reasonably assumed to be the worst case scenario in that the model makes various assumptions such as a bare earth scenario with no screening by vegetation, that the turbines will be rotating at all times and presents their maximum aspect to the observers in all directions, with all receptors having windows facing onto the windfarm and that the sun will always be shining during daylight hours with no cloud cover. The measures detailed to address exceedances including turbine shut down/curtailment via the Supervisory Control and Data Acquisition (SCADA) turbine control system is an acceptable mitigation measure which has been used in other wind farm developments.
- 9.4.28. I am satisfied that subject to mitigation, no significant impact from shadow flicker will arise which would result in annoyance to local residents or impact on the amenity value of dwellings or other structures.
- 9.4.29. The **2019 draft wind energy guidelines** set out more stringent controls than the 2006 document and do not allow for any potential periods of shadow flicker with specific measures including automated turbine shutdown to be required as a condition of the grant of planning permission. The draft guidelines note the technological ability of modern turbines to measure sunlight levels and reduce to stop turbine rotation if conditions were to occur which would lead to shadow flicker at any neighbouring property. In accordance with standard practice a condition is recommended which limits or curtails the operation of the turbines during periods where shadow flicker may arise.

### Health Effects

9.4.30. Observers to the application and the appeal raise concerns about the potential for the wind farm to cause adverse health effects by way of impact on individuals with a range of medical conditions including, but not limited to epilepsy and persons with neurological conditions. 9.4.31. Whilst I acknowledge the concerns expressed, the limits and setbacks applicable with particular regard to shadow flicker and noise are designed to protect humans. On the basis on the information before the Board and given the proposed distance to receptors it is concluded that the proposal would not adversely impact population including vulnerable persons.

# **Population and Human Health - Conclusion**

9.4.32. I have considered all of the submissions made in relation to population and human health, noise and shadow flicker. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of population and human health.

## 9.5. Biodiversity

## **Environmental Impact Assessment Report**

- 9.5.1. **Chapters 5, 6** and **7** relate to Terrestrial Ecology, Aquatic Ecology and Ornithology respectively. They are supported by the following appendices
  - Appendix 5.1 Terrestrial Ecology Target Note Survey Results
  - Appendix 5.2 Habitat Management Plan
  - Appendix 7.1 Vantage Point Survey Data
  - Appendix 7.2 Collision Risk Modelling
- 9.5.2. The application is also accompanied by a Natura Impact Statement and I refer the Board to the Appropriate Assessment in section 10 below.
- 9.5.3. The assessment methodology included a combination of desk top studies using recognised ecological data bases, field surveys, review of the findings of bird surveys for other wind farm projects in the surrounding area followed by detailed targeted surveys including a suite of bird surveys, terrestrial fauna surveys and aquatic surveys.
- 9.5.4. The information provided by the desk top study indicates the Natura 2000 sites that occur within 15km of the site in addition to sites where there is a potential for

connectivity. As the potential for significant effects is considered in detail in the NIS, the designated sites are not considered further in these chapters of the EIAR.

## **Receiving Environment**

<u>Flora</u>

- 9.5.5. As per the Guide for Habitats in Ireland (Fossitt, 2000) a total of 13 habitat communities were recorded within the site. The northern section of the site is dominated by conifer plantation with pockets of blanket bog. The central section of the site is dominated by cutover blanket bog and degraded blanket bog with a band of wet willow alder ash woodland to the west along a steep v-shaped valley of the upper Owengar River. The southern section of the site comprises largely of a mix of wet and improved agricultural grassland (see Figure 5.10 and Table 5.8).
- 9.5.6. The blanket bog occurring within the project site is representative of the priority habitat Active blanket bog\* (7130). It has been assigned international importance (rating A). The nearest examples of blanket bog habitat included in the Article 17 database of Annex 1 habitat are (a) c. 300m to the south of the site's southern boundary and (b) a strip of blanket bog habitat, associated with Coillte plantation c. 400m to the west of the project site (see Figure 5.9)
- 9.5.7. Cutover and degraded blanket bog are assigned county importance (rating C).
- 9.5.8. Dry heath comprises of vegetation communities that are representative of Annex 1 habitat European Dry Heath rated as of National Importance (rating B)
- 9.5.9. The wet heath located in areas of previous turbary activity where shallow peat substrate of c.0.5 metre of less remain is considered to be of county importance (rating C).

<u>Fauna</u>

Bats

- 9.5.10. Manual bat activity surveys and static detector surveys were completed during the 2020 and 2022 bat activity seasons with additional surveys completed during the 2023 early autumn season.
- 9.5.11. No bat roosts occur within or in the immediate vicinity of the Site. Bat activity was recorded as low. The overall distribution of bat activity at and in the vicinity of the

site was recorded within sheltered areas closely associated with the structured vegetated habitat provided by the forestry. In excess of 80% of all bat passes recorded during the automatic monitoring were at the monitoring locations of T1 and T2.

- 9.5.12. In terms of site risk, as per Table 5.4 the project has been identified as a medium scale wind farm project. This is based on the number of proposed turbines being 4 (i.e. less than 10), the presence of other wind farms in the 10km surrounding area and the size of the turbines associated with the project, which are greater than 100m in height. The habitat risk at the proposed wind farm site have been identified as low based on the absence of roost features and the dominance of low-quality habitats that could be used by a small number of foraging bats and the isolated nature of the site with an absence of linear habitat connections to the wider landscape. Based on the medium scale of the project and the low habitat risk, the proposed wind farm site has been identified as having a low site risk (risk level of 2 as per the NatureScot (2021) guidelines for bats).
- 9.5.13. 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 in the vicinity of the 7 no. watercourse crossings along the proposed grid connection route.
- 9.5.14. No badgers or their setts were within the proposed wind farm site.
- 9.5.15. Rabbit, fox and common frog were recorded. Common lizard or smooth newt were not recorded however, the peatland habitats of the proposed wind farm site provide suitable habitat for both these species, and they are likely to occur within, and surrounding the site. Butterfly species were recorded.

### Aquatic Ecology

- 9.5.16. There is an overlap with water and the Board is referred to section 9.7 below. The site is characterised by a network of non-mapped natural and artificial drainage channels which are often found in forestry plantations and peat turbary areas. The site is considered to have a flashy regime with low permeability soils and standing water in some areas.
- 9.5.17. The proposed grid connection route and watercourse intersections all occur within streams or rivers that have high potential for salmonid populations.

- 9.5.18. The results of the macroinvertebrate survey are outlined in Table 6.8. At SW1 the macroinvertebrate community recorded at the site along with the stream conditions are indicative of a Q-value of 4-5. At SW2 and SW3 the macroinvertebrate community recorded along with the stream conditions are indicative of a Q-value of 4.
- 9.5.19. No white-clawed crayfish were identified along the two 100m sections of the Owengar River downstream of the site. It is further noted that there are no historical records for the presence of white-clawed crayfish along the Owengar River.

Avifauna

- 9.5.20. The bird surveys involved vantage point surveys of the proposed turbine locations and existing operational wind turbines in accordance with the Scottish Natural Heritage methodology.<sup>2</sup> Two vantage points (VP1 and VP2) were used for monitoring of the proposed wind farm and surrounding area (see Figure 7.1). Transect surveys were also completed (see Figure 7.3).
- 9.5.21. Table 7.5 provides details for all target species recorded during the Vantage Point Surveys undertaken between March 2019 and March 2021 and April 2022 and September 2022. A total of six no. target species were recorded. These comprise Kestrel, Buzzard, Mallard, Snipe, Hen Harrier and Sparrowhawk. A total of 45 target species flights were observed. Approximately 51% of all target species flights occurred during the non-breeding season.
- 9.5.22. A total of 38 species were recorded during all transect surveys across five separate seasons, comprising three breeding seasons and two non-breeding seasons.
  Meadow pipit was the only red-listed species of high conservation concern recorded.
  A total of 8 amber-listed species of medium conservation concern were recorded, whilst the remaining 29 green-listed species are of low conservation concern (see Table 7.7). No evidence indicating the presence of sensitive breeding bird species such as golden plover or red grouse were observed during the breeding season transect surveys.

<sup>&</sup>lt;sup>2</sup> Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Windfarms, Scottish Natural Heritage, 2017.

- 9.5.23. The results of the field surveys indicate that no target species recorded rely on the flight survey area for breeding or roosting.
- 9.5.24. Table 7.8 set out the key ornithological receptors. Whilst activity was very low for hen harrier across all surveys, given the location of the site within a hectad where wind energy development pressure to hen harrier has been identified by the NPWS (2022) a precautionary approach is taken and this species is included as a KOR.

## 9.5.25. Likely Significant Effects

### **Do Nothing**

• Majority of the site would continue to be managed as commercial forestry and for agriculture. The general biodiversity would remain similar to that recorded.

#### **Construction Phase**

- Loss of 3,797 sq.m of cutover bog (c.9% of the habitat on the site)
- Loss of 1,307 sq.m. degraded blanket bog (c.4% of the habitat on the site)
- Loss of wet grassland and scrub.
- Temporary loss of cutover and degraded blanket bog 4172 sq.m. 85 sq.m. temporary loss of wet heath.
- Potential introduction or spread of invasive alien plant species.
- Potential pollution of watercourses and impact on aquatic ecology.
- Habitat loss, disturbance and displacement during construction for all identified bird species. The project will have the potential to result in the direct loss of potential breeding habitat for some of these 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.

### **Operational Phase**

- Collision and displacement risk for kestrel was undertaken. The details of the collision risk model are provided in Appendix 8-6.
- There is the potential for collision risk for bats.

### **Decommissioning Phase**

• Similar to those identified during the construction phase but of lesser scale and magnitude.

#### Cumulative Impacts

- There are 16 wind farms within 20km of the site. See Figures 2.1 and Table
   7.9. Excluding Croagh which was refused permission by the Board (currently subject of judicial review) this equates to 122 turbines.
- No significant effects as a result of the proposed development in relation to disturbance, displacement or mortality of faunal or avifaunal species has been identified. There is no potential for negative cumulative impacts identified including significant cumulative barrier for avifauna.

#### 9.5.26. Mitigation Measures

#### **Construction Phase**

- ECoW is to be retained to oversee construction works.
- Pre-construction surveys to be undertaken by suitably qualified person(s) to confirm the continued absence of mammal breeding and resting places within the construction footprint and within 50m of the construction footprint or identify the presence of newly established breeding/resting places.
- Ongoing ornithological monitoring during periods of the construction phase that overlap with the breeding bird season. Where evidence of breeding pairs of key ornithological receptors are identified an appropriate buffer distance will be established around the nest site in which no construction activity will be permitted until it is confirmed that breeding has terminated.
- A site-specific CEMP to be implemented and best practice construction methods to be applied.
- Full extent of the infrastructure footprint to be marked out prior to the commencement of works. Where this meets Annex I habitats, this will also be

the full extent of the works corridor, with no machinery access, storage or other works allowed outside this area.

- Any trees and treelines along approach roads and planned site access tracks will be retained unless felling is unavoidable.
- A pre-construction Invasive Species Survey to be conducted. Proposed biosecurity and best practice measures to prevent the introduction or spread of invasive alien species.
- In terms of aquatic ecology the mitigation measures to protect water and watercourses are set out in section 9.7 below are relevant.

## **Operational Phase**

- A Habitat Management Plan has been prepared (Appendix 5.2). The restoration of areas of peatland and the implementation of measures such as the control of drainage and grazing aims to achieve the restoration and enhancement of an area of approximately 19 ha of peatland habitat.
- To reduce the potential for casualties at turbines, measures will be taken to discourage birds from hunting in the area surrounding the four turbine locations This will involve eliminating any high sward or rank vegetation from around the relevant turbine(s) to make it less suitable for supporting prey items such as small mammals (mice, shrews, voles) and birds (meadow pipit, skylark etc).
   Vegetation clearing can be achieved by mowing and/or strimming
- Breeding bird monitoring will be implemented at least 12 months prior to the start of construction works. The surveys will commence (as a minimum) in the breeding season prior to works commencing and for at least the first fifteen years of wind farm operation (i.e., annually for the first three years, then fifth, seventh, tenth and fifteen years). At which point the need for further monitoring would be reviewed. The surveys would include the flight survey area which comprises the four proposed turbines and a 500m surrounding buffer area.
- Collision fatality searches will involve the search of a standard polygon area around each of the 4 no. turbines.

• A 50 metre bat buffer area will be implemented around all turbines which will remain free of suitable foraging habitat consisting of hedgerows, treelines, scrub or conifer plantation edge. This will require the clearance of conifer plantation within the vicinity of the proposed turbines T1 and T2. Figure 5.15 shows the bat buffer areas surrounding turbines and the conifer plantation that will be cleared. Turbines will operate in a manner which restricts the rotation of the blades as far as is practicably possible below the manufacturer's specified cut-in speed. Increasing the cut-in speed of turbines, to be dictated on a case by case basis depending on the activity levels recorded at each turbine. Post-construction surveys will be undertaken for the first three years of operation.

## **Decommissioning Phase**

 Decommissioning plan is to be agreed with the local authority Comparable mitigation measures to prevent impacts on water quality during construction will be applicable to the decommissioning phase.

## **Residual Effects**

- 9.5.29. With full implementation of mitigation measures through the construction, operational and decommissioning phases residual impacts are calculated to be low in all instances.
- 9.5.30. There will be an overall permanent loss of approximately 0.5 ha of peatland in the form of cutover blanket bog and degraded blanket bog to the footprint of the proposed wind farm. In addition, there will be a temporary loss of approximately 0.4ha of cutover blanket bog and degraded blanket bog footprint of the proposed wind farm. The Habitat Management Plan will be implemented to mitigate for the loss of habitat and comprises measures for the restoration and enhancement of an area of approximately 19 ha.

# **EIAR - Conclusion**

9.5.31. The construction of the wind farm, with the implementation of the proposed mitigation measures, will not have a significant adverse effect on the biodiversity of the site and the surrounding area.

# <u>Assessment</u>

# Avifauna

- 9.5.32. I have examined, analysed and evaluated Chapter 7 of the EIAR and all of the associated documentation and submissions on file in respect potential effects on birds.
- 9.5.33. The planning authority in its 3<sup>rd</sup> reason for refusal detailed its concern as to the possibility of significant adverse cumulative impacts on avifauna having regard to birds of conservation value given the extent of existing windfarm development in the vicinity of the site.
- 9.5.34. At the outset I submit that the EIAR has clearly set out the survey works and methods undertaken in accordance with best practice and by competent experts. The bird surveys were undertaken over a two year period from March 2019 and between April and September 2022. The vantage point and transect surveys are in accordance with Scottish Natural Heritage Guidance.
- 9.5.35. Table 7.5 of the EIAR provides details for all target species recorded during the vantage point surveys with a total of six no. target species and 45 no. target species flights.
- 9.5.36. The EIAR also addresses collision risk in section 7.5.3.1 with collision risk modelling undertaken for one species (kestrel) the results of which are presented in Appendix 7.2. The model used is that developed by SNH<sup>3</sup> which is peer reviewed and widely accepted.
- 9.5.37. I consider that the nature and scope of the surveys are robust, acceptable, proportionate and sufficiently up to date to allow for a proper assessment. I note the cited mitigation measures including pre-construction surveys and post construction monitoring which are considered to be best practice measures for such type development.
- 9.5.38. The applicant has also provided details in its appeal to the approach to consideration of **cumulative impacts**. It provides details on the windfarms including their footprint within a 10km radius presenting as the worst case scenario and I refer the Board to

<sup>&</sup>lt;sup>3</sup> SNH (2000), Windfarms and Birds: calculating a theoretical collision risk assuming no avoiding action

Table 4.1 of the appeal submission which provides a summary of the existing and consented windfarms totalling 15 windfarms and 115 turbines<sup>4</sup>, the footprints of which amount to in the region of 167ha. The proposed Letter wind farm infrastructure would have a footprint of c. 5.4ha. This would give a combined area of 172ha. The relevant hectads are G81, G82, G91, G92 and G93. The proposed wind farm is in G82.

- 9.5.39. Interrogation of available resources including Corrine Land Cover mapping, National Hen Harrier Survey Reports, Article 17 Habitat Mapping for 7140 blanket bog and 4010; 4030 and 4060 heath habitats for the respective 5 no. hectads within which the 15 windfarms surrounding the appeal site are located was undertaken to estimate the area of suitable habitat available to species including ground nesting and conifer plantation nesting species.
- 9.5.40. Whilst I note the reference in an observation to the appeal to **Hen Harrier** recorded in the vicinity of the site the species was recorded once, only, in the two years of surveys undertaken. It was not recorded breeding or roosting on the site. From the above mapping exercise undertaken an area of in the region of 9,169 ha of suitable peatland and heathland habitat occurs in the 5 hectads.
- 9.5.41. In terms of cumulative impacts the applicant interrogated the national hen harrier surveys of between 2005 and 2022 with the latter recording the species breeding in hectad G93 and possibly breeding in G92. The species was not seen in any of the surveys in hectads G81 and G82 (appeal site). It is also noted that the vast majority of the wind farms footprints are situated within G81, G82 and G91 which have not been identified as being relied upon by hen harrier. In totality, it is calculated that the existing and permitted windfarms, in conjunction with that proposed, would result in a habitat loss through direct loss and displacement of c.245 hectares which equates to c.2.7% of the suitable habitat within the 5 hectads. A cumulative effect of low significance is assigned.
- 9.5.42. Section 7.5.3.1 addressed collision risk in which studies are cited which demonstrate that fatalities of hen harrier through collision with turbines are rare. The lower susceptibility to collision is due to the low flight altitude of hen harriers (the majority

<sup>&</sup>lt;sup>4</sup> Reference in the appeal submission to 12 windfarms would appear to be in error. See Table 4.1 in appeal submission, pgs. 32-33.

of which are below 20m above ground), the higher rotor swept area of modern turbines and the high avoidance rate of turbines (99% avoidance rate has been assigned by SNH). As noted above 1 no. flight, only, was recorded during the 5 seasons of surveying representing 0.01% of the total survey monitoring time of the flight survey area. No flight activity was recorded within the rotor sweep area of the proposed wind farm turbines. On the basis of this information and detail I consider that the applicant has adequately justified its conclusions that there is negligible risk to the species and that no specific collision risk calculation was required.

- 9.5.43. The greatest flight occurrence was by **Kestrel** with 26 recordings. It was not recorded breeding at the site and on this basis it is reasonable to conclude that there will be no loss of breeding habitat for the species. Having regard to the small area of open habitat being lost to the development and the extent of open habitats in the immediate vicinity estimated to be 23,583 ha. the habitat loss both for the proposed windfarm on its own and cumulatively with the 15 no. developments would be of low significance for the species.
- 9.5.44. As above review of studies were undertaken with reference had to the SNH avoidance rate for kestrel which is set at 95%. Collision with turbines have been reported, with disproportionate numbers recorded for kestrel relative to other species at a number of wind farm sites. Collison Risk Modelling was undertaken for the species. A rate of 0.005 collisions per year was calculated. Based on the absence of any evidence of breeding in the vicinity of the proposed wind farm overall low level of flight activity recorded within the flight survey area and within the rotor sweep area in the vicinity of the proposed turbines, and the low rates of collision predicted by the collision risk model, the potential for collision is assessed as being a very low magnitude impact.
- 9.5.45. In terms of cumulative impacts as the species is not recorded breeding or roosting on the appeal site the wind farm will not have the potential to combine with other wind farms to result in displacement from their breeding or roosting sites. The collision risk modelling undertaken concludes that 0.2 collisions over the 40 year lifetime of the development. The applicant provides details on the estimated national population level of 13,500 with an adult survival rate of 0.69. From this it is estimated that the additional collision risk posed by the proposed development will

represent an increase in the annual mortality rate of 0.0001% representing a very low significance to the species.

- 9.5.46. **Buzzard** was recorded 9 no. times during the vantage point surveys. It was not recorded breeding at the site therefore it is reasonable to conclude that there will be no loss of breeding habitat. The review of studies notes that the species has a high avoidance of wind turbines. Based on the absence of any evidence of breeding in the vicinity of the proposed wind farm and the low level of flight activity recorded within the flight survey area or within the rotor sweep area of the turbines the risk of collision to buzzards is assessed as being a low magnitude impact.
- 9.5.47. Having regard to the extent of open habitats in the immediate vicinity estimated to be 23,583 ha. and assuming the worst case scenario that all habitat on the site is suitable habitat for the species, the loss both for the proposed windfarm on its own and cumulatively with the 15 no. developments, would be of low significance for the species. As the species is not recorded breeding or roosting on the appeal site the wind farm will not have the potential to combine with other wind farms to result in displacement from their breeding or roosting sites.
- 9.5.48. Snipe was recorded on the site 3 times but not breeding or roosting. Snipe fly relatively low to the ground when flushed and often land a short distance from the take off point. Wintering snipe typically stay on the ground foraging, and do not tend to regularly fly within a site. They are only occasionally seen on the wing when moving between feeding areas. The species tend to avoid turbines, which further reduces collision risk. Collision risk impact is concluded to be of low significance. No cumulative loss in terms of habitat or displacement are anticipated to arise.
- 9.5.49. Mallard was recorded twice with the absence of suitable habitat available on the site and on the other wind farm sites within the 10km radius (waterbodies). The conclusions in terms of collision risk as summarised for snipe above also apply to this species. No cumulative loss in terms of habitat or displacement are anticipated to arise.
- 9.5.50. The combined area of open habitat type comprising of **degraded and cutover blanket bog** and **wet grassland** suitable for supporting **ground nesting birds** within the site is c. 6.2 ha with the permanent loss equating to 0.9 ha. which equates to 5.5% which is representative of a medium magnitude impact. Regard is had to

the extent of suitable habitat available to ground nesting birds in the immediate vicinity of the site. Coupled with the low sensitivity of the species to wind farm developments the impact of direct habitat loss would be very low to low. Meadow pipit, skylark, goldcrest and other passerines are not considered to be at risk of collision with the operating wind farm as their flight heights are generally well below the lowest point of a rotating turbine blade.

- 9.5.51. In terms of cumulative impacts for the ground nesting and conifer plantation nesting species including skylark and meadow pipit I refer the Board to Table 4.2 of the appeal submission. It is estimated that within the 10km radius there is a total of 30,553 hectares available of which the existing, permitted and the proposed windfarms account for 0.6%. This percentage loss will represent an impact of very low significance to the species.
- 9.5.52. In terms of **species that breed** in **woodland habitat** including conifer plantation and scrub such as goldcrest and linnet the loss within the windfarm site accounts for 15% of the woodland habitat within the appeal site. As above this would be a medium magnitude impact. This is considered to be the worst case scenario as it does not take into account the prevalence of such habitat adjoining the site. In terms of cumulative impacts there is the potential to result in short term displacement and disturbance during construction. Having regard of the low sensitivity of the said species the impact is of very low significance. The cumulative loss within a 10km radius would equate to a very low to low significance for the species.
- 9.5.53. On balance I consider that the applicant has provided sufficient information in the EIAR as supplemented by the detail provided in the appeal submission to support its conclusions that the proposed development on its own and cumulatively with existing and permitted wind farms in a 10km radius will not result in significant effects on avifauna in terms of habitat loss, displacement or collision risk. On this basis I consider that the planning authority's concerns as detailed in reason for refusal no. 3 have been addressed.

#### Fauna

I note the observation to the appeal which considers that due consideration was not given to bats and otters. I refer to survey works undertaken which accord with best practice.

In terms of **otter** no holts or couches were recorded along the stretch of the Owengar River that bounds the site. Pre-construction surveys are to be undertaken as mitigation. The matter of potential impact of otter as a qualifying interest of designated European Sites is addressed in the Appropriate Assessment in section 10.

**Bat** activity was recorded to be low on the site with no evidence of bat roosts within or in the immediate vicinity. Mitigation measures which accord with best practice including a 50 metre buffer of the turbines free of suitable foraging habitat, blade rotation speed parameters and post construction surveys are proposed.

### Habitats

- 9.5.54. The matter of loss of **blanket bog** and requirements of Article 17 of the EU Habitats Directive has been raised in an observation to the appeal. Under Article 17 Ireland is required to report to the European Commission every six years on the status of habitats and species listed in the Annexes of the Directive. The latest Article 17 Report was published by the NPWS in 2019 and provide estimates for the area of Annex 1 habitats occurring in the state. The nearest recording of such Annex 1 blanket bog habitat is approx. 300m to the south of the site's southern boundary with a strip of blanket bog habitat, associated with Coillte plantation approx. 400m to the west of the project site. Figure 5.9 shows the location of these areas of blanket bog with respect to the site. Both examples are buffered by existing stands of conifer plantation and tracks or roads and are not connected to the project via any pathways.
- 9.5.55. The Planning and Development Act, 2000, as amended, in section 171A(b), requires the Board to consider the likely direct and indirect effects of developments on biodiversity, with particular attention to the species and habitats protected under the Habitats and Birds Directive. Further, the under Article 27(4)(b) of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021(transposing the Habitats and Birds Directives into national legislation), requires public authorities to take steps to avoid pollution or deterioration of habitats that occur outside of protected areas. The proposed footprint of the development avoids the area of the Annex I habitat classified as being of international importance within the site boundary. An area of approx. 5104 sq.m. of cutover and degraded blanket bog

equating to approx. 13% of the site area is to be permanently removed with approx. 4172 sq.m. (12% of site area) to be removed temporarily. The loss will be mitigated by the proposed rehabilitation of habitats as proposed in the Habitat Management Plan.

## Monitoring

I note that an Ecological Clerk of Works is to retained to oversee the construction works and that the NIS makes reference to the appointment of a project ecologist for the operational phase to supervise ongoing implementation, management and monitoring of peatland habitat management and enhancement measures. I recommend that should permission be granted a project ecologist be retained to oversee the implementation of the mitigation measures during both the construction and operational phases.

## **Biodiversity - Conclusion**

*9.5.56.* I have considered all of the written submissions made in relation to biodiversity. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of biodiversity.

### 9.6. Land and Soil

# Environmental Impact Assessment Report

- 9.6.1. Chapter 8 addresses soils and geology with the following supporting appendices:
  - Appendix 2.1 CEMP: Management Plan 4: Peat and Spoil Management Plan
  - Appendix 8.1- Numerical Analysis of Key Indicators to Determine HAZARD for the Purposes of Peat Slide Risk Evaluation
  - Appendix 8.2-Analytical Analysis
  - Appendix 8.3 Peat Probing Data
  - Appendix 8.4 (a)-Vane Data
  - Appendix 8.4 (b)-Von Post Data

- Appendix 8.5 Trial Hole Logs
- Appendix 8.6 Trial Pit Photographs
- Appendix 8.7 Geotechnical Risk Register
- Appendix 8.8 Peat Slide Risk, Preventative Action, Guide for Workers
- 9.6.2. The assessment methodology consists of a desk top study using published maps, aerial photography and recognised data sets. Field surveys were undertaken between February 2021 and August 2023 and included walkover surveys and intrusive site investigations (see Table 8.1 for summary).
- 9.6.3. Due regard is had to the Scottish Executive's Peat Slide Hazard and Risk Assessment – Best Practice Guide for Proposed Electricity Generation Developments, 2<sup>nd</sup> ed. April 2017.

# **Receiving Environment**

- 9.6.4. The site consists of lands characterised as blanket bog peatland, turbary, mature forestry and isolated areas of semi-improved grassland. Preliminary ground investigation data records peat underlain by a natural sequence of glacial soils overlying shale rock. Intact bedrock was encountered during the intrusive investigations at proposed Turbine T1, approximately 2.80m below existing ground level. Groundwater was generally not encountered in any significant volumes within exploratory trial hole excavations. Ground slopes range from low to moderate across the wind farm locality and exhibits slope gradients of less than 15° to the horizontal within the development.
- 9.6.5. Land in the vicinity of the proposed Letter Wind Farm site is predominantly underlain by the Dergvone Shale Formation. In the northern portion of the site the forestry roads have been constructed using this shale rock recovered from the existing borrow pits located on site.
- 9.6.6. The majority of the northern part of the site is covered by forestry and peat depths in excess of 5 metres were recorded. Historic peat cutting occurred on the southern half of the site with moderate peat depths ranging between 9 and 2.5 metres in thickness recorded.

- 9.6.7. Table 8.10 details the variation of peat depth at proposed turbine/structural locations. From same an average peat depth within the construction footprint of the turbines was recorded; 1.85 m at T1, 2.50 m at T2, 2.25m at T3 and 1.40 m at T4. In terms of the investigations undertaken at the substation site averages of 0.40m, 4.70m and 2m respectively were calculated. An average of 0.10m at the construction compound and 1.98 metres along the access track were recorded.
- 9.6.8. As per details from GSI 59 no. landslide events have been mapped within a 5km radius of the site. 29 no. relate to locations where a scar/soil detachment is visible on the hillside and do not generally have a date of occurrence. One mapped area of soil detachment is recorded within the wind farm site and is approx. 75 metres northwest of T4. GSI landslide susceptibility mapping indicates that the above landslide event is within lands designed as Moderately High landslide susceptibility with the majority of the wind farm infrastructure coinciding with low to moderately low landslide susceptibility (see Figure 8.6). The substation, compound and access track are within an area mapped as being of moderately high susceptibility.
- 9.6.9. A Peat Stability Risk Assessment was carried out and indicates that the risk of significant mass movement of soils or landslides occurring is low within the footprint of the development.

### Likely Significant Effects

### **Do Nothing**

• The ground and soil conditions would remain as existing save for potential future felling of the commercial plantation.

### **Pre-Construction and Construction Phases**

- Site investigations will be required to inform detailed design of turbine foundations, substation foundations, road design, HDD techniques etc. The use of machinery could cause compaction to peat/soils along the access route whilst use of hydrocarbons would present a risk of soil contamination if spills or leaks occurred.
- Table 8.11 details the estimated peat and subsoil to be excavated totalling 54,236 m<sup>3</sup>.
- Compaction, erosion and degradation of soil by construction vehicles.
- Potential for bog failure.

• Changes to hydrological regime and water quality (see section 9.7 below)

## **Decommissioning Phase**

• Changes to hydrological regime and water quality (see section 9.7 below)

## 9.6.10. Mitigation Measures

## **Pre Construction and Construction Phases**

- CEMP will be in place.
- Mitigation by design avoiding areas of deep peat.
- Confirmatory pre-construction phase ground investigation works to confirm absence of change to baseline conditions that have informed the proposed wind farm design, to comprise of both intrusive and non-invasive ground investigation elements.
- Supplementary investigations may be undertaken during the construction phase to assess the integrity of the rock formation beneath critical infrastructure.
- Appropriate engineering controls, such as the installation of a drainage system with settlement / stilling ponds, silt traps, check dams and interceptor drains, to be carried out in tandem with, and where possible, prior to, any excavation work to mitigate potential impacts
- Prior to commencement of construction works all-natural organic topsoil will be stripped from the footprint of the proposed development and stored temporarily in a series of stockpiles.
- For off-sections, granular material will be placed over exposed clayey subsoil or made ground, to prevent erosion of fines and/or rutting.
- During construction any exposure of bedrock surfaces will be minimised. Following uncovering of the bedrock surface and excavation to the required

level, the exposed formation will be covered by a non-permeable barrier material until construction work can be completed in a timely manner and then reinstated.

- There will be limited stockpiling of material on-site. Excavated soil / material will be removed off site for recovery or re-use. Any stockpiles will be small in size and covered with appropriate waterproofed material where fine content exceeds 5%.
- Open excavations, where practical, will be covered and sidewalls supported, if these are to remain open for periods in excess of a day. Excavations are to be backfilled as soon as practicable.
- Where contaminated material is encountered, it will be left in-situ while testing to determine its characteristics is carried out. This material will be covered to minimise rainfall ingress. The material will be excavated and either retained on site or transported by a permitted waste contractor to an appropriate facility for treatment or disposal.
- Best practice measures to be implemented to reduce the risk of soil, subsoil, made ground and/or groundwater contamination arising as a result of spills or leakages.

## Peat Stability

- The Contractor's methodology statement to be reviewed and approved by a suitably qualified geotechnical engineer.
- The potential for peat slide to be monitored during the construction works by a suitably qualified and experienced professional.
- Suitable staff training on working on upland environments and procedures aimed at reducing peat slide risk.
- All peat excavated to be immediately removed from sloping sites.
- Spoil movements will be minimised by disposing of the material within or immediately adjacent to the construction footprint of the structure from where it was excavated.

- Excavated spoil will not be deposited on the down slope or up slope edges of the adjacent peat. This spoil will be deposited on the two flanks either side of the excavation (where gradient is least) and spread in such a way as to limit the surcharge pressure on sensitive peat.
- Slopes will not be undercut, or excavations left unsupported for periods in excess of 24 hours.
- All slopes to be regularly checked for development of tension cracks (caused by desiccation), indicative of slope movement.
- To mitigate again bog burst the design of turbine bases are to be engineered to ensure that excavations do not cut into deep peat (>2.50m).
- Where slopes are less than 5 degrees, floating roads may be placed within peat cover exceeding 2.50m depth.
- The hardstanding areas surrounding the turbine bases to be designed so that crane loadings can be transferred directly onto the competent strata underlying the peat. In order to facilitate these works it will be necessary to undertake limited excavations. To ensure effective sidewall support during these operations the contractor will adopt an approved engineering solution (such as sheet piling) to maintain sidewall stability at all times.
- Pore water pressure within excavations should be kept low at all times by draining deliberate or intentional sumps at regular intervals.
- Low ground bearing pressure machinery to be used in sensitive areas. Less sensitive areas should be completed first to allow suitable construction practices to be established before works commence in the more difficult areas.
- Glacial spoil disposal will take place within a 100m radius of each structure.
- Preparation of the spoil disposal site will involve the removal of the "Top Mat" which will be transplanted to an area of inactive bog and maintained for re-use during restoration operations.
- Spoil will be deposited, in layers of 0.50m and will not exceed a total thickness of 1.50m.

- Spoil will be deposited on slopes of < 10 degrees to the horizontal and greater than 10m from the top of a cutting. The exact location of such areas will be determined on consultation with the geotechnical specialist.
- A peat stability register will record the location of each spoil disposal site used and regular weekly assessment will be made by the construction manager or other suitably qualified individual.
- Once disposal is complete the disposal sites will be re-vegetated with the "Top Mat" removed at the commencement of disposal operations. Upon commencement of the restoration phase guidance from a suitably qualified ecologist will be sought to provide a suitable methodology and programme of maintenance for the restored areas.
- Drainage management measures will be installed to effectively drain grounds in tandem with access track construction. Such drains to be positioned at an oblique angle to slope contours to ensure ground stability. Drains on areas of the site with minimal risk of bog failure can be positioned at a more acute angle to the slope contour in order to reduce the velocity of surface water drainage.
- Wherever possible any imported aggregates should consist of a similar geochemistry to the local geology of the site.
- Excessively wet periods to be avoided in terms of scheduling significant excavations in peat substrates.
- The zone of historic peat landslide movement to the western side of access track and infrastructure at turbine T4, will be stabilised so as to prevent the continued natural loss of peat and / or mineral soils into the adjacent watercourse. The watercourse will be culverted along the entire length of the recorded landslide zone to stop any subsequent soil movements from entering the water course.

• Mitigation measures identified under water (see section 9.7)

## **Decommissioning Phase**

• No new mitigation anticipated

#### Cumulative Impacts

 Impacts on soil and geology do not extend beyond the immediate vicinity of the site, therefore no cumulative impacts between the proposed development and other existing or permitted or proposed projects have been identified.

## **Residual Impacts**

9.6.11. No significant residual impacts anticipated after mitigation.

## **EIAR - Conclusion**

9.6.12. The construction of the wind farm, with the implementation of the proposed mitigation measures, will not have a significant adverse effect on land and soil.

## Assessment

- 9.6.13. The matter of peat stability and potential for **peat slide** comprises one of the substantive concerns of the planning authority and observers to the appeal. The planning authority engaged RPS to critically review the Peat Landslide Hazard Risk Assessment in this chapter of the EIAR on foot of which it adjudicated that having regard to the site characteristics including slope and peat depths, to the number of landslide events in the vicinity and to the proposed spoil and peat management, a significant level of uncertainty remains and that there is a real and inherent risk of peat failure and/or landslide associated with the construction stage of the proposed development.
- 9.6.14. The appeal submission sets out the response to matters raised in the RPS report concluding that it has been demonstrated that the likelihood of peat landslide is negligible.
- 9.6.15. Section 8.3.81 of the EIAR pertains to the *Peat Stability Hazard Assessment* in which regard is had to Peat Landslide Hazard and Risk Assessments, Best Practice Guide for Proposed Electricity Generation Development<sup>5</sup>. I note the agent for the applicant clarifies that the planner's report should appropriately refer to PLHRA (Peat Landslide Hazard Risk Assessment).

<sup>&</sup>lt;sup>5</sup> Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments Prepared for Energy Consents Unit Scottish Government Second Edition, April 2017.

- 9.6.16. On examination of the detail before the Board I note the following:
- 9.6.17. As per the GIS landslide susceptibility mapping (see Figure 8.6) the majority of the wind farm infrastructure coincides with low to moderately low susceptibility with the substation, compound and access with moderately high susceptibility. The applicant states that this risk of instability is offset by low average peat thickness of <0.5m. I also note the proximity of an area of high susceptibility immediately to the west of the wind farm site coinciding with the steep slope to the Owengar river which corresponds with a soil detachment occurrence on the site (see section 9.6.17 below). I note that the applicant proposes to culvert the stream for the extent of the landslide zone although specific detailed plans for this proposal do not appear to accompany the application. I note the EIAR. It is unclear whether this correlates with section 6.6.1.1 of the NIS which refers to the culverting of the drainage channel that conveys surface water along the depression that formed following the historic peat detachment.</p>
- 9.6.18. As noted by all parties to the appeal there is a notable number of recorded peat failures in the vicinity of the appeal site with due regard had to the GSI details. In total 59 no. landslide events have been mapped within a 5km radius. 29 no. of these are part of a GSI pilot project and relate to locations where a scar/soil detachment is visible on the hillside. These do not generally have a date of occurrence. One such mapped area of soil detachment is recorded within the site and it's mapped location is approx. 75 metres north-west of T4 and associated access track (see Figure 8.4). The applicant adjudicates that it is indicative of a natural event where high rainfall had caused the detachment of relatively thin peat soils on a small steeply sloping gully. The applicant notes that both non-intrusive and intrusive site investigations were undertaken at the site of T4 in the vicinity, including gouge core sampling, insitu testing for peat shear strength and von post analysis.
- 9.6.19. The other recorded landslide events as per the GSI database record an approx. date of the landslide. Of note is that at the Garvagh Glebe windfarm site in 2008 which is 1.2km to the west of the appeal site. Save for its inclusion as one of the recorded landslide events in the vicinity the applicant acknowledges that it was not specifically reported in the EIAR. This matter was raised by RPS and in the council's planner's report where it was considered that the key observations of the said failure should be

considered in the PLHRA due to the similarities in the sites and to provide for a robust justification of the qualitative approach taken in defining peat failure hazard. The applicant in the appeal response makes reference to a technical report specifically compiled for the PLHRA which was summarised for this chapter of the EIAR and which is stated to be a fuller and informative report. This report does not appear to form part of the EIAR supporting documentation and the applicant did not avail of the opportunity by way of its appeal to present the report to the Board. I note that the applicant reviewed the 2020 event at Shass Mountain c. 3km to the southeast (see Appendix B of the appeal response). The said event was stated to be natural event and was not as a consequence of development/construction activities.

- 9.6.20. Whilst the EIAR references evidence of **tension cracking** or **compression features** which may be a pre-failure indicator on the site, no mapping of such features has been provided as recommended in the Scottish Guidance. The applicant in the appeal notes that the closest cracks recorded to infrastructure is approx. 127 metres northeast of T2 on lands sloping at 0 to 1.5 degrees with the impact on these cracks on the stability of peat determined to be negligible.
- 9.6.21. The matter of Factor of Safety (FoS) as raised by RPS in its report is addressed in the appeal submission with Appendix D comprising an explanatory note of Eurocode 7 and BS 6031:2009. The appeal submission notes that an earlier iteration of the latter document as referenced in the EIAR (dated 1981) was in error. The 2009 version remains valid. As per Table 8.17 in the EIAR a FoS for dry conditions of less than 1.3 is recorded at T1, T3 and T4 at 1.13, 0.56 and 0.93 respectively. The Scottish Guidance notes that FoS less than 1 indicates the slope to be unstable and likely to fail. Further details provided in Appendix D of the appeal response provides calculations as per Eurocode 7. Where there is no surcharge loading a FoS of 1.78 at each of the locations was calculated. With a surcharge of 10kPa equivalent to 1m of stockpiled peat assumed as a worst case a FoS of 1.41 (minimum) was calculated.
- 9.6.22. In terms of the **quantitative analysis** as set out in section 8.3.8.3 and the identification of hazard ranking it is noted that the Scottish Guidance does not provide a definitive approach to the determination of elements required to ascertain Hazard or Exposure. As a consequence it is for the assessor to derive their own weightings for factors they predict to relate to each HAZARD and what is considered

as EXPOSURE. I refer the Board to Appendix 8.4 which details the Numerical Analysis of Key Indicators to Determine HAZARD for the Purposes of Peat Slide Risk Evaluation and to Tables 8.19 to 8.25 of the EIAR. I would concur with the RPS assessment that an appropriate explanation is not given for the assigned values and the basis on which they were calculated. Whilst I note the assessment of the peat failure at Shass Mountain relative to the applicant's quantitative analysis is provided in the appeal submission I submit that the calibration of the applicant's approach with reference to the nearby peat failure at Garvagh Glebe would have provided for a more robust analysis.

- 9.6.23. The agent for the applicant in the appeal response notes that an analysis of in-situ testing data shows the peat to be relatively weak but in line with peat strengths recorded at other upland peat bogs and that peat shears of 10-12kPa are appropriate recognising the significance of these values being at the lower end of the 22nr recorded levels. (see appendix 8.4). It is further stated that the significance of **peat shear strength** should not be relied on too strongly as experience shows that this demonstrates a high degree of spatial, depth and temporal variation. It is also contended that the properties and significance of catotem peat are understood by the author.
- 9.6.24. As noted above in the region of 54,236 m<sup>3</sup> of peat soils and subsoils are to be excavated from the site. As per the **Peat and Spoil Management Plan** (No. 4 of CEMP) there are to be 4 no. spoil storage areas in addition to use of the borrow pit. No details are provided of same either with the application or at this appeal stage.
- 9.6.25. In response to the concerns regarding side casting the applicant states that the scheme allows for the potential to create triangular peat bunds of max. height of 2 metres averaging 1 metre along approx. 700 metres of the access track network where peat thickness is <0.50 thick on slopes of less than 10 degrees. Where such conditions are not met the procedure will not be deployed. 1,745m of new tracks are required to serve the proposed development of which floated roads are to be employed where slopes are less than 5 degrees and peat depths exceed 2.5 metres. The Board is advised that the mitigation measures detailed in section 6.3.1 of the NIS state that floated roads would only be constructed where peat exceeds 1.5 metres in depth with a crossfall of less than 1 in 10.</p>

- 9.6.26. The agent for the applicant further states that following a review of the capacity of the proposed on-site borrow pit there is understood to be sufficient storage available so as to remove the need for side casting completely with the peat spoil to be used for its restoration and landscaping following the construction stage. As noted previously the location of the borrow pit does not appear to be delineated on the site layout plans accompanying the application but I note its location on Figures 8.5 and 9.1(b) in the EIAR (in the northern section of the site adjacent to the watercourse bounding the site to the west). In response to the IFI submission to the planning authority the applicant states that the results of the construction phase ground investigations will determine the extent of the borrow pit and in the case where there is potential to expand the borrow pit the volume of material deposited in the four spoil storage areas can be reduced. It is noteworthy that from the details provided in the NIS the borrow pit site is stated to have an area of 5000 sq.m. with material to be excavated stated to be 25,000 sq.m. (see Table 2.3). Table 2.4 of the NIS provides a summary of re-use of excavated material again with a reliance on spoil storage areas 1-4 for 32,019m<sup>3</sup> of which no details are provided. Material used to infill the borrow pit is detailed at 11,499m<sup>3</sup> which would suggest that the 6,980m<sup>3</sup> originally proposed for side casting could be accommodated. It is unfortunate that this was not clarified in the appeal submission. Also details of the depth to which it is estimated that the borrow pit will be worked and drainage of the pit have not been provided.
- 9.6.27. I acknowledge that there is always the risk of peat landslide on upland sites where peat is present. I note that the purpose of the PLHRA is to determine the likelihood that such an event will take place during the period of the development particularly during the construction stage and the period immediately after and to assess all pertinent components that regulate this risk in such a way that the final infrastructure as presented occupies the footprint that carries the lowest possible probability of peat landslide occurring. I also acknowledge the expertise of the applicant's consultants in this field and their rejection of the association of the project with past peat slides associated with projects in the vicinity. Notwithstanding, I consider that the details provided in the EIAR and documentation accompanying the application lack clarity and that the appeal response fails to address the lacunae in the information available. In my opinion the detail before the Board is not sufficient to allow for an informed decision to be made. In view of the recognised sensitivities of

the area which are reflected in the reported events in the vicinity and having regard to the proximity of the Owengar River, I consider a precautionary approach is required. At this juncture a refusal of permission is recommended.

## Land and Soil - Conclusion

9.6.28. I have considered all of the written submissions made in relation to land and soil, in addition to those specifically identified in this section of the report. I am not satisfied that there is sufficient and clear information before the Board on which to make a fully informed decision that the risk of peat slide would be negligible and that the impacts on land and soil would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures or that the lacunae in the information can be addressed by way of condition. I am therefore not satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of land and soil.

## 9.7. Water

## Environmental Impact Assessment Report

- *9.7.1.* The potential impacts of the development on the water environment are assessed in **Chapter 9** *of the EIAR.* The following appendices are of relevance:
  - Appendix 2.1 CEMP (including Surface Water Management Plan)
  - Appendix 9.1- Letter Strategic Flood Risk Assessment (SFRA)
  - Appendix 9.2 Letter Wind Farm Project Site Photographs
  - Appendix 9.3 Surface Water Hydrochemistry Database
  - Appendix 9.4 Surface Water Sampling Laboratory Certificates
  - Appendix 9.5 Conceptual and Information Graphics

## Receiving Environment

9.7.2. The subject site is as previously described and is characterised mainly by forestry and peatland with man-made drains and ditches. Surface water mapping is provided in Figure 9.6(a). A watercourse with very steep sides divides the area of bogland from the forestry plantation. The site is considered to have a flashy regime with low permeability soils and standing water in some areas.

- 9.7.3. The wind farm site and the southern part of the grid connection route (comprising of 5 no. water crossings) drains into two sub catchments
  - Sub Catchment: Owengar (Leitrim)\_SC\_10, River Sub Basins: Owengar (Leitrim)\_SC\_010 and Diffagher\_10, Rivers: Owengar (Leitrim)\_010, Owengar (Leitrim)\_020, Diffagher\_010
  - Sub Catchment: Shannon Upper\_SC\_020; River Sub Basin: Shannon Upper\_040, Lough: Lough Allen
- 9.7.4. These sub-catchments are located within the Upper Shannon catchment (Catchment ID26A).
- 9.7.5. The north part of the grid connection route (comprising of 2 no. water crossings) is situated in Sligo Bay catchment.
- 9.7.6. The WFD status (2016-2021) for Owengar River is good and the Diffagher River is moderate.
- 9.7.7. Consultation with the GSI Groundwater Map Viewer (2022) indicates that the Wind Farm Site is underlain by areas classified as 'Moderate (M)' vulnerability rating.
- 9.7.8. The Site is not within a probable flood zone

## 9.7.9. Likely Significant Effects

## **Do Nothing**

• Existing land uses including commercial forestry which have had an impact on the baseline conditions could continue to do so.

## **Construction Phase**

- Excavations and earthwork activities including tree felling have the potential to adversely impact on surface water and groundwater with release of elevated suspended solids to surface waters, give rise to soil erosion, compaction and degradation with potential for soil instability, nutrient loss and nutrient loading of receiving waters.
- Accidental spillage of hydrocarbons and cementitious materials impacting hydrochemistry.

- Should dewatering of open excavations, turbine foundations etc. be required, the receiving engineered drainage and attenuation features will likely receive water discharges elevated in suspended solids.
- In stream works will be avoided as far as possible, however, infrastructure such as culverts over natural or artificial drainage channels and non-mapped rivers will require instream works with the potential effects to water quality.

 The development at the site will lead to a net increase in runoff equating to 30.06/s/ha (litres per second) 0.102 m<sup>3</sup> /second or 2.61% relative to the site area.

## Decommissioning Phase

• Impacts identified during the construction phase but to a lesser extent.

## Cumulative Impacts

 The proposal to contribute to and add to the cumulative nature of adverse effects imposed on the surface water network in the catchments associated with the project. In the context of the pre-existing "Good" and "Moderate" WFD status of the surface waters surrounding the proposed project, and the generally good-quality baseline water quality results, the potential for adverse cumulative effects on hydrology is limited to the construction phase.

## 9.7.11. Mitigation Measures

There is an overlap with the measures detailed under land and soil. I refer the Board to section 9.6 above. To avoid undue repetition I recommend that the sections be read in tandem.

## **Construction Phase**

- Ecological Clerk of Works to be retained. Monitoring of environmental obligations by ECoW.
- Methodology Statements of Works, prepared by the Contractor, to be submitted to the local and relevant authorities associated with the development.

- Management of excavated material will adhere to the measures related to the management of temporary stockpiles outlined in Chapter 8:Soils and Geology and the Peat and Spoil Management Plan which forms part of the CEMP (Management Plan 4).
- Earthworks to be limited to seasonally dry periods and will not occur during sustained or intense rainfall events with protocols for covering of exposed soils in such occurrences.
- Inspection by ECoW following heavy rainfall events prior to recommencement of works.
- Emergency response system developed (Management Plan 1 Emergency Response Plan and Management Plan 3 – Section 5.10).
- A 50m buffer from watercourses except at water crossings. These will be marked out prior to works beginning on site. A 15 metre drainage buffer zone to be implemented.
- Drainage will be installed in parallel with road construction.
- Check dams to be used for road drainage. All road sections will drain to settlement-attenuation ponds.
- Silt fencing will be utilised during water crossings and around stockpiles.
  Where possible multiple silt fences will be installed at multiple locations in drains / treatment trains discharging to the surface water network. Multiple silt fences / screens will be deployed at drains/outfalls discharging to surface waters.
- Settlement-attenuation ponds will be used at every major excavation.
- Excess build-up of silt will be removed at check dams, attenuation/settlement ponds or any other drainage feature by scraper or excavator and under the supervision of the ECoW.
- Surface water runoff to be discharged to land via buffered drainage outfalls which will be located outside of surface water buffer zones and will not be positioned in areas with extensive existing erosion and exposed soils.

- Flocculant 'gel blocks' made from anionic polymer to be used in drainage channels upstream of stilling ponds to promote the settlement of finer solids.
- Vacuum excavation techniques or similar will be used for excavations with surface water buffer zones and other sensitive areas.
- Best practice measures for storage of fuel and refuelling on site and for plant machinery. The designated refuelling area will be located a minimum distance of 50m from any surface waters or site drainage feature.
- Best practice measures for dealing with accidental spillage on site and treatment and disposal of waste.
- Dedicated bunded area for concrete wash out within the temporary construction compound. Only chutes to be cleaned prior to departure.
- Precast concrete will be used where possible.
- Concrete will be poured during meteorological dry periods/seasons in so far as practical and reasonably foreseeable.
- Designated refuelling area to be bunded to 110% volume capacity.
- Appropriate storage of chemicals
- Monitoring of quality of the water being discharged. If discharge water quality is poor (>25mg/l) additional measures will be implemented, e.g. pausing works as required and treating construction water by dosing with coagulant to enhance the settlement of finer solids.
- Watercourse crossing within the site and along the grid connection route will be way of bottomless bridge culvert.
- Infrastructure such as culverts over natural or artificial drainage channels and non-mapped rivers may require instream works. Where culverts are required and in-stream works are necessary best practice measures to be taken (see sections 9.5.2.14 & 9.5.2.15)
- Programme of water quality monitoring to be agreed with IFI and Leitrim County Council.

• The drainage system to be installed will comprise of collector drains, check dams, dirty water collector drains, buffered outfalls to vegetated areas utilising the infiltration capacity of the ground, and clean water collector drains. The potential combined attenuation capacity of the drainage infrastructure has been designed to attenuate net increase in water runoff during extreme storm events i.e. 1 in 100 year storm event plus a 20% allowance for climate change.

## **Decommissioning Phase**

- Impacts as detailed for the construction phase but to a lesser degree.
- Decommissioning plan to be developed.

## **Residual Impact**

- 9.7.12. The residual impact on the surface water receiving environment resulting from the construction phase of the development is anticipated to be a limited temporary decrease in water quality. Mitigation by avoidance and the implementation of physical control measures to ensure that contaminant concentrations, particularly elevated suspended solids entrained in run-off are reduced to below the relevant legislative screening criteria. The overall impact is anticipated to be a direct, adverse, and imperceptible. During the operational phase the residual impact is anticipated to be neutral.
- 9.7.13. The mitigation measures as detailed will reduce any potential cumulative effects to acceptable levels.

## **EIAR Conclusion**

9.7.14. With the implementation of the proposed mitigation measures the proposed development will not have a significant adverse effect on the biodiversity of the site and the surrounding area.

#### Assessment

9.7.15. I consider that the matter of water and potential impacts would be appropriately assessed in conjunction with land and soil as set out above. As noted above I do not consider that there is sufficient detail and clarity with regard to aspects of the

project in terms of land and soil on which an informed decision can be made. This is pertinent in view of the proximity of the Owengar stream which bounds the site to the west and the fact that a tributary of same traverses the site. As noted in the EIAR in the event of a peat slide event, the potential will exist for the conveyance of significant quantities of peat materials to the Owengar River and associated sub-catchment. Any peat slide or slope failure which occurs will have the potential to result in medium to long-term significant negative effects to the water quality, habitats and fisheries supported by the Owengar River. Such an event would also have the potential to undermine the efforts by Inland Fisheries Ireland (IFI) in rehabilitating this watercourse and its fisheries since the 2008 landslide associated with Garvagh Glebe windfarm. In this regard I note the detailed submission on the application by Inland Fisheries Ireland wherein it details its reservations with respect to the excavation, storage and disposal of materials on the site and the potential impacts on water quality.

9.7.16. I note that IFI has raised areas for which further detail/information on specific aspects of the construction and operational drainage are required including details of which solutions are to be used in which cases, acceptability of 28mg/l discharge, use of flocculant gels in drainage channels etc. The applicant in the appeal submission notes that a 50 metre buffer from watercourses except at water crossings is to be maintained and that the proposed watercourse crossings are to be undertaken in accordance with the 2016 IFI Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. Drainage will be installed in parallel with road construction with check dams used for road drainage with all road sections draining to settlement-attenuation ponds. Silt fencing will be utilised during water crossings and around stockpiles with settlement attenuation ponds to be used an major excavations. The use of flocculant gels are defended for use to settle very fine solids or colloidal particles which are stated to passive systems that are self-dosing, self-limiting and are environmentally friendly. Water quality monitoring to be agreed with the County Council and the IFI is also proposed. A Surface Water Management Plan (Appendix 2.1) has been prepared for the proposed wind farm and this plan details the implementation of the suite of measures to avoid negative impacts to water quality and the hydrological regime of the Owengar River.

#### Water - Conclusion

9.7.17. I have considered all of the submissions made in relation to water. In view of the above identified lacunae in terms of land and soil it is not possible to definitively conclude that potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures or through suitable conditions. I am therefore not satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of water.

## 9.8. Air and Climate

## **Environmental Impact Assessment**

9.8.1. **Chapter 10** addresses air and climate with Carbon Balance Calculations provided in Appendix 10.1.

#### **Receiving Environment**

9.8.2. EPA ambient air quality data is used to characterise the existing air quality in the area and is typical of that of rural areas in Ireland i.e. Zone D. The closest online monitoring site to the development within the same air quality zone is Carrick-on-Shannon.

#### 9.8.3. Likely Significant Effects

#### **Do Nothing**

 No change to the prevailing air environment. The opportunity to reduce emissions of carbon dioxide, oxides of nitrogen (NO<sub>x</sub>) and sulphur dioxide (SO<sub>2</sub>) to the atmosphere would be lost due to the continued dependence on electricity derived from fossil fuels rather than renewable energy sources.

## **Construction Phase**

• Dust and exhaust emissions from vehicles both within and transporting to the site and use of plant.

No direct emissions to the atmosphere from the windfarm. Emissions from service vehicles would be limited. The electricity generated will result in a reduction in CO<sub>2</sub> and other emissions associated with the generation of electricity from fossil fuels. The methodology set out in '*Calculating carbon savings from wind farms on Scottish Peatlands*' developed by the Scottish Government was applied to the development. Table 10.4 details the calculated carbon losses. The development is expected to give rise to 44,958 tonnes of CO<sub>2</sub> equivalent losses for the 4.2MW model over its 40-year life.

## **Decommissioning Phase**

 Similar impacts as the construction phase, but of reduced magnitude as elements of the development including substation and roads would remain in place.

## Cumulative Impacts

 Due regard is had to the potential for construction of permitted windfarms in the study area being undertaken concurrently. Even if construction of these wind energy developments was to take place at the same time, given the distances from the site, there would not be any cumulative air quality effects. The potential cumulative operational impact with other renewable energy projects will be long term, significant and positive on air and climate.

## 9.8.8. Mitigation Measures

## **Construction Phase**

- A Construction and Environmental Management Plan (CEMP) will be in place for the construction phase and includes standard mitigation measures to be employed to control dust and air emissions.
- Turbines and construction materials are to be transported to the site via specific routes, only. Agreed haul roads adjacent to the site are to be regularly inspected and any material deposits are to be removed.

- Dust suppression measures will be used along haul roads, site roads and around the borrow pit area during periods of dry weather.
- All plant and materials vehicles are to be stored in dedicated areas on site.
- Areas of excavation and stockpiling of materials are to be kept to a minimum.
- The transport of spoil will be minimised.
- Tree felling will be carried out in accordance with Forest Service guidelines and in compliance with any felling licence granted.

- No mitigation required.
- Any trees felled will be replanted in another location resulting in no net loss.

## Decommissioning Phase

• Similar measures to mitigate dust and vehicle emissions as detailed for the construction phase.

## **Residual Impacts**

9.8.10. No residual impacts are anticipated. The operational stage will have significant, long term beneficial effects on air quality and climate

## **EIAR Conclusion**

9.8.11. The construction of the wind farm will have a long term, moderate positive impact on air and climate.

#### Assessment

9.8.12. The **carbon balance** of the proposed wind farm development has been raised by an observer to the appeal. In the absence of an Irish equivalent the assessment uses the Scottish Government's carbon calculator which is an established methodology developed to determine the carbon impact of windfarm developments. The methodology calculates the carbon costs of windfarm development with the carbon savings attributable to the windfarm. The total carbon emissions savings from a wind farm are estimated with respect to emissions from different power generating sources and loss of carbon associated with the production, transportation, erection,

operation and decommissioning of the windfarm. Carbon losses as a result of felling are also taken into account. It uses a full life cycle analysis approach and includes restoration of the site after decommissioning.

- 9.8.13. At the outset I note that the site is underlain by shale with due regard had to peat present within the development footprint of the site. Working within the parameters of the Scottish Government's carbon calculator the calculations are based on the entire development footprint being 'Acid Bog' which is one of two choices available. As the habitat impacted by the development comprises of commercial forestry and blanket bog rather than acid bog the actual CO<sub>2</sub> losses arising from ground activities are expected to be lower than the 44,958 tonnes calculated. The worst case scenario, includes the non-restoration of hydrology and habitats following decommissioning.
- 9.8.14. It is estimated that 717,000 tonnes of carbon dioxide will be displaced over the proposed 40-year lifetime of the wind farm. The 44,958 tonnes that will be lost to the atmosphere due to the construction, operation and decommissioning of the proposed development will be offset in approx. 2.5 years of its operation.
- 9.8.15. I am satisfied that significant carbon savings will be achieved compared to power derived from more conventional forms of power generation and will have a positive impact in terms of climate.

## Air and Climate - Conclusion

*9.8.16.* I have considered all of the submissions made in relation to air and climate. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of air and climate.

## 9.9. Material Assets

## **Environmental Impact Assessment Report**

9.9.1. Chapter 13 of the EIAR deals with material assets with Chapter 15 addressing transport and traffic. The latter is supported by Appendix 15.1 which provides Swept Path Analysis Figures.

## **Receiving Environment**

### Roads and Traffic

- 9.9.2. The site is located within a rural area connected by a network of local and regional roads with access proposed from local road L-4282.
- 9.9.3. A haul route from Killybegs for the large turbine components is identified. They will be transported to the N56 some 4.0km northeast of the harbour. The route primarily follows the national road network, namely the N56, N15, N4, R285 and R280 before turning left onto local road L-4282 towards the wind farm site entrance. The Turbine Delivery Route is shown in Figure 15.1. The proposed construction haul routes (crushed stone, concrete, concrete blocks and precast units) will come from the quarries as shown on Figure 15.5. The grid connection route is shown on Figure 15.3. Disposal routes for soil and stone excavated for the grid connection are shown in Figure 15.4.
- 9.9.4. Baseline traffic volumes have been determined. A continuous traffic counter is maintained by TII on the N4 at Drumdoney, southeast of Castlebaldwin. Traffic data from this site together with classified traffic counts during the morning and evening peak hour traffic at the R280 / L-4282 / R200 Junction were used to provide background traffic volumes on the local public road network.

#### Utilities

- 9.9.5. A scoping response provided by 2RN identified a risk of interference to the 2RN FM link from Truskmore.
- 9.9.6. The closest regional airport is Sligo Airport, 28km north-west of the development. the closest international airport is Knock, 50km to the south-west.
- 9.9.7. The Corderry 110kV substation is c. 3km to the north of the nearest point of the site.

## 9.9.8. Likely Significant Effects

## **Do Nothing**

• No additional traffic generated or accommodation works carried out on the local road network.

• There would be no change to existing telecommunications and aviation operations in the area.

#### **Construction Phase**

- The construction phase of the proposed development is expected to last approx. 14-15 months with the underground cable being installed over a concurrent 5-month period.
- It is estimated that 2,570 HGV and abnormal load deliveries will be required for the proposed development. 2,257 HGV load deliveries will be required for the grid connection. The breakdown for each component of the development is set out in Tables 15.19 to 15.21.
- Turbine components will be delivered to the site over a period of approximately 34 36 weeks after civil works are completed. It is estimated that approximately 138 loads of turbine components and crane parts will be delivered during this period. The majority of these loads will be classified as abnormal loads.
- Based on the indicative timetables outlined in Table 15.22 the peak times for HGV deliveries will be in months 2 to 9 when the turbine foundations will be constructed, turbine hardstands and the site roads will be finished in imported stone and the grid connection works will be ongoing. 330 movements per day at peak is calculated.
- A peak workforce of 76 persons is calculated. There will be peaks and troughs in the numbers, with the peak workforce during the general site works.
- A summary of the magnitude and significance of impacts on the road network are set out in Table 15.25. The effects on the local road network (including turbine delivery route, and construction haul routes) can be predicted to be direct, negative, negligible to high (depending on the section of road as detailed in Section 15.5.3) but short-term in nature.
- As outlined in Table 15.18, works will be required at a number of locations along the Turbine Delivery Route. These works may cause some short-term disruption to local road users. However, these effects will be confined to a

relatively short period during the construction phase, prior to the delivery of turbine components.

 For the grid connection, the works will be constructed within local roads L-4282 and L-8280 over a total length of c.6.4km. The construction of a trench and joint bays will effectively close the road to vehicular traffic. Formal road closures will be required.

## **Operational Phase**

- Minimal traffic volumes will be generated by the development once operational.
- The development is potentially within the approach surfaces of the IFP for Sligo airport.

## **Decommissioning Stage**

 Turbine foundations and hardstanding areas to be left in place, to be covered with soil/topsoil. The access roads are to be left in situ. The phase is anticipated to last 12-24 weeks.

## **Cumulative Impacts**

- Were the construction phases of the consented but not yet constructed windfarms to overlap, there is potential for cumulative effects on the road network from construction traffic and turbine delivery.
- The developer is responsible for engaging with all relevant Telecoms Operators and Aviation Authorities to ensure that the proposals will not interfere with television or radio signals by acting as a physical barrier. In the event of any potential impact, the developer for each individual project is responsible for ensuring that the necessary mitigation measures are in place. Therefore, as each project is designed and built to avoid impacts arising, a cumulative impact cannot arise.

#### 9.9.12. Mitigation Measures

#### **Construction Phase**

- Traffic Management Plan (see Management Plan 7 attached to the CEMP) to include standard measures to enhance safety, reduce delays, congestion and inconvenience to local residents and road users. All road surfaces and boundaries will be re-instated to predevelopment condition, as agreed with the local authority engineers.
- The developer will provide a travel plan for construction staff.
- The grid connection will be constructed to the requirements and specifications of ESB. Prior to construction confirmatory drawings for all existing services will be sought from ESB Networks.
- Temporary safety signage will be erected all around the perimeter of the live work area to warn members of the public of the hazards of ongoing construction works.
- In agreement with Sligo Airport, the developer is committed to undertaking a IFP assessment subject to the grant of planning permission.
- An Obstruction Survey will be undertaken at the pre-construction phase in agreement with the IAA.

## **Operational Phase**

- Best practice measures for vehicles using the site including maintenance of low speed limits on access roads. Signage to be maintained.
- The requirements of the IAA in terms of lighting and entering of details into aircraft navigation databases, will be complied with.

## **Decommissioning Phase**

 A decommissioning plan, including material recycling / disposal and traffic management plan will be prepared for agreement with the local authority. This plan, will contain similar mitigation measures to those implemented during the construction phase.

## **Residual Impacts**

9.9.14. Subject to the implementation of the mitigation measures during the construction and decommissioning phases no residual impacts are anticipated.

## **EIAR Conclusion**

9.9.15. The proposed development would not have a significant adverse effect on material assets having considered cumulative effects with other existing and/or approved projects.

## Assessment

9.9.16. Whilst I accept that the increases in traffic, the potential restrictions relating to lane/road closures and the transport of abnormal sized loads on the road network during the **construction phase** may cause inconvenience and annoyance to local residents and regular road users, these impacts will be temporary and relatively short in duration and will be managed in accordance with a **Traffic Management Plan** to be agreed with the relevant local authorities along the route.

## Material Assets – Conclusion

9.9.17. I have considered all of the written submissions made in relation to material assets. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of material assets.

## 9.10. Cultural Heritage

## **Environmental Impact Assessment Report**

- 9.10.1. **Chapter 14** of the EIAR addresses cultural heritage. Appendix 14.1 provides a description of recorded archaeological monuments located within 2km of the proposed development site, and 100m from the proposed grid connection route
- 9.10.2. The assessment methodology included a combination of desk top studies using recognised data bases supported by mapping sources and aerial imagery followed by site inspections. The assessment also covers the proposed haul route.

## **Receiving Environment**

- 9.10.3. There are no recorded archaeological sites located within the red line boundary of the proposed wind farm. Three recorded monuments are located within 2km of the proposed development. There are no National Monuments in State Ownership/Guardianship, or sites with Preservation Orders, located within the study area or its close environs. The closest NIAH structures are located in Drumkeeran village c. 3km east of the proposed development.
- 9.10.4. A walk over survey of the area of the proposed development revealed no features of archaeological significance. A ringfort LEO17-004001 and house LEO17-004002 in Lugmeeltan townland are located c. 80m east of the proposed grid connection route and will not be impacted.

## 9.10.5. Likely Significant Effects

#### **Do Nothing**

Site would continue to be managed as an existing commercial forestry with some agricultural uses interspersed. Any unknown subsurface archaeological sites would remain in situ.

## Construction Phase

There is potential for construction stage impacts on unknown subsurface archaeological features.

#### **Operational Phase**

None predicted

## **Decommissioning Phase**

None predicted

## **Cumulative Impacts**

The existing 13 turbine Garvagh Glebe wind farm is located less than 1km west of the proposed development. When the location of the proposed development is taken into consideration the overall long-term negative indirect effect on the archaeological landscape will increase slightly. This increase in cumulative impact does not result in any direct effects to archaeology or cultural heritage.

#### 9.10.10. Mitigation Measures

#### **Construction Phase**

All ground disturbance associated with the construction of the proposed development to be monitored by a suitably qualified archaeologist. In the event of archaeological features, finds and/or deposits been encountered during the monitoring, all relevant authorities to be notified immediately. Preservation in situ or preservation by record (excavation) may be required.

#### **Operational Phase**

None

#### **Decommissioning Phase**

None

## **Residual Impacts**

9.10.11. There will be no residual effects on the archaeological, architectural and cultural heritage resources.

#### **EIAR Conclusion**

9.10.12. The proposed development would not have a significant adverse effect on cultural heritage having considered cumulative effects with other existing and/or approved projects.

#### **Cultural Heritage – Conclusion**

*9.10.13.* I have considered the submissions made in relation to cultural heritage. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of cultural heritage.

## 9.11. Landscape

### **Environmental Impact Assessment Report**

- 9.11.1. **Chapter 12** addresses landscape and visual amenity and is accompanied by photomontages with Appendix 12.1 providing a viewpoint assessment.
- 9.11.2. The assessment is conducted in accordance with the methodology set out in the Guidelines for Landscape and Visual Impact Assessment (2013) published by the UK Landscape Institute and the Institute for Environmental Impact Management and Assessment (CLVIA). The EIAR also lists other guidance documents used in the assessment.
- 9.11.3. Regard is had to the SNH Guidelines relating to the Cumulative Effects of Wind Farms (2005) and Guidelines for Landscape and Visual Assessment (GLVIA) (2013) in terms of cumulative effects.
- 9.11.4. The assessment included a desktop study and site visits with the tools used to assist in the assessment of visual effects including ZTV maps and photomontages.
- 9.11.5. A number of photomontages are used to compare alternative turbine configurations as viewed from the near and medium distant positions.

#### **Receiving Environment**

- 9.11.6. As noted previously the area is characterised by a mix of commercial coniferous forestry, peatland and agricultural land with sporadic one off housing.
- 9.11.7. As per the Leitrim County Development Plan the site is within the landscape character type LCT 6 Moorland Hills. 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 transitions to LCT 8 Valley Farmland. The proposed development is wholly located in LCA11 Corry Mountain (refer to Figure 12.4), which is described as an upland area which overlooks Lough Allen and lowlands to the east. The area features extensive tracts of peat bog, transitional woodland and scrub. In the agricultural landscapes on the lower slopes hedgerow enclosure results in a more intimate landscape.
- 9.11.8. The site is not within an area of outstanding natural beauty or of high visual amenity. Corry Mountain, which is situated just over c.500m south of the site is designated as

an area of high visual amenity whilst Lough Allen c. 4.5km southeast of the site is designated as being of outstanding natural beauty.

- 9.11.9. The Sligo County boundary is c. 2.6km west of the site at its nearest point. The current Sligo County Development Plan does not contain a Landscape Character Assessment but identifies areas of 'Normal Rural landscape' and 'Sensitive Rural Landscape' as well as 'visually vulnerable' linear features such as ridgelines and coastlines. The nearest parts of Sligo to the proposed development comprise a mix of all three of the landscape classifications with a predominance of 'Normal Rural' landscape.
- 9.11.10. The Roscommon County boundary is c. 5km south of the Site at its nearest point. The Roscommon County landscape character assessment identifies 36 landscape character areas, with the nearest and most relevant of these being LCA 14 – Arigna Mountains and LCA 1 – Lough Allen and Arigna Foothills. Both of these character areas have been classified with a 'Very High Value' noted for their scenic quality.
- 9.11.11. The Cavan County boundary is c. 10km northeast of the Site at its nearest point. In terms of landscape character areas LCA 1 Cuilcagh-Anierin Uplands of West Cavan is of relevance.
- 9.11.12. The landscape sensitivity of the central study area (<5km) which comprises a mix of landscape features and types, is deemed Medium-low due to its robust working character, which is heavily influenced by existing wind energy development.
- 9.11.13. The landscape of the wider study area (5-20km) comprises a much broader array of landscape areas, types and features. An overall landscape sensitivity judgement of Medium is deemed appropriate for the landscape of the wider study area, albeit some parts of the study area, such as the uplands and lake lands, have a landscape sensitivity of High (lake lands) and in some cases Very High (mountain summits).
- 9.11.14. The EIAR (section 12.3.4.1) considers the **2006 Wind Energy Guidelines** and the guidance provided on aesthetic considerations including siting and design. The site is considered to accord with the Transitional Marginal' Landscape type with the majority of the study area considered to have the same qualities as the site. The siting and design recommendations for the 'Mountain Moorland' and 'Hilly and Flat Farmland' landscape types have also been considered when designing the turbine

layout for the proposed Letter Wind Farm as a result of the varied nature of the landscape within the central and wider study area.

- 9.11.15. In order to assess the extent of visibility i.e. **Zone of Theoretical Visibility** (ZTV), regard is had to the Windfarm Guidelines which recommends 20km for turbines over 100 metres high. It shows theoretical visibility concentrated in close proximity to the proposed turbines. Due to the complex and diverse nature of the terrain within the study area, which comprises elevated rolling hills and ridges, the proposed turbines will not be visible from over half of the study area.
- 9.11.16. The potential visual receptors are designated scenic routes and views, local community views, centres of population, major routes and amenity and heritage features. 21 viewpoints were chosen with Table 12.6 providing a description of each (see figure 12.7).
- 9.11.17. The turbines used in the photomontages is the highest possible tip height and hub height combination, namely a turbine envelope of 117m rotor diameter, 91.5m hub height and 150m tip height which represents a worst-case scenario in terms of the maximum potential turbine envelope for the proposed project. One alternative turbine dimension is being considered by the developer, which comprises a turbine envelope of 115.7m rotor diameter, 92m hub height and 149.85m tip height. A set of comparative montages has been included.

## 9.11.18. Likely Significant Effects

## Do Nothing

 The existing land use of commercial coniferous forestry would continue to be carried out on the site, including felling and replanting, in addition to use of parts of the site for agriculture and other rural based activities.

## **Construction Phase**

 Most of the construction phase will be close to ground level and, therefore, not generally visible outside the proposed site boundary. The erection of turbines occurs towards the end of this period, at which point the visual effects will be similar to those during the operational phase.

## Landscape Effects

- The introduction of vertical structures on the site will result in a change to its landscape character from its present condition. The landscape of the site has been previously modified in character due to the coniferous commercial forestry occupying a significant portion of the lands within the site boundary.
- Wind turbines are a highly characteristic feature of the central and wider study area. The nearest are less than a kilometre to the south of the site. The effect, is considered to be one of intensification and extension of an established land use in this landscape and not the introduction of a new and unfamiliar feature.
- The scale of the proposed development will be well assimilated within its landscape context without undue conflicts of scale with underlying landform and land use patterns. For these reasons the magnitude of the landscape impact is deemed to be Medium within the site and its immediate environs (c.1km) reducing to Medium-low for the remainder of the central study area. The quality of the landscape effects is deemed Negative. Beyond 5km from the site, the magnitude of landscape impact is deemed to reduce to Low and Negligible at increasing distances as the wind farm becomes a proportionately smaller and integrated component of the overall landscape fabric.

## Visual Effects

- Table 12.9 provides a summary of the visual impact assessment at representative viewpoint locations as set out in Appendix 12.1. The visual assessment concluded that residual visual effects of substantial – moderate was deemed to arise at 1 no. of the 21 viewpoint locations. 3 no. were deemed to be 'moderate'. All other viewpoints were assessed as resulting in 'moderate - slight', 'slight', 'slight -imperceptible' or 'imperceptible' residual visual effects.
- VP2, VP3, VP8, VP20 and VP21 represent scenic designations within the study area. This scenic designation crosses an upland ridge southwest of the site and is currently heavily influenced by existing wind energy development, much of which is viewed nearer than the proposed turbines. The proposed turbines will present at a slightly larger scale than all other existing turbines within the

view, albeit they will not increase the vertical extent of wind energy development in this view, as they are located at a lower elevation than the nearer existing turbines.

- Up to 11 views were chosen to represent the local community, including VP5, VP7, VP9, VP10, VP11, VP13, VP14, VP15, VP16, VP18 and VP19. Of the 11 views, the highest significance of visual impact is 'Substantial-moderate' (VP18), which relates to the nearest potential views of the proposed development. All other views were deemed to have an impact significance of Moderate or lower. The proposed turbines will generate an increased sense of enclosure in the local landscape where views are already afforded of existing turbines to the west and south. Overall, the proposed turbines will generate a notable increase in the intensity of wind energy development in this landscape context, however, the turbines will not appear out of place or over scaled, especially in the context of the broad landscape features and land uses that surround the site and wider landscape.
- Drumkeeran is the only notable centre of population within the central study area. A relatively clear view of the turbines is afforded from VP13, which is located immediately north of the settlement's main street along the R280 regional road. A ridgetop conifer forest screens turbine T1. The remaining three turbines present in a highly legible manner and are evenly spaced across the ridge. Whilst the proposed turbines will increase the intensity of wind farm development at the settlement of Drumkeeran, they are not considered to be an inappropriate addition to this landscape context which is heavily influenced by other working land uses and existing wind energy development. As a result, the visual impact significance is deemed Moderate-slight.
- Due to the intensity of walking trails and cycling routes within the study area, nine viewpoints were chosen to represent heritage and amenity features within the study area, including VP1, VP2, VP3, VP4, VP8, VP13, VP17, VP20 and VP21. As many of these routes pass across the most scenic parts of the study area, these viewpoints often also represent designated scenic views or route receptors. Whilst clear views of the proposed development will be afforded from numerous sections of this extensive walking trail, especially along some of

the most elevated sections of terrain at Corry Mountain, the proposed turbines will be viewed in combination with the numerous existing wind farm developments located along the broad ridgeline that extends in a north-south direction. Thus, the main visual effects at this linear receptor relate to the intensification of wind farm development (refer to VP21).

 Other notable aspects of amenity within the study area relate to the numerous lakes which VP2, VP3 and VP20 represent. Despite the highly scenic nature of many of these lakes, the proposed turbines will have little notable influence and the visual amenity afforded from these susceptible locations due to their distance from the proposed development.

## Decommissioning Phase

• Visual impacts would revert to pre-development phase

#### Cumulative Effects

• The proposed turbines will almost always be viewed in combination with the existing turbines to the west and south of the Site.

#### 9.11.20. Mitigation Measures

# Construction Phase

None

## **Operational Phase**

Careful siting and design in accordance with the Wind Energy Guidelines, which minimises landscape and visual effects.

## **Decommissioning Phase**

None

## **EIAR Conclusion**

9.11.24. The cumulative landscape effects will be imperceptible and the visual effects would be slight for the visual study area as a whole.

## Assessment

- 9.11.25. I have inspected the site and the surrounding area and have visited the viewpoint locations and examined the photomontages submitted. I consider they are sufficiently representative of views in the area and adequate for the purposes of the assessment. I also note the concerns raised by observers to the application and the appeal.
- 9.11.26. I consider that the visual aids accompanying the application were prepared and presented in a reasonable and competent manner. I would submit that the photomontages indicate that the impact and the extent of visual dominance of the wind turbines depends on the location from where the wind farm is viewed and the extent of local screening or vegetation. I submit that the preparation of photomontages necessarily involves a degree of selectivity and artificiality and are not regarded as definitive and are only a tool, albeit a useful tool, to assist in the determination of the visual effects of the proposal. It is in this context that such photomontages are used.
  - 9.11.27. In total 21 no. photomontages have been prepared and I consider that the locations chosen provide for a reasonable representation with both near and medium distance views available on which to allow for a proper assessment.
  - 9.11.28. The visual effects of the proposed turbines were assessed from each viewpoint in terms of the sensitivity of the visual receptors along with the magnitude of change. The EIAR considers potential impacts from designated scenic views/routes, settlements, recreational and tourist destinations, recreational routes and transport routes.
  - 9.11.29. The ZTV shown in Figure 12.8 of the EIAR illustrates the overall potential for all or parts of the development likely to be visible from the surrounding countryside within a radius of 20km. This would represent what could be considered to be a worst case scenario as the ZTV does not take into account the effects of screening by natural vegetation and existence of structures. I consider that it demonstrates the extent of the most relevant geographical area likely to be impacted and includes the most critical areas of influence that are of relevance to the assessment of the proposal. As noted above whilst it is possible that the development may be visible from further afield, distance will play a significant role in abating the impact.

- 9.11.30. I have reviewed each of the photomontages in the field. I have also observed the appearance of the windfarms located in the study area and I have noted the legibility of turbines in different weather conditions which can have a material impact on visibility. I note that in some of the photomontages landscape features (including vegetation) obscure views of some of the turbines but submit that these features are components of the existing environment and would, in practice, act in the same way.
- 9.11.31. In terms of the visual impacts from the closest residential receptors their visual amenities will, in many instances, be altered. Certainly the turbines are significant in height and scale however I note that the nearest sensitive receptor is 720+ metres away from the nearest turbine (T4). This materially exceeds the 500 metre requirement of the current 2006 wind energy guidelines. I accept that the said guidelines were prepared at a time when turbines were generally of a smaller scale and height. Having regard to the 2019 draft wind energy guidelines a setback distance for visual amenity purposes of 4 times the tip height of the relevant wind turbine is recommended which, in this case, equates to 600 metres. The 720+ metre setback proposed by the applicant exceeds this.
- 9.11.32. The level of impact decreases with distance and is apparent from the photomontages submitted. Within the 5km to 10km range and as is evident from the ZTV, for large areas the windfarm will not be readily visible or would be totally or partially screened by intervening topography, hedgerows etc. Intermittent and truncated views of the turbines will only be available in most instances. I submit that the visibility, where available, is tempered by the intervening distance and the existing wind farms in view. I do not consider that the proposed turbines dominate the views in question. I concur with the appraisal presented in the EIAR that the proposed wind turbines are highly characteristic features of the central and wider study areas given the scale of existing turbines within a 20km radius, with the effect of the proposed development largely one of intensification and extension of an established land use in this landscape and not the introduction of a new and unfamiliar feature.
- 9.11.33. I concur with the characterisation of the receiving landscape presented in the EIAR as being a mix of landscape features and types, comprising of a robust working landscape with some susceptible scenic and recreational values, particularly in the context of the wider study area. Similarly, I am in agreement that the central study

area (5km radius of the site) is strongly influenced by existing wind energy development and extensive areas of commercial conifer forestry

- 9.11.34. I acknowledge that whilst the height of the proposed turbines (circa 150 m) may be of a greater scale than many of the existing turbines within the wider and central study areas, I consider that the proposed four turbine development is not of a scale that would give rise to any significant adverse impacts on the character of the receiving landscape or when viewed in combination with other existing wind farm developments.
- 9.11.35. In terms of the comparative photomontages submitted the very small variation in the **turbine's range/dimensions** is virtually indiscernible to the naked eye.
- 9.11.36. Overall, 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.

## Landscape – Conclusion

- 9.11.37. I have considered all of the written submissions made in relation to landscape and visual Impact.
- 9.11.38. I submit that whilst the area has an innate rural quality it is dominated by commercial coniferous forestry and existing windfarm developments interspersed with agriculture and is lightly populated. On this basis I consider that the absence of specific landscape/visual protection designation in the Leitrim County Development Plan to be reasonable. The designation of the area within the plan as being available for wind farm development reflects this assessment. I submit that in view of the long established commercial coniferous forestry and wind farm developments prevalent in the area it presents itself as a highly moderated landscape which is relatively robust.
- 9.11.39. I consider that given the nature of the receiving landscape and national and strategic imperatives in terms of increasing renewable energy to address the pressing climate change crisis, that the visual impacts would not have such an adverse impact on the character and amenities of the area such as would warrant a recommendation of refusal on visual impact grounds.
#### 9.12. Interactions

- 9.12.1. Chapter 17 of the EIAR addresses interaction of impacts with a matrix provided in Table 17.1 and a summary provided in Table 17.2. I would concur that the most dynamic interactions pertain to human beings. Other interactions of note are land and soil, water, and biodiversity.
- 9.12.2. I have considered the interrelationships between factors and whether these might, as a whole, effect the environment, even though the effects may be acceptable when considered on an individual basis. In my assessment of each environmental topic, I have considered the likelihood of significant effects arising as a consequence of interrelationship between factors. Most interactions e.g. the impact of noise and air quality on the population and human health are addressed under individual topic headings.
- 9.12.3. I refer the Board to interactions between land and soil and water (see sections 9.6 and 9.7 above) and the lacunae identified. I submit that such lacunae is material.

#### 9.13. Reasoned Conclusion

Having regard to the examination of the environmental information above, to the EIAR, the details provided by the applicant in the grounds of appeal and the observations received, the contents of which I have noted, I consider that the main significant direct and indirect effects of the proposed development on the environment are as follows:

#### **Population and Human Health**

Shadow flicker during the operational phase such as would impact negatively on sensitive receptors and populations in the vicinity of the site. Impacts are to be mitigated by a curtailment strategy for all turbines that have the potential to cause an exceedance in the daily and annual shadow flicker limits.

Noise impacts will arise from construction activities such a site preparation and construction of the turbine foundations, roads and substation. A suite of mitigation measures to manage noise during the construction phase are set out in the Environmental Impact Assessment Report. Predicted operational noise levels will be within the relevant best practice noise criteria for wind farms.

# **Biodiversity**

Habitat loss associated with construction will impact on habitats of generally low ecological value with no rare or protected species recorded. Potential impacts to habitats and faunal species, aquatic fauna and invertebrates and avian species would be mitigated by the implementation of the measures during the construction and operational phases set out in the Environmental Impact Assessment Report and overseen by a project ecologist.

#### Land, Soil and Water

Having regard to the high density of historical landslides in the area, including within the site itself, the tension cracks recorded as being present on the site, the upland and sloping nature of the terrain, the high rainfall levels prevalent in this location, the high density of drainage channels throughout the site, both natural and man-made, and the inadequacy of the details provided on the proposed peat storage arrangements on the site, it is considered that there is material lacunae in the information provided on which it can be concluded that the proposed development would not present a significant risk of adverse impacts in terms of soil stability and potential for landslide and which would, therefore, not constitute an unacceptable risk of pollution of watercourses in the area.

## Air and Climate

Positive environmental impacts will arise during the operational phase from the generation of renewable energy with the displacement of CO2 from the atmosphere arising from fossil fuel energy production.

## **Material Assets**

Impacts on roads and traffic will be mitigated during construction by the measures set out in the Environmental Impact Assessment Report and by a Traffic Management Plan. The main impacts will occur during the construction stage which will be short-term and temporary. Impacts during the operational stage would be negligible.

## Landscape

Localised visual impacts of the development from sections of the local roads in the vicinity and on local properties. These impacts will not be avoided, mitigated, or

otherwise addressed by means of condition. The impact is balanced by the nature of the landscape which is considered to be a moderated landscape in which wind farm developments are prevalent and which is robust.

# 10.0 Appropriate Assessment

#### Introduction

- 10.1.1. The requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, sections 177U and 177V of the Planning and Development Act 2000 (as amended) are considered fully in this section. The areas addressed in this section are as follows:
  - Compliance with Article 6(3) of the EU Habitats Directive.
  - Screening the need for appropriate assessment.
  - The Natura Impact Statement and associated documents.
  - Appropriate assessment of implications of the proposed development on the integrity of European sites.

## Compliance with Article 6(3) of the EU Habitats Directive

10.1.2. The Habitats Directive deals with the Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union. Article 6(3) of this Directive requires that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. The competent authority must be satisfied that the proposal will not adversely affect the integrity of the European site before consent can be given.

## 10.2. Screening the need for Appropriate Assessment

10.2.1. The requirements of Article 6(3) as related to screening the need for appropriate assessment of a project under part XAB, section 177U of the Planning and Development Act 2000 (as amended) are considered fully in this section.

#### Background on the Application

10.2.2. The applicant has submitted a Screening Report for Appropriate Assessment and a Natura Impact Statement as part of the planning application, both of which were prepared by Doherty Environmental and dated December 2023. The report was prepared in line with current best practice guidance and provides a description of the proposed development and identifies European Sites within a possible zone of influence of the development. It has regard to ecological, geological and hydrological field surveys and investigations which informed the application and as presented in the EIAR

The applicants AA Screening Report concluded that the potential for likely significant effects on 5 no. European Sites cannot be ruled out at the Screening stage and that an Appropriate Assessment of the project is required.

## Screening for Appropriate Assessment- Test of likely significant effects

10.2.3. The project is not directly connected with or necessary to the management of a European Site and therefore it needs to be determined if the development is likely to have significant effects on a European site(s). The proposed development is examined in relation to any possible interaction with European sites designated Special Conservation Areas (SAC) and Special Protection Areas (SPA) to assess whether it may give rise to significant effects on any European Site

## Brief Description of the Proposed Development

10.2.4. It is proposed to construct a windfarm development comprising of 4 no. turbines, substation, grid connection to Corderry substation and ancillary works on an upland site characterised by a mix of coniferous forestry, blanket bog, wet heath and semi-improved grassland. The upper Owengar River, which is characterised as an upland eroding stream, flows along the boundary of the wind farm site. A stream that flows into the river will be crossed at one location by the proposed access track. The site has a stated area of 45ha. The entire stretch of the grid connection route from the proposed wind farm site to the existing ESB substation at Corderry will be located within the footprint of existing public road corridors and includes 7 no. water crossings. A detailed description of the development is provided in section 2 above with specifications of the proposal provided in other planning documents provided by the applicant.

- 10.2.5. Taking account of the characteristics of the proposed development in terms of its location and the scale of works, the following issues are considered for examination in terms of implications for likely significant effects on European sites:
  - Uncontrolled discharge of polluted surface water from the site, for example, that is silted (including from peat slides) or contains hydrocarbons or cement (construction, operation and decommissioning) with adverse effects on habitats and/or species of conservation interest in European sites (in situ and ex situ).

## Submissions and Observations

- The Department of Housing, Local Government and Heritage in a report dated 27/02/24 states that the NPWS concurs with the NIS findings that provided the mitigation measures as outlined therein are strictly adhered to, the project should not have the potential to significantly impact the designated sites outlined.
- IFI in its submission (summarised in section 3.3.above) has serious concerns regarding potential impact on surface water.
- Submissions from 3<sup>rd</sup> parties raised issues including peat stability, risk of peat slide and impacts on avifauna.
- 10.2.6. I note that the applicant included a greater number of European sites in its initial screening consideration. There is no ecological justification for such a wide consideration of sites, and I have only included those sites with any possible ecological connection or pathway in this screening determination.
  - 10.2.7. The following is my summary of the information in relation to the potential impacts identified in the screening stage.

European Site	Qualifying Interests	Distance	Connections
Lough Gill SAC	Natural eutrophic lakes with	5.5km from	Hydrological
(Site Code:	Magnopotamion or	the grid	connection
001976)	Hydrocharition - type vegetation	connection	via grid
	[3150] Semi-natural dry	route.	connection
	grasslands and scrubland	8.3km from	route and

	facies on calcareous substrates	wind farm	watercourse
	(Festuco-Brometalia) (*	site	crossings.
	important orchid sites) [6210]	11km from	With 15km
	Old sessile oak woods with llex	the nearest	otter foraging
	and Blechnum in the British	turbine	range.
	Isles [91A0] Alluvial forests with	delivery	
	Alnus glutinosa and Fraxinus	route	
	excelsior (Alno-Padion Alnion	widening	
	incanae, Salicion albae) [91E0]	location	
	Austropotamobius pallipes		
	(Whiteclawed Crayfish) [1092]		
	Petromyzon marinus (Sea		
	Lamprey) [1095] Lampetra		
	planeri (Brook Lamprey) [1096]		
	Lampetra fluviatilis (River		
	Lamprey) [1099] Salmo salar		
	(Salmon) [1106] Lutra lutra		
	(Otter) [1355]		
Unshin River SAC	Water courses of plain to	13.6km	No
(Site Code:	montane levels with the	from wind	hydrological
001898)	Ranunculion fluitantis; and	farm site	connection
	Callitricho-Batrachion	and grid	Within 15km
	vegetation [3260]	connection	foraging
	Semi-natural dry grasslands	route	range of otter
	and scrubland facies on	Toule.	
	calcareous substrates		
	(Festuco-Brometalia) (*		
	important orchid sites) [6210]		
	Molinia meadows on alcareous,		
	peaty or clayey-silt-laden soils		
	(Molinion caeruleae) [6410]		

Alluvial forests with Alnus	
glutinosa and Fraxinus	
excelsior (Alno-Padion,	
Alnion incanae, Salicion albae)	
[91E0] Salmo salar (Salmon)	
[1106] Lutra lutra (Otter) [1355]	

- 10.2.8. As noted above the AA Screening Report considered a greater number of European Sites. In terms of the sites not mentioned above I note the following:
  - The main body of the site is within the upper Shannon catchment. The northern section of the grid connection route, only, is within the Sligo Bay catchment.
  - The main body of the works including the turbines and associated infrastructure in addition to 5 no. water crossings along the grid connection route are within the Upper Shannon catchment. Whilst there is a hydrological connection to Lough Forbes Complex SAC, having regard to the significant separation distance of in excess of 45 km from the windfarm site and the intervening waterbodies of Lough Allen, Lough Tap and Lough Boderg, the proposed development would not be likely to have a significant effect on the site.
  - In view of the limited extent of the works within the existing public carriageway along the grid connection route and the separation distances to Cummeen Strand/Drumcliff Bay SAC (site code 000627) and Cummeen Strand SPA (site code 004035) (over 20km) the proposed development would not be likely to have a significant effect on the European site in view of the sites' conservation objectives.
  - There is no hydrological connection to Lough Arrow SAC (site code 001673), Bricklieve Mountains and Keishcorran SAC (Site Code: 001656), Boleybrack Mountains SAC (site code 002032), Cuilcagh-Anierin Uplands SAC (site code 000584).

#### **Mitigation Measures**

10.2.9. No measures designed or intended to avoid or reduce any harmful effects of the project on a European Site have been relied upon in this screening exercise.

#### Screening Determination

10.2.10. The proposed development was considered in light of the requirements of Section 177U of the Planning and Development Act 2000 as amended. Having carried out screening for appropriate assessment of the project, it has been concluded that the project individually (or in combination with other plans or projects) could have a significant effect on European Site Nos. 001976 and 001898, in view of the sites' conservation objectives, and appropriate assessment (and submission of a NIS) is therefore required.

# 10.3. Appropriate Assessment of Relevant European sites

- 10.3.1. The following is an objective assessment of the implications of the proposal on the relevant conservation objectives of the European sites using the best scientific knowledge in the field. All aspects of the project which could result in significant effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are examined and assessed for effectiveness. I have relied on the following guidance:
  - DoEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, National Parks and Wildlife Service.
  - EC (2021) Assessment of plans and projects in relation to Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EC
  - EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC.

## Natura Impact Statement

10.3.2. The NIS prepared by Doherty Environmental dated December 2023 outlines the methodology used for assessing potential impacts on the habitats and species within the European Sites that have the potential to be affected by the proposed

development. It predicts the potential impacts for these sites and their conservation objectives, it suggests mitigation measures, assesses in-combination effects with other plans and projects and it identifies any residual effects on the European sites and their conservation objectives.

10.3.3. The report concludes that, taking into account the project design and the implementation of mitigation measures identified in the NIS, the proposed development will not result in adverse effects on the integrity of any Natura 2000 site.

# European Sites

- 10.3.4. The following sites are subject to appropriate assessment:
  - Unshin River SAC (site code 001898)
  - Lough Gill SAC (site code 001976)
- 10.3.5. Tables 1 and 2 in the appendix attached to this report summarise for each European site the qualifying interests (QI) of the site, conservation objectives, potential adverse effects, mitigation measures proposed by the applicant, in-combination effects and an overall conclusion in respect of the effect of the development on the integrity of the site. I have also examined the attributes and targets for each QI, the Natura 2000 data forms and supporting documents as relevant available on the NPWS website. The attributes and targets of the features of interest subject to examination are set out in section 4.3.

## Aspects of the Proposed Development

- 10.3.6. Having reviewed the development proposal I submit that the main aspects that could adversely affect the conservation objectives of the above-mentioned European Sites include:
  - Impacts as a result of reduction of water quality through construction related pollution events (e.g. chemicals, oil/fuel, cementitious materials etc.) or sediments/silt runoff.
  - Impacts as a result of peat slide
  - Impact on foraging/prey availability of qualifying species

#### Mitigation Measures

Section of the NIS sets out the proposed mitigation which can be summarised as follows:

#### 10.3.7. Oversight and Monitoring

- Appointment of Ecological Clerk of Works (ECoW) to supervise the works both during construction and decommissioning phases.
- Project Ecologist to be appointed for operational phase to supervise ongoing implementation, management and monitoring of peatland habitat management and enhancement measures.
- Construction and Environmental Management Plan developed
- Regular inspection and maintenance of surface water management systems. Programme of water quality monitoring to be implemented.
- Vehicle and plant maintenance and inspection.
- Programme of water quality monitoring to be agreed with Leitrim County Council and IFI for construction phase. Programme of operational phase water quality monitoring to be agreed with Leitrim County Council.

#### 10.3.8. Earthworks

- Management of excavated material with no permanent or semi-permanent stockpiles. Any surplus spoil at end of construction phase to be taken off site.
- Excavated material to be backfilled and transported to spoil storage area as soon as practicable.
- Open excavations to be covered and sidewalls supported where practical.
- Construction works not to be carried out during or directly after periods of sustained rainfall.
- Emergency Response Plan prepared as part of the CEMP and SWMP.
- All mitigation measures related to surface water to be implemented before excavation works commence including settlement ponds, silt traps, check dams and sediment drains. Sediment fencing to be erected along proximal and paralleling areas of watercourses and drainage channels. Multiple silt

fences will be used in drains discharging to the surface water network. A dedicated silt fence will be established along all sections of the wind farm access track that are within the 50m buffer zone of the Owengar River and all other small streams or drainage channels occurring at the wind farm site.

- No direction flow paths between stockpiles and watercourses.
- Surface water runoff will be discharged to land via buffered drainage outfalls that will contain hardcore material of similar composition to the geology of the bedrock at the site to promote the capture and retention of suspended sediment. Buffered drainage outfalls will be placed outside of the 50m buffer zone and will not be positioned in areas with extensive erosion and degradation.
- A high number of discharge points will be established to decrease the loading on any one particular outfall.

#### 10.3.9. Measures to Protect against Risk of Landslide

- The infrastructure design has sought to avoid areas of deep peat and potential deep bedrock as much as possible.
- Floated roads will only be constructed in areas of deeper peat (>1.5m depth with a crossfall of less than 1 in 10). Pipes will be installed at intervals to allow the existing runoff regime on the site to continue. The loading phases to be carefully controlled in order to keep the stresses induced in the peat below the strength of the peat at the time.
- Prior to the construction phase confirmatory pre-construction phase ground investigation works to be undertaken to confirm an absence of change to the baseline condition that have informed the proposed wind farm design.

## 10.3.10. Excavation Dewatering Requirements

- Areas of subsoils to be excavated will be drained ahead of excavation works.
- Engineered drainage and attenuation features outlined in the Surface Water Management Plan to be established ahead of excavation works.
- Dewatering pumping rates will be controlled by an inline gate valve or similar infrastructure.

- The direct discharge of dewatered loads to surface waters will not be permitted.
- All dewatering will follow a strict procedure of pumping to a settlement tank and then to a dewatering bag, or settlement ponds prior to discharging to receiving environment for overland flow. Settlement ponds will be designed to reduce flow velocity to 0.3 m/s.
- Check Dams will be constructed across drains and will reduce the velocity of run-off.
- Overland flow paths of the final dewatered discharge will be maximised to the greatest practical extent to avoid prematurely draining to drainage channels or surface waters. Sediment fencing will be installed up gradient of water courses which may receive the final overland flow. The final treated dewatered discharge will be directed towards heavily vegetated areas to allow for further natural filtration of suspended solids.
- No extracted or pumped water will be discharged directly to the surface water network associated with the Site (this is in accordance with Local Government (Water Pollution) Act 1977 as amended). Any discharges of sediment treated water will meet the requirements of the Surface Water Regulations 2009, as amended.

## 10.3.11. Watercourse Crossings (within site and along grid connection route)

- The stream crossing on the windfarm site and method statement to be agreed with IFI.
- Specified measures to be implemented during installation of culverts for artificial drainage channel crossings in accordance with IFI Gudelines.
- Vehicle refuelling onto at site's designated bunded refuelling area.
- Spill kits to be available in event of accidental leaks or spillages.
- The drainage channel that conveys surface water along the depression that formed following the historic peat detachment to the northwest of T4 to be culverted under the wind farm access road.

- At bridge crossings on the grid connection route excavated road and soil to be stored at least 10 metres from the crossing structure and watercourse with silt fencing and silt capture structures such as straw bales to be deployed either side of a watercourse. Gullies to be blocked to ensure that the direction of potential runoff is conveyed to vegetated verges to allow for infiltration and trapping/
- Flocculant gels to be used in drainage channels to promote the settlement of finer solids prior to discharging to surface water networks.

#### 10.3.12. Cementitious Materials

- Precast concrete to be used where possible
- Concrete not to be poured during periods of rainfall.
- Pouring of concrete into standing water within excavations will be avoided.
- Any required shuttering installed to contain the concrete during pouring will be fully secured around its perimeter to minimise any potential for leaks
- Raw or uncured waste concrete or any surplus concrete to be removed from the site
- Only chutes to be cleaned in designated area prior to leaving site.
- Vehicle inspection

## In combination effects

- 10.3.13. Section 5.4 of the NIS addresses in combination effects with other wind farms within 20km of the site. The Water Framework Directive 3rd Cycle catchment report for the Shannon (Lough Allen) catchment (EPA, 2021a) provides a summary of water quality and associated anthropogenic pressures within the catchment. The EPA note that there are issues with sedimentation from a wind farm development upstream of Meelagh Lake (Kilronan windfarm). As no hydrological pathways connect the proposed development site or any elements of the project to Meelagh Lake there will be no potential for the project to combine with the Kilronan Wind Farm to result in cumulative negative effects to the water quality of this lake.
- 10.3.14. Given that no other operational wind farms drain to the same receiving waterbodies as the project have been identified there will be no potential for these operation

phase wind farms to combine with the project to result in cumulative negative effects to the water quality, freshwater habitats and species of waterbodies downstream of the project.

- 10.3.15. With respect to the consented Tullynamoyle Wind Farm projects it is noted that detailed measures for the protection of water quality have been set out in the planning application documentation for these projects and that an Appropriate Assessment has been completed. These assessments have concluded that provided all mitigation measures set out in the planning application documentation that aim to protected water quality are implemented, there will be no potential for these consented projects to result in adverse effects to European Sites. In view of the findings of these assessments, there will be no potential for the project to combine with these other consented projects to result in cumulative adverse effects to European Sites downstream of the project.
- 10.3.16. There are no proposals in place to fell conifer plantation remaining on the site during construction phase and therefore no overlap between the construction phase and felling operations.
- 10.3.17. Taking into consideration the proposed mitigation measures the proposal will not give rise to in-combination effects on water quality downstream within Sligo Bay and Upper Shannon catchments during the operational phase.
- 10.3.18. Given that the decommissioning phase of the proposed development will not take place until the termination of the operation phase of the proposed wind farm it is not possible at this juncture to identify other plans or projects with which activities associated with the decommissioning phase could combine to result in adverse effects to European Sites. Notwithstanding this, it is noted that the activities associated with the decommissioning phase will be similar to those that will be required for the construction phase and will have the potential to result in similar impacts. It is noted that mitigation measures are set out in Section 7 below and their full implementation will provide safeguards such that the decommissioning phase of the proposed wind farm site will not have the potential to combine with other land use activities that pose a threat/pressure to the water quality of the receiving catchments.

#### Assessment

- 10.3.19. I refer the Board to my assessment in section 9.6 of the EIA with regard to the detail before it with respect to the matter of peat stability and potential downstream impacts on water quality should a peat slide event arise as a consequence of the proposed development notably the construction phase and the period immediately after. I note that the considerations in the NIS are taken from the details which fed into the EIAR and notes that all infrastructure elements associated with the proposed wind farm will result in a negligible to low risk of a peat slide occurring.
- 10.3.20. I submit that the works that would potentially give rise to risk of peat slide are applicable to site excavations and turbine construction contained within the main body of the site at Letter. This drains into two sub-catchments:
  - Sub Catchment: Owengar (Leitrim)\_SC\_10, River Sub Basins: Owengar (Leitrim)\_SC\_010 and Diffagher\_10, Rivers: Owengar (Leitrim)\_010, Owengar (Leitrim)\_020, Diffagher\_010
  - Sub Catchment: Shannon Upper\_SC\_020; River Sub Basin: Shannon Upper\_040, Lough: Lough Allen
- 10.3.21. These sub-catchments are located within the Upper Shannon catchment (Catchment ID26A). As noted in the AA Screening above there is a significant separation distance from the site to the nearest European Site downstream (Lough Forbes Complex SAC) with the intervening waterbodies including Lough Allen, Lough Tap and Lough Boderg noted. The proposed development would not be likely to have a significant effect on the said European site.
- 10.3.22. This conclusion is also applicable for the grid connection works in the vicinity of the 5 no. watercourses within the same catchment.
- 10.3.23. The site of the turbines, substation and other infrastructural works at Letter is within the maximum foraging range of otter, a qualifying species of the 2 no. designated sites. No breeding or resting habitat for otters occurs within the vicinity of the site.
- 10.3.24. With respect to the 2 no. water crossings within the Sligo Bay catchment I consider that the works to be minor in scale within the long established public road carriageway where potential for peat slide is minimal. I consider the mitigation measures, as detailed, for the grid connection works including the works required at

the 2 no. water crossings, to be standard best practice and with the stated level of supervision and monitoring will be implementable and effective in achieving their aims. The measures address the main threats to the QI species and habitats dependent on high level of water quality in the control of sedimentation and construction related pollutants along the route and would reduce possible effects to a non-significant level whereby adverse effects can be prevented. I refer the Board to Summary Tables 1 and 2 attached to the report.

#### **Integrity Test**

10.3.25. Following the appropriate assessment and the consideration of mitigation measures, I am able to ascertain with confidence that the project would not adversely affect the integrity of Lough Gill SAC and Unshin River SAC in view of the conservation objectives of this sites.

#### **Appropriate Assessment - Conclusion**

- 10.3.26. The proposed Letter windfarm, grid connection and associated works has been considered in light of the assessment of the requirements of sections 177U and 177V of the Planning and Development Act 2000 as amended. Having carried out screening for Appropriate Assessment of the project, it was concluded that it may have a significant effect on Unshin River SAC and Lough Gill SAC. Consequently, an appropriate assessment was required of the implications of the project on the qualifying features of those sites in light of their conservation objectives.
  - 10.1. Following a detailed examination and evaluation of the NIS, all associated material submitted with the application as relevant to the appropriate assessment process and taking into account observations received I am satisfied that based on the design of the proposed development, combined with the proposed mitigations measures, adverse effects on the integrity of Unshin River SAC and Lough Gill SAC can be excluded in view of the conservation objectives of those sites.
- 10.1.1. My conclusion is based on the following:
  - A detailed assessment of all aspects of the proposed development that could result in adverse effects on European Sites within a zone of influence of the development site,

- Consideration of the conservation objectives and conservation status of qualifying interest species and habitats
- A full assessment of risks to qualifying interest habitats and species and
- Application of mitigation measures designed to avoid adverse effects on site integrity and likely effectiveness of same.
- 10.1.2. The proposed development would not undermine the favourable conservation condition of any qualifying interest or special conservation interest or delay the attainment of favourable conservation condition for any qualifying interest or special conservation interest of these European sites.

# 11.0 Recommendation

Having regard to the foregoing I recommend that permission for the above described development be refused for the following reasons and considerations

# 12.0 Reasons and Considerations

Having regard to:

- (a) The classification of the site by Geological Survey Ireland as being of low to moderately high landslide susceptibility,
- (b) The high density of historical landslides in this area, including within the site itself,
- (c) The tension cracks recorded as being present on the site,
- (d) The upland and sloping nature of the terrain,
- (e) The high rainfall prevalent in the area,
- (f) The high density of drainage channels throughout the site both natural and manmade,
- (g) The proximity of the Owengar River which bounds the site to the west,
- (h) The volumes of peat and other spoil material requiring excavation, handling, storage and management on the site,

on the basis of the information submitted with the application and appeal, the Board cannot be satisfied that the proposed development would adequately mitigate risk associated with potential landslide as a consequence of the development of the proposed wind farm.

In view of the above, it is considered that the proposed development would constitute an unacceptable risk of pollution of watercourses in the area. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.

I confirm that this report represents my professional planning assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought to influence, directly or indirectly, the exercise of my professional judgement in an improper or inappropriate way.

Pauline Fitzpatrick Senior Planning Inspector

October, 2024

# APPENDIX

#### Table 1: Unshin River SAC (site code 001898)

Summary of Key issues that could give rise to adverse effects:

#### • Loss of foraging /prey availability

Conservation Objectives: Unshin River SAC Conservation Objectives (npws.ie)

Statutory Instrument: S.I. No. 99/2019 (irishstatutebook.ie)

Summary of Appropriate Assessment						
Qualifying Interest	Conservation Objectives Targets and	Potential adverse effects	In-	Mitigation measures	Can adverse effects	
feature	attributes		combination		on integrity be	
Maintain (M)			effects		excluded?	
Restore (R)						
Water courses of plain to	- No habitat distribution decline, subject to	None	None	None	Yes	
montane levels with the	natural processes; area stable or	There is no hydrological				
Ranunculion fluitantis	increasing, subject to natural processes.	pathway connecting the				
and Callitricho- Batrachion vegetation	- Maintain appropriate hydrological regime	site and examples of this habitat				
(M)	- Maintain appropriate substratum particle					
	size, range, quantity and quality subject					
	to natural processes.					
	- Maintain/restore appropriate water quality					

	<ul> <li>Typical species of the relevant habitat sub-type should be present and in good condition.</li> <li>The area of active floodplain at and upstream of the habitat maintained/restored</li> <li>Maintain the area and condition of fringing habitats necessary to support the habitat and its sub-types</li> </ul>				
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia) (* important orchid sites)* ( <b>R</b> )	<ul> <li>Habitat area stable or increasing and no decline in distribution.</li> <li>Vegetation Composition: Positive indicator species requirements, negative indicator species &lt; 20% cover, cover of non-native species &lt; 10%; cover of woody species (except certain listed species) and bracken (Pteridium aquilinum) &lt; 5%</li> <li>Vegetation Structure: broadleaf herb component between 40% and 90%;&gt; 30% of sward between 5cm and 40cm tall; litter cover &lt; 25%; &lt; 10% bare soil;</li> </ul>	None There is no hydrological pathway connecting the site and examples of this habitat	None	None required	Yes

		areas showing signs of serious grazing or disturbance <20m <sup>2</sup>				
<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) <b>(R)</b>	-	Habitat area stable or increasing and no decline in distribution. Vegetation Composition: Positive indicator species requirements, negative indicator species < 20% cover, cover by individual species < 10%; Hair mosses < 25%; cover of woody species and bracken < 5%. Vegetation Structure: broadleaf herb component between 40% and 90%; > 30% of sward between 10cm and 80cm tall; litter cover < 25%; < 10% bare soil; areas showing signs of serious grazing or disturbance <20m <sup>2</sup>	None There is no hydrological pathway connecting the site and examples of this habitat	None	None required	Yes
* Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno- Padion, Alnion incanae, Salicion albae) <b>(R)</b> (Map 5)	-	Area stable or increasing and no decreased in distribution (see map 4) Woodland size: Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	None There is no hydrological pathway connecting the site and examples of this habitat	None	None required	Yes

- Woodland structure: Total canopy cover
> 30%; median canopy height > 7m;
native shrub layer cover 10-75%; native
herb/dwarf shrub layer cover > 20% and
height > 20cm; bryophyte cover > 4
Maintain diversity and extent of
community types. Seedlings, saplings
and pole age-classes occur in adequate
proportions to ensure survival of
woodland canopy
- Hydrological regime: Flooding
depth/height of water table: Appropriate
hydrological regime necessary for
maintenance of alluvial vegetation
- Woodland structure: At least 19 stems/ha
of dead wood of > 20cm diameter. No
decline in veteran trees. No decline in
indicators of local distinctiveness; all five
indicators of overgrazing absent
- Vegetation composition: No decline in
native tree cover > 90%; target species
>50% of canopy; negative indicator
species cover < 10%; cover of common
nettle <75%.

Atlantic Salmon Salmo salar ( <b>R</b> )	<ul> <li>100% of river channels down to second order accessible from estuary accessible</li> <li>Adult spawning fish: Conservation Limit (CL) for each system consistently exceeded</li> <li>Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling</li> <li>No significant decline in out-migrating smolt abundance:</li> <li>No decline in number and distribution of spawning redds due to anthropogenic causes</li> <li>At least Q4 water quality at all sites sampled by EPA</li> </ul>	None There is no hydrological pathway connecting the site and examples of this habitat	None	None required	Yes
Otter Lutra lutra ( <b>M</b> )	<ul> <li>No significant decline in distribution</li> <li>No significant decline of extent of terrestrial habitat:. Area mapped and calculated as 124.68ha</li> </ul>	Windfarm site within maximum foraging range of species. No breeding or resting habitat occurs in vicinity.	No	Best practice measures to be employed during construction of grid connection in proximity to 2 no. watercourses. See	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent

- No signi freshwat mapped - No signi and holt significa - No signi connecti	ficant decline in extent of ter (river) habitat:. Length and calculated as 66.55km ficant decline in couching sites s, fish biomass available: No nt decline ficant increase to barriers to vity:	Watercourses along grid connection route within foraging range of species. Impact on surface water quality arising from construction related pollution events during the grid connection and watercourse crossings. Reduction in suitable foraging habitat and prey availability	sections 10.3.7 to 10.3.12 above	direct or indirect effects on integrity
Overall conclusion- Integrity Test		availability.		

Based on the information provided and my review, I am satisfied that adverse effects can be excluded for Unshin River SAC and that no uncertainty remains.

The proposed development would not delay or prevent the attainment of the conservation objectives of the Unshin River SAC and adverse effects on site integrity can be excluded.

#### Table 3: Lough Gill SAC (site code 001976)

Summary of Key issues that could give rise to adverse effects:

- Impacts to water quality through construction related pollution events (e.g. chemicals, oil/fuel, cementitious materials etc.) or sediments/silt run-off
- Loss of foraging/prey availability

Conservation Objectives: Lough Gill SAC Conservation Objectives (npws.ie)

Statutory Instrument: S.I. No. 330/2023 (irishstatutebook.ie)

Summary of Appropriate Assessment						
Qualifying Interest	Conservation Objectives Targets and	Potential adverse effects	In-	Mitigation measures	Can adverse effects	
feature	attributes		combination		on integrity be	
Maintain (M)			effects		excluded?	
Restore (R)						
Natural eutrophic lakes	Area stable or increasing; no decline in	Impact on surface water	None	Best practice	Yes	
with Magnopotamion or	habitat distribution;	quality arising from		measures to be	No doubt as to the	
Hydrocharition - type vegetation [3150] <b>(R)</b>	Typical species present, in good condition, and demonstrating typical abundances and distribution; Vegetation Composition and Distribution: All characteristic zones should be present, correctly distributed and in good condition; Maintain maximum depth of vegetation:	construction related pollution events at water crossings along grid connection route and contribute to a diminution in the condition of the freshwater dependent habitat.		employed during construction of grid connection in proximity to 2 no. watercourses. See sections 10.3.7 to 10.3.12 above.	effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity	

Maintain appropriate natural hydrological		
regime necessary to support the habitat;		
Maintain appropriate lake substratum type,		
extent and chemistry to support the		
vegetation;		
Water Quality/Characteristics:		
Maintain/restore appropriate Secchi		
transparency; maintain/restore the		
concentration of nutrients in the water column		
to sufficiently low levels to support the habitat		
and its typical species; maintain/restore		
appropriate water quality to support the		
habitat, including good phytoplankton		
composition status and high chlorophyll a		
status; maintain/restore trace/ absent		
attached algal biomass; Restore good		
macrophyte status; Maintain appropriate		
water and sediment pH, alkalinity and cation		
concentrations to support the habitat;		
Maintain/Restore appropriate water colour to		
support the habitat; Maintain/restore		
appropriate organic carbon levels to support		
the habitat; Maintain/restore appropriate		
turbidity to support the habitat		

	Maintain the area and condition of fringing				
	habitats necessary to support the natural				
	structure and functioning of the habitat				
[6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia) (* important orchid sites)* ( <b>R</b> )	<ul> <li>Habitat area stable or increasing and no decline in distribution.</li> <li>Vegetation Composition: Positive indicator species requirements, negative indicator species &lt; 20% cover, cover of individual species &lt; 10%; cover of nonnative species &lt; 1%; cover of woody species (except certain listed species) and bracken (Pteridium aquilinum) &lt; 5%</li> <li>Vegetation Structure: broadleaf herb component between 40% and 90%;&gt; 30% of sward between 5cm and 40cm tall; litter cover &lt; 25%; &lt; 10% bare soil; areas showing signs of serious grazing or disturbance &lt;20m<sup>2</sup></li> </ul>	None No pathway. This is a terrestrial habitat	None	None required	Yes
[91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles <b>(R)</b>	<ul> <li>Area stable or increasing and no decline in habitat distribution (see map 5).</li> <li>Woodland size: Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size</li> </ul>	None No pathway. This is a terrestrial habitat	None	None required	Yes

	Woodland structure: Total canopy cover > 30%; median canopy height > 11m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover > 20% and height > 20 cm; bryophyte cover at least 4%; Maintain diversity and extent of community types. Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy. At least 19 stems/ha of dead wood of > 20cm diameter. No decline in veteran trees. No decline in indicators of local distinctiveness. All four indicators of overgrazing absent Vegetation composition: Native tree cover at $\geq$ of canopy; target species cover $\geq$ 50% of canopy. At least 1 target species for 91A0 woodlands present; at least 6 positive indicator species for 91A0 woodlands present; Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent				
	indicator species absent				
* All 1 - 1 Constant 10					Mar
* Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-	<ul> <li>Area stable or increasing and no decrease in distribution (see map 5)</li> </ul>	No By virtue of the remote distance between the project and examples of	None	None required	Yes

Padion, Alnion incanae,	- Woodland size: Area stable or increasing	this habitat and the		
Salicion albae) (R)	Where topographically possible, "large"	absence of any instream		
(Man 5)	woods at least 25ha in size and "small"	works at the project site,		
(мар 5)	woods at least 3ha in size	the project will not have the		
		potential to result in		
	<ul> <li>Woodland structure: Total canopy cover</li> </ul>	adverse effects		
	> 30%; median canopy height > 7m;			
	native shrub layer cover 10-75%; native			
	herb/dwarf shrub layer cover > 20% and			
	height > 20cm; bryophyte cover > 4%			
	Maintain diversity and extent of			
	community types. Seedlings, saplings			
	and pole age-classes occur in adequate			
	proportions to ensure survival of			
	woodland canopy			
	- Hydrological regime: Flooding			
	depth/height of water table: Appropriate			
	hydrological regime necessary for			
	maintenance of alluvial vegetation			
	- Woodland structure: At least 19 stems/ha			
	of dead wood of $> 20$ cm diameter. No			
	decline in veteran trees. No decline in			
	indicators of local distinctiveness; all five			
	indicators of overgrazing absent.			

	-	Vegetation composition: No decline in native tree cover > 90%; target species >50% of canopy; at least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present; negative indicator species cover < 10%; cover of common nettle <75%.				
Austropotamobius pallipes (White-clawed Crayfish) [1092] <b>(M)</b> Map 6		<ul> <li>No reduction in distribution from baseline.</li> <li>Population structure: recruitment:</li> <li>Juveniles and/or females in at least of</li> <li>50% of positive samples.</li> <li>No reduction of population structure from</li> <li>baseline of 0.25</li> <li>No alien crayfish species.</li> <li>No instances of disease.</li> <li>Water quality: At least Q3-4 at all sites</li> <li>sampled by EPA.</li> <li>Maintain appropriate water quality,</li> <li>particularly pH and nutrient levels, to</li> <li>support the natural structure and</li> <li>functioning of the habitat.</li> </ul>	Impact on surface water quality arising from construction related pollution events during the grid connection and watercourse crossings. Could contribution towards impeding the achievement of favourable conservation condition of the SAC population. It could undermine the population structure and habitat heterogeneity	None	Best practice measures to be employed during construction of grid connection in proximity to 2 no. watercourses. See sections 10.3.7 to 10.3.12 above	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity

	<ul> <li>No reduction in habitat heterogeneity or habitat quality.</li> </ul>				
Sea Lamprey Petromyzon marinus <b>(R)</b>	<ul> <li>Distribution: extent of anadromy: Greater than 75% of main stem length of rivers accessible from estuary.</li> <li>Annual run size should reflect that expected under near-natural conditions</li> <li>Larval lamprey present in SAC catchment</li> <li>Extent and distribution of spawning habitat: No decline in extent and distribution of spawning beds and nursery.</li> </ul>	Impact on surface water quality arising from construction related pollution events during the grid connection and watercourse crossings. Potential impacts on juvenile stage and density of species, extent and distribution of spawning habitat and density of	None	Best practice measures to be employed during construction of grid connection in proximity to 2 no. watercourses. See sections 10.3.7 to 10.3.12 above	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity
Brook Lamprey Lampetra planeri <b>(R)</b>	<ul> <li>Distribution: Access to all water courses down to first order streams.</li> <li>Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey.</li> <li>Population structure of larvae: At least three age/size groups of brook/river lamprey present.</li> <li>Extent and distribution of spawning habitat: No decline in extent and</li> </ul>	arval lamprey.			

River Lamprey Lampetra fluviatilis <b>(R)</b>	<ul> <li>distribution of spawning beds and nursery.</li> <li>Distribution: Access to all water courses down to 1<sup>st</sup> order streams.</li> <li>Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey</li> <li>Population structure of larvae: At least three age/size groups of river/brook lamprey present. Mean density of brook/river larval lamprey in sites with suitable habitat at least 5/m<sup>2</sup></li> </ul>				
Atlantic Salmon Salmo salar <b>(R)</b>	<ul> <li>No decline in extent and distribution of spawning and nursery beds.</li> <li>Distribution: extent of anadromy: 100% of river channels down to second order accessible from estuary</li> </ul>	Impact on surface water quality arising from construction related	None	Best practice measures to be employed during	Yes No doubt as to the effectiveness or
	<ul> <li>Adult spawning fish: Conservation Limit (CL) for each system consistently exceeded</li> <li>Salmon fry abundance: Maintain or exceed 0+ fry mean catchment-wide</li> </ul>	pollution events during the grid connection and watercourse crossings. Potential impacts on spawning redds, reduction in prey resource; reduction		construction of grid connection in proximity to 2 no. watercourses. See sections 10.3.7 to 10.3.12 above	implementation of mitigation measures proposed to prevent direct or indirect effects on integrity

	<ul> <li>abundance threshold value. Currently set at 17 salmon fry/5 min sampling</li> <li>Out-migrating smolt abundance: No significant decline</li> <li>No decline in number and distribution of spawning redds due to anthropogenic causes</li> <li>Water quality: At least Q4 at all sites sampled by EPA</li> </ul>	in availability and quality of rearing habitat and reduction in transparency impairing ability to find food.			
Otter Lutra lutra <b>(M)</b>	<ul> <li>No significant decline in distribution</li> <li>No significant decline of extent of terrestrial habitat:. Area mapped and calculated as 193.91ha</li> <li>No significant decline in extent of freshwater (river) habitat:. Length mapped and calculated as 80.38km</li> <li>No significant decline in extent of freshwater (lake) habitat:. Area mapped and calculated as 353.39ha</li> <li>No significant decline in couching sites and holts, fish biomass available: No significant decline. Are</li> </ul>	Watercourses along grid connection route within foraging range of species. Impact on surface water quality arising from construction related pollution events during the grid connection and watercourse crossings. Reduction in suitable foraging habitat and prey availability. Impact on surface water quality arising from	None	Best practice measures to be employed during construction of grid connection in proximity to 2 no. watercourses. See sections 10.3.7 to 10.3.12 above	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity

	- No significant increase to barriers to	construction related				
	connectivity. (map 7 – guidance)	pollution events during the				
		grid connection and				
		watercourse crossings.				
		Reduction in suitable				
		foraging habitat and prey				
		availability.				
Overall conclusion- Integrity Test						
Based on the information provided and my review, I am satisfied that adverse effects can be excluded for Lough Gill SAC and that no uncertainty remains.						
The proposed development would not delay or prevent the attainment of the conservation objectives of the Lough Gill SAC and adverse effects on site						
integrity can be excluded.						